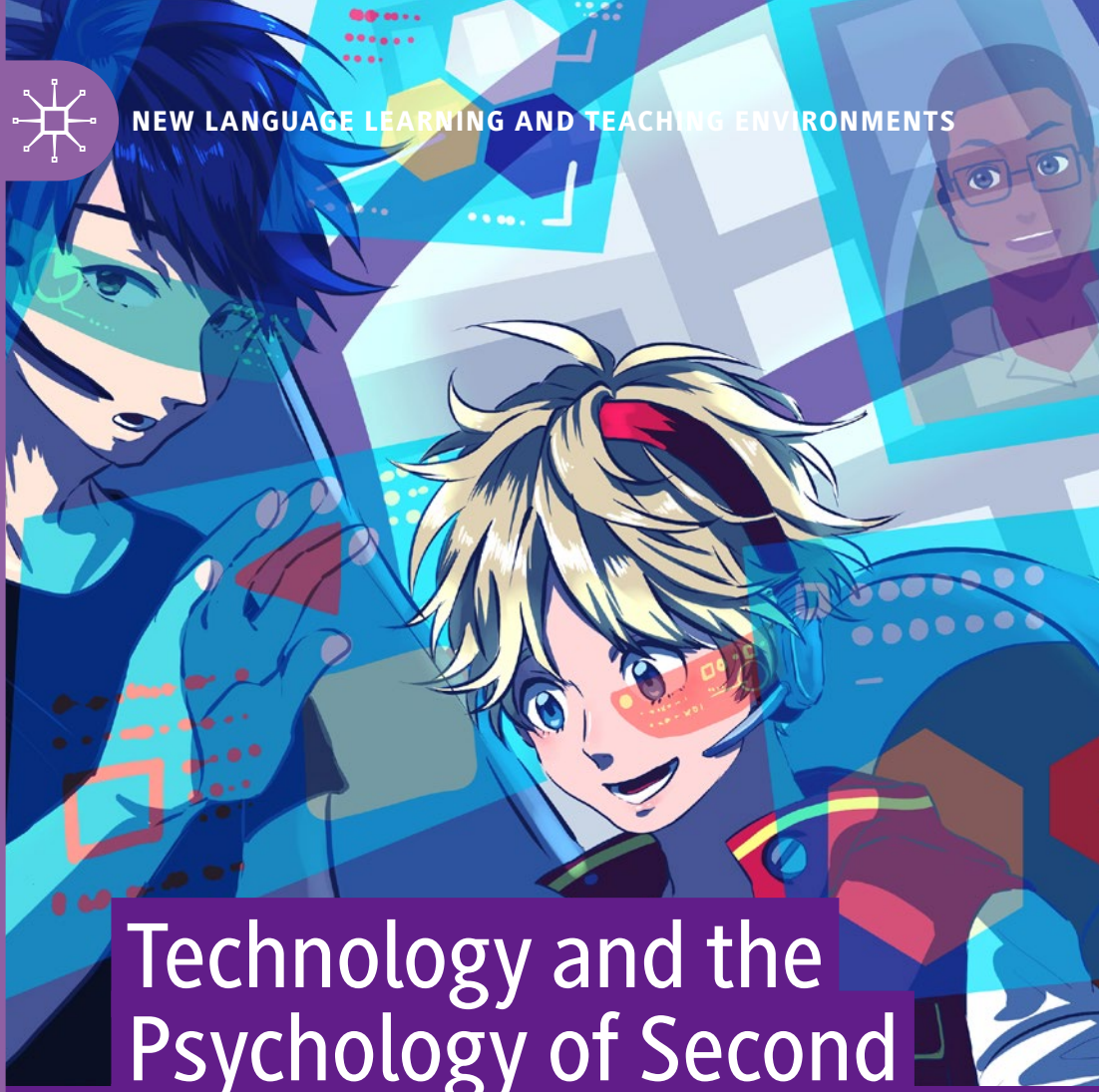


NEW LANGUAGE LEARNING AND TEACHING ENVIRONMENTS

Technology and the Psychology of Second Language Learners and Users

Edited by
Mark R. Freiermuth
Nourollah Zarrinabadi

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New Language Learning and Teaching Environments

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A cord of three strands is not easily broken. *Thanks to the following folks for being part of my third strand: my wife Michiyo, my mom, and my dad (who is now in a better place), my colleagues especially Neal Snape, my co-editor Nourollah, my professors over the years and all of my Japanese students learning English and especially my seminar student Nanase Iwahori who designed the amazingly beautiful front cover for this volume. You have all given me encouragement in so many ways.*
—Mark

To my parents: Esfandiyar and Kolsoum.
—Nourollah

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Part I

Introduction

1

Introduction and Overview: The Inescapable Confluence of Technology, Psychology and Second Language Learners and Users

Mark R. Freiermuth

Introduction

"Language is entwined with thought and thus lies at the heart of our sense-making about the world. As our inner thoughts are rooted in language, they are inherently social, like language" (Oldfather, West, White, & Wilmarth, 1999, p. 10). This quote points to an incontrovertible truth—at the heart of learning language lies thought. Perhaps in our rush to bring the latest computer-fueled gadgets into the classroom, the notion of 'thought' tends to play second fiddle to the innovation and glamour that the latest applications offer—but this is indeed faulty logic. Rather presciently, Oldfather and Dahl (1994) rightly suggested that the impulse for learning encompasses an "ongoing engagement with learning that is propelled and focused by the thoughts and feelings that emerge when students construct meaning. It is characterized by intense involvement,

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curiosity, and a search for understanding that goes well beyond situational interest in a topic or activity" (Brophy, 2008, p. 14). In other words, to gain a better understanding of the efficacy of technology in the language learning classroom, we must not only understand the device the learner is using or holding but also address the questions (1) 'How should this device be employed?' and, more importantly, (2) 'Does interaction with this technology facilitate involvement that sparks curiosity about or fuels a need for understanding the language being learned?'

Such questions should naturally bring second language (L2) researchers and teachers to consider the effects of commingling technology with the internal cogitations of language learners, as the need for clarity of the thoughts, feelings and other internal states that affect language learners sits at the heart of any value that may be assigned to the technology's use as a language learning device or application. The purpose of this volume then is to inform language teachers and researchers of some of the more critical issues—both positive and negative—that affect second language learners and users, who are ever becoming more and more deeply embedded in the technological world that surrounds them. To shed light on these issues, scholars from across the planet share their research findings on the pages of this compendium. This chapter hopes to highlight a broad spectrum of issues but still provide detailed insights as to how the latest technologies are affecting second language learners and users. With that in mind, prior to prying open the cover to have a peek at the thoughts, feelings and processes spinning around in the minds of these language learners, it is perhaps wise to at least glance back at where we have come from to arrive at the place where we find ourselves now.

Language Learner Psychology

Rather than start with technology, it is perhaps better to begin at the source—the psychology of language learners. If language learner psychology could easily be summed up in two words, it would be *individual differences* (Dewaele, 2009, 2012; Dörnyei, 2005).

If we had a secret camera so we were able to observe a class full of Japanese students awaiting the arrival of their language teacher just before

the onset of their English grammar test, one thing would stand out. Students are different—even groups of so-called homogeneous learners have differences. Some of the students might be poring over their notes with their noses a few centimeters above the pages of their texts, while others might be chatting and laughing about a boring lecture from an earlier class. Some of them might be over-prepared for the test, worried that they will not receive the score they hope for, while others may not have even studied at all either because they understand the materials well or because they really are not so interested in grammar. Each student is different, and although it would be nice (in some ways) to put students in the same box, it cannot be done. If students were all the same, there would be no need to consider the psychology of language learners because standard curricula could be developed that would always satisfy every language need of every learner—100% of the time. However, this would also make for a bland world, and since this has never been the case and hopefully never will, differences between students need to be understood. A lack of understanding of the psychology of language learners and users is a serious matter, especially for teachers, who are struggling on a daily basis to maximize their effectiveness in the little time that they have with their students. As we contemplate using various technologies with students, we hope to avoid viewing language learning in a vacuum; there are consequences for not understanding a learner's psychological makeup and state. Emotions, concentration, enthusiasm, confidence and ultimately language learning itself are all squarely in the crosshairs when psychological constructs are ignored or considered less important than that day's language activity.

In consideration of this point, Cervone and Pervin (2013) assert that one of the defining traits in humans is that their individual differences are not unstable concepts that change from one moment to the next; however, within that framework, the large number of competing influences a person may encounter—even in one day—helps to shape individuals and as such makes them complex beings indeed (Dörnyei & Ryan, 2015). From this perspective, the differences in language learners are wide ranging, necessitating a narrowing of the possible factors that can be examined. To arrive at these fundamental elements, it is good to take a step back.

Fixed Assets

Some individual differences are considered to be by and large fixed ones. At the top of the list for language learners is *aptitude* for learning a language. Carroll and Sapon (1959) developed the Modern Language Aptitude Test (MLAT), which was designed to test the cognitive capabilities of adults and teens to learn a language. Carroll (1962, 1990) surmised that the speed at which a potential learner can develop second language skills is constrained by several cognitive factors. He identified four key aspects that must be considered as being a part of a language learner's internal cognitive makeup. They are as follows:

1. Phonetic coding: the ability to distinguish between sounds, as well as to be able to associate those sounds with graphic representations of those sounds and retain these in memory.
2. Grammatical sensitivity: the ability to recognize the grammatical functions of words and phrases and incorporate them correctly into discourse.
3. Rote learning ability: the ability to form associative links to memory so as to recall words and phrases.
4. Inductive language learning ability: the ability to extrapolate from language in a given context so as to be able to form new but appropriate discourse.

Subsequent research introduced the concept of working memory as a key component of aptitude (Baddeley & Hitch, 1974). Skehan (1998, 2002), citing the indispensable role working memory plays in language learning aptitude, determined what its components are and the point at which working memory is 'activated' in the language learning process. Table 1.1 illustrates Skehan's adaptation of Carroll's original ideas.

As one can see, Skehan placed a high value on the brain as an operational device rather than a more passive receptor. He also added the notions of (1) attentional control, which is the ability to 'pay attention' to the necessary input; (2) automatization, which refers to the ability to produce language forms from memorized sets of language; and (3) chunking, which simply means that language can be stored as chunks rather than as individual words. Unconsciously, language learners make choices of what they need to process to maximize their own learning.

Table 1.1 Second language aptitude factors (adapted from Skehan, 1998, 2002)

SLA stage	Operational mechanism	Aptitude construct
Language input	Input processing	Attentional control Working memory
Central processing	Noticing	Phonemic coding ability Working memory
Language output	Pattern recognition	Phonemic coding ability Working memory Language analysis ability
Language output	Pattern restructuring and manipulation	Working memory Language analysis ability
Language output	Pattern control	Automatization Working memory
Language output	Pattern integration	Chunking Retrieval memory

Semi-fixed Assets

Closely related to aptitude are learning styles—the primary difference being that styles of learning can be acquired over time and are significantly influenced by learner environment. Learning styles represent subconscious preferences by learners to process incoming language in the most effective way they see fit using the cognitive tools they possess. Sternberg (1994) suggests that learning styles (he refers to them as thinking styles) represent a bridge between intelligence and personality. People utilize their styles in the most effective manner possible. Styles that reap rewards are naturally preferred over styles that provide fewer benefits to learners; however, as Oxford (1990) and Ellis (1985) both point out, for the learning of language, styles are highly idiosyncratic. Ehrman and Oxford (1988, 1989, 1990) essentially break styles down into the following components:

1. Sensory perception:
    a. Prefer tactile (touch) learning
    b. Prefer kinesthetic (movement-oriented) learning
    c. Prefer auditory learning
    d. Prefer visual learning

2. Psychological type:
    a. Introverted or extraverted
    b. Intuitive (random, creative or abstract) or sensing-sequential (grounded or fact oriented)
    c. Thinking (stark truth seekers) or feeling (empathetic or compassionate)
    d. Closure-oriented/judging (serious and task finishers) or open/perceiving (enjoyment of learning and less serious)
3. Global/holistic: prefer communicative and active learning
4. Analytic: prefer grammatical study
5. Biological:
    a. The time of day a learner prefers to study (biorhythms)
    b. Sustenance (food and drink intake)
    c. Location (best environment for study)

Clearly, style preferences can and do affect language learner behavior.

Ephemeral Assets

Although aptitude and learning styles undoubtedly play an integral role in language learning, other factors are less a product of nature and more a product of nurture. Strategies are a step toward more ephemeral psychological factors whereby learners' choices play a more prominent role (Bandura, 2001). Ellis (2004) suggests that styles in tandem with situational and social factors help the learners determine what type of *language strategies* (language actions) should be used to maximize language learning. Oxford (1990) developed a taxonomy comprising six macro-strategies:

1. Cognitive strategies facilitate the learning of materials via reasoning skills, analysis, summarizing, reorganization and the like.
2. Metacognitive strategies enable the learners to identify their own learning preferences, construct their own plans for L2 tasks, as well as monitor and evaluate their own L2 capabilities.

3. Memory-related strategies allow learners to retrieve, sort and draw connections between ideas.
4. Compensatory strategies are primarily related to language production elements and include guessing, using synonymy and gesturing.
5. Affective strategies allow users to assess their mood, their confidence level, their anxiety level and the like.
6. Social strategies facilitate learning through interaction with others or learning social conventions associated with the language being learned.

Considering that learner agency is a critical component of strategy use, Oxford (1990) developed the Strategy Inventory for Language Learning (SILL), which is a test that teachers can use to assess language learners they are teaching.

Naiman, Fröhlich, Stern, and Todesco (1978) took a different approach. They were curious as to why some language learners were better than others. They surmised that good language learners had to be different from poorer ones, so they investigated internal factors that might be responsible for such differences. Through their research, they posited five principles that were typically characteristic of better learners. Good language learners tended to: "(1) take an active approach to the task of language learning, (2) recognize and exploit the systematic nature of language, (3) use the language they were learning for communication and interaction, (4) manage their own affective difficulties with language learning, and (5) monitor their language learning performance" (Norton & Toohey, 2001, p. 309). They suggested that *attitude* toward the language and *motivation* were likely the two most important factors for language learning success. Vygotsky (1978) expounded upon this idea by focusing on the pertinence of the sociocultural aspects of language use; that is, to become a competent language learner meant becoming part of a 'group' of language learners whereby engagement in activities and experiences with other more competent language users in the group would propagate more language learning. Thus, besides attitude and motivation, Vygotsky (1978) suggested that how learners saw themselves, essentially their language learning *identity*, was an integral aspect of language learning.

This concept of learner identity was magnified in a somewhat controversial study by Schumann (1978). In a study of six native Spanish speakers who were studying English in the United States, one learner

(Alberto) performed noticeably more poorly than the others. Schumann took a strong professional interest in finding out why Alberto's progress had been so slow. His hypothesis was that Alberto, who came from a blue-collar background in Costa Rica, had intentionally distanced himself from American society. He based this opinion primarily on his own observations of Alberto's behavior. Using what Schumann called the Acculturation Model, he assessed Alberto's psychological distance from American society. Although the results confounded his theory, he assumed that Alberto was in fact lying to please the interviewers. Whether or not Alberto was lying, Schumann's study invigorated discussion focused on learner identity and drew attention to the fact that a learner's identity is a principal psychological factor that affects learning language and also that background, physical and social contexts, especially in association to the language being learned, must also play a role in shaping such identities (Norton, 2000). Mercer (2011) considers a learner's identity, what she refers to as 'self-concept,' as a personal evaluation of oneself as a second language learner, which encapsulates self-evaluation and internal feelings attributed to being a language learner. This is critical as a consideration, as it is closely tied to the emotional state of the language learner, which naturally affects the learning process.

When it comes to under-researched areas of psychological variables, at the top of the list sits *emotions*, which are sometimes referred to as *affect*. Despite the lack of research interest, Swain (2013) claims that cognition and emotion are at the very least interdependent but more likely inseparable, and as such, are vital toward understanding internal processes that affect language learners. He goes on to suggest that research often focuses on the cognitive factors of psychological research (following Vygotsky) at the expense of the affective side.

Any discussion of language learning psychology needs to point to the importance of the role of *motivation* and its twin sister, *willingness to communicate* (WTC). In second language acquisition (SLA) research, psychologists Gardner and Lambert (1959, 1972) are largely given credit for moving the ball forward on motivation research in language learning circles. Their seminal research, when boiled down to its core, focused on students' attitude toward language; from this position, they developed the widely known concepts of integrative motivation and instrumental

motivation. Essentially, when students are motivated integratively, their objectives are associated with social aspects of learning language, such as interest in meeting native speakers of that language or interest in a country where the language is spoken. Instrumental motivation, on the other hand, is achievement oriented—when learners see some kind of tangible assets (e.g., grades, a test score, a job requiring a certain language ability) to learn the language, they will be motivated to secure those assets. Although Gardner and Lambert did not claim that the two types of motivation were mutually exclusive, perhaps their dichotomous definitions led other researchers to consider learners' motivational drives as being all 'instrumental' or all 'integrative.' (In fact in a later model, Gardner and MacIntyre (1993) provided detailed illustrations to show that Gardner's original concepts were not intended as mutually exclusive concepts.)

Although their research represented a shift away from social psychology toward a more cognition-based version, Deci and Ryan's (1985) Self-Determination Theory (STD) still sounded surprisingly similar to the notions of instrumental and integrative motivations. STD posited that different pursuits give rise to different types of motivations, but at the heart of STD lies intrinsic motivation, which is based upon the enjoyment or pleasure of learning, while extrinsic motivation is motivation with a particular objective in mind (Ryan & Deci, 2000). While maintaining a cognitive perspective, in the same vein as Deci and Ryan but looking at motivation in a more qualitative light, attribution theory recognized, as Dörnyei and Ryan (2015, p. 83) posit here, "the subjective reasons to which we attribute our past successes and failures considerably shape our motivational disposition and underlying future action." Ushioda (1996, 1998, 2001) asserts that attribution plays a key role in motivating learners on a very personal level. Her interview with Irish students learning French revealed that they tended to associate positive language learning outcomes to personal abilities as well as other internal factors (such as effort) and negative outcomes to personal shortcomings (such as lack of effort).

In later research, Dörnyei and Ryan (2015) pointed out a relative weakness that could be attributed to both social psychological constructs and cognitive psychological constructs, namely that researchers tended to view motivation as a sort of static variable and gave scant attention to the

variables of time and dynamism. Dörnyei and Ottó's (1998) process model highlighted the idea that motivation is complex and changeable, consisting of periods of rises and falls, which could be directly tied to the process of learners' desires and wishes (pre-actional stage) being converted into language learning objectives (actional stage), which ultimately would be evaluated (post-actional stage) by the learners. Ushioda's (2009) notion of context relational motivation complemented this concept by pointing to the ever-changing relationship between the language learners and relevant contextual factors.

No summary on the psychology of language learning motivation would be complete without talking about 'possible selves' research. Dörnyei (2005) developed what he called the L2 motivational self-system, which was based upon Markus and Nurius's (1986) 'possible selves' research. Dörnyei divides his version of 'possible selves' into three categories:

1. Ideal self: This is the future self. When it comes to motivation constructs, the ideal self is a desired image or picture of the person as a language user in an imagined future. Such ideal images can elicit powerful and positive motivational drive.
2. Ought-to self: This represents someone else's vision or expectation for the language learner. The motivation is derived not from hopes and dreams of the learner but from avoiding negative consequences from failing to achieve what is expected. This is likely to be less fulfilling but, depending on the circumstances, may still be motivating.
3. L2 learning experience: This focuses on the language learner's current language learning experiences, which may include language classes and interactions in the L2. This motivation may fluctuate based upon a number of intervening factors.

The interest in 'possible selves' research as well as the notion that there is a temporal aspect that must be considered when talking about motivation opened the door for a look at long-term (months rather than hours) and very intense motivation, whereby learners remain highly motivated to learn language over extended periods of time. Dörnyei, Henry, and Muir (2016) call this kind of motivation directed motivational currents

(DMCs). The motivation associated with DMCs does not waiver with the rises and falls associated with other kinds of language learning motivation but stays rather steady and remains intense until the learner reaches his or her goal. The target represents the driving force behind this kind of motivation.

Finally, we consider the concept of willingness to communicate (WTC). MacIntyre, Clément, Dörnyei, and Noels (1998), who introduced the concept of WTC to the second language acquisition (SLA) world, were curious about what psychological levers needed to be 'activated' for language learners to willingly put themselves in situations where they could use the targeted language. As with most psychological concepts, the matter is far more complex than simply choosing to engage or not choosing to engage in conversation with a potential interlocutor in a second language. Undoubtedly one of the primary factors affecting a learner's WTC is the level of anxiety the learner feels when an opportunity for communication is at hand. In other words, the choices (i.e., behavior control) affecting a WTC are directly affected by the anxiety the learner is feeling. In situations where learner control is sacrificed (e.g., an L2 classroom activity), the learner's beliefs about the task will be affected. When the task is perceived as being extremely difficult, anxiety levels will rise and a learner's WTC will likely be negatively affected; when it is perceived as being manageable, anxiety will be less important and, consequently, a learner's WTC will be positively affected.

The Influences of Technology

When we think about technology in the classroom, it is the computer that normally comes to mind, so we will start there; this one device has immeasurably altered our world—let alone second language learning—in ways few could have imagined even ten years prior to this volume. If we consider the state of language learning in years gone by, imagine if the images of the technological wonders found inside (and outside) of today's language learning classes were magically sent back in time and flashed on a big screen to second language teachers in the mid-1970s. This would undoubtedly stir up all kinds of emotional responses—from amazement

to shock and likely even fear. After all, in the days of 'old,' language teachers were struggling with their own issues about the reliability, the value and even the morality of foisting these new computer technologies upon second language learners. Resistance came from all directions: language teachers, researchers, deans, administrators and budget officers. TV and video in the classroom was one thing, but computers, they represented a step into a vast, unknown wilderness, where peril lurked around every corner. Nevertheless, in spite of this multidirectional and multifaceted pushback, society, as it is prone to do, kept pushing forward so that over a very short period of time, the use of computers had become a relatively commonplace staple for the language learning world. And, as is the case with most innovation, the age of the 'players' was a significant factor in perpetuating the change. As the older generation harped, 'We don't do things that way around here,' the younger generation responded with, 'Resistance is futile (and a waste of time).' The consequence of course was that computer use, at a very methodical but steady pace, became a language learning tool—for better or for worse.

As a result of the changes in society and because the handwriting could be seen on the wall, it was the computer-assisted language learning (CALL) lab that became the first significant step toward establishing computers as a language learning tool. Granted, at the outset, many of the applications available to students were of the 'drill' and 'kill' mentality. These new 'tools' approached language learners from one of two directions: (1) they attempted to change the behavior of students through repeated patterns of questioning or activities, or (2) they provided rule-based activities so students could master various grammatical structures—hardly what one would call communicative activities (Bax, 2003; Warschauer, 2000). In other words, at the start of the CALL era, computer use pointed learners back to a time when the teacher-dominated classroom (or tutor-dominated, depending on the activity) ruled the roost. The CALL lab featured an emotionless electronic teacher rather than a living, breathing version. As for the psychological state of the learners, we can say unequivocally that the CALL lab had essentially pivoted learning 180 degrees—essentially booting learners back to the ideals of behaviorism and mentalism. Communication was with a machine that had all of the answers but certainly not all of the questions. On the plus side, these electronic teachers never grew tired and offered students

unlimited access and individualized experiences (Warschauer & Healey, 1998), but this also came at a psychological price. Using Deci and Ryan's (2000) expansive work as a backdrop, it can be concluded that such kinds of activities quickly lost their ability to satisfy learners' innate need for relatedness—a desire for a personal connection to others; CALL lab activities at the time were mechanistic and one-directional by their very nature.

Nevertheless, in broader society, the 1980s saw computer use begin to change in dramatic ways. The internet had arrived, and with it, the ability to communicate relatively effortlessly with others. E-mail was the premier communication tool that networked computers offered; it represented a nearly instantaneous way of communicating with others. Some language learning professionals took note, as they saw the potential for a significant change in the way language learners could use computers (Warschauer, 1995). The benefit of having interconnected computers was a game-changer because the internet enabled students to connect electronically with teachers and with other students. Of course, there were still pockets of resistance associated with this rapidly changing landscape, but by the early 1990s, the opposition had generally capitulated to the needs of society, and computers in labs (versus computer labs) were becoming so commonplace that devising ways to use them to connect students seemed a perfectly reasonable and natural evolution for second language learning activities (see Warschauer and Healey (1998) for a detailed look at how computer use progressed as a language learning device). Still, the question remained, "Could computers really transform the language learning classroom?" (Cuban, 1993).

Certainly in such a heady atmosphere, it is easy to imagine that the status of language learners' psychological cogitations was often overlooked for the sake of trying to stay technologically relevant; however, certain prominent scholars were acutely aware of this shortcoming, and research about the plight of learners, who were using computers to communicate as an integral part of their language learning activities, began to take root. As the possibilities of connecting students widened beyond e-mail (electronic text-based chat for one striking example) and as a way to try to keep pace with the internet juggernaut as it rolled along, the research on the psychological state of language learners engaged in

technology use expanded even further. Findings revealed (depending on the computer application) that language learners felt greater empowerment (Sullivan & Pratt, 1996; Warschauer, 1996; Warschauer, Turbee, & Roberts, 1996); they felt as if the playing field had been leveled to the point that more interlocutors could participate on an equal footing (Freiermuth, 1998; Freiermuth & Jarrell, 2006; Warschauer et al., 1996); they experienced less anxiety (Freiermuth & Jarrell, 2006); they were more cognizant of their own grammatical output (Pellettieri, 2000); they felt they had more control over their learning (Schwienhorst, 2003); they were able to collaborate more effectively (Beauvois, 1992, 1995; Meunier, 1998; Warschauer, 1996, 1997); they focused their attention on production rather than mistakes (Freiermuth & Jarrell, 2006); they enjoyed computer interaction more than face-to-face discussions (Freiermuth & Jarrell, 2006; Meunier, 1998); and they were more motivated and willing to communicate with one another (Freiermuth & Huang, 2012; Freiermuth & Jarrell, 2006; Meunier, 1998).

As computers became increasingly more user friendly, the speed of changes within technologically capable classrooms naturally followed. Although the technological applications became easier, faster and even safer to use, the CALL lab remained the main portal for language learners to use technologies. If we fast forward to the present day, we can say that the CALL lab has been transformed by various applications that have literally relegated much of what was considered as cutting edge in the 1980s and 1990s to the dustbin of history. Computer labs represent a place of interconnectedness whereby students from around the globe can communicate with relative ease (Freiermuth & Huang, 2012, 2018). Telecollaborative projects which produce large amounts of data have gained popularity because of available funding and because researchers are eager to provide students with opportunities to work together. By employing a wide array of multimedia, researchers have considered such psychological factors as personality, attitude, strategies, willingness to negotiate and emotional responses (Belz, 2003, 2005; Ryshina-Pankova, 2018). To this point, collaborative storytelling projects, in particular, have engendered a spirit of cooperation and harmony between language learning students involved in creating such works (Godwin-Jones, 2018).

One of the more prescient psychological advantages to language learners who have had opportunities to communicate using online platforms is that their behavior can be dramatically but positively affected. As language learners take more control over their own learning (autonomy), they also become authors of content themselves. Such creative behavior has a multifaceted effect. Agency—in this case the act of creating meaningful content in electronic form—serves to bring pleasure to those creators. When such creative content is coupled with vibrant communication with peers, this can evoke curiosity from peers and represents paths moving away from student marginalization and toward inclusion, both in the virtual world, where identity is somewhat shielded, and in the real word, through increased confidence (Kramsch, A'Ness, & Lam, 2000). Under this umbrella, language learning is easily transformed into something that cannot be contained within the classroom or is even teacher-directed, as students invent their own communities of discourse and, in doing so, create for themselves additional opportunities for increased socialization. In a very palpable sense, learners carve out their own online identities through the processes of interacting with others by digital means, and this can positively affect the development of their offline identity as well (Thorne, Black, & Sykes, 2009).

We would be remiss if we did not mention digital gaming and virtual worlds and their effect on language learners' internal mechanisms. Internet and electronic game playing have the potential to lower learners' affective filters as their brains process potential language input; games also foster learner autonomy because games naturally hand the reigns of control to users, and games tend to increase learners' willingness to communicate in the target language (Reinders & Wattan, 2015; Reinders & White, 2016). Virtual worlds, a concept that is tightly linked to games, also have been shown to have positive influences on second language learners by facilitating learner creativity, by reducing learner anxiety, by fostering camaraderie with other participants and by opening the door to more autonomy (Lin & Lan, 2015).

The latest trend that technology—the never-ending shape shifter—exerts on society positions mobile devices as a key tool for the language learning 'classroom'; this naturally affects the inner workings of students' minds in different ways. Tablet computers, i-Pads, i-Phones and android

phones have changed how the computer 'lab' actually operates. The so-called flipped classroom has jettisoned technologically based activities out of the CALL lab and landed it on trains, planes and automobiles. That is not to say that CALL labs no longer play a role in language learning, but that the whole notion of the CALL lab being simply a room filled with personal computers does not provide a complete picture of the technology that language learners are presently using. As the technology takes students away from the classroom and fixed devices, there are new psychological contingencies that must be considered. What effect does this 'anytime, anyplace and anywhere' kind of language learning actually have? This new freedom comes with its own set of additional concerns. Students might experience confusion and frustration when they come face-to-face with anxieties about assessment and uncertainties about their own understanding of the texts they are processing. On the other hand, being free from the constraints imposed in the CALL lab might make students more relaxed, more independent and more willing to engage others in communication (Gaved et al., 2013; Kukulska-Hulme, 2005). This new-found freedom has spurred the development of language learning applications employing artificial intelligence (AI) that can be easily downloaded onto mobile phones and which are able to quickly learn users' tendencies and habits. Perhaps these applications have reconfigured how languages should be taught, which may alter the role of teachers further. This independence from teachers should not divert our attention away from the students; rather, it should heighten our attention to the ways such applications are affecting the psychological underpinnings of our students. As the classroom itself begins to change, researchers will need to keep a close eye on how learners are being affected. As such, this volume represents a good place to start thinking about how technologies are affecting our students.

Nearly a quarter of a century ago, Warschauer et al. (1996) pointed out that one of the principal shortcomings associated with technology-enabled language learning (TELL) was that research into the psychological states of learners sorely lagged behind research aimed at outcomes and applications. This problem has never really gone away and so provides a solid foundation for such a volume as this. Thus, as we rapidly approach the one-quarter mark of the twenty-first century, the aims of this volume are

to provide an overview of what technologies are being used, how they are being used and, most importantly, what effect the devices and their applications have on the psychological states of second language learners and users. It is critical to provide language teaching professionals and researchers with up-to-date research so that they are armed with enough knowledge to be able to assess how the technologies that they are employing might be affecting the behaviors of their own students. This volume then will touch on some of the many issues that have really never gone away (as readers will clearly discover). To close this brief introduction to the book, I would like to say that the rapid changes taking in place in the technology-enhanced world in which we all live and in which language learners continue to study and learn make up a solid rationale that compels us to reassess the psychological needs of language learners from a birds-eye perspective and by a very globally diverse group of scholars, which I believe readers will find of great interest. There is something in here for everyone.

In the final section of this introduction, we have compiled the list of authors and their contributions organized by categories of interest, all of which were touched upon in this introductory chapter. The research covers a wide range of topics and the researchers hail from a variety of locales, including the United Kingdom, Japan, China, Spain, Vietnam, Turkey, the United States, Denmark, Greece, Hong Kong, Iran, Taiwan, Australia, South Africa and Malaysia.

Processing and Pragmatics

This section looks at other psychological effects related to a learner's mental processes and how they assist or hinder language learners.

Karina Collentine (Northern Arizona University, USA) looked at virtual environments to see how they affected language learners' pragmatic development. In the virtual environment, Spanish language learning students (treatment group 1) approached avatars to ask them for various items that were needed to help resolve the task. Ineffectual questions resulted in poor advice from the avatars. The data from 74 third-year university student-participants revealed that those students who had received help from the avatars outperformed those who had been provided

with consciousness-raising information (treatment group 2) and those who received no help (control group) from the avatars. The author's research suggests that pragmatic development for language learners may be more effectively addressed within virtual environments rather than outside of them.

Saad Alzahrani and **Leah Roberts (York University, UK)** investigated how their self-designed computer-assisted vocabulary acquisition software could aid memory and language processing. Using a zoomable user interface to teach five British monolingual students Arabic as a foreign language (AFL), they found that the software aided learners' deep semantic long-term word acquisition by improving vocabulary retrieval. The effect on memory trace offered by learning vocabulary using a zoomable interface demonstrates how effectively such computer applications can be used in the processing and retrieval of second language vocabulary.

Peter Yang (Case Western Reserve University, USA) looked at advanced German language students' uses of YouTube and whether or not using YouTube as a primary means of language learning increased their motivation. In particular, he looked at the psychological and cognitive effects of using videos, based upon the modes of text support, with a focus on the effects of captioning and subtitles of YouTube videos on high, intermediate and advanced German language learning. His findings provide teachers with a clearer understanding of what kinds of captions facilitate more efficient language processing and how such types of videos can be incorporated into the classroom.

Emotional and Behavioral Constructs

In this section, scholars provide research findings pointing to the emotional responses and the behavior associated with those responses when students are engaged in TELL contexts.

Brett Milliner and **Blair Barr (Tamagawa University, Japan)** look at computer-assisted language testing (CALT) programs, which are big time-saving applications for teachers with large classes, and which may seem more interesting to students compared to paper-and-pencil-type

tests. Their research examined the feedback of 304 Japanese language learners who had used CALT applications created with either *Blackboard* or *Google Forms*. The dynamic nature of the tests, when compared to the typical paper-pencil tests, had a strong positive influence on the students, who felt that electronic test-taking represented affordances such as convenience, ease and multiple opportunities for retaking; that is to say, they preferred the online tests over traditional handout-type assignments.

Işıl Günseli Kaçar (Middle East Technical University, Turkey) analyzed how blog production by her 40 Turkish English as a foreign language (EFL) students affected them. As students prepared their blogs, they wrote reflectively in their journals and produced a video or posted their reflections. These were commented on by other blog users from within the class. In addition, all of the students were interviewed as a means to identify any benefits or drawbacks associated with the blog project. It was found that the students felt that they had benefited from producing the blogs because their voices could be heard, and they felt the course had been more meaningful. Her research suggests that the blogs triggered constructs such as motivation and helped to improve cognitive and metacognitive skills in an autonomous, socio-constructivist setting. Nevertheless, the study also revealed that students needed scaffolding, monitoring and guidance to maximize the effectiveness of blog use.

Quyen Thi Thanh Tran and **Loi Van Nguyen (Can Tho University, Vietnam)** used Facebook as the means for delivering video content and other content to students in a flipped-class ESP course in Vietnam. More specifically, 38 English for tourism students participated in the flipped class using Facebook as the virtual platform. Following the class, the students provided feedback by way of a questionnaire. A number of these participants were then interviewed to measure their level of engagement and their emotional states while following the flipped model with Facebook. The researchers suggest that engagement intensity is high and the learners have a positive disposition while using Facebook, which provides a sound rationale for using flipped classes to promote independent language learning opportunities for students.

Hsin-Chou Huang (Taiwan National Ocean University, Taiwan) developed a reading program within the curriculum framework using a

flipped English class to promote student autonomy. Her aim was to see if students developed a greater sense of responsibility and independence by participating in the reading program. The flipped class used videos, keyword information, grammatical help and instant quizzes to track learner progress. As a result, students gained a deeper sense of responsibility for their own learning and were willing to use the program more frequently independent of teacher directives.

Language Learner Identity

In this section, scholars will bring readers up to date on how TELL affects or, in some cases, reconstructs the identity of learners.

Adam Mendelson (University of California-Berkeley, USA) looks at online identities in text-based synchronous chat with learners of Spanish as a foreign language. He describes a case in which a student's online representation changes drastically and positively, from expressing feelings of inadequacy to reporting frequent and enjoyable interactions in Spanish. Intertwined with this online transformation is evidence of a strengthening friendship with a fellow student. This case suggests who learners are and become, both online and offline, is intimately linked to their access to and relationships with target language interlocutors across contexts and media.

Boris Vasquez-Calvo (University of Santiago de Compostela, Spain), **Nikolaj Elf (University of Southern Denmark)** and **Adriana Gewerc (University of Santiago Campostela, Spain)** follow the path of a 'gang' of three young boys who use YouTube and other environments to construct their virtual selves so as to participate in the virtual world of their liking. Through interviews, the researchers have learned that this reconstruction of themselves includes not only language use but what they produce, including avatars and images. The gang members develop their own identities in order to conform to the societal pulls of language used in virtual environments or to find ways to use language that can benefit their needs (even monetarily). This kind of digital identity creation illustrates the need for curriculum developers to rethink how they

assess language learning as it relates to how learners really do learn and use their second languages.

Liudmila Klimanova (University of Arizona, USA), using a phenomenological approach, looks at how the meaning-making process of participating in virtual environments not only reflects a language learning variable but, through the experience of communicating online, creates virtual identities. She argues that hegemonic social relationships online between native speakers and non-natives speakers can result in various linguistic and emotional insecurities as well as virtual ostracism. Hence, associations with the target language come to represent not simply feelings related to academic interest or heritage but shared online social experiences—for better or for worse.

Sharin Jacob, **Leiny Garcia** and **Mark Warschauer (University of California, Irvine, USA)** look at language learners' identity development during computer science instruction. Too often, educators assume that multilingual students come to school without the conceptual or linguistic resources necessary for learning science, technology, engineering and mathematics (STEM) subjects. To address this issue, K-12 STEM educational policymakers have called for instructional models that build on language learners' existing resources, opening new possibilities for computer science education. In connecting an upper-elementary computer science curriculum to students' lives and interests, we find that language learners engage in authentic self-expression and begin a lifelong journey of learning and exploration in the field.

Nourollah Zarrinabadi (Isfahan University, Iran) and **Ensieh Khodarahmi (Allameh Tabataba'I University, Iran)** look at the effect of online social network learning activities on lower-intermediate and advanced English language learners' L2 self-concept. Participants were interviewed before and after the treatment for their actual and imagined e-learning self-concept. They also kept a journal where they recorded all their reactions, feelings and reflections after each time they completed their assignments online. Their findings showed significant improvements in students' spoken L2 self-concept for both proficiency groups and provided further evidence for the dynamic nature of language learners' self-concept.

Attitudes and Perceptions

The attitudes students bring to the CALL lab and the ones that are fostered through the use of various applications can shed light on whether or not the applications have merit.

Gina Paschalidou (Greek Ministry of Education and Hellenic Open University, Greece) discusses the use of a tutor blog that was incorporated into an EFL class as a way to assist students. Specifically, she focused her attention on the attitude of students toward using the virtual environment as an extension of the regular classroom. Her findings revealed that although students were generally excited during the initial stage of the blog's introduction, that excitement waned over time. One of the more prominent aspects of the feedback she received from participating students was that their anxieties increased. As a consequence of her findings, she proposes guidelines for more effective blogging experiences.

Goh Ying Soon, Saiful Nizam Warris and **Rasaya Al Marimuthu (Universiti Teknologi MARA, Malaysia)** examined intrapersonal and interpersonal perceptions of students toward an application that was developed for learning Chinese as a foreign language (CFL). More specifically, when the learners logged on to the system, they were able to download sound files that were intended to help them improve their pronunciation skills of Chinese words as well as bolster their listening skills. The 119 CFL students were given a questionnaire to assess their attitudes about using the system. The findings revealed that students generally had negative intrapersonal experiences due to a lack of technological knowledge and lack of technological assistance from the university, but had generally positive interpersonal experiences, pointing out that the online system was able to help improve their pronunciation.

Jako Olivier (North-West University, South Africa) investigated the level of computer anxiety of 279 English for academic purposes (EAP) university students in South Africa concerning electronic resource selection aimed at fostering self-directed writing practice. By examining students' written reflections, he found that the students were fearful when they needed to use electronic resources. The fear of technology had stemmed from their limited knowledge of electronic resources and their

own struggles with computer literacy. He has proposed a list of 'good practices' to act as guidelines for how to go about addressing inexperienced language learning students who have been thrust into the digital era.

Bin Zou, **Sara Liviero**, **Mengyuan Hao (Xi'an Jiaotong-Liverpool University, Suzhou, China)** and **Chaoyang Wei (Liverpool University, UK)** examined students' attitudes using an artificial intelligence (AI) application as a supporting tool for an English for academic purposes (EAP) class. In all, 113 first- and second-year Chinese students used the application. Students attitude toward the application were positive primarily because the students could get immediate feedback on their speaking skills from the application. Nevertheless, student also mentioned that the application could not replace language teachers, and that the application could be improved by incorporating various accents.

Motivation and Willingness to Communicate

Motivation and willingness to communicate are central to the language learning classroom. Scholars in this section will present how these elements are still fundamental considerations for students engaged in TELL.

Thi Ha Do (Ho Chi Minh City University of Technology and Education, Vietnam, and University of Technology-Sydney, Australia) and **Mark R. Freiermuth (Gunma Prefectural Women's University, Japan)** set up a joint, electronic text-based chat session between their respective universities in Vietnam and Japan. Students attempted to construct a storyline using a jigsaw activity and later discussed starting a joint business together using English (the target language). Despite a number of unforeseen problems such as starting time, long lag times and eventually a network disruption, a questionnaire revealed that students generally remained highly motivated and willing to communicate throughout the task. From the questionnaire, it was determined that the opportunities to communicate using English in EFL settings are limited, so that when rare chances are provided where English must be used as a means to communicate, they are relished by language learners and problems are overlooked.

Julia Chen and **Dennis Foung (Hong Kong Polytechnic University, Hong Kong)** employed learning analytics to monitor the behavior of 7000 university students who were all required to be enrolled in an online English for academic purposes (EAP) class. By introducing three staggered deadlines for completing online activities, blended learning course activities were shown to improve language learning behavior. The researchers go on to say that the expectancy theory of motivation best describes what psychological processes changed inside the heads of the learners. Furthermore, they point out that goal-oriented behavior is an important motivational aspect in language learning.

Lizzie Abderrahim and **David Navarro González (Universitat Rovira i Virgili, Spain)** looked at the motivation of 22 language learning children aged 5–14 years who were involved in a digital storytelling project. Students created and presented their own stories using such applications as Storyboard, VideoScribe and PowerPoint. They also used their mobile phones in the production of the videos. Quantitative and qualitative data analyses revealed that students were motivated both intrinsically and extrinsically by participating in the project.

Rebecca Chism (Kent State University, USA) and **Carine Graff (University of North Texas, USA)** looked at how lower-level language learners in several higher education institutions perceived their experience of online language learning. They were particularly interested in the role of interactive communicative activities and whether they increased students' willingness to communicate in the target language as well as their mind growth. The resulting data gathered via questionnaire provide the basis for guidelines on using online media more efficiently to engage learners in ways that have a positive impact on their progress and development as communicators.

Pinelopi Krystalli, Panagiotis Panagiotidis and **Panagiotis Arvanitis (Aristotle University, Greece)** developed detailed criteria based upon solid motivational constructs to act as a guideline for researchers who intend to use Web 2.0 and Web 3.0 in their language learning classrooms. The criteria were developed from survey information gathered from 72 language learners, who ranked the items according to importance. Thus, the research offers second language teachers a handy checklist so that these criteria can be used in practical ways.

Concluding Remarks

Nourollah Zarrinabadi (Isfahan University, Iran) and **Mark R. Freiermuth (Gunma Prefectural Women's University, Japan)** summarize the main thrust of this volume and point to future avenues under the headings of (1) technology's influences on language learner psychology, (2) psychology's influences on language learning via technology and (3) technology's help in understanding language learner psychology. The chapter concludes by bringing second language teachers back into the frame of discussion.

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Part II

Processing and Pragmatics

2

The Acquisition of Pragmatically Appropriate Requests by Second Language Learners of Spanish Using an Input-Based Virtual Environment

Karina Collentine

Introduction and Background

Pragmatic competence is the use of the second language (L2) in socially and culturally appropriate ways. One of psychology's principal questions concerning pragmatic competence is how do language learners process semantic knowledge and convert that knowledge into practical and meaningful utterances. After all, as Tomasello (2000) claims, "Without pragmatics and communicative intentions, it's all just noise" (p. 411).

Pragmatic competence, along with other competences such as linguistic competence and discourse competence, is a central element of a person's communicative competence. It is made up of sociopragmatic knowledge (i.e., knowledge about the use of language based on social norms) and pragmalinguistic knowledge (i.e., linguistic knowledge vital to carrying out speech intentions). Pragmatic competence involves not

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only using the L2's linguistic tools to express meaning appropriately and politely, but it also necessitates incorporating the perspectives of the L2 culture and making linguistic choices that fit within that culture's belief systems and ideals (Shively & Cohen, 2008). Both are necessary to communicate successfully in the L2 culture (Roever, 2009). Just as perceiving that a situation requires a particular level of appropriateness but lacking the pragmalinguistic knowledge to express that appropriateness leads to unsuccessful communication, so too does having sufficient pragmalinguistic knowledge to carry out a particular communicative act but lacking the sociopragmatic knowledge to recognize that a particular level of appropriateness is warranted.

In appreciation of the deep cognitive processes tied to language pragmatics and learning, it is germane to point to the state of pragmatics research at present. Recent research has been focused on determining if and when pragmatics is teachable, whether an implicit or explicit approach is needed, and what sorts of pedagogical materials work well (Rose, 2005). With consideration for certain caveats, Roever (2009) suggests that pragmatics can be taught, and research by Koike and Pearson (2005), Martínez-Flor and Fukuya (2005), Takimoto (2009) and Witten (2002), among others, confirms as much. Since an explicit approach provides learners with metapragmatic explanations of the pragmatic features being taught and allows learners to direct attentional resources to it (cf. Noticing Hypothesis, Schmidt, 1993), for the most part, an explicit approach is preferred. An explicit approach has yielded greater improvement (Alcón Soler, 2005; Félix-Brasdefer, 2008; Martínez-Flor & Fukuya, 2005; Mwinyelle, 2005), greater gains (Koike & Pearson, 2005), and better performances (Takahashi, 2001) when compared with an implicit approach. However, as Takahashi (2001) has noted, the effects of explicit instruction do not last.

Teachers often struggle in the classroom to help their students develop pragmatic competence because they themselves do not know how to naturally integrate all the dimensions that native speakers take into consideration when communicating. Understanding what types of materials may work effectively is crucial (Ishihara & Cohen, 2010). Long and Crookes (1992, 1993) favor integrating pragmatics using materials conceived from task-based language teaching (TBLT) principles because of

their inherent focus on real-world language use. In tasks, pragmatic competence is developed naturally alongside linguistic competence. Vinther and Jensen (2008) suggest video as a means of delivering input for pragmatic instruction, while Clennell (1999) and Meier (1997) highlight the importance of active learner engagement. Shively (2014) suggests using consciousness-raising activities with video and face-to-face interactions based on data from natural interaction, that is, conversation analysis or corpus linguistics (Huth & Taleghani-Nikazm, 2006) to avoid creating materials containing unnatural language.

The bulk of the research thus far has focused on studying the acquisition of speech acts, for example, apologies, invitations, rejections and requests (Roever, 2009; cf. Félix-Brasdefer, 2008). In general, in studies investigating the acquisition of requests, L2 learners of Spanish generally develop more target-like pragmatic abilities with respect to directness, mitigation and head-act orientation as they gain more proficiency and as they have more exposure to native speakers, for example, during study abroad (Félix-Brasdefer, 2007; Shively, 2014). Rodríguez (2001) compared the *perception* of the appropriateness of requests by learners abroad and those in classroom settings, while Shively (2011) and Bataller (2010) studied the *production* of requests by learners of Spanish abroad. Rodríguez (2001) found improvement in both groups, and Shively (2011) found that participants abroad produced requests in line with those that native speakers of the L2 might use (e.g., in a restaurant using a command or simply identifying food or a drink). Bataller (2010) found that participants abandoned one first language (L1) strategy in favor of an equally inappropriate one (i.e., using *poder* 'can, to be able to' in a question *¿Puedo tener…?* 'Can I have…?' instead of a want statement such as *Quiero*… 'I want…').

Additionally, it is important to consider that requests are not a monolithic phenomenon. Requests entail a variety of features. As mentioned previously, L2 requests can entail an orientation that is different from that of the L1, for example, Spanish favors second-person singular requests and a hearer-oriented perspective, whereas English favors a first-person singular perspective and a speaker-oriented perspective (Félix-Brasdefer, 2007). Other aspects of requests include grounders, disarmers and tense usage (Félix-Brasdefer, 2007). Félix-Brasdefer (2007) and Pinto

(2005) studied learners of Spanish at different proficiency levels and found that 'advanced learners' more readily used the conditional tense and hearer-oriented strategies while at the same time decreasing their use of por favor 'please,' an evidence of adoption of L2 norms. Félix-Brasdefer (2007) also reported that 'advanced learners' used more syntactic complexity. Despite these favorable results, Shively (2014) reminds us that whether abroad or in an instructed environment, abandonment of L1 norms is not guaranteed, and even learners at advanced levels do not always attain pragmatic competence on par with native L2 speakers.

Within the context of pragmatics, Takimoto (2009) has focused attention on processing instruction (PI; VanPatten, 1996). Recall that the main goal of PI is to instill appropriate processing strategies to facilitate acquisition and comprises three features: explicit information about targeted forms, information about processing principles and structured input activities. In PI, the input must be structured in such a way as to facilitate noticing. There are two ways to accomplish this goal: using interpretation tasks and using consciousness-raising tasks (Ellis, 1997). Interpretation tasks provide input to which learners respond nonverbally (or with minimal verbal output) in the form of checking a box and selecting a graphic, to name a couple. Another element of interpretation tasks focuses on meaning and form, and the order of these. Ellis (1997) states that attention to meaning should come first, followed by noticing and connection of meaning and form, and lastly by error identification. Takimoto (2009) says that in pragmatics an additional factor is present: the noticing of linguistic forms must incorporate both noticing how the forms fulfill a speaker's intention and the social conventions of the forms. As such, he claims that structured input should help develop learners' knowledge of pragmalinguistics and instill knowledge of sociopragmatics prior to having learners identify their errors. The other type involves consciousness-raising tasks, tasks in which there is a "deliberate attempt to draw the learner's attention specifically to the formal properties of the target language" (Rutherford & Sharwood Smith, 1985, p. 274). The content of consciousness-raising tasks is the language necessary for a task at hand (e.g., if the task requires the learner to produce a request, a consciousness-raising task for Spanish might involve using the conditional tense and a hearer orientation).

In his study on the use of PI in requests, Takimoto (2009) compared the production of requests of a control group to three experimental groups of Japanese learners of English: (1) a structured input with explicit instruction group, (2) a structured input without explicit instruction group and (3) a consciousness-raising task group (Takimoto uses the term problem-solving). After four treatment sessions of 40 minutes each, the results showed no significant differences except on an aural judgment test, where the structured input without explicit instruction group and the consciousness-raising group (CR group) outperformed the structured input with explicit instruction group. The author concludes that input-based activities allowing for the processing of pragmalinguistic and sociopragmatic knowledge (individually or together, as complementary) can be effective.

Can technology provide an input-rich medium for teaching pragmatics? Virtual environments (VEs) are hypothesized to be able to replicate the pragmatically appropriate situations and interactions that learners would encounter in the L2 culture. VEs allow learners to move within and explore a space as first-person characters. They permit interactions with avatars seeded in the VE, so that teachers or materials developers can provide specific input to learners (e.g., samples of specific pragmatic features). VEs allow for practice without offending anyone, an advantage for teachers wishing to have learners acquire certain speech acts or develop interlanguage pragmatics. For example, a learner using an inappropriate request in the real world might receive an unexpected response from an interlocutor, while the same outcome in a VE would have no direct effect on the learner's life. Another advantage of using VEs to teach speech acts is that the researcher can integrate feedback into the VE. Holden and Sykes (2013) suggest that feedback be meaningful, immediate and obvious, as it would be in the real world. They also recommend that feedback relate to the context, or task at hand.

There has been some research interest on the acquisition of speech acts set within VEs. Sykes (2009) studied the acquisition of requests by learners of Spanish and found that learners showed little improvement after working in the VE she created. Her research on apologies showed that learners gained some control over a hearer-oriented focus (which is in line with L2 cultural norms) and acquired a "new apology formula at the lexical level" (Sykes, 2013, p. 90). She also found that participants do not

necessarily benefit from a VE's embedded affordances (Sykes, 2015). Cornillie, Clarebout, and Desmet (2012) studied the effects of feedback on social introductions and professional networking (e.g., *This venue is fantastic, don't you think?; Hi, I'm… I work for…*) in a 3D role-playing game; participants showed a preference for explicit and immediate feedback that contained metalinguistic explanations over feedback that was implicit and provided at the conclusion of the task. Cohen (2013) highlights the need for more research, mentioning that "future work can explore how such [virtual] environments can lend themselves to pragmatics, such as the ways that the space caters to the performance of speech acts like apologizing or making requests" (p. 265). The present project contributes to this line of research.

Research Questions

To the author's knowledge, no research has compared the effects of using consciousness-raising and structured input to study the acquisition of requests in Spanish when set within a task in a VE. As such, the research questions are as follows:

1. Is there an overall effect for the treatment on producing requests?
2. Is there an overall effect for treatment groups?
3. Is there an overall effect for general acceptability of requests produced?
4. Is there an overall effect for perspective, tense, use of disarmers, use of adjuncts to head and grounders?

Method and Materials

Participants and Procedures

A total of 74 third-year, second language learners of Spanish enrolled in Spanish grammar or composition courses at a medium-sized university in the United States participated in the study. Participants were 19- to 24-year-old native speakers of English who had met or exceeded the

learning outcomes of the previous course, a fourth-semester university-level Spanish course (heritage learners were excluded). The classes were traditional, face-to-face courses and incorporated various teaching materials and activities. While lessons involved speaking and writing, apart from this study, learners did not engage in instant messaging activities as part of the course. The researcher conducted all segments of the study. All of the materials were integrated into the syllabus across three class periods, each lasting 1.5 hours: the discourse completion test (DCT) pretest was administered on the first day to consenting participants. On the second day, all groups were given an introduction containing background information in English about how to explore the VE, its affordances, the task itself and a map of where the task was imagined to have taken place. They also completed the VE task and chatted in a Moodle chat room with a classmate about their discoveries. On the third and final day, the posttest was administered.

Materials: Discourse Completion Test (DCT)

The DCT pretest and posttest both comprised two sections: a 16-item fill-in-the-blank section and a 14-item multiple-choice section. All 30 items contained a written dialogue in Spanish on a handout, which was contextualized with a QuickTime video that was played on the classroom's projector screen. As for the case of the fill-in-the-blank section, participants completed the next line in the dialogue—the request. For the multiple-choice items, participants selected one of three request options (The DCT was verified by educated native speakers of Spanish. First, eight graduate students verified that the dialogues in the DCT and in the QuickTime videos reflected accurate and appropriate use of Spanish and that the multiple-choice answers selected by the researcher were correct. Agreement with the researcher was 92.1% [Fleiss' kappa = 0.96]. Next, three different graduate students were trained on the three dimensions studied herein [power, distance and level of imposition] and asked to verify that the researcher had created scenarios that clearly differentiated these dimensions. Any unclear scenarios were rewritten prior to collecting data.) (Fig. 2.1).

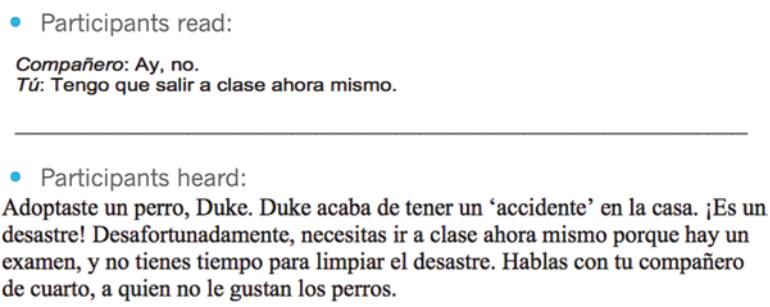


Fig. 2.1 Sample of a fill-in-the-blank DCT item

(The gray line is the space in which the request was to be written. Translation of this example: Roommate: Oh no.

You: I have to leave for class right now.

You adopted a dog, Duke. Duke just had an 'accident' in the house. It's a mess! Unfortunately, you need to go to class right now because there's an exam, and you don't have time to clear the mess. You talk to your roommate, who doesn't like dogs.)

The three dimensions under consideration in this study (distance, power and imposition) were intermingled such that 9 of the 30 items involved strangers, 10 involved acquaintances and 11 involved friends, of whom 9 were older, 11 were near the same age (as the participants) and 10 were younger; 14 of the scenarios had a high level of imposition, while 16 had a low level of imposition.

Materials: Virtual Environment

Created by the researcher in Unity (unity.com), the VE was set in a marketplace containing various shops, stands and a beachfront restaurant; participants approached avatars to request of them various objects (e.g., a map) or favors (e.g., a ride) essential to solving the task: a search for a missing treasure (experimental groups) or identification of a thief (control group). Participants explored the VE by using the arrow keys and approaching the avatars to collect clues. They could return to collect clues from any given avatar at any moment during the VE task. In the consciousness-raising group (CR group), learners engaged in

consciousness-raising while solving the task in the VE. In the structured input group (SI group), structured input was used to inform learners about the three parameters, followed by the VE exploration to solve the task. Both treatment groups received feedback about the parameters of their choices while immersed in the VE. Selecting an appropriate request resulted in information to solve the task, while selecting an inappropriate request resulted in irrelevant information. A control group (C group) completed a similar task in a similar VE but did not receive pragmatics training or feedback. The following paragraphs detail the differences among the three groups.

Consciousness-Raising Group (CR)

After a short introduction (see Section 'Participants and Procedures'), the CR group (n = 26) began exploring the VE. Upon approaching an avatar, participants heard an aural dialogue between the avatar and a participant (called Elena—the participants were to imagine themselves as Elena). The dialogue also appeared on the screen, after which two additional sets of information appeared: (1) three multiple-choice items in English whose purpose was to elevate consciousness regarding requests and (2) three requests in Spanish in textboxes (Fig. 2.2). The multiple-choice items related to the orientation of the request, how to alleviate imposition and the tenses commonly used in requests. Participants were encouraged to work through the consciousness-raising questions prior to selecting a request and to consider a different request if their first choice resulted in negative feedback. They could hear and read the dialogue and not select a request. They could approach an avatar, or move away and return again, in which case only the text appeared on the screen (the audio would not replay). They explored the VE for 35 minutes.

Clicking on a request textbox yielded a QuickTime video response to the selected request: the avatar to whom the request was made responded orally and visually to its appropriateness given the context. For example, if the participant selected an appropriate response, the avatar might smile and say, *Por supuesto que sí* 'Yes, of course,' followed by a clue to solving the task, for example, a map of the area (Fig. 2.3).

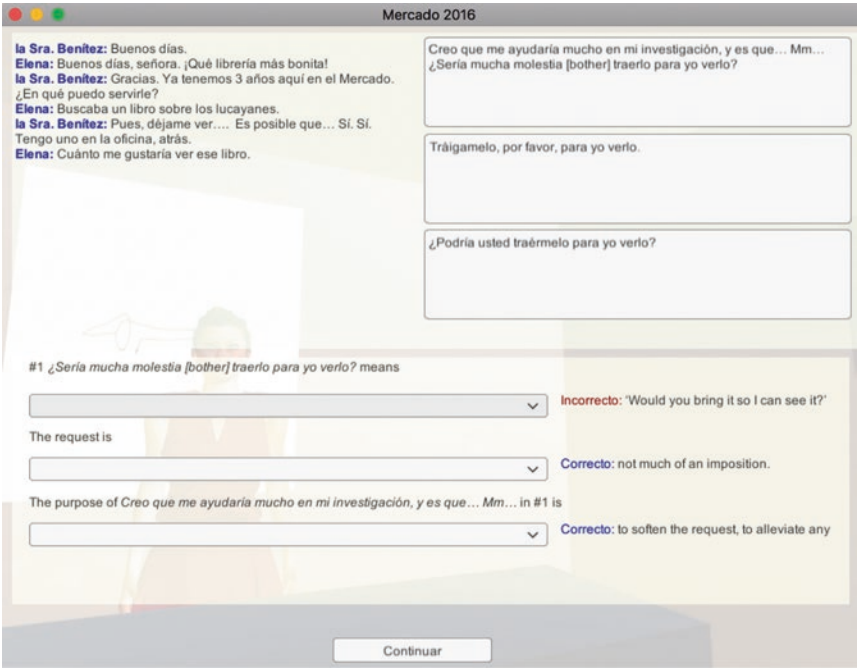


Fig. 2.2 Screenshot of CR group interface

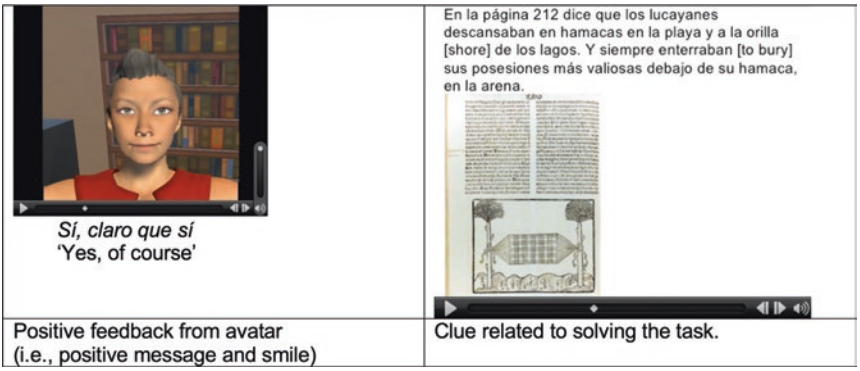


Fig. 2.3 Screenshots of the QuickTime video feedback (positive)

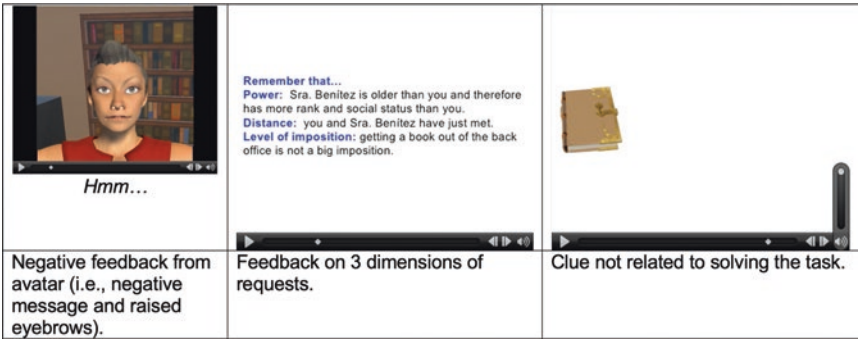


Fig. 2.4 Screenshots of the QuickTime video feedback (negative)

If the request was inappropriate, the avatar might frown and say, *¿Cómo?* 'What?!' followed by a clue unhelpful in solving the task, for example, a map of a different place (Fig. 2.4). Participants could close the video and click on a different request at any time.

Structured Input (SI) Group

Participants in the SI group (n = 26) received the same introduction as those in the CR group, followed by explicit instruction on requests lasting ten minutes. The instruction involved a handout containing scenarios in Spanish and multiple-choice questions in English that the researcher worked on with the participants in English prior to their entry into the VE. The questions related to the orientation of the request (i.e., hearer, speaker or impersonal), the three dimensions under investigation, their definitions and how they are manipulated to form appropriate requests, the linguistic tools used to alleviate the imposition and the tenses commonly used in requests.

Once in the VE, when a participant in the SI group approached an avatar, a dialogue between the avatar and the participant (imagined as Elena) would play and also appear on the screen, as with the CR group. However, as opposed to the CR group, after the dialogue was completed, the only additional information that appeared was the three

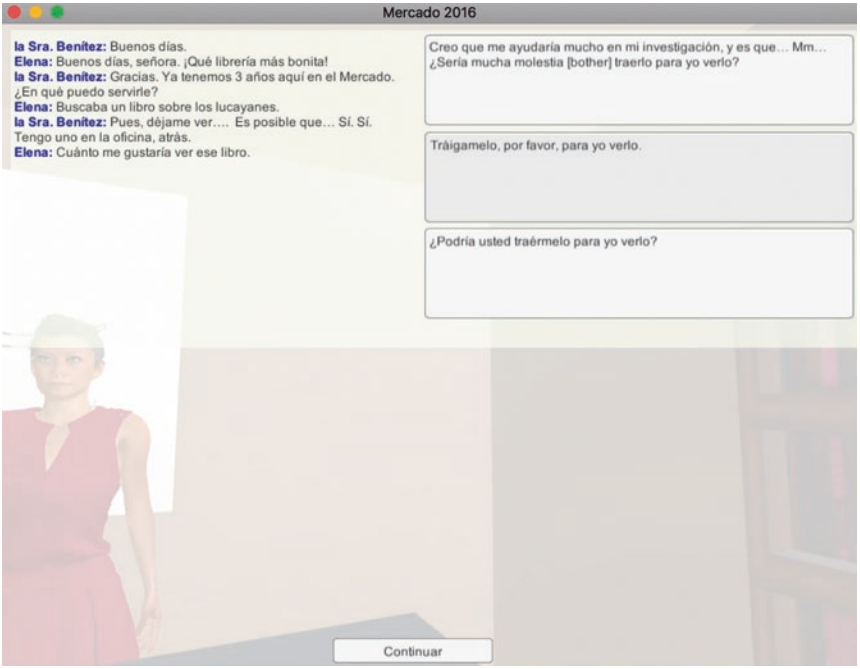


Fig. 2.5 Screenshot of the SI group interface

requests (Fig. 2.5). The participants in the SI group explored the VE for 25 minutes (preceded by 10 minutes of explicit instruction for 35 total minutes).

Selecting a request yielded the same positive or negative feedback as for the CR group (see Figs. 2.3 and 2.4).

Control (C) Group

Following the introduction to the task, participants in the control group (n = 22) could approach an avatar, read the avatar's bio and select one of three questions in textboxes related to the avatar's whereabouts during a robbery. Clicking on a question revealed a textual answer (Fig. 2.6). Participants could click on any or all questions before exploring the VE some more, for a total of 35 minutes.

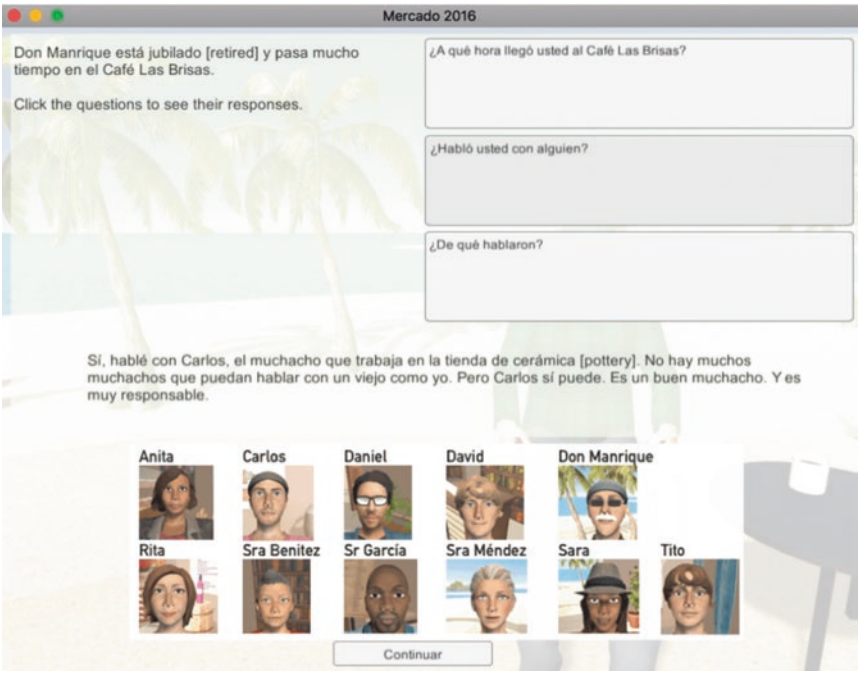


Fig. 2.6 Screenshot of the control group interface

Analysis

The researcher sought to determine whether improvements in the pragmatic acceptability of learners' Spanish production were attributable to instructional conditions of the VE in which they studied requests. Regarding the independent variables, there were three instructional conditions: CR, SI and control. Concerning the dependent variables, the data from the pretest and the posttest instruments were assessed first to determine the overall pragmatic acceptability of learners' production, and then to determine their abilities with particular features of requests they had used. The researcher calculated a global *overall acceptability* score for the pretest and the posttest data, which included all 16 fill-in-the-blank test items. Next, the researcher calculated separate acceptability scores for items representing *L2 perspective*, *tense*, *grounders* and *disarmers*.

Regarding *overall acceptability*, four possible scores were awarded: 0 (totally unacceptable), 1 (somewhat acceptable), 2 (mostly acceptable) or 3 (acceptable).

Regarding *L2 perspective* and noting that Spanish favors a hearer's perspective (Could you give me a glass of water?) rather than a speaker's perspective (Could I have a glass of water?), each item in the DCT was determined to require a hearer perspective, an impersonal phrase or a speaker orientation. Students' responses were analyzed to determine whether their request matched the perspective needed for the situation and were coded as acceptable or not. Results here are reported as the mean degree of acceptability per student, ranging from 0 to 1. Concerning *tense*, the analysis considered the appropriateness of the uses of commands (e.g., *Llévame al centro* 'Take me downtown') and verbs in the present, conditional or imperfect subjunctive (e.g., *¿Puedes/podrías/pudieras llevarme al centro?* 'Can/could you take me downtown?').

Tense was coded as acceptable or not for the situation (e.g., the use of a command to request a ride from a stranger was considered unacceptable). Since the DCT had 16 items requiring the production of a verb, the results are reported as a proportion of acceptable uses of tense per student.

Grounders are explanations for a request. In a request for a ride, the grounder might be *La batería de mi carro está agotada* 'My car battery is dead.' Learners could provide a grounder for any given item on the DCT or not. When one was provided, the answer was coded as acceptable or not. Results are reported as the mean number of the acceptable grounders per student.

Disarmers are words or phrases used to show awareness of the request's imposition (e.g., *Sé que estás muy ocupado, pero…* 'I know that you're very busy, but…'). Learners could provide a disarmer or not. When one was provided, the answer was coded as acceptable or not. Results are reported as the mean number of the acceptable disarmers per student.

The researcher completed the full analysis of the DCT. To assess the reliability of the analysis, a random sample of 160 items from pretests and posttests was assessed by a colleague trained in Spanish second language acquisition (SLA) and on the features of Spanish requests, providing an independent judgment of whether a participant's answer was

acceptable or not for the 160 random items. (A total of 8 of the 16 DCT items from 10 participants' scores on the pretest and the posttest were compared by the raters [i.e., 8 × 2 × 10 = 160]). The analysis indicated that there was a 95% agreement between the judgments of the researcher and the colleague (Cohen's kappa = 0.89).

To address the effects of the treatments on learners' *overall acceptability* scores, the researcher employed a 3 × 2 repeated-measures analysis of variance (ANOVA) and then separated 3 × 2 repeated-measures ANOVAs for *L2 perspective*, *tense*, *grounders* and *disarmers*. Unless otherwise noted below, the data met the assumptions of normality. Each analysis had one within-subjects variable, test time (pretest and posttest), and two between-subjects variables, treatment group (CR, SI and control) and participant. To determine the source of any significant interactions between test time and treatment group for each of the repeated-measures analyses, the researcher employed post-hoc Tukey's pairwise analyses, which compared pretest-posttest differences of each of the three treatments, where a significant difference was determined with a Bonferroni-adjusted alpha of 0.017.

Results

The analysis of the *overall acceptability* of the requests that learners produced indicated that there was a significant interaction between group and time, Wilks' lambda = 0.89, F (2,73) = 4.55, p = 0.01, Eta squared = 0.11, revealing that differences between students' performance on pretests and posttests were attributable to treatment type.

(Rather than depicting the mean, a boxplot provides information about the distribution of a sample. The box represents, respectively from bottom to top, the first quartile, the median [i.e., the thickest middle line] and the third quartile of the distribution. The whiskers extend to ±2.7 standard deviations. Dots represent any outliers, if there are any.)

An examination of the descriptive statistics in Table 2.1 and Fig. 2.7 reveals that while the control group improved moderately, the CR and SI groups experienced greater improvement in the overall acceptability of the requests produced. Post-hoc analyses confirmed this conclusion: only the experimental groups showed significant improvement from the pre-

Table 2.1 Means and standard deviations for overall acceptability by treatment group and test time

	Time					
	Pretest		Posttest		Marginal	
Group	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	0.80	0.41	1.12	0.57	0.96	0.52
CR	1.15	0.53	1.74	0.47	1.44	0.58
SI	1.09	0.50	1.75	0.55	1.42	0.62
Marginal	1.03	0.50	1.57	0.59		

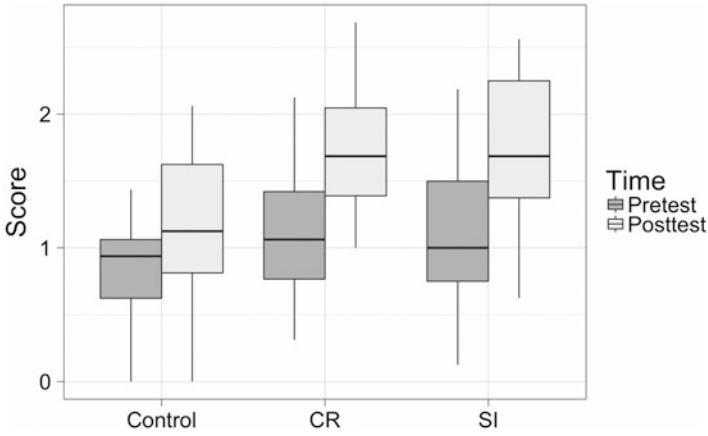


Fig. 2.7 Boxplots for overall acceptability by treatment group and test time

test to the posttest. Figure 2.7 indicates that the gains were not attributable to outliers. Yet, as the descriptive data suggest, the post-hoc analyses indicated no significant differences between the gains of the CR and SI groups. That is, overall, the CR and SI groups benefited equally from their respective treatments. It is important to note, however, that the overall effect size was weak, with the variable treatment group accounting for only 11% of the overall variation.

The analysis of the acceptability of learners' use of *L2 perspective* indicated that there was a significant interaction between group and time, Wilks' lambda = 0.91, $F(2,73) = 3.13$, $p = 0.05$, Eta squared = 0.09, such that pretest-posttest differences were attributable to treatment type (Table 2.2 and Fig. 2.8).

Table 2.2 Means and standard deviations for L2 perspective by treatment group and test time

	Time					
	Pretest		Posttest		Marginal	
Group	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	0.27	0.15	0.38	0.22	0.33	0.19
CR	0.33	0.19	0.49	0.21	0.41	0.21
SI	0.34	0.20	0.61	0.23	0.48	0.25
Marginal	0.32	0.18	0.51	0.24		

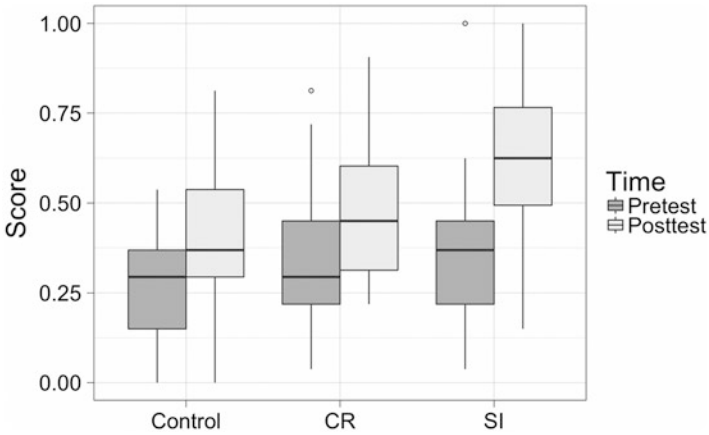


Fig. 2.8 Boxplots for L2 perspective by treatment group and test time

The descriptive statistics and the post-hoc analyses reveal that while all three groups improved in their production of an L2 perspective, the interaction effect was due to the fact that only the SI group improved significantly. The overall effect size was weak, with treatment group accounting for only 9% of the overall variation. Considering the descriptive data, the SI group produced more utterances from the correct L2 perspective, as the 25th percentile of the sample on the posttest was higher than the 75th percentile on the pretest; yet, it is important to note that the use of the first language (L1) perspective was still present.

Regarding appropriate use of *tense*, the data were positively skewed enough to require a logarithmic transformation, which produced a sample meeting ANOVA assumptions. The repeated measures analysis

indicated that there was a significant interaction between group and time, Wilks' lambda = 0.92, F (2,73) = 3.53, p = 0.05, Eta squared = 0.08, where pretest-posttest differences were attributable to treatment type (Table 2.3).

The descriptive statistics appear to indicate that both experimental groups improved as a result of their respective treatments. However, the post-hoc analyses revealed that, as with the L2 perspective analysis, only the SI group improved significantly in the appropriate use of tense. The overall effect size was weak, with treatment groups accounting for only 8% of the overall variation. As Fig. 2.9 shows, the gains of the SI group were mostly attributable to the improvements of a subset of the

Table 2.3 Means and standard deviations for tense by treatment group and test time

	Time					
	Pretest		Posttest		Marginal	
Group	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	0.27	0.15	0.38	0.20	0.32	0.18
CR	0.37	0.21	0.56	0.19	0.46	0.22
SI	0.35	0.19	0.60	0.24	0.48	0.25
Marginal	0.33	0.19	0.52	0.23		

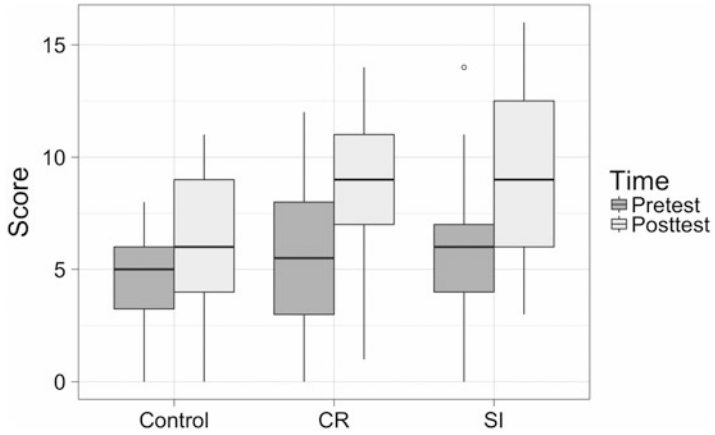


Fig. 2.9 Boxplots for tense by treatment group and test time

SI learners rather than to group improvement. Further exploration of the data revealed that SI learners in the top 25th percentile (n = 8) produced twice as many correct tense cases (mean improvement = 9.25 cases) as SI learners in the 50th–26th percentile (mean improvement = 4.6 cases).

Finally, the researcher assessed whether a correlation existed between improvement in overall acceptability and improvement in tense acceptability, comparing the pretest-posttest difference scores. As mentioned above, researchers such as Félix-Brasdefer (2007) and Pinto (2005) have noted that advanced learners of Spanish tend to have better control over conditional tense than less advanced learners (Table 2.4).

The analysis indicates that as learners' overall acceptability improved from the pretest to the posttest, so did the acceptability of the verb tenses that they used. The relationship was especially strong for the SI group (r = 0.80, df = 25, p < 0.01).

Regarding *grounders*, the data were positively skewed, requiring a logarithmic transformation to yield a sample meeting ANOVA assumptions. The repeated measures analysis indicated that there was a significant interaction between group and time, Wilks' lambda = 0.91, F (2,73) = 3.53, p = 0.05, Eta squared = 0.09, where pretest-posttest differences were attributable to treatment type (Table 2.5 and Fig. 2.10).

The descriptive statistics indicate that there were a number of participants who did not produce grounders on either the pretest or the post-

Table 2.4 Means, standard deviations and correlations with confidence intervals for tense and overall acceptability of pretest-posttest difference scores

Group	Tense	Overall acceptability	r
Control	M = 2.00	M = 0.33	0.69**
	(SD = 2.33)	(SD = 0.36)	[0.37,0.86]
CR	M = 2.92	M = 0.61	0.68**
	(SD = 3.06)	(SD = 0.35)	[0.39,0.84]
SI	M = 3.71	M = 0.65	0.80**
	(SD = 3.52)	(SD = 0.47)	[0.61,0.90]

Note: *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. *indicates p < 0.05. **indicates p < 0.01

Table 2.5 Means and standard deviations for grounders by treatment group and test time

	Time					
	Pretest		Posttest		Marginal	
Group	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	1.10	1.22	0.71	1.38	0.90	1.30
CR	0.96	1.04	1.62	1.81	1.29	1.50
SI	0.79	0.82	0.97	1.05	0.88	0.94
Marginal	0.93	1.01	1.12	1.47		

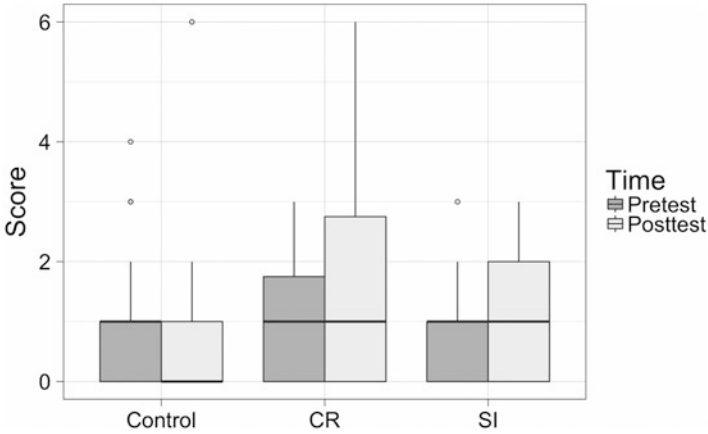


Fig. 2.10 Boxplots for grounders by treatment group and test time

test. A calculation of the number of such participants found six (6/22 = 27%) in the control group, six (6/27 = 23%) in the CR group, but only four (4/27 = 15%) in the SI group. An analysis of the raw frequencies of grounders, comparing the number of grounders on the pretest and the posttest, showed that the CR group produced 1.7 times more grounders on the posttest (pretest = 25, posttest = 42), whereas the SI group produced only 1.2 times more on the posttest (pretest = 23, posttest = 28) and the control group produced 0.7 times fewer on the posttest (pretest = 23, posttest = 15). This analysis is consistent with the post-hoc analysis, which showed that the interaction effect was only due to the CR group's increased use of grounders.

Concerning *disarmers*, the data were positively skewed, requiring a logarithmic transformation to meet ANOVA assumptions. The repeated measures analysis indicated that there was a significant interaction between group and time, Wilks' lambda = 0.83, $F(2,73) = 4.08$, $p = 0.02$, Eta squared = 0.17, where pretest-posttest differences were attributable to treatment type (Table 2.6).

As was the case with the analysis of grounders, the descriptive statistics indicate that numerous participants produced no disarmers on either the pretest or the posttest, as indicated in Fig. 2.11. Twelve such participants (12/22 = 55%) figured in the control group, six (6/27 = 22%) in the CR group and only four (4/27 = 17%) in the SI group. An analysis of the raw

Table 2.6 Means and standard deviations for disarmers by treatment group and test time

	Time					
	Pretest		Posttest		Marginal	
Group	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	0.00	0.00	0.32	1.06	0.16	0.75
CR	0.16	0.46	2.42	3.04	1.29	2.44
SI	0.06	0.27	1.60	2.58	0.83	1.98
Marginal	0.08	0.31	1.53	2.56		

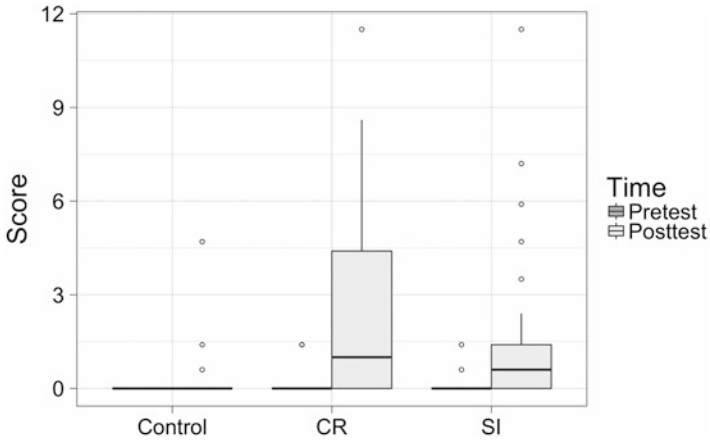


Fig. 2.11 Boxplots for disarmers by treatment group and test time

frequencies of disarmers, comparing the number of disarmers on the pretest and the posttest, showed that the CR group produced 6.5 times more disarmers on the posttest (pretest = 13, posttest = 85) and the SI group produced 10.4 times more on the posttest (pretest = 8, posttest = 83). The control group produced 7.5 times more disarmers on the posttest, although the group produced few overall (pretest = 2, posttest = 15). In any event, the post-hoc analyses indicated that the interaction effect was due to the CR group's increased use of disarmers. This, upon consideration of Fig. 2.10, is most likely due to the fact that while both the SI and CR groups experienced gains, participants in the 75th percentile of the CR group (i.e., those who scored well above the mean) produced many more disarmers on the posttest than did those in the 75th percentile of the SI group.

Conclusions

As teachers and materials designers increasingly rely on technologically enhanced devices and applications, and as learners themselves reach for such devices and tools and use the affordances they offer, it is increasingly important to understand the ways that technology influences the learner's cognitive processes. This may be especially true in the case of pragmatics, an area of L2 learning in which teachers struggle to locate materials that reproduce the contexts and countless factors that native speakers consider when producing pragmatically correct language. This study sought to explore the type of input-oriented approach that best promotes pragmatic development in a virtual environment (VE). Learners of Spanish explored a researcher-designed VE seeded with avatars, to whom they made requests to solve a task. Of the two experimental groups, one received structured input (SI) followed by the VE task, while the other engaged in consciousness-raising (CR) during the VE task. Both groups received feedback on their request choices. The control group completed a task within a VE that did not involve requests. The data show that, in general terms, both types of input-oriented approaches improved learners' abilities to make requests, although there were some differences. The SI group significantly outperformed the CR group in the use of an L2 orientation and appropriate tense. The CR group outperformed the SI

group in the use of disarmers and grounders, even though there were very few of either overall.

These data contribute to previous research on L2 pragmatics. First, the experimental groups significantly outperformed the control group, lending support to the notion that pragmatics can and should be taught. This is by no means a trivial assertion, as debate on this matter continues (cf., Roever, 2009). Second, with respect to the sort of approach (SI or CR) that best promotes acquisition of requests by learners of Spanish, a pattern is emerging that SI is especially beneficial (as suggested by Takimoto, 2009) with respect to L2 perspective and the appropriate tense, two factors that seem to contribute to the overall acceptability of learners' production of requests. Why might this be the case? SI activities present learners with new strategies and provide them with structured input that connects sociopragmatic knowledge to pragmalinguistic knowledge. During this study's pre-task SI instructional period, attention was called to the misuse of a speaker's orientation (e.g., 'Can I get a ride?'), which is common in the L1. Students were told that the preferred Spanish orientation was that of the hearer (e.g., 'Can you give me a ride?'). Also, examples of an impersonal orientation (e.g., 'Would it be possible…?') were discussed, and learners' attention was focused on how an impersonal orientation is often accompanied by grounders and disarmers to mitigate the request's imposition. With respect to tense, the pre-task SI instructional period reviewed the present tense, conditional tense, past subjunctive of *poder* ('to be able to, can') and *querer* ('to want'), and commands as well as the factors influencing their usage. The instructional period contributed to the improvement seen by the SI group on the overall acceptability of the requests produced, along with the use of an L2 perspective and appropriate tense. These results mirror the findings of Félix-Brasdefer (2007) on 'advanced' Spanish learners' increased use of a hearer orientation and the conditional tense.

Concerning the types of materials that effectively teach pragmatics—a third area of focus in L2 pragmatics research—it would seem that assigning a task within a VE is an ideal context for teaching speech acts such as requests. Sykes (2013) points out that engaging content motivates learners to pay attention so that they can continue to make progress in a task. In a VE, learners explore, take on different roles, experience contextual-

ized situations and practice without offending anyone. The purpose of exploring the VE in the present research was to find a treasure, a task that engaged learners and encouraged them to explore the 3D world and make appropriate requests of avatars to obtain clues. The VE's story line in this project contextualized the dialogue of each avatar and connected the relationships among avatars as well as between some of the avatars and participants.

An additional advantage lies in the fact that feedback on the appropriateness of learners' pragmatic choices can be authentic. That is, avatars in VEs can give feedback similar to that which learners might receive in the real world, for example, tone of voice, facial expression, body posture, an utterance's elaborateness/curtness (Cohen, 2013), all of which were evident from the feedback provided in the QuickTime movies employed. VE feedback may have also helped learners in the SI group incorporate into their own production the ways that Spanish speakers manipulate the dimensions of requests. This feedback may have reinforced the pre-task instruction and processing strategy training. In contrast, learners in the CR group had to infer all of the variables necessary for the production of requests on their own, all while exploring the VE to solve the task.

A more in-depth analysis of the behaviors and autonomous moves that participants used while exploring the VE (cf. Collentine, 2011) and the time they spent working with the VE's affordances may provide additional insight into the benefits of an SI versus a CR approach to the teaching of requests. Future research might investigate whether time spent on the feedback movies had an effect; for example, did participants use the initial feedback responses and move quickly through the QuickTime movies to get clues (or not), or did they focus on the information about the requests that was embedded into the movies (see Figs. 2.3 and 2.4)? Likewise, did the amount of time spent working with the consciousness-raising statements in the VE have an effect on the CR group's overall gains, as well as on the group's gains with disarmers and grounders?

A limitation of the study is the small sample size. Additionally, the results need to be accepted with a certain amount of caution, as the effect appears to be not particularly strong. On average, only about 15% of the

variance was due to the treatment; other factors may account for variance, for example, personality (explorers or not), proficiency level, experience with native speakers and even with making requests in the L2. However, because of the complexity of requests (i.e., they involve the lexicon, morphology, syntax, cultural norms, etc.), it may be perfectly reasonable to assume that less-than-strong effects are the norm.

Cohen (2013) urges teachers to investigate the viability of including technology in their instruction of pragmatics, while Freiermuth (2002) cautions them that the use of technologically assisted language learning in general does not guarantee desired outcomes. Nevertheless, the input-based approaches with instruction in this project seem to have had beneficial effects on the overall acceptability of these learners' production of requests, suggesting that tasks set within VEs may help teachers develop effective materials for teaching pragmatics. These approaches contribute to our understanding of how learners pragmatically process language as they interact with each other as well as helping us to understand the technologies they use during their acquisition of a second language.

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3

Exploiting Vocabulary CALL Interventions to Operationalize and Test the Depth Levels of the Processing Model

Saad Alzahrani and Leah Roberts

Introduction

Despite the potential inherent in related cutting-edge technology, there has been a failure to fully apply the effective features of vocabulary computer-assisted language learning (CALL) interventions to operationalize memory theory and research. Ironically, students raised in the era of advaned technology (e.g., cell phones, computers and video games) are capable of using such environments to acquire a second language.

To address this lack, the researchers in this study designed three interactive multimedia CALL interfaces, in order to establish how they affect learning vocabulary on Arabic as a foreign language (AFL). These consisted of the verbal-based menu-driven interface (L2-L1 'MDI'), the visual-based graphical user interface (L2-Picture 'GUI'), and the spatial-based zoomable user interface (L2-Context 'ZUI'). It should be noted

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that ZUI is here used for the first time in the field of vocabulary CALL and is examined along with the other interfaces using computer-assisted vocabulary acquisition (CAVA).

The study examined the differential influence of a number of specific features of the instructional software in order to investigate any potential differential influence of the zoomable interface's coding elements on vocabulary learning due to teaching additional aspects of a word. In this experiment, word knowledge was differentially provided through the three conditions in different levels as a means to operationalize and test the levels of processing theory. The primary aim was to relate vocabulary CALL research to language learner psychology, through operationalizing and testing the depth of processing hypothesis.

Literature Review

Intentional Vocabulary CALL

A review of the various intentional and incidental vocabulary CALL interventions in use since the 1990s established a lack of focus on relating vocabulary CALL design to memory theories (Alzahrani, 2017). Comparing the effectiveness of translation equivalents with illustrated pictures and/or videos is the most common method of researching L2 word learning for incidental vocabulary CALL (e.g., Acha, 2009; Akbulut, 2007; Al-Seghayer, 2001; Chen, 2002; Chun & Plass, 1996; Jones, 2009; Jones & Plass, 2002; Kost, Foss, & Lenzini, 1999; Lin & Tseng, 2012; Plass, Chun, Mayer, & Leutner, 1998; Yeh & Wang, 2003; Yoshii, 2006), as well as for intentional vocabulary CALL (e.g., Dubois & Vial, 2000; Fagehi, 2013; Kim & Gilman, 2008; Rimrott, 2010). However, despite the rapid development of technology, this approach has not changed in recent years (Alzahrani, 2017). These methods of presenting L2 words to strengthen form-meaning links have an advantage in terms of vocabulary building, although the fact that "lexis is the core or heart of language" (Lewis, 1993, p. 89) promotes increased effectiveness of other CALL methods to deliver improved vocabulary learning outcomes. In reflecting

on word knowledge as being more than simply a mapping of form and meaning, Nation (2013) argued:

> Words are not isolated units of the language, but fit into many interlocking systems and levels. Because of this, there are many things to know about any particular word and there are many degrees of knowing. (p. 44)

Thus, there is a need to address various aspects of word knowledge beyond the form and meaning links when designing vocabulary CALL programs. The current research employed technology to teach multiple significant levels of word knowledge (i.e., word association), with the potential to create additional relationships between words. This leads to a more rapid and effective storage as well as retrieval of lexis due to enhancing the encoding and retrieval of words as well as promoting the development of lexical networks. This depth of processing can thus result in the faster and more effective storage in addition to the retrieval of lexis.

Depth of Processing

The depth of processing hypothesis, as proposed by Craik and Lockhart (1972), refers to the degree of effort placed on analysis of a stimulus, stating that its retention as a memory trace depends on the degree to which its processing has been enriched during encoding (i.e., deeper semantic analysis yields richer and more elaborated encoding of the memory trace). This extensive elaboration supports improved retention as follows. First, the elaborated trace is differentiated from previous memory traces to ensure it is distinctive and easier to retrieve. Second, deeper processing leads to the organization of the elaborated trace, followed by its integration into the previous knowledge base in an arranged structure that facilitates the retrieval process (Moscovitch & Craik, 1976). It should be noted that, in order to ensure improved retention, deep processing must be implemented on the stimulus, not only at its shallow levels (i.e., analysis of color, surface form and vividness) but in a broader sense (i.e., analysis of inference, meaning, implication and interpretation) to enrich it meaningfully (Craik, 2002; Craik & Watkins, 1973; Lockhart & Craik, 1990).

Goldstein and Chance (1971) found that in order to differentiate snowflake patterns in a meaningful way, learners required specific semantic knowledge of such patterns. Thus, despite each pattern being unique, learners remembered meaningfully distinctive patterns more accurately. In addition, the degree of attention paid to a stimulus forms a further factor in elaborating depth (Craik & Lockhart, 1972).

The depth of processing hypothesis is relevant to the current study due to it being applied by the CAVA software in its third condition (i.e., ZUI). This ensures that learners focus and undertake deeper processing in order to analyze the additional aspects of a word displayed on the layout, that is, in comparison to the L2-picture representation (GUI). In addition, it is expected that the smallest degree of attention and processing is devoted to L2-L1 in the MDI condition.

Word Knowledge

The three CAVA conditions explicitly teach different aspects of word knowledge. Prior to discussing these in more detail, it is first vital to examine the issue of word knowledge as a means to provide some clarity. According to Nation (2001), depth of word processing (i.e., images of the word, elaboration or deliberately making inferences) creates a strong explicit awareness of the meaning of a word. Nation (2001) further noted that word meaning is one of nine aspects involved in knowing a word. Thus, the learner knows the spoken form of the word when they are able to, first, recognize it when spoken and, second, vocalize it to produce a meaning. Learners also need to be able to correctly pronounce each sound within the word, placing clear degrees of stress on the appropriate syllables. These sounds are combined according to underlying rules, known as phonotactic grammaticality. Nation (2001) also considered spelling to be one of the features used to gain familiarity with a word's written form, and that this can be improved by early training and playing with rhymes. In addition, learning can become easier if the word is made of known parts, due to stems and affixes being potentially familiar to a learner from his or her first language or other second language vocabulary. Nation (2001) further noted that general word knowledge includes understanding

that these aspects can be employed in other words, as well as the familiarity with members of a particular word family being an aspect of knowing the word and a sign of proficiency. In addition to acquiring a word's meaning and appearance (i.e., its written form), as well as its sound (i.e., its spoken form), the learner needs to be able to combine these pieces of information (Nation, 2001).

A dictionary is able to present a list of different meanings, particularly for high-frequency words. Thus, knowing the dictionary entries of a single word forms a notable aspect of word knowledge, as well as being able to recognize its part of speech so that it may be used in accordance with appropriate grammatical patterns. A further aspect of knowing a word is familiarity with the vocabulary in its surrounding linguistic environment (i.e., 'I ate some fast food,' rather than 'speedy food' or 'quick food'). Pawley and Syder (1983) argued that a native speaker becomes fluent through storing a large number of memorized sentences in the brain, as producing memorized sequences is easier than spontaneous construction during speech. An additional aspect of the knowledge of a word relates to constraints concerning its use under specific circumstances (Nation, 2013).

Teaching different aspects of word knowledge across the three multimedia CALL interventions in this study took place during the earliest stages of learning, that is, when learners have not yet established links between the meaning of the word and its form due to a lack of any familiarity with the target language. This ensured that the learners' lack of experience with Arabic assisted in the exploration of how different multimedia representations can lead to differing levels of L2 processing.

Research Purpose

To gain a better understanding of the psychological processes related to acquisition of vocabulary by inexperienced learners, this experiment investigated the efficacy of three multimedia representations for the acquisition of vocabulary (i.e., (1) the verbal-based menu-driven interface (L2-L1 'MDI'), (2) the visual-based graphical user interface (L2-Picture 'GUI') and (3) the spatial-based zoomable user interface (L2-Context 'ZUI')). To achieve this, the CAVA software presented

participants with 24 words, divided equally into six lessons (to be discussed in greater detail in 'Methodology'), in order to achieve the study's aims, which are expressed in the following research question:

- What is the effect of interactive representation types on L2 depth of processing and acquisition for

  (1) verbal-based menu-driven interface (L2-L1 'MDI'),
  (2) visual-based graphical user interface (L2-Picture 'GUI') and
  (3) spatial-based zoomable user interface (L2-Context 'ZUI')?

Methodology

The Study Participants

The participants for this study consisted of five L1 monolingual native English speakers (three males and two females) aged between 18 and 23. They were selected from consenting undergraduate students at a fairly large British university, all of whom gave informed consent. The participants were invited by e-mail to be tested by new multimedia, which would involve interacting with a computer-based instructional program and answering items on an achievement test. The experiment took place over two days and lasted for an hour and a half during the first day for the study phase and the immediate posttest, and half an hour during the second day for the one-month delayed posttest. The participants were offered £20 as compensation and were encouraged to do their best in both sessions by being informed that an additional £10 would be awarded for the highest score on the CAVA achievement test.

The Study Design and Intervention

It was considered important to ensure that the distribution of the three representations for all of the words was balanced in both the study and

practice exercise phases. The two main objectives were that all learners would be exposed to the three multimedia representations so a fair comparison could be made of their relative efficiency for each representation of every learner, and that each multimedia representation would be assessed in relation to all the target words as a means to control for the potential of any confounding effect on the representation of the words being acquired. The study employed a Latin square within-subjects experimental design to obtain these objectives, which took the form of a partial counterbalancing design, capable of being controlled for the influence of practice and fatigue (see Table 3.1).

In a Latin square experimental design, the measurements found under any conditions are repeated on the other conditions for each participant. In the current study, the design was employed to represent each treatment (i.e., multimedia representation) once in each column and row in order to control two sources of extraneous variation (i.e., word and learner) (see Table 3.2).

In the Latin square design of the current study, each lesson was examined by means of all multimedia representations by different participants. For each participant, the multimedia representation of the word was consistent across the CAVA phases (i.e., the study and practice phases). In all, 24 words were split thematically into six lessons in the Latin square design, as shown in Table 3.3.

Table 3.1 Example of a Latin square

A	B	C
B	C	A
C	A	B

Table 3.2 Multimedia representation distribution in Latin square design

Lesson	Exposure group 1 (CAVA 1)	Exposure group 2 (CAVA 2)	Exposure group 3 (CAVA 3)
Office	ZUI	MDI	GUI
Food	GUI	ZUI	MDI
Occupation	MDI	GUI	ZUI
Clothes	ZUI	MDI	GUI
Kitchen	GUI	ZUI	MDI
Class	MDI	GUI	ZUI

Table 3.3 The six four-word lessons in CAVA

Lessons	Words
مكتب (office)	طاولة (desk), كرسي (chair), حاسوب (laptop), دولاب (bookcase)
طعام (food)	بيض (eggs), حليب (Milk), خبز (bread), ماء (water)
وظائف (occupations)	إطفائي (fireman), شرطي (policeman), ساعي (postman), دهان (painter)
ملابس (clothes)	بنطال (trousers), قبعة (hat), قميص (shirt), حذاء (shoes)
مطبخ (kitchen)	قدر (pot), سخان (kettle), فرن (oven), مغسلة (sink)
فصل (class)	لوح (board), كتاب (book), حقيبة (bag), قلم (pen)

As the chosen words were matched according to linguistic features, the overall learning burden for all these lessons can be viewed as being similar for all cases.

Table 3.2 demonstrates the presence of three exposure groups, formed of a combination of the lessons and multimedia representations, into which the participants were divided in a random manner. Two participants in Group 1 were exposed to four words in each of the following: in lesson 1 (Office) by means of the zoomable representation (ZUI), in lesson 2 (Food) by means of the graphical representation (GUI) and in lesson 3 (Occupations) by means of the menu-driven representation (MDI). Then, they were exposed to four words in lesson 4 (Clothes) via the zoomable representation (ZUI), four words in lesson 5 (Kitchen) via the graphical representation (GUI) and four words in lesson 6 (Class) via the menu-driven representation (MDI).

In Group 2, two participants were exposed to four words in lesson 1 (Office) via the menu-driven representation (MDI), in lesson 2 (Food) via the zoomable representation (ZUI) and in lesson 3 (Occupations) via the graphical representation (GUI). This was followed by being exposed to four words in lesson 4 (Office) via the menu-driven representation (MDI), four words in lesson 5 (Food) via the zoomable representation (ZUI) and four words in lesson 6 (Occupations) via the graphical representation (GUI).

Finally, in Group 3, one participant was exposed to four words in lesson 1 (Office) via the graphical representation (GUI), four words in lesson 2 (Food) via the menu-driven representation (MDI) and four words in lesson 3 (Occupations) via the zoomable representation (ZUI). This was followed by being exposed to four words in lesson 4 (Office) via the

Table 3.4 Independent variable of the experiment

Independent variable	Type	Levels	Measure
Multimedia representation	Within-subjects	Three levels: MDI, GUI, ZUI	Nominal

Table 3.5 Aspects of word knowledge covered by the information in CAVA

Aspect of word knowledge	Information	Purpose in CAVA
Form	Written form	Default information
	Spoken form	Default information
Meaning	L1 translation	Representation type
	Picture	Representation type
	Word association	Representation type
Use	L2 example sentence	Default information

graphical representation (GUI), four words in lesson 5 (Food) via the menu-driven representation (MDI) and four words in lesson 6 (Occupations) via the zoomable representation (ZUI).

This study considered one independent variable with a number of different levels (i.e., multimedia representation types), as shown in detail in Table 3.4.

The dependent variable in this study consisted of the learning of vocabulary, which was operationalized as the scores achieved by students in both the immediate and delayed posttests.

Apparatus

As previously noted, Nation (2001) listed a range of aspects involved in receptive and productive knowledge of a word. In CAVA, information is provided for all three aspects of word knowledge, including form, meaning and the use of the target words (see Table 3.5). CAVA employs three user interfaces in each representation to teach the target words (i.e., MDI, GUI and ZUI). Each item of the target words is taught by means of each representation to different groups of participants.

In addition to the written and spoken forms of the word, CAVA provides three different sources of information to establish its meaning: (1)

L1 translation, (2) pictures and (3) word visuospatial associations. These are selected as 'representation types,' each of which is presented as a different condition of the experiment. In the first condition (*MDI representation*), the learners were provided with the L1 translation. In the second condition (*GUI representation*), the learners were shown a picture. In the third and final condition (*ZUI representation*), the learners were exposed to the visuospatial associations of the target words. At each interface, the learner clicked on the word in order to move on to the following slide, which enabled him or her to learn the meaning of the word in addition to its spoken and written forms. In ZUI, the software zooms into the target word for the learning phase, followed by zooming out to choose a new word. This is due to ZUI being designed as a meaning source to address the lack of findings of teaching L2 word associations in intentional vocabulary CALL research.

The three sources were designed as alternative, rather than complementary, methods of expressing the meaning of the target lexical items. Each source delivered a different type of information concerning the word's meaning. CAVA was designed to compare between these three ways of communicating the meaning of a word, although Nation (2001) considered these to be indirect means. As his declaration is summed up in this statement, 'all ways of communicating meaning involve the changing of an idea into some observable form, are indirect, are likely to be misinterpreted, and may not convey the exact underlying concept of the word" (Nation, 2001, p. 85). Nevertheless, it has been argued that it is effective to provide the second language learner with the translation of a word, particularly for beginners with no previous knowledge of the target language (Chun & Plass, 1996; Plass & Jones, 2005).

It has also been pointed out that within the context of second language vocabulary research, the most important initial process in learning new vocabulary is to establish a memory link between the form and meaning of a word (Laufer & Goldstein, 2004; Nation, 2001; Ryan, 1997; Schmitt, 2010). Thus, a majority of previous studies have tried to assess the creation of this form-meaning link. CAVA, however, goes beyond this aim by teaching and assessing the creation of associations in addition to form-meaning links. In CAVA, this is tested by using more than one

assessment type (i.e., receptive and productive vocabulary tests). During this study, the receptive and productive learning were encouraged, including having examinees do practice exercises as preparation for the posttest.

Procedure

All sessions were conducted in a private study room in the library of a fairly large British university. The researcher met each participant on an individual basis to introduce them to the experiment and its main sessions. Each participant was subsequently informed that the research would focus on assessing the acquisition of vocabulary in a multimedia CALL environment; however, no details of the specific research purposes were provided as a means to avoid any 'halo effect.' The researcher then asked the participant to read and sign an informed consent form. The personal laptop of the researcher (which was provided with CAVA as the apparatus of the study and an Arabic/English keyboard) was used during all of the sessions during the experiment.

In the first session, each participant was exposed to CAVA and completed four of its phases (i.e., study phase 1, practice phase, study phase 2 and the immediate posttest). The learning process in CAVA is computer controlled, with the learner receiving instruction through an animated character called 'Cava,' which provides clear instructions for each slide of the software. The researcher was also available at all times to monitor the process and provide the participant with any necessary assistance. Each session took approximately one-and-a-half hours to be completed. The researcher then assessed the participant's L2 recognition in a delayed posttest during the subsequent session.

The Two Posttests

The posttests in CAVA are in a receptive and productive recall format. The tests in this study consisted of 39 questions (13 questions of each teaching method: MDI, GUI and ZUI) divided into five parts. Each learner completed an identical test, with their scores ranging between 0 and 78 points (with 2 points for each questions). The first part tested the

participant's ability to relate the meaning of the target Arabic word (L1 translation, picture, or associations) with its written form. Five other meanings were given as distractors alongside the correct meaning. The learner was required to identify the meaning of the written form of the Arabic target word displayed on the screen.

The same process was repeated in the second part of the posttest, this time to establish the participants' ability to relate the meaning to the spoken rather than the written form of the Arabic target word.

The third, fourth and fifth parts of the posttest consisted of association-based questions. The third part tested the learner's ability to select an odd word out of a list of related words. The fourth part assessed the ability to find a hidden target Arabic word among a number of distractors, in order to complete a list of semantically related Arabic words. The fifth part required the learner to write the Arabic word completing a list of four semantically related words.

The immediate posttest (follow-up test 1) and the delayed posttest (follow-up test 2) were identical.

Analysis

The study used inference tests to establish the relevant effects in order to address the research question shown in Table 3.6. The level of alpha was set to 0.05 to determine if there was statistical significance for all tests. The inferential results for the research question of the study were addressed by conducting a one-way within-subjects (repeated measures) analysis of variance (ANOVA), with multimedia representation as the within-subject factor using Statistical Package for Social Sciences (SPSS).

Table 3.6 Research question and the inference test of the study

Research question	Effect tested	Inference test
What is the impact of multimedia representation types on L2 depth of processing and acquisition?	Main effect of multimedia representation types	ANOVA ($\alpha = 0.05$)

The following two subsections present the study's results and related discussion. The acquisition of vocabulary is investigated by showing the results for the main effect of multimedia representation.

Results

The current research focused on the effectiveness of multimedia representations in CALL environments for second language vocabulary acquisition. It therefore examined both the short-term and long-term effects of a number of different interactive user interfaces (i.e., MDI, GUI and ZUI) on L2 depth of processing and vocabulary acquisition. First, there is a discussion of the immediate posttest findings, followed by the delayed posttest results.

Immediate Posttest

Table 3.7 shows the results of the immediate posttest for the five participants in relation to the main effect of multimedia representation type.

Descriptive Statistics of the Immediate Posttests Results

Table 3.7 reveals that the learners achieved an average score of 47 out of 78, representing a vocabulary acquisition score with a mean rate of 60.2%. Figure 3.1 shows that multimedia representation (MDI) (i.e., a

Table 3.7 Immediate posttest results for the three multimedia representation types

Multimedia representations	Rank	Mean	Maximum score	Percentage	SD
MDI	1	17	26	65.3%	4.8
GUI	3	14.8	26	56.9%	7.1
ZUI	2	15.2	26	58.4%	4.6
All multimedia representations		47	78	60.2%	

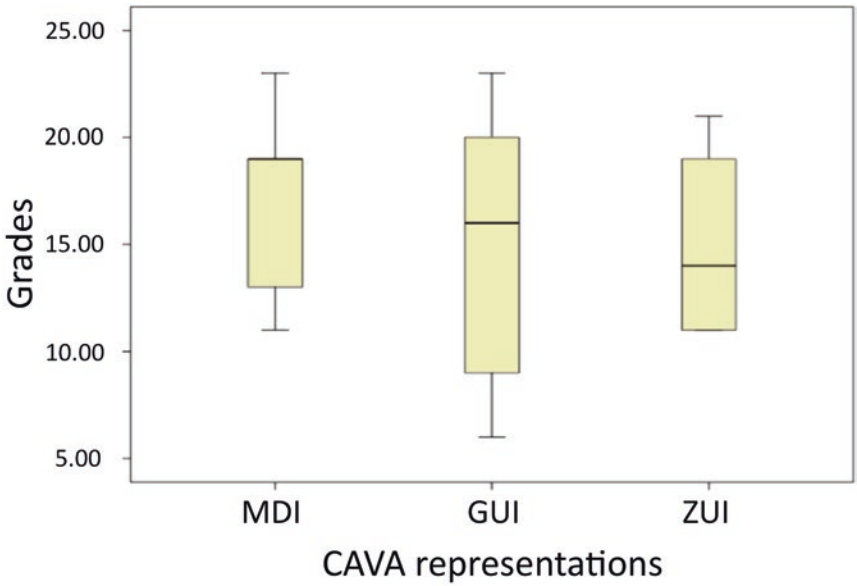


Fig. 3.1 Mean differences of CAVA's three representations in the immediate posttest

form of verbal-based L2-L1 user interface) resulted in the highest mean score of 17 out of 26 (26 being the maximum possible points for the 13 questions on MDI words), representing an average of 65.3%, making it the most effective support for vocabulary acquisition in the immediate posttest. The second most effective multimedia representation was ZUI, which contained the zoomable interface of the layout, with a mean of 58.4%, closely followed by GUI (graphic-based L2-picture user interface) with a mean of 56.9%.

Inferential Statistics of the Immediate Posttests Results

The immediate posttest examined the primary influence of multimedia representation in the formal hypothesis, testing it with an alpha level of 0.05. The difference did not prove to be significant (F (2, 12) = 0.21,

Table 3.8 Pairwise comparisons for multimedia representation in the immediate posttest

Multimedia representation I	Multimedia representation J	Mean difference (I-J)	Standard error	Sig.
MDI	GUI	2.2	3.5	0.81
	ZUI	1.8	3.5	0.87
GUI	ZUI	−0.4	3.5	0.99

Table 3.9 Delayed posttest results for the three multimedia representation types

Multimedia representations	Rank	Mean	Maximum score	Minimum score	SD
MDI	2	10.4	26	40%	2.7
GUI	3	9.8	26	37.6%	3.7
ZUI	1	11.8	26	45.3%	2.1
All multimedia representations		32	78	41%	

$p = 0.8$). Post-hoc multiple pairwise comparisons revealed that multimedia representation MDI proved more effective than the multimedia representations GUI and ZUI for the acquisition of vocabulary (see Table 3.8).

Delayed Posttest

As a starting point, all participants confirmed that they had not deliberately studied the target vocabulary between the immediate posttest and the delayed posttest.

Descriptive Statistics of the Delayed Posttests Results

Table 3.9 demonstrates that the results of the delayed posttest, including the mean word retention of 41% (i.e., 32/78 points), are lower than the results of the immediate posttest (i.e., 60.2%, or 47/78 points).

In relation to the research question of the current study, the differences in the vocabulary acquisition efficiency among the three multimedia

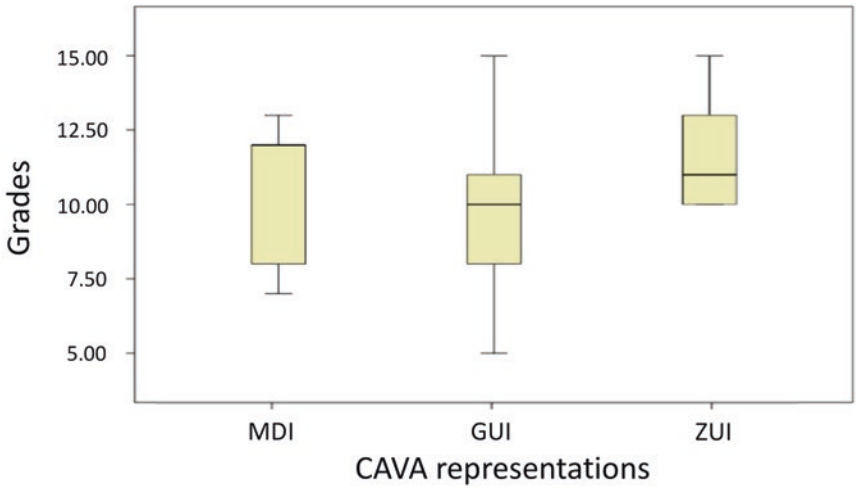


Fig. 3.2 Difference in the mean of CAVA three representations in the delayed posttest

representations in the delayed posttest were less pronounced than in the immediate posttest. However, the multimedia representation based on zoomable user interactivity (i.e., ZUI) was found to be the most effective multimedia representation with a mean word retention of 45.3%. This was in contrast to multimedia representations GUI (40%) and MDI (37%). Figure 3.2 shows a difference of two points (7.7%) in mean vocabulary recall scores between the most effective multimedia representation (ZUI: mean 11.8 points) and the least effective (GUI: mean 9.8 points).

Inferential Statistics of the Delayed Posttests Results

The influence of multimedia representation types on learners' scores in the delayed posttest and the immediate posttest was about equal, as established by the formal hypothesis testing at the alpha level of 0.05. However, there remained a lack of any significant difference in effectiveness of the multimedia representations in the acquisition of second language vocabulary (F (2, 147) = 0.6, p = 0.5). Post-hoc multiple pairwise comparisons

Table 3.10 Pairwise comparisons for multimedia representation in the delayed posttest

Multimedia representation I	Multimedia representation J	Mean difference (I–J)	Standard error	Sig.
MDI	GUI	0.6	1.85	0.94
	ZUI	−1.4	1.85	0.73
GUI	ZUI	−2	1.85	0.54

revealed that, over the long term, multimedia representations using ZUI tended to be more effective for vocabulary acquisition than multimedia representations using MDI and GUI (see Table 3.10.).

Discussion and Conclusions

The current study established the different kinds of learning resulting from the use of different vocabulary teaching methods. The use of MDI helped the participants to acquire the meanings of items from a word list using a translation equivalent. The study established that this manner of presenting the words (i.e., isolated from any kind of contextual elaboration) limited the students to forming small degrees of linkage between meaning and form. Although it proved to exert a relatively beneficial effect over the short term, this shallow processing appeared insufficient to enable the participants to consolidate these form-meaning links. Thus, the majority of these connections were broken, resulting in participants being unable to retrieve the words during the delayed posttest.

Generalizability was a potential limitation to the current study of the research. The sample was small (i.e., five participants) for the findings to be generalized to a wider population of L2 word learners. Although the number of learned words was large (24), delivered in six topics, increasing the number of participants could have increased the validity of scores.

Nevertheless, regarding the use of ZUI, the teaching of other aspects of word knowledge created an environment facilitating an appropriate depth of knowledge. Schmitt (2014) defined depth of word knowledge as familiarity with individual lexical aspects, that is, associations and collocations. ZUI's interface explicitly provided the participants with this

knowledge in its visuospatial multimedia representations. Consequently, a higher number of aspects of word knowledge delivered via ZUI (i.e., its visuospatial associated terms of the target word) resulted in an increased depth of processing of the word meaning. This created a longer-lasting memory trace concerning the word in question, thus facilitating the retention of a greater number of words in the delayed posttest than those delivered via MDI or GUI. It appears that the zoomable interface is more effective for the long-term storage and retrieval of lexis. Knowledge of word associations should thus be taken into account when designing vocabulary CALL programs, as this has the potential to promote the development of lexical networks. In other words, employing technology in teaching visuospatial associations as an important dimension of word meaning could help create deeper processing, resulting in more long-lasting and effective storage as well as better retrieval of lexis. Taking such features into account could result in an effective involvement between technology and language learner psychology. This could, in turn, improve the future design of vocabulary CALL.

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4

The Cognitive and Psychological Effects of YouTube Video Captions and Subtitles on Higher-Level German Language Learners

Peter Yang

Introduction

Videos on YouTube, a popular video-sharing website where users can upload, share, view and comment on videos, have been widely and increasingly used as a common video source for foreign language and second language (hereafter L2) courses. Although there are many studies focused on the effects of target language videos toward L2 learning, the research on the psychological and cognitive benefits of using YouTube target language videos on L2 learners is still lacking. Research on these issues might enhance our knowledge and practice in incorporating YouTube target language videos into the L2 curriculum.

This chapter will first review the existing research on the use of target language videos for L2 courses, especially the psychological and cognitive effects of captioning and subtitling of these videos on the student's L2

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learning. Then, it will discuss the author's use of captioned and subtitled German YouTube videos for intermediate-high and advanced German courses and, finally, present the findings from the author's experiments in conjunction with the effects of using various modes of text support in YouTube videos on these students.

Literature Review

There are a host of published studies (Markham, 2001; Matielo, D'Ely, & Baretta, 2015; Vanderplank, 1988) on the pedagogical benefits of using videos for L2 learning, ranging from psychological positives such as facilitating enjoyment and excitement for language use to more cognitive ones such as (1) providing students with more focused input to help them overcome initial language barriers along and (2) offering more practical behavior-based opportunities such as selecting videos, subtitling them, adjusting them for appropriate speeds of the speeches, listening to dialects and the like.

Pedagogical Benefits of Using Videos

A number of studies have explored the pedagogical benefits of using videos for L2 learning. Researchers, such as Swaffar and Vlatten (1997), Weyers (1999), Al-Seghayer (2001) and Gardner (2006), found that compared to learners only supplied with print or auditory texts, students who were also supplied with videos understood and remembered more.

Cognitive and Psychological Benefits

Embodying an advantageous combination of modalities (vivid or dynamic image, sound and printed text), dynamic video images were considered to be psychologically and cognitively more effective in helping students learn unknown words when compared to still pictures by helping them build mental images and creating curiosity, leading to increased concentration (Al-Seghayer, 2001). The cognitive support

provided by video in L2 learning was considered crucial for language learners to acquire, understand and retain vocabulary and grammar, improve spelling and develop the linguistic skills of reading, writing, speaking and listening (Medina, 2002). Non-verbal input in video was identified as an essential element of the video that assisted L2 listeners to process and comprehend aural input (Baltova, 1999; Gruba, 1997; Wagner, 2007).

One of videos' key cognitive benefits was found to be their 'picture superiority effect,' that is, their ability to illustrate vocabulary, concepts and ideas as pictures rather than words, which allows learners to better understand and retain the relatively dry and complex materials longer in the memory (Berk, 2009). The use of videos, when supplemented by appropriate support material, was shown to be able to cognitively "activate the passive knowledge of language learners in particular, assist with language assimilation and transfer, both in terms of that language presented as well as that which is implicitly suggested" (Wood, 1999, p. 95) and such videos can also help students gain statistically significant improvement in cultural knowledge and skills by meeting their intrinsic learning needs (Herron, Dubreil, Corrie, & Cole, 2002).

At the same time, there were conflicting results regarding videos' usefulness for L2 listening test-taking. Some observed a significant number of test-takers (over 50%) to have never watched the video and considered this phenomenon as reflecting L2 students' perception of the video as insignificant for their listening tasks (Brett, 1997; Gruba, 1997) or as a result of their preoccupation with the listening tasks (Alderson, Clapham, & Wall, 1995). However, Wagner (2007) observed using a systematic study that his students spent extensive time (69%) watching the video. Although he acknowledged the possibility that test-takers might stop watching the video when they considered the non-verbal input of the video unhelpful in comprehending the text, he rejected the notion that test-takers found the video distracting.

Psychologically, viewing videos was found to help the L2 learners demonstrate a statistically significant increase over their counterparts in a control group not only in listening comprehension but also in the number of words they used in discourse and in two component parts of communicative competence, specifically, in their confidence in generating

output and the scope and breadth of their discourse (Weyers, 1999). Through videos, concepts become students' emotional, psychological and cognitive experience, in which they can observe, listen to, visualize, make "sense" of and react to details about the concepts in a deeper manner when compared to only reading texts about the concepts (Berk, 2009). The discourse in well-selected videos, for instance, was found to help model a communicative environment, lower the level of L2 learners' anxiety, ease their initial language barrier, enhance their confidence in speaking and, thus, improve their oral production (Allen, 1986; Kirk, 1992). Videos with interesting content and meaningful context (Kirk, 1992) and with an "air of reality" (Allen, 1986) are able to engage students, illustrate and introduce new concepts and present different views, thus facilitating students' active learning. Kirk's surveys (1992) indicated that interesting videos motivated L2 learners twice as much as written texts, and nearly as much as native-speaker teachers.

Cognitive and Psychological Effects of Video Subtitling and Captioning: Definitions

A number of studies examined the impact of subtitled or captioned videos on the L2 learners' psychological and cognitive states (Markham & Peter, 2003; Vanderplank, 1988). To enhance the readability and to avoid confusion in this study, the words 'subtitles' or 'subtitling' "refer to on-screen text in the native language of the viewers that accompany the second language soundtrack of the video materials" (Markham & Peter, 2003, p. 332). Here, the terminology is used to mean 'interlingual subtitles,' 'foreign subtitles' or 'translated subtitles' in the viewer's native or first language (i.e., text provided is not in the target language). In contrast, the words 'captions' or 'captioning' refer to "on-screen text in a given language combined with a soundtrack in the same language" or "bimodal subtitling" (Markham & Peter, 2003, p. 332; Gorjian, 2014), used here to denote 'intralingual subtitles,' 'within-language subtitles,' 'native-language subtitles' or original closed captions, also called 'teletext subtitles' in Europe (i.e., the sound and the text are both in the target language) (Bird

& Williams, 2002; Herron, Morris, Secules, & Curtis, 1995; Matielo et al., 2015; Mitterer & McQueen, 2009; Vanderplank, 1993).

Employing non-typical input modes, such as video subtitling and captioning, facilitates processing language in chunks, which is beneficial to the acquisition of language, as the processing demands are diminished. In other words, chunked input can be processed more efficiently and the demands on recall processing are also diminished because language chunks are more easily accessed (Vanderplank, 1988, 1990).

Existing Research Findings

Subtitling and captioning were used in L2 instruction for the first time in the 1980s and have been increasingly recognized as important beneficial tools for L2 learning. The observed cognitive and psychological benefits include enhancing L2 learners' attention and motivation, reducing their confusion and anxiety, and providing them consistent assistance in their listening comprehension of what was heard (Burger, 1989; Froehlich, 1988; Grimmer, 1992; Vanderplank, 1988).

Captioning or subtitling was considered a "particularly powerful pedagogical tool" for helping students improve their L2 listening comprehension skills (Danan, 2004). Accordingly, captioning was found to be especially helpful for students to confirm what they heard when their language proficiency was reasonably close to the linguistic level of the input.

Subtitled Videos

There is a lack of consensus among scholars in existing research on the effectiveness of video subtitling for L2 learning. Some found video subtitling beneficial to language learning. For instance, a study comparing the results of watching a Dutch-subtitled English language TV program to those of a program with no subtitles and to those of a Dutch TV program (without any English) found Dutch subtitles facilitated acquiring English language knowledge as well as increasing the vocabulary of Dutch-speaking elementary school students prior to beginning their formal L2 education (Koolstra & Beentjes, 1999). However, conflicting

research claimed that reading subtitles was distracting viewers, essentially impeding aural comprehension. For instance, Mitterer and McQueen (2009) posited that Dutch-subtitling was responsible for lexical interference for fluent English-speaking Dutch students.

Captioned Videos

Most empirical studies (Borras & Lafayette, 1994; Danan, 2004; Garza, 1991; Huang & Eskey, 2000; Markham & Peter, 2003) consider captioned videos as being an effective tool for helping L2 students enhance their listening and reading comprehension skills. For example, a number of studies showed positive effects of video captioning on developing L2 language skills and proficiencies. Using a number of three-week delayed text-based posttests, Neuman and Koskinen (1992) compared the results of students' word recognition and explanation, and found a statistically significant improvement in the language learning of students watching captioned TV when compared to groups who watched uncaptioned TV and those who read along while listening to the text. In Mitterer and McQueen's (2009) study, after separate exposure to either an L2 captioned video, an L1 subtitled video or an unsubtitled video, all groups were asked to repeat back excerpts from the L2 material. The test results showed that L2 captioning helped students' speech adaptation while L1 subtitles hindered students' speech learning. The same positive results when using captioned videos were found in post-viewing tests on the retention and recall of language used in the video programs (Neuman & Koskinen, 1992; Vanderplank, 1988).

As for 'bimodal' captioned videos (i.e., videos with synchronized audios and texts in L2), they appear to induce an enhanced multisensory cognitive effect on L2 students. Baltova's (1999) experiments with immediate and two-week delayed posttests demonstrated that simultaneous exposure to spoken and written text used in the L2 video helped the L2 caption group gain a statistically significant improvement when compared to the control groups (no-subtitle group and L1 subtitle group), not only in listening recognition ($F(1, 89) = 13.72$, $p < 0.001$) but also in long-term content retention ($F(1, 89) = 2.76$, $p < 0.01$). These results indicate that by

enhancing students' focus on the L2 and avoiding the distraction caused by the L1 translation complexity, both L2 listening comprehension and long-term L2 learning improve. However, the superior caption model only worked when the difficulty level of the L2 video was slightly higher than the language capability of the L2 learner (Baltova, 1999; Danan, 1995).

Captioning Versus Subtitling

Increasingly studies have compared the effect of different types of text support on L2 learning and their roles as multimedia factors in enhancing digital videos for L2 learning (Al-Seghayer, 2001; Berk, 2009; Borras & Lafayette, 1994; Mukhamadiarova, Merkish, & Kulkova, 2018).

While there seems to be some consensus among the scholars as to videos with text support having more pedagogical benefits in enhancing language learning over videos without text, results have been less clear regarding which mode of text support is most effective. Many researchers consider captioning significantly more effective than no text support or subtitling (Froehlich, 1988; Huang & Eskey, 2000; Ogasawara, 1994; Wang, 2007; Yoshino, Kano, & Akahori, 2000). For example, Froehlich (1988) points out that students, especially those at beginning levels of comprehension, who were left on their own, became frustrated by the fast speech in L2 videos without any text support; in fact, they only paid attention to subtitles and skipped L2 speech samples altogether when they watched subtitled L2 videos. Nonetheless, they were able to pay simplified, dedicated and synchronized audio-visual attention to L2 speech when they were watching captioned L2 videos. A comparison of the results of video-viewing by beginning-level language learners to those of more advanced students indicates that captioning was even more beneficial to advanced students (Taylor, 2005). However, other studies produced contradictory results, showing no significant differences between subtitled and captioned videos or even pointing to more positive effects derived from subtitled videos (Başaran & Köse, 2013; Markham, Peter, & McCarthy, 2001). As an example, Markham and Peter (2003) found that for fourth-semester Spanish L2 learners, watching subtitled videos was most effective, con-

siderably more effective than captioned videos, which were, in turn, more effective than videos without text support.

Reversed subtitling (i.e., video with native-language audio and target language subtitles) research has also been examined. For example, for beginning-level and intermediate-level French college students (Danan, 1992) and second-semester English L2 students (Gorjian, 2014), reversed subtitling was found to be more effective than videos without text support or subtitled videos, suggesting that L2 students with low proficiencies might need more native language (either audio or text) support.

Besides fully text-supported video, there is also a middle ground of partial text support. Guillory (1998) confirmed the expected significant differences between the mode of no text support with the modes of full captioning and partial captioning, but found no significant difference between the two latter modes themselves. Captioned videos were found to be more effective than uncaptioned ones for all language proficiency groups, but partial captioning was considered more conducive to the high-intermediate students when compared to intermediate and low-intermediate students (Park, 2004). Yang and Chang (2013) also discovered that reduced annotated keyword captioning was more effective than full captioning. However, Behroozizad and Majidi (2015) observed that while partial captioning (keyword captioning) was found to be more effective than no captioning, it was not as effective as full captioning.

Additional Support for L2 Learning Through Subtitling and Captioning

Digital video technology has also been used as a tool to allow L2 teachers to manipulate authentic video through editing, subtitling and simplifying to make videos more suitable for language learners (Shrosbree, 2008). For example, captioning was found to be more effective in providing modified input to intermediate English as a second language (ESL) students in comparison to lecture transcripts (Grgurović & Hegelheimer, 2007). Background information or 'advanced organizers,' associated with the videos, informed students of the main scenes in the video and not only helped to direct the

language learners' attention to the appropriate scenes but also helped them process and retain component information from other scenes through the imagery (Herron, 1994). Videos captioned with added culture-specific background information were observed to have significantly helped language students overcome the cultural hurdles in their video comprehension (Markham, 2001), which confirmed that culture-specific background knowledge plays an important cognitive role in language learning.

As for psychological benefits of learner interaction with and/or access to subtitling and captioning, Borras and Lafayette (1994) found controllable video subtitles to have benefited fifth-semester French L2 students' speaking performance on video-based oral communicative practice tasks. They pointed to improved self-efficacy as being a motivating factor, and this positive attitude was reflected by increased confidence.

To sum up then, it seems apparent that text support on videos has a pedagogic, psychological and cognitive value, as it can provide students some control over learning and can help them develop active viewing strategies as well as make them more confident language learners (Borras & Lafayette, 1994; Chung, 1999; Danan, 2004; Swaffar & Vlatten, 1997).

Limitations of the Existing Research

The existing studies on the use of videos for L2 learning have several limitations, however. First, most of them were conducted in the pre-YouTube era (Burger, 1989; Markham, 2001; Vanderplank, 1988; Weyers, 1999). They focused on the use of offline videos, such as videos on tapes, video compact discs (VCDs) and digital versatile discs (DVDs), and dealt with learning environments that are markedly different from post-millennial ones, whereby internet-connected students can view YouTube videos for L2 learning at any time. Second, most studies targeted elementary and intermediate L2 language learners. Third, studies that did use YouTube videos to evaluate the effect of captioning and subtitling to address needs of L2 students focused on English as a second language (ESL) students (Behroozizad & Majidi, 2015; Matielo et al., 2015; Mitterer & McQueen, 2009; Vanderplank, 1993). Despite these shortcomings, such findings, including the earlier ones, offered clear insights into the effects of text support, which

can be applied to YouTube videos and whether or not they will be valid for German language learners at high-intermediate and advanced levels.

Benefits of Using YouTube Videos

The present study takes into consideration that the rapid worldwide expansion of YouTube videos online can play an increasingly important role in their use for L2 learning. They are considered "a best fit to the characteristics of this Net Generation of students and a valid approach to tap their multiple intelligences and learning styles" (Berk, 2009, p. 1) for good reasons.

The use of YouTube videos in L2 learning is pedagogically well supported by psychological and cognitive research. Their form- and content-related features, such as linguistic, cultural and thematic authenticity; connection; flexibility and diversity, were found to have more psychological and cognitive benefits for L2 learning than traditional videos (Alimemaj, 2010). Besides the general benefits of using videos for education, YouTube videos, like other social-based computer technologies, were viewed as pedagogically beneficial to L2 learning because of their global coverage and access, their free availability, their ever-increasing nature and their convenience (Donchev, 2017; Duffy, 2008; Hegelheimer & O'Bryan, 2008; Solomon & Schrum, 2007; Wang & Vásquez, 2012). For instance, L2 YouTube videos provide a linguistically and culturally contextualized learning environment (Brown, Collins, & Duguid, 1989), extend the student L2 learning beyond text to visual or episodic memory (Paivio, 1986) and enhance students' knowledge retention (Fox, 2003). The ease of creating, editing, watching, sharing or commenting on YouTube videos can also promote student-centered and participatory L2 learning (Brown & Adler, 2008; Lenhart & Madden, 2005). L2 instructors can also use YouTube videos as advanced organizers for later class lectures, discussions and small group activities (Ausubel, 1978; Herron, 1994).

In addition, students consider watching YouTube videos as fun, interesting and entertaining; such videos raised their curiosity while

watching them; they were also motivated by them and were engaged while watching them in friendly and enjoyable learning environs (Alimemaj, 2010; Alwehaibi, 2013; Kabooha & Elyas, 2018; Kelsen, 2009). YouTube videos also helped them focus their attention and reduce their L2 learning barriers and anxiety (Köksal, 2004; Terantino, 2011).

As one can see, YouTube video has a role to play in language learning, and in light of the lack of research regarding the influences that text-based videos might have on German language learners in particular, the linguistic and psychological effects that text-supported YouTube videos might have on them necessitates investigation. The purpose of this chapter, then, is to discuss the psychological and cognitive impact of using captioned and subtitled YouTube videos on students' learning of the German language as well as its culture and literature in high-intermediate and advanced German language courses.

As for the core principles under discussion in this volume, this study attempts to examine the effects of four modes of text support (no text support, subtitling, captioning and annotated captioning) on L2 learners' psychological and cognitive constructs. While the terms of no text support, subtitling and captioning are used as defined in 'Literature Review,' the term 'annotated captioning' differs from Yang and Chang's (2013) term 'annotated keyword captions,' which was used to denote a reduced form of captioning with the help of symbols (p. 49, 50). In contrast, 'annotated captioning' in this study is used to characterize a full captioning mode with added English explanations of a limited number of new words.

With all of these issues in mind, we ask the following research questions to address these issues:

1. How do various modes of text support influence intermediate-high and advanced German language learners?
2. How do these students perform in response to the effects of these modes of text support in viewing YouTube videos?
3. How do these students perceive the effects of these modes of text support?

Methodology

The Preparation of YouTube Videos

Drawing on the above theoretical and empirical findings, the author experimented with various aspects of using YouTube videos for intermediate-high and advanced German language courses. This section discusses the related approaches.

Selection

The selection of German YouTube videos for the intermediate-high and advanced German language learning was based on the following two key pedagogical considerations: (1) student needs and (2) choices.

1. Needs encompassed two aspects: (a) level of the language course to be taught and (b) the characteristics of students.

The level of German language classes to be taught was the most important issue in the process of selecting YouTube videos because of its relation to students' language proficiency. The subject areas of the German language courses determined which YouTube videos could be chosen to best meet courses' content needs.

The characteristics of students in a German language class play an important role in preparing YouTube videos for L2 class use. To ensure that students of relatively different language proficiencies would benefit similarly from using YouTube videos, the author included YouTube videos that were tailored to the proficiency levels of most students. To address students' needs the following matters were also considered: (a) types and context of YouTube video content, (b) language appropriateness of the YouTube videos, (c) lengths of the YouTube videos, (d) availability and quality of captioning of the YouTube videos and (e) presentation of the YouTube videos.

In German language courses, different types of YouTube videos were included, such as animated videos, documentary films, recorded lectures, films and songs. Animated videos using a simple and instructional lan-

guage were useful for introducing new words, terms, concepts and ideas. Moreover, German documentaries and recorded lectures were deemed a more appropriate tool providing experience in not only authentic German but also authentic issues in German-speaking countries. Additionally, videos showing in-depth knowledge of specific topics were included to engage students in critical thinking, deliberations and actions. German films and songs were also used to help German language students develop cultural literacy and enrich the German language classes.

Authentic YouTube videos were selected that related directly to scheduled language learning topics, such as energy transformation, passive house or green cities. Contextualized YouTube videos can be considered tools of language learning because they may foster improved language proficiency by sparking curiosity and enthusiasm while learners explore and pursue knowledge.

Of course, the linguistic appropriateness of the YouTube videos was an important aspect to evaluate in the selection process of appropriate YouTube videos for German language courses. While more diverse speeds and accents of the target language are spoken in the YouTube videos, intermediate-high and advanced German students needed relatively slower and clearer speech for better understanding.

In addition, the author paid particular attention to video length. For a 50-minute class, the length of selected YouTube videos was between 5 and 7 minutes. The short length of the videos allowed ample time for the instructor to pause for explanations, questions and repetition or to stress a certain issue; it also allowed time to involve students in recycling vocabulary or terminology, to aid them in comprehension issues and to give them the opportunity to reflect on, discuss or debate an issue in a sequential manner. Consequently, YouTube videos were used in a controlled manner, to allow the students to rewind, review or even fast forward (Swaffar & Vlatten, 1997).

Considering that intermediate-high and advanced level students already have developed some German language listing and reading skills, it is psychologically and cognitively effective to show them intralingually captioned videos to focus their attention on the comprehension of and response to actual German words, concepts, sentences and ideas, helping them reinforce and expand their vocabulary as well as develop their writing and

oral communication skills. Therefore, efforts were made to collect captioned German YouTube videos. If the selected original YouTube videos did not have captioning or had only linguistically unsatisfactory auto-generated captioning, YouTube Video Manager's CC feature was used to create captioning or as a way to edit the auto-generated captioning.

The author also deliberated how to effectively present YouTube videos in German language courses. A course webserver was used to post YouTube videos along with other course materials on the German course syllabi. The YouTube videos for the German language courses were arranged in two different venues: (1) video playlists of the author's YouTube account as well as (2) weekly class schedules and homework assignments of the author's German courses. Arranging the selected YouTube videos in topic-based video playlists of a YouTube account made it easy to locate them when they were needed, while linking them directly on the weekly course and homework schedule made the use of the related YouTube videos more organized for in-class use and homework assignments.

Use of YouTube Videos

The author used YouTube videos in the German language courses in the following ways:

- As class preparation, students were assigned homework of previewing animated or simple YouTube videos that introduce and illustrate particular concepts, terms or theories. To ensure that the students completed the video-viewing assignments, they were assigned to write a brief summary and reflection after viewing.
- As a warm-up activity at the beginning of class, students were prompted to think and discuss the videos among themselves. When confusion arose, explanations were provided to make it easier for students to understand the videos.
- Before viewing longer YouTube videos, introductions were given to allow students to gain a general understanding of the viewing process.
- When comprehension issues arose during the viewing of YouTube videos, pauses were made to allow students to 'rewind' and 'review' the videos.

- After viewing YouTube videos, students were engaged in discussing or debating related content.
- The students were challenged to discuss more critical issues through involvement in active learning activities, such as discussing in pairs or groups on certain broader issues (Wilkinson, 1984).
- Adequate time was reserved before class ended, to call the class to summarize the issues they had discussed in pairs and groups, exchange their discussion results or debate their different views.

The Effects of Using Captioned YouTube Videos

In using YouTube videos for intermediate-high and advanced German language courses, the author paid close attention to understanding the effects of using the various modes of text support in YouTube videos on students' comprehension of German contents. This section discusses a related study.

Participants

The participants in this study were 14 German students enrolled in 300-level German courses the author taught at a fairly small mid-central university in the United States. They were randomly divided into two groups—Group A and Group B. Of the 14 participants, aged around 20 years old, there were 12 Americans and 2 Chinese international students; 11 males and 3 females.

Materials

Two short educational German YouTube videos were used: Video 1 'Windkraft—wie entsteht Strom? [Wind energy—how is power generated]' (two minutes) and Video 2 'Energiewende einfach erklärt [Energy transformation: An easy explanation]' (four minutes). Each had original German audio and auto-generated German captioning. Four text support modes were set up: (a) no subtitling/no captioning, (b) English subtitling (hereafter subtitling), (c) German captioning (improved from

the auto-generated German captioning; hereafter captioning) and (d) German captioning with English translations of new words (hereafter annotated captioning).

Procedure

Three experiments were conducted during regular class hours, and each lasted about 20 minutes. The students were informed about the purpose and steps of the experiment. Each experiment consisted of the students performing the following three steps:

1. Watching the YouTube video in one of the four modes of text support,
2. recalling and processing the content of the video and
3. answering questions about their viewing experience.

Experiment 1: Viewing Video 1

1. Step 1. The students were directed to complete the following video-viewing tasks:
   (a) Group A was assigned to watch the video without any text support.
   (b) Group B was assigned to watch the video with subtitling.
2. Step 2. The students were directed to reflect on their viewing experience and address the following statements or questions in English:
   (a) Indicate how much (from <20% to >90%) the student understood the video.
   (b) Indicate if the text support used helped the student understand the video or distract from it:
      (i) Yes, it helped a lot.
      (ii) Yes, it helped a little.
      (iii) I am not sure if it helped.
      (iv) No, it distracted a little.
      (v) No, it distracted a lot.

(c) Discuss, in one sentence, the satisfaction or dissatisfaction with the mode of text support for video-viewing and explain why.
(d) Indicate if the student preferred a different mode of video-viewing text support, and if so, which mode of text support?

Experiment 2: Viewing Video 2

1. Step 1. The students were directed to complete the following video-viewing tasks:
   (a) Group A was assigned to watch the video with captioning.
   (b) Group B was assigned to watch the video with annotated captioning.
2. Step 2. The students were directed to reflect on their viewing experience and address the same statements and questions from 1 to 3 in Step 2 of Experiment 1:
   (a) Indicate the mode of text support the student used to watch Video 1 in Experiment 1.
   (b) Compare and decide which of the two text support modes was more beneficial to the student's video comprehension, and explain in one sentence why the student thinks so.
   (c) Indicate if the student prefers a different mode of text support, and if so, which mode of text support?

Experiment 3: Viewing Video 2 Again with a Reversed Mode of Text Support

1. Step 1. The students were directed to complete the following video-viewing tasks:
   (a) Group A was assigned to watch the video with annotated captioning.
   (b) Group B was assigned to watch the video with captioning.

2. Step 2. The students were directed to reflect on their viewing experience and address the same statements and questions from 1 to 3 in Step 2 of Experiments 1 and 2:
   (a) Indicate the mode of text support the student used to watch Video 2 in Experiment 2.
   (b) Compare and decide which of the two text support modes (captioning vs. annotated captioning) was more beneficial to the student's video comprehension and explain in one sentence why the student thinks so.
   (c) Indicate if the student prefers a different mode of text support, and if so, which mode of text support?

Results and Discussion

The posttest surveys generated the following results.

Experiment 1

Most students who were assigned to use subtitling found this mode helpful for understanding the video, but 57% of them would have used captioning or annotated captioning instead. One of these students explained the reason for this preference by referring to the difference between the two different types of comprehension involved in the effect of subtitling on their cognitive viewing processes:

- "The subtitling might have helped understand the video, but this had nothing to do with my German learning."

At the same time, 28.6% of all participants reported to have understood the relatively easy German video well (around 90%), and they preferred no subtitling.

Experiment 2: Captioning/Annotated Captioning Versus No Text Support/English Subtitling

After using either captioning or annotated captioning, about 80% of students considered either type of text support as being helpful. They explained their preferences as follows:

- "As opposed to English, captioning actually follow the flow of the language. The word order of the subtitling is different from actual German, so you have to both comprehend what you are hearing and then what the captioning says. With captioning, you can follow along with the speech and make sure you do not miss any of what you are hearing."
- "When I am listening to a video in German, I try to understand the German spoken, but with subtitles, I get distracted because I have to think in two languages."
- "Having captioning only that matches up with the voiceover on the video is extremely helpful because without them it is much harder to understand the video with voice alone. The text helps identify words that are familiar but not to the ear, only when read."
- "Since I am familiar with German, the text allowed me to speed up my thought process without distracting me from the German language. The subtitles were still good, but they complicated my watching of the video."
- "I think listening to a German text with captioning helps me learn the language more, because I associate words with their spellings."
- "When the captions aren't helpful I can just ignore them, but if I am missing a word in my vocabulary the captions can be helpful."

The explanation of the only student who stated preferring the English subtitling to the annotated captioning was very enlightening as well:

- "I understood the video more clearly with English subtitles, but using the subtitles did little to help with my German education."

Experiment 3: German Captioning Versus Annotated Captioning

The survey for Experiment #3 showed that proportionally more students preferred using annotated captioning when compared to plain captioning (0.57 vs. 0.43). Although this difference was not as obvious as the difference between the preference of L2 captioning and that of L1 subtitling, the students' survey responses suggest their different preferences might have different effects on L2 learning. Students who preferred using plain captioning cared more about understanding the video and, thus, considered annotated captioning distractive:

- "Captions helped me to follow along a little better and decipher what German words were being used. The annotations were a bit of a distraction as I was simply just trying to follow along, not learn vocabulary."
- "German subtitles are easier to follow along with especially when your issue is comprehension rather than vocabulary."
- "The German captions give me the words and allow me to figure out the words with the context given in the video rather than thinking in English about what the words mean."

These responses showed that although there were some who tried to negotiate the meanings of unfamiliar words by themselves, most of the learners who preferred pure captioning focused more on global comprehension than on vocabulary learning. Considering that vocabulary learning is a learning focus at higher levels, students who do not care about vocabulary learning might lose the cognitive opportunity to pay attention to vocabulary learning and, thus, the opportunity to recognize the words that reappear in future videos. In addition, more students might have switched to using enhanced caption if vocabulary learning was set as an explicit learning objective.

Students who preferred using annotated captioning were much more enthusiastic about the just-in-time text support of limited new-word annotations for language learning:

- "It was essentially the same as captions but with help on the problem words. It's a fascinating idea."
- "If there was any confusion with a word the annotation helped just by adding some explanation."
- "Every time I encountered an unfamiliar German word, the definition was right there on the screen."
- "I can relate the heard German directly with the captions, and the partial English explanation of it."
- "There are many words I don't know and annotated captions provide explanations."
- "The captions helped, but with the annotated captions, I understood a lot more because some words I didn't know were made clear."

These responses were enlightening about the effect of enhanced captioning on language learner psychology and cognition. The learners linked the design of adding English or German synonym annotations to a limited number of unfamiliar words to their perceived increased learning results. They welcomed this model, as they perceived that they could both go along with the German narrative and pick up words with their meanings either in English or in German synonyms. Motivated or guided by this positive learner perception or preference, these students might indeed have learned a lot. If this learning process is repeated, the learning effects might have become even more obvious.

To sum up, the ratio of those preferring subtitling to those preferring no text support was more than 2:1 when the video was relatively easy; the ratio of those preferring captioning with or without limited annotation to those preferring either subtitling or no text support was approximately 4:1 when they watched a linguistically more difficult German video; and the ratio between those preferring annotated captioning to those preferring plain captioning was around 4:3. It is worth noting that if L2 learners found the limited English annotation not useful, they could easily skip it without causing the major switch that the L1 subtitling would force them to do in most cases.

These results suggest that German L2 students at high-intermediate and advanced proficiency levels overwhelmingly preferred German captioning with or without additional English explanations, and more

than half of this overwhelming majority found occasional, limited English translations beneficial to their vocabulary learning and overall video comprehension of German speeches. Adding English translations directly to the end of a limited number of each of the new words in the captioning, therefore, can be seen as optional psychological and cognitive assistance in lowering students' language barrier, motivating them to pay attention and, thus, psychologically and cognitively engaging them in comprehending German speech, as opposed to considerably detaching or distracting them from the German soundtrack by using full English subtitling.

Conclusions

This study indicated that although German YouTube videos provide many potential pedagogical benefits, a number of steps need to be carefully investigated, designed and implemented to achieve the desired effects of using such videos for high-intermediate and advanced German language learners. The selection and thoughtful enhancement of these videos are two of these important steps. The benchmarks of these steps are to see if they sufficiently prepare students to be able to attentively watch and comprehend video speech as well as actively participate in learning activities in response to the authentic German used in these YouTube videos in pairs, small groups and the whole class.

The experiments revealed that substantially more students considered the viewing models of using captioned German videos with or without minimum English annotation as being more helpful for their German language learning than those of using unsubtitled or English-subtitled L2 YouTube videos, which confirmed the findings of previous research (Froehlich, 1988; Huang & Eskey, 2000; Ogasawara, 1994; Wang, 2007; Yoshino et al., 2000). An explanation for the perceived effectiveness or learner preference for such captioned videos speaks to the learners' "linguistic integrity," which allows L2 language learners to optimally benefit from focusing their "incidental attention" (Macaluso et al., 2016) on linguistic "multisensory integration processes" (Baltova, 1999; Massaro, 2004) in the target language. It is difficult to say how much video-viewing

models using unsubtitled L2 YouTube videos (those without any synchronized text support) help L2 language learners benefit from 'multisensory integration processes.' On the other hand, when English-subtitled L2 videos are considered, although such videos may have helped L2 language learners understand the content of the videos, they failed to help them learn the L2 because the users were likely overwhelmed in a 'linguistics tug-of-war' between their native and target language, thus preventing them from paying dedicated attention to the target language. In other words, interference from the 'multisensory integration processes' that were naturally occurring as the students viewed the videos essentially rendered the video-captioning ineffectual for language learning (Froehlich, 1988). At the same time, the findings of this study differ from those of a number of other studies. The differences resulted from the fact that those previous studies were mostly focused on beginning levels and intermediate low levels of L2 language students (Başaran & Köse, 2013; Markham, Peter, & McCarthy, 2001; Markham & Peter, 2003).

Moreover, this study's experiments, comparing the viewing model of using captioned German videos with that of using captioned German videos with minimum English annotation, differ from previous studies regarding partial text support (Behroozizad & Majidi, 2015; Guillory, 1998; Park, 2004; Yang & Chang, 2013). Therefore, it can be seen as an interesting new finding that the viewing model of using captioned German videos with minimum English annotation was perceived to be more effective than those without minimum English annotation. Accordingly, the viewing model of annotated captioned German videos can be seen as a pedagogical tool or strategy to help German language learners benefit from enhanced attention in 'multisensory integration processes.' The psychological and cognitive benefits of this viewing model are similar to those of using captioned German videos. What makes this model more effective is that the inclusion of English translations of a minimum number of new words provided students with additional just-in-time psychological and cognitive support in understanding the words they did not know prior to the study, without interfering with their 'multisensory integration processes.' It is, however, important to reemphasize the importance of determining the linguistic appropriateness of the selected YouTube videos, so that they correspond to the language level of the students, to ensure that the selected videos only need a small amount of English annotation.

In addition, the experiments here demonstrated that students do seem to process language more easily when they have subtitling and captioning. These findings concur with Vanderplank's notion (1988, 1990) of the ease of processing texts with chunks of language. In addition, the multimedia principle may play a significant role in students' ability to process language more effectively with YouTube videos. Mayer (2005a, 2005b) claims that the combination of pictures (in this case video) and words together is a far easier input to process than either words or pictures by themselves. Mayer's Cognitive Theory of Multimedia Learning (CTML) contends that although learners process multimedia input through different channels (i.e., separating aura input from visual input [words and video] in this case), the final stage of processing is integration of the image with the sound. Any extraneous information presented in the medium only impedes efficient processing—a violation of the coherence principle. Concerning the present research, CTML identifies that captioning is naturally more effective because it facilitates more efficient processing of German, as students' cognitive processes meld the incoming aural language with the words and video. Subtitling, on the other hand, involves additional steps of interpretation and may even result in dissonant processing, as what students hear and see cannot be combined without additional processing, which concurs with the conclusions drawn by Froehlich (1988).

CTML offers a very plausible explanation to the cognitive processes students encountered in this study. In light of this and in respect to the findings here, it is highly recommended to teachers who wish to use video in the classroom that they (a) do not provide English subtitles for intermediate-high and advanced language courses, but that they (b) do provide both the viewing model of using captioned language learning videos and that of using captioned targeted language videos with minimum native language annotation so that students can have their own choice of or control over which ones to choose from.

At the same time, due to the small size of the sample, the findings of this study need to be treated with caution. A substantially larger number of subjects might generate more robust results concerning the psychological and cognitive effects of various modes of text support in YouTube videos on target languages on L2 learners. It should also be recognized

that these findings are culturally specific to American students learning German. Other cultures and languages may prove to be significantly different, especially for languages that do not employ Romanized characters.

Nevertheless, text-supported YouTube videos do seem to have a place in today's language learning classes. Our results here illustrate that they can help students decode difficult language and also help students learn. At the same time, this study focused on the role text-supported YouTube videos play on language learner psychology and cognition. The findings are a positive step in the understanding of the effect captioning has on language processing.

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Part III

Emotional and Behavioral Constructs



5

Computer-Assisted Language Testing and Learner Behavior

Brett Milliner and Blair Barr

Introduction

Although computer-assisted language testing (CALT) is not a new area of research, it has been attracting renewed excitement from researchers in recent times (Brown, 2013). The spread of personal devices, expanding access to high-speed internet, increasing incorporation of computer-assisted language learning (CALL) into language learning programs, the growth in internet-based testing and an ever-expanding selection of CALT programs are just some of the factors nurturing this interest. In foreign language classrooms, some teachers have become attracted to CALT's promise of a time-saving means to grade student work, and now, in alignment with more data-driven approaches, CALT metrics provide teachers with an efficient and reliable means to monitor the effectiveness of their teaching.

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Language learners also stand to gain from CALT, as they can receive immediate and targeted feedback on their work. Focusing on English as a foreign language (EFL) learners here, we intend to report on their perceptions of CALT for formative assessment and how the instant feedback provided by these assessments influences their behavior. That is to say, we are interested in understanding learner metacognition after they have received automated feedback.

Computer-Assisted Language Testing (CALT)

Following Suvorov and Hegelheimer (2014), we define CALT as any testing delivered via the internet to be completed on a personal computer (PC) or mobile device (e.g., smartphones or tablets). This distinction reflects how we were implementing CALT in our teaching context (i.e., predominantly low-stakes tests or quizzes delivered via the internet to students to complete on either personal computers or mobile devices). Also, the online component means that results could be shared with test takers immediately. Second, we considered the research of Noijons (1994), who noted that CALT could be implemented as either an exercise (a low-stakes task developing a particular skill) or a test (a task designed for measured goals). Again, in our case, CALT was implemented for both formative tasks (e.g., homework and answering questions from class textbooks) and formal assessment (e.g., unit or chapter tests).

While this chapter does not promote a framework to comprehensively define CALT, it is important to highlight some of the attributes of CALT. First, CALT makes use of an online format which promotes greater accessibility. Tests can be created and taken at the most convenient time and in the most convenient place (provided there is an internet connection), and test creators can embed multimedia content (e.g., audiovisual content from YouTube) to enhance a test or quiz (Noijons, 1994; Suvorov & Hegelheimer, 2014). Most importantly, the online format provides a channel for instant feedback on performance for both test takers and teachers. Second, the type of questions used in CALT can vary greatly. For example, question fields can be selective (e.g., multiple choice or true/false), productive (e.g., essays, oral narratives or cloze tests) or

interactive tasks (e.g., matching, drag-and-drop activities). While the selective- and productive-type tests can be completed in a paper-based format, the interactive format represents an approach that is unique to CALT. Finally, the scoring of CALT can be automated, graded manually by the teacher or a combination of both. In addition to checking responses, CALT software can generate sophisticated feedback for test takers or teachers such as item analyses and comparisons between class members.

In the case of this study, CALT was administered using either a university's content management system's (CMS) test tool (Blackboard.com) or the free, web-based applications Google Forms and Google Sheets with the add-on Flubaroo (flubaroo.com). The majority of the sampled students (79.3%) were also taking CALT generated by the extensive reading quiz system M-Reader (mreader.org).

Another important thing to note was that participants mostly completed CALT for receptive learning tasks (e.g., vocabulary quizzes, cloze tests and listening comprehension questions). Some examples of how CALT was used in our EFL classes included: taking reading or listening tests, doing vocabulary quizzes, engaging in standardized test practices, taking cloze tests, answering questions from a textbook and running online polls. However, a number of participants also completed some productive tasks, such as writing, where feedback was not immediate due to manual grading.

Benefits of CALT

For language teachers, CALT can help them manage their classrooms more effectively. Recognizing the trend toward more formative assessment, where teachers conduct larger numbers of short, diagnostic tests, these types of assessments can be more efficiently managed using CALT (Ćukušić, Garača, & Jadrić, 2013; Fargeeh, 2015; Teo, 2012). Computer technology can be useful in both staging a test (e.g., establish time limits and delivery dates) and accelerating the marking process. Most CALT programs create reports, which teachers can review to objectively scrutinize the effects of their teaching (Ćukušić et al., 2013; Roever, 2001; Teo, 2012), evaluate the quality of test questions or identify gaps in learning or

comprehension (Teo, 2012; Wang, 2014). For example, a teacher can utilize item analysis to establish where students are having trouble or make decisions about test items. Another benefit to teachers using CALT is having the capability to monitor in-class learning tasks and homework. Teachers can determine whether students have completed assignments, a function that elevates student accountability according to some experts (e.g., Bracher, 2013; Roever, 2001; Suvorov & Hegelheimer, 2014; Teo, 2012).

It is argued that CALT can be an effective way to manage large groups and remove barriers between teachers and students (Ćukušić et al., 2013; Teo, 2012). Teachers can quickly identify students who need remedial attention (Teo, 2012; Wang, 2014), and CALT opens channels for communication with students (Reinders, 2018). CALT may be particularly useful in larger classes or foreign language classes specifically, places where there may be students who have weaker perceptions of their own language skills and who would be less inclined to approach teachers for support. CALT opens up opportunities for teachers to intervene and offer support that is more confidential and appropriate based on specific students' needs (Teo, 2012; Wang, 2014).

One of the strongest arguments for implementing CALT is that it provides immediate feedback on learning progress (Ćukušić et al., 2013; Fargeeh, 2015; Roever, 2001; Vanderkleij, Eggen, Timmers, & Veldkamp, 2011; Wang, 2014). Empirical evidence shows that CALT feedback can prompt students to spend significantly longer amounts of time on task (Fargeeh, 2015), achieving better grades (Ćukušić et al., 2013; Wang, 2014) and performing better on specific macro-language skills (Teo, 2012). Furthermore, for CALT-based homework tasks, students may independently, or be advised to, retake a test to confirm their learning progress. Students may also be privy to sophisticated metrics comparing their score to those of their classmates, for example, item analyses or overall averages (Wang, 2014). Access to such metrics was identified by Vanderkleij et al. (2011) as having a motivating influence upon students. Teo (2012) concluded that CALT feedback promotes metacognition and self-regulation, and Fargeeh (2015) posited that metrics help students to more effectively learn from mistakes. It has also been shown that, through sustained CALT implementation, students learn how to interpret feedback more effectively, becoming less dependent on their teachers and more self-directed or autonomous (Ćukušić et al., 2013; Teo, 2012; Wang, 2014).

Concerns of Using CALT

While versions of CALT have been implemented for over two decades, some EFL teachers appear to have been slow to adopt this technology. Milliner and Cote (2018) evaluated English teachers' usage of the Blackboard CMS in their EFL program at a Japanese university and found that even though the majority of teachers were using the Blackboard system, the online test function was being used in less than a third of all classes. Similarly, Bracher's survey (2013) of 100 English teachers' usage of internet-based tools at other Japanese universities reported that only 26% of teachers used CALT in their classes. There is, however, some evidence that this trend may not be true across all contexts. In a survey of 25 English teachers at a Saudi Arabian university, Fargeeh (2015) found that the teachers had positive attitudes toward CALT, and that they believed this learning tool was complementary to their e-learning program.

Although the efficient generation of learner analytics can benefit students and teachers, some experts caution that the regular use of CALT may be fostering a "mechanistic, behaviorist view of learners" (Reinders, 2018, p. 84). Rather than focusing on the learners themselves and creating tasks that align with learning goals, some teachers are possibly drawn toward CALT tasks because they can generate useful metrics. That is to say, teachers opt for learning tasks that are easy to observe and measure rather than tasks that benefit their students most. Second, CALT may limit language learning potential by focusing on a narrow range of skills rather than a set of dynamic communicative activities (Douglas & Hegelheimer, 2007). For these reasons, some teachers and researchers are exercising caution when making decisions about adopting CALT.

Preparing students to use online tools effectively is another concern. Wang's (2014) review of automated feedback for Taiwanese students recognized that the students often felt overwhelmed with feedback data, which handicapped their ability to look for support materials that could enhance learning. In the context of our study, tertiary-level Japanese students have been reported to have limited PC knowledge (Bracher, 2013; Murray & Blyth, 2011) and digital literacy (Cote & Milliner, 2017; Gobel & Kano, 2014). It is only recently that Japanese students have started experiencing some form of computer-based learning in public

schooling, thus raising questions about their abilities to effectively use CALT (Cote & Milliner, 2017).

A final concern surrounds the security of tests. In fact, Roever (2001), as well as Suvorov and Hegelheimer (2014), warned against using CALT for high-stakes tests. Moving tests online can make it easier for students to share test questions or answers, compromising test security. Students could complete tests together or take screenshots of tests or feedback data and share these data with classmates or friends. Computer-adaptive tests, featuring randomized questions and a rotating bank of test items, stricter management of test settings and embedding a test inside an institution's CMS were presented by Douglas and Hegelheimer (2007) as possible approaches to mitigate such security risks.

Research on CALT

As we noted in the introduction, investigating CALT is not a new area for research in CALL or language testing. Generally speaking, researchers have tended to focus on three areas:

1. Overall reviews or introductions to CALT (e.g., Brown, 2013; Chapelle & Douglas, 2006; Chapelle & Voss, 2016; Douglas & Hegelheimer, 2007; Noijons, 1994; Roever, 2001; Suvorov & Hegelheimer, 2014)
2. The consequences of CALT (e.g., Ćukušić et al., 2013; Fargeeh, 2015; Garcia Laborda, 2007; Kenyon & Malabonga, 2001; Teo, 2012; Wang, 2014)
3. Reviews of specific forms of CALT technology, such as online testing (e.g., Fargeeh, 2015) automated writing assessment (e.g., Godwin-Jones, 2008; Ware & Kessler, 2013) and speech recognition assessment (Chapelle & Chung, 2010; Ware & Kessler, 2013)

These three areas could be condensed further to a focus on (a) the technology and (b) the efficacy of CALT. We struggled to find studies which focused on the learners' experiences, and very few investigated perhaps one of the most persuasive arguments for using CALT: immediate (automated) feedback.

Ware and Kessler (2013) looked at digital feedback as comprising three important dimensions: its delivery, its focus and its strategies for providing feedback. However, their review only considered feedback for the productive skills of writing and speaking. In their conclusion (p. 335), the authors called for research to move toward understanding how 'optimal feedback conditions' can be established across all three dimensions.

In Saudi Arabia, Fargeeh (2015) surveyed 400 university-level EFL students and 25 teachers about their perceptions of CALT (defined as web-based assessment). Tests were managed by the Blackboard CMS. Overall, students and teachers had very positive perceptions of this testing application. Students believed that Blackboard's test application helped them develop skills for online test taking; however, the most influential factor in students' attitudes toward CALT was their behavioral intentions to use the system. These behavioral intentions were evidenced by students retaking formative assessments to prepare for upcoming tests and to measure their learning progress. In his discussion, Fargeeh (p. 56), citing Bransford, Brown and Cocking (1999), argued that "web-based assessment and practice not only plays the role of measurement or evaluation, but it also plays the role of instruction, reflection, and reinforcement." Fargeeh observed that CALT enabled students to demonstrate their understanding, learn from mistakes, review, reconnect with previous concepts and develop more complex language skills through an increased time on task. He also highlighted the value of retaking tests and the positive impact instant grading and feedback had at directing learning. Fargeeh's students exercised self-assessment and self-regulation to take stock of what they already knew and to address the learning goals for the EFL course.

Ćukušić et al. (2013) looked at the effects of a formative assessment strategy utilizing CALT for 1300 students at a Croatian university. More specifically, they looked into whether the delivery of short, multiple-choice tests connected to reading assignments would encourage students to score higher in their mid-term and final examinations. Their analysis revealed a strong positive correlation between the formative assessment treatment and test scores. Moreover, focusing on class passing rates, the overall passing rate was 10% higher for students who completed a series of formative CALT assessments.

In a more detailed investigation into the impact of automated CALT feedback, Teo (2012) evaluated its effects upon Taiwanese university students ($N = 68$) in her EFL reading course. Students took a reading test for three reading passages every week. If students were incorrect in their responses, they would move through four mediation stages (automated feedback), where students would gradually receive more reading support to help them comprehend the passage. If students failed to improve after receiving four mediations, the teacher would intervene. After the treatment, students significantly improved their reading test scores, and Teo concluded that students' metacognitive awareness was raised. Teo also observed that the tests were a novel approach for teaching reading strategies. In Teo's words, "the participants became strategic and reflective readers who are aware of knowledge, procedures, and controls of their learning processes" (p. 16). In her role as teacher, Teo reported that the dynamic feedback system helped her understand which mediations more effectively served her students' needs, and that the feedback data enabled her to assist students during interventions more effectively.

In brief, the research points out that automated feedback has potential to be a catalyst for engaging students more deeply in their learning while training them to become more self-directed or self-regulated in their approaches. In the following section, we will address the implementation of learner strategies in response to CALT feedback.

Learner Strategies and Learner Feedback

Metacognitive strategies are used by learners to manage their learning through four steps: planning, monitoring, evaluating and modifying (Rubin, 1987). Planning is evidenced by the learner's advanced organization, selective attention during learning tasks and self-management. Monitoring is a form of comprehension-checking or double-checking mechanism. Evaluating is related to the learner's self-assessment of their abilities. Finally, modifying concerns learners developing approaches to manage their learning or respond to a problem. At each of these stages, student's metacognitive strategies can benefit from access to CALT with automatic feedback.

According to Ware and Kessler (2013) "autonomous strategies are the hallmark of computer-generated feedback" (p. 325), and in most situations, students are left to interpret and act upon the feedback with limited support from the teacher. Therefore, if students are going to profit from feedback data, it is crucial that teachers nurture students' abilities to interpret feedback metrics and design pathways toward independent learning.

Another concept of interest is self-regulated learning, whereby learners take an active role in managing their learning activities. This point is particularly poignant in an e-learning or CALL environment, as learners may lack the supervision or restrictions observed in a traditional classroom (Wang, 2014). Paris and Paris (2001) argued that student access to opportunities for self-assessment or ways to measure their growth during the learning process would effectively foster such self-regulated skills. Also, as frontline teachers are often responsible for large numbers of students and restricted by curricula demands, it can be quite difficult for learners to perform self-assessment and receive appropriate feedback (Wang, 2014).

Focusing on this self-assessment stage, we were interested in how our EFL learners were responding to automated feedback they were receiving after CALT. As we noted earlier, overall introductions to CALT or reviews of CALT's validity dominate the academic discourse. Here we wanted to consider the language learners' experiences with CALT. Importantly, how did our EFL learners respond to CALT for formative assessment? And, how did students react to the automated feedback?

Purpose

In light of these questions, this study sought to answer the following questions:

1. Do learners prefer using CALT rather than paper-based methods?
2. Do students feel there is a benefit to doing formative tests on paper?
3. What do students do with the automated feedback once they receive their evaluation from CALT?

Method

Instruments

Data were gathered via two approaches. First, 304 university students studying in the authors' EFL courses at two Japanese universities were anonymously surveyed about their experiences with CALT created in either Blackboard or Google Forms. The online survey primarily focused on the students' impressions of CALT in comparison to similar tasks implemented in a textbook or paper-based format. Students responded in English or Japanese, sharing their thoughts on the advantages and disadvantages of both online and on-paper formats. Questions concerning how students reviewed and interacted with the automated feedback were also included in the questionnaire. For data analysis, both authors (bilingual English and Japanese users) translated the open-ended responses from Japanese to English. As a second approach to data collection, the authors observed the behavior of the learners during their classes. In this way, the teachers could identify behaviors and habits of learners using CALT.

Participants

There were 304 Japanese EFL student respondents from a wide range of skill levels and a variety of university departments (Fig. 5.1), most of whom (241/304, 79.3%) were taking the classes as part of their compulsory undergraduate coursework.

The students in the classes, taught by the authors, experienced CALT delivered via either the Blackboard CMS (156 students, 51.1%) or Google Forms (149 students, 48.9%). Some examples of how CALT was used for formative assessment tasks included reading or listening tests, vocabulary quizzes, practice for the test of English for international communication (TOEIC) and homework tasks that relate to textbooks or other supplementary contents. It is also worth noting that the students who encountered Google Forms performed some tasks that were not autograded for immediate feedback. Although powerful coding can allow autograding and immediate feedback for open-ended comprehension

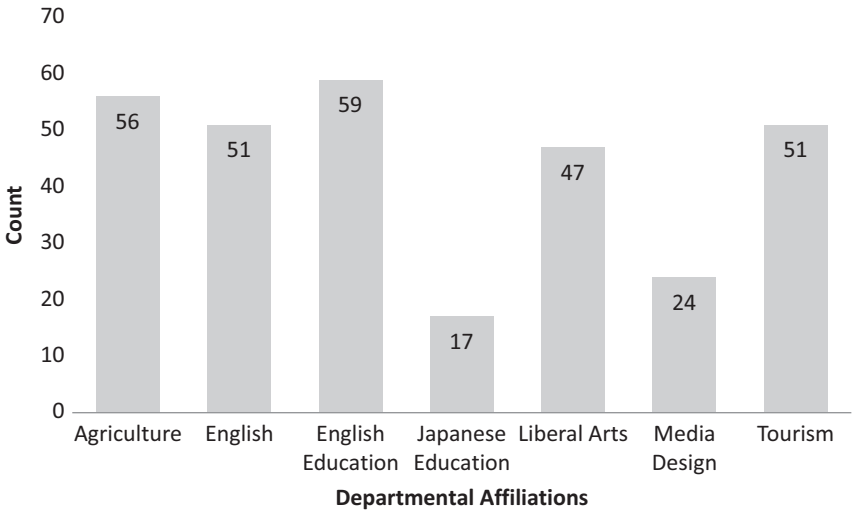


Fig. 5.1 Departments of participants

questions using the Flubaroo add-on, some tasks required manual grading, which prevented immediate feedback.

Analysis

For analyzing open-ended questionnaire items, the researchers read each comment and devised a classification system to identify the themes in each response to the following questions:

1. What are the advantages of online tests/homework?
2. What are the advantages of doing work in your book or on paper?
3. What are the disadvantages/problems with online tests/homework?
4. What are the disadvantages to doing work in your book or on paper?
5. What do you do with the feedback/score information?
6. Why do you think your teacher is using this system?

Each response could contain one, two, three or more themes that related to a particular question, so each response was classified into multiple categories when applicable. After identifying the themes, they were

reported in order of frequency, with the most frequent themes appearing at the top of the table. Comments that were not relevant to the particular question were labeled miscellaneous. In addition, the classification 'nothing' refers to responses such as 'none,' 'nothing,' or 'no,' because it could mean the student saw no advantage or disadvantage to CALT or paper-based testing. Blank fields were labeled 'no comment.'

Results

Advantages of CALT

One of the most important findings of this study (Fig. 5.2) is that when asked to state a preference, the students in this study overwhelmingly preferred the option of performing CALT with feedback (77.7%) rather than completing assignments in a textbook or on paper (22.3%). In the future, it may be worthwhile looking into what types of activities would be preferred on paper, but we saw a general preference for CALT among the participants.

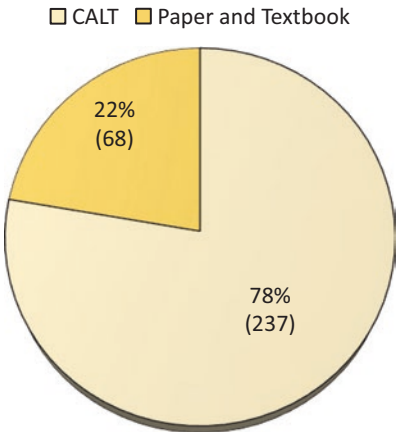


Fig. 5.2 Preferences—CALT versus paper based

Although we expected the learners would find the online testing forms relatively easy to access, the majority of learners reported neutrally (Fig. 5.3) about the ease to access the forms, with 136 respondents (44.6%) reporting that the online tests were all right to access. Slightly more participants reported that CALT forms were either difficult to access (76) or very difficult to access (17) than those who reported on the easy end of the spectrum (55 easy; 21 very easy). Students felt it was troublesome to (a) pass through university internet firewalls, (b) login to the CMS and (c) find the quiz. In addition, for Blackboard, some quizzes are optimized for PCs, so they can be difficult to navigate using smartphones. Whereas with Google Forms, students needed to be cautious about going back a page with the internet browser keys, as a few students experienced losing all of their work by doing so.

The students recognized many advantages to doing online tests and homework using CALT (Table 5.1); however, four factors, comprised the vast majority of the responses. Most frequently, students brought up the convenience (92) of being able to do CALT anytime and anywhere. Some students specifically mentioned that they could do their homework

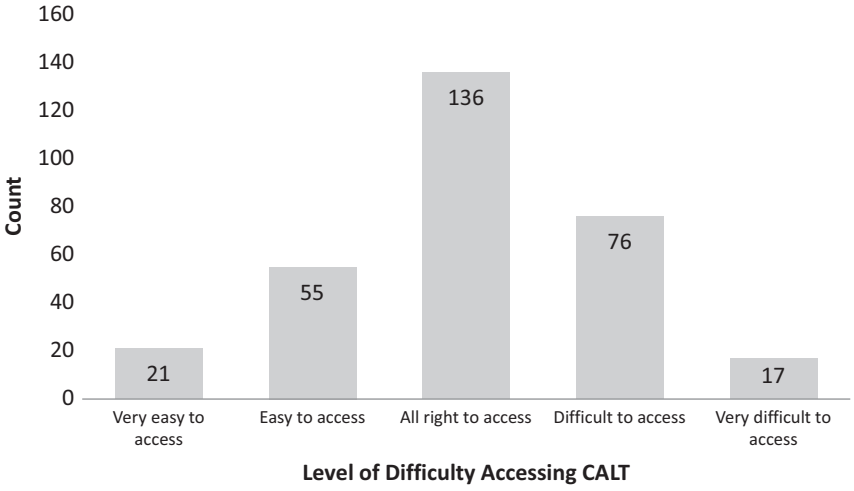


Fig. 5.3 Accessibility of CALT

Table 5.1 Advantages of CALT

Response content	*N*	Example
Convenient	92	I can answer anywhere.
Fast	78	We can submit quickly.
Easy	72	I can do my homework easily.
Feedback	60	We can receive feedback.
Accountability	13	I do not have to worry about being unable to submit due to poor health or a transportation problem.
Paperless	12	We can write without pencil and eraser.
Resubmit	11	It can be solved many times.
Score management	10	Scoring is easy.
Technology	7	If I do homework online, I can improve my typing skills.
Light	6	It is not troublesome to carry.

Language improvement (5), spelling (3), fun (3), nothing (3), usefulness (3), negative (2), paper advantage (2), time saving (1), share (1), reusable templates (1), vocabulary check (1), miscellaneous (19), no comment (14)

conveniently during their commutes. Other comments referred to the quick speed (78) and ease (72) of using CALT. It is not always clear why participants feel the testing is fast, but the word was often used in connection with the next most commonly mentioned advantage, 'feedback' (60). 'Fast' and 'feedback' occurred together 44 times. This indicates that the speed of immediate feedback was a rewarding advantage.

Although other items were far less frequently mentioned, they do seem to reflect many of the thoughts discussed in the literature. Students recognized that CALT tasks made them more accountable (13) for completing their work, and that there was a reward or benefit for re-submitting (11) work online. They also understood that CALT saves time for teachers with automated-grading management (10) and reusable templates (1). Others mentioned the environmental impact of going paperless (12), but this could also be attributed to lugging around fewer materials (6). Others see the advantages of using technology in general (7), with some specifying that they could leverage other tools or applications, such as spell checks (3) or dictionaries, to check vocabulary (1) and finalize their work. Others simply suggested that it is fun (3) to use CALT to develop their computer and English skills at the same time.

Disadvantages of CALT

When asked to identify some of the disadvantages of CALT (Table 5.2), the three most frequent issues were related to technical risks. First, students expressed that they may not always be connected to the internet (50), which is crucial for completing CALT. Second, participants pointed out the risk of technical errors (40). Specifically, from the observations of the researchers, some students experienced losing their work when the forms were inactive for some time or after the students mistakenly pressed the back key in their internet browser. Third, students complained of accidents that occurred while inputting answers (38), such as keystroke errors and misalignment of answers with questions which can be nearly indistinguishable across some forms.

In addition, smartphone users have a legitimate complaint about the tests draining their devices' batteries (21), although, from observation, it seems that an increasing number of students have been carrying an external battery or a charging cable to deal with this issue. Next, some students recognized that device ownership is critical (19), and this could be a potential deterrent for some students. For some of the Blackboard users,

Table 5.2 Disadvantages of CALT

Response content	*N*	Example
Connection required	50	It cannot be done in an environment where there is no internet connection.
Error	40	I erroneously erase everything while I am writing.
Accident	38	It is easy to make a mistake by shifting the answer fields.
Forgetting	24	It is hard to remember words.
No battery	21	It is hard when you have no battery.
No device	19	Need to use laptop or phone.
Less hands on	12	I do not write English by hand, so it is difficult to remember English words.
More time	12	It takes a lot of time for me.
Heavy	11	It is hard to bring PC.
Learning curve	10	There was a period when it was unclear how to submit.

Nothing (17), tired eyesight (10), no note-taking (9), troublesome (7), strict deadline (4), cheating (3), textbook required (3), no confirmation (2), technical fear (2), format issue (1), distractions (1), slow typing (1), miscellaneous (16), no comment (19)

the instructor required laptop computers that some complained were too heavy to bring to class (11). Other students referred to the detriment of being connected to do homework, with some mentioning the negative effects on eyesight or tiredness (10) and one participant noting the distractions of the online entertainment (e.g., push notifications or games). Other participants felt that doing activities online consumes more time in general (12), with one specifically mentioning his or her slow typing speed, and others referring to a learning curve (10) when using new technology. Finally, some learners recognized the ability to cheat using CALT (3).

Other comments are consistent with the advantages that participants felt paper provides, for example, participants felt that online activities take away the opportunity to make notes (9) and are less hands-on (12), which many participants relate to one's ability to remember (24). However, that inability to remember may also refer to the fact that there were times when a delay between submission and graded feedback was necessary due to manual grading.

Finally, some disadvantages may be an expression of students' dissatisfaction with the class workload or the design of particular tests, some state submitting work online is troublesome (7), while others did not appreciate the accountability of strict deadlines (4) and the required use of textbooks (3) with their online activities. A couple of learners noted missing notifications of submission (2), and two students expressed a general fear of using computers.

Advantages of Paper-Based Work

Although participants showed a preference for CALT overall, they recognized numerous benefits to using paper and textbook (Table 5.3). Most frequently, students noted that it is easier for them to remember (82) things when they write them down. Some believe the hands-on (52) nature or the ability to visualize (4) writing exercises helps them learn, while others noted that their spelling (9) skills can improve through writing. In addition, some responded that writing on paper is intuitive, so it is easy (40) for anyone to do it conveniently (4) and then simply submit (1) their work physically to the teacher. Some learners even noted that they can write faster (6)

Table 5.3 Advantages of paper/textbooks

Response content	*N*	Example
Memory	82	It is easy to remember words.
Hands on	52	Since I can actually write, I can write and memorize it.
Easy to do	40	I think it is easy to write answers on paper.
Note-taking	28	I can write down some memo and review that page.
Review	27	It is an advantage to see things again on paper.
Writing improvement	26	We can practice writing English.
No battery or connection required	13	You can do it without a network.
No technical errors	10	You can avoid submission errors resulting from computer errors.
Spelling	9	You can learn spelling by writing.
Fast	6	I can write on paper faster than typing on a computer.

Nothing (11), more time for completion (5), convenient (4), no typos (4), rewarding (4), visualization (4), alertness (3), light (2), test simulation (2), technology fear (1), deeper tasks (1), easy submission (1), miscellaneous (30), no comment (20)

than they can type. In addition, learners appreciated having the option to jot down notes (28) while they work, as they can refer to the notes again (27). Perhaps students intended to contrast the online experience, where the content could potentially disappear upon the completion of a test. Finally, some felt using paper is simply an ideal way to practice using English and that this will lead to improved writing (26) in their foreign language.

Some lesser mentioned comments are also notable. For example, some learners felt that they have more time (5) to accomplish tasks when working on paper. It is not entirely clear why the students felt this way, but perhaps it was due to earlier deadlines set for certain CALT assignments. As another benefit, four students said that writing on paper can lead to a more rewarding sense of accomplishment, with another respondent indicating that paper-based tasks are deeper (1). Others suggested that they are physically more alert (3) when they write on paper, while a few students like the fact that they would not need to carry their laptops (2)—a requirement in some classes. Another two learners believed that doing

tests on paper is a better way to simulate standardized tests such as the paper-based TOEIC test.

Finally, some focused directly on the frustrations that they had with CALT. For one, they appreciated that no batteries or online connections (13) were needed. Others noted that they would not encounter any technical errors (10) in their efforts to complete their work. A few respondents appreciated the fact that typing mistakes (4) would not be the reason for their errors. Finally, one student noted a serious fear of technology leads him/her to prefer paper-based exercises.

Disadvantages of Paper-Based Work

In considering this question, some of the comments directly focused on issues or problems with using paper and textbooks, but the majority of responses seemed to contrast the paper-based tasks and CALT (Table 5.4).

The most common complaint contrasting paper and CALT is that students can lose paper (53), which is not a factor for online activities. Nine students also mentioned that they are more likely to forget the assigned tasks when they are on paper, whereas with online tasks, the assigned questions will be on the CALT form, so the range of assigned questions is unmistakable.

Table 5.4 Disadvantages of paper/textbooks

Response content	*N*	Example
Misplaced	53	It is easy to lose paper.
Troublesome	51	It takes a lot of labor to submit.
Slow	40	It takes more time to write than to type.
Inconvenient	26	I can only finish it during class.
Feedback problem	17	I do not immediately know the answers.
Tired	13	My eyes get tired.
Bothersome for teacher	10	It will increase teacher's work.
Forgetting (the task)	9	I forget to do it.
Wasteful	8	It needs papers.
Messy	8	I sometimes cannot read it.

Nothing (33), unmotivating (4), more mistakes (4), no resubmission (3), less output (2), money (2), submission issues (2), attendance required (1), miscellaneous (10), no comment (32)

Another frequent complaint was that paperwork is troublesome (51). Other comments shed light as to the possible reasons for this. Many students complained that it takes more time (40), while others pointed out that paperwork is less convenient (26), inasmuch as there are places where a smartphone would just be easier to use. An additional 13 students said that paperwork makes them tired or sleepy and 10 students noted that the workload for teachers would increase using paper exercises. Other students believed their output decreases when hand-writing tasks (2) or that their own handwritten work is messy (8), making it difficult to read and comprehend. In addition, some felt that they make more mistakes without the aid of spell-checkers or predictive typing (4), clearly contrasting handwritten tasks with and giving an advantage to online ones. Finally, a couple of students noted that submitting paperwork is troublesome because of the risk of missing class, thus being penalized for submitting late (2). One student even noted that, with paperwork, it is imperative that you attend all classes. Whereas with online work, students can receive and submit work even when they cannot attend. This presents less anxiety about falling behind and missing important tasks.

Other less frequently noted problems with paper related directly to the materials used. For one, some felt that the use of paper is wasteful (8), perhaps considering the environmental concerns of using too much paper. In addition, two students noted the extra cost to have textbooks and paper.

Lastly, a number of responses to this question directly considered the advantages of CALT. Seventeen participants noted that you cannot receive immediate feedback in paper-based tasks and homework. Three participants noted the advantages of re-submitting CALT-based tasks. Finally, four students felt that the paper-based tasks are less motivating.

Students' Opinions of Teachers' CALT Usage

The responses to this question (Table 5.5) can be divided into three classes: vague comments about the quality of CALT (145), comments that recognized the advantages for the teachers (46) and comments that focus on the advantages CALT can provide to students (100). However,

Table 5.5 Reasons the teachers use CALT

Response content	*N*	Example
Easy to use	49	It is very easy to understand.
Good	40	I think it is very good.
Score management	37	I think that it is because there is almost no mistake in score, and management is easy.
Usefulness	26	It is very useful.
Convenient	24	Because the internet is convenient.
Feedback	22	I think that it is because you will be able to check mistakes yourself as the graded response is fast.
Summary	19	It is easy for the teacher to check students' answers.
Technology	18	I think that he wants to prepare us for the modern age.
Fun	15	Because he wants us to have fun learning.
Uncertainty	13	I don't know.

Language improvement (13), accountability (10), time saving (7), negative (6), focus the teaching (2), objectivity (1), research (1), paperless (1), no comment (20)

a small number of participants (13) admitted that they are uncertain why the teacher chose to use CALT. Although both teacher and student advantages are important, we feel that it is imperative that students recognize the advantages CALT can provide learners.

The vast majority of the comments—four out of the five most frequent—do not clearly show who benefits from the use of CALT. Examples are the following: CALT is easy to use (40); it is useful (26), convenient (24), and good (40), with no elaboration as to who benefits.

Nevertheless, some students understood how teachers benefit from using CALT. A number of students (37) recognized that CALT provides teachers with a quick and easy way to manage the scoring of student work. Related to this point, seven participants observed that teachers can dramatically reduce the amount of time spent on grading. In addition, one student felt the teacher benefited from doing this particular research, whereas another believed that the teacher was reducing paperwork (1).

Although not the most frequently noted point, some students recognized that teachers also use CALT to assist students in their learning. They understood that teachers value the feedback (22) that learners receive for self-correction. Also, they believe that the summary (19) of responses is useful in the learning process; two students even recognized

that these summaries helped focus the teaching on difficult questions. In addition, some felt that the teacher was trying to provide students with technical knowledge (18) while studying English. In addition, 15 students believed the teachers choose CALT because it is more enjoyable for learners. Thirteen noted that there is a benefit to improving their abilities in English, ten felt the teacher wanted more accountability with deadlines, while another suggested that the teacher used CALT to have a fair and objective scoring system (1).

Retesting by Students

When surveyed about whether the students had experience taking the same CALT more than once, an overwhelming 261 of the students surveyed (85.6%) claimed that they had retaken quizzes at some point; a mere 44 (14.4%) said they had not. However, questions remain concerning why they are retaking a test and, more importantly, how they are reviewing the feedback prior to retaking one.

Feedback from CALT

The students' responses show that they value the results (Table 5.6) and that they know what they should be doing with these data. For one, 87 respondents said that they review their answers, while 49 said that they

Table 5.6 What learners do with CALT feedback

Response content	*N*	Example
Review	87	I do a thorough review.
Check answers	49	To confirm the answers.
Retake	30	I redo it to correct errors.
Strive	27	I feel motivated when I do well, I feel panicked when I do bad, I feel better for trying my best.
Check score	20	I look at my score.
Wants paper results	2	I would like you to publish the results on paper.

Unrelated (47), nothing (20), no comment (46)

check whether their answers are correct. Some students said that they check their scores (20), but it is not clear if this means these students only checked their scores without reviewing. Additionally, 27 respondents stated that the results motivated them to strive to do better on future assignments or at least on a second submission. Of these respondents, 30 repeated that they retake the quizzes, but from anecdotal observations, this may not necessarily mean a student is reviewing, but rather randomly selecting different answers when they retake a quiz.

Some results are a bit complicated to interpret. For example, although 20 respondents reported that they do 'nothing' with the data, it is not clear if their responses were meant to express 'no comment' in writing or if they are admitting to the fact that they did not do anything with the feedback. In addition, a large number of respondents did not adequately address the question (47), as some respondents used this space to summarize or reemphasize points in other sections of the survey. Among the latter, two students used this space to say that they would prefer to receive the results on paper.

Discussion

In this section, we first discuss the research questions before identifying some limitations and practical teaching applications based on the findings.

First, in response to our research questions, our study found the following:

Question 1: Do Learners Prefer Using CALT Rather than Paper-based Methods?

This group of respondents (78%) does generally prefer CALT to paper-based approaches. Motivation for why students have this preference are based on the speed, ease and convenience this approach provides. More specifically, students can take tests at a time and place that is convenient for them, and the simple design makes it easy to complete on one's smartphone or personal computer. Important to the focus of this study, 60 respondents recognized automated feedback as an advantage. Here is one comment that reflected this view:

- With CALT, I can have two positive experiences for my learning. I can receive feedback on my learning quickly, and I can work on typing in English.

Interestingly, when students were asked to write about the disadvantages of CALT, many comments did not focus on the actual test or test-taking experience; rather, they focused on the technical limitations that affect some CALL tasks. Some themes that emerged include internet connectivity, battery consumption and technical errors. In this context specifically, technical errors are a concern that deserve special attention. As the universities are located in Tokyo, most students spend hours each day commuting on trains. While the CALT format makes it easier for students to take advantage of this commuting time, the tests are susceptible to internet connectivity issues. Trains can move through underground sections, which breaks network connections, and in the case of the tests described, some students were logged out and any responses made previously were lost. A similar focus of dissatisfaction was observed by Fargeeh (2015), whose respondents cited internet connectivity and technical hitches as the strongest factors influencing their perceptions of perceived challenges to their CALT experience. This issue was a root of frustration for some students. To overcome internet connection problems, teachers could work on creating test programs that automatically save responses and raise awareness among students about the disconnection risks they will face if they undertake CALT from an insecure location.

Question 2: Do Students Feel There Is a Benefit to Doing Formative Tests in Writing?

Although our sample overwhelmingly confirmed a preference for CALT to paper-based tests, students still cited a range of intangible benefits for a paper-based approach. Most importantly, some students see a connection between physically writing something and memory:

- You can remember it yourself after you write the words.
- I can remember by moving my hand while taking a test.

Moreover, some students noted that paper-based tests were easier to complete, as this was an approach that they were familiar with:

- I think it is easy to write on paper.

Regarding previous educational experiences, one can argue that the first language learning experiences of this specific group (Japanese EFL learners), who have produced Chinese characters (kanji) literally thousands of times using paper and pencil during schooling, may engender a strong connection to physically writing something and committing it to memory. We posit that our respondents may be more inclined to have these beliefs because of this fundamental first language learning experience.

Question 3: What Do Students Do with the Automated Feedback They Receive from CALT?

Focusing on automated feedback specifically, students most frequently noted that they use the feedback to inform their individual review or study. These results echo Fargeeh's (2015) observation that CALT promotes longer periods of engagement with language learning tasks. The following comments reflect this process:

- Inspect the mistake and review. Next, try not to make the same kind of mistake.
- I compare my answer with the correct answer, then I review it.
- Look back and answer what I got wrong.

Test results also appeared to be a source of motivation for 27 respondents:

- The results make me think that I should try harder.
- Test results lead me to studying more.

Moreover, CALT feedback seemed to help some students to see how they compared to their classmates:

- I know how well I am doing compared to the class.

Somewhat related to the above point, there is an awareness that these formative assessments can be repurposed toward measuring one's language learning progress:

- Feedback helps me confirm my English ability.
- I can individually see my progress of English proficiency.

As for the psychological construct of self-regulated learning, where students actively measure their progress and regulate their learning as advocated by Paris and Paris (2001), the examples above illustrate that some students were using CALT and automated feedback to monitor their learning. It is also noteworthy that these actions took place organically for many students. Students did not receive explicit instruction on self-directed learning or how to use CALT to measure their learning progress. This organic promotion of self-regulated approaches was also observed in other reviews of automated feedback by Teo (2012) as well as Wang (2014). Teo (2012) concluded that dynamic feedback for reading comprehension tasks effectively nurtured learners' uses of reading strategies (e.g., meaning construction and monitoring text) as a means of self-evaluation of their own reading performance, whereas Wang (2014) found that using an online test system with automatic feedback efficiently advances learning effectiveness, facilitates learners to understand their learning situation and promotes self-regulated learning.

Along with being a motivator for students to study or review more deeply, automatic feedback data also encourage students to retake quizzes to confirm that they have profited from their initial review of results. Retaking was cited by 30 respondents as a step they take after receiving automated feedback:

- Find the cause and try again.

Moreover, the majority of students surveyed (85.6%) had at least some experience retaking CALT tests. Retaking strategies were also observed in Fargeeh (2015), who found Iranian learners retook tests to gauge learning progress and prepare for upcoming assessments.

Limitations

While this study was able to survey a range of EFL learners, there are some limitations that researchers need to be mindful of when interpreting our results. First, our study focused solely on Japanese university students, aged 18–22 years, with the majority being neither science nor technical majors. Different results may be observed in other contexts. In our case, survey responses are influenced by differences in network connectivity, age, device ownership, digital literacies, language learning experience and homogeneity, as well as specific cultural factors unique to Japan.

To achieve a deeper understanding of the learning strategies used, personal interviews may have uncovered other learner behaviors. In echoing a similar call by Ware and Kessler (2013), we suggest interviewing select students immediately upon their completion of a CALT so as to identify which types of feedback serves students' learning and strategy needs most effectively, and to assess how students are interpreting feedback as well as to see what learning strategies they use to act on the feedback they receive.

Implications

While encouraging, our review suggests that the implementation of CALT could be more supportive for students. We understand that using CALT just to manage grading and test administration ignores the power of this digital learning approach. To better support students' learning, a more comprehensive implementation of CALT for formative assessment tasks ought to feature some or all of the following features:

1. Why CALT? A teacher needs to articulate why the class is doing CALT-based tasks.
2. Training: Teachers have to dedicate class time to learner training on (a) how to take a test, (b) how to interpret results or feedback, (c) how to act upon the feedback received and (d) how to manage internet connectivity issues.

3. Make training cyclical. Teachers (supported by student teachers) ought to return to CALT training throughout the course to refine learners' approaches.
4. Teachers should introduce self-regulated learning and illustrate how CALT can be leveraged to support self-directed approaches (e.g., retaking tests).
5. Encourage students to reflect on feedback with peers and co-create strategies to improve their situations.
6. Do not give up on paper! There are cases where blending CALT and paper-based tests may be more appropriate.

Conclusions

The use of CALT represents a practical approach for language teachers to more efficiently and effectively manage homework as well as formative assessment items. The quality of feedback and its immediate delivery to students indicate that this approach can be a catalyst for students to exercise greater ownership and to reflect upon their learning. Our study reviewed the implementation of two formats for managing CALT: (1) the test function available in Blackboard and (2) the free service, Google Forms and related add-ons. We were able to establish that students overwhelmingly preferred formative assessment being delivered in these formats (as opposed to paper-based testing or homework). Students generally retook the tests for revision purposes, and the instant feedback function appeared to be a catalyst for deeper engagement of students toward the learning tasks. Some important lessons were also learned about how CALT can be effectively incorporated in EFL classes to maximize the learning outcomes.

Despite CALT's long history, we are confident that developments in digital technology will continue to generate interest in this area. The short-term future is particularly exciting. The more seamless embedding of multimedia that can simulate communicative language situations, along with the advancement of interactive tasks (e.g., drag-and-drop), which are unique to this testing format, as well as CALT's own burgeoning powers for measuring productive language (i.e., speaking and writing), all foreshadow a sustained level of interest from teachers and researchers alike.

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6

Blogging in an Autonomous, Constructivist and Blended Learning Environment: A Case Study of Turkish EFL Pre-service Teachers

Işıl Günseli Kaçar

Introduction

Technology in the classroom affords space for linguistically and culturally diverse language learner profiles as well as multiple individual and contextual variables. In light of this, the present study examines weblogs or blogs, which have the potential to be a transformational teaching and learning tool (Brescia & Miller, 2006; Ellison & Wu, 2008; Papacharissi, 2006; Williams & Jacobs, 2004).

Blogs are ubiquitous web-based online diaries with a hyperlinked post structure, an archive facility and regular updates in a reverse chronological order (Alm, 2009; Dyrud, Worley, & Flatley, 2005; Kajder & Bull, 2004; Sim & Hew, 2010). Being easily linked and cross-linked to other blogs to create larger online communities, blog posts are interactive in nature, allowing their visitors to leave comments and messages (Mutum

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& Wang, 2010). They revolve around various topics (Kajder & Bull, 2004), enabling social connectivity, while justifying the space for individual expression (Burgess, 2006; Williams & Jacobs, 2004). Having software with user-friendly interfaces, blogs provide users with an opportunity for the use and management of self-owned blogs, with little or no technical information (Godwin-Jones, 2003). Apart from the aforementioned opportunities provided by blogging, blogs were demonstrated to promote learners' digital competence and provided relief from time constraints, as suggested by Hung (2010).

Though not designed for educational purposes, blogs have been considered a language learning tool for the past few decades and are acknowledged to play a significant role in English as a second language (ESL) and English as a foreign language (EFL) contexts (Aydın, 2014), leading to meaningful learning (Meinecke, Smith, & Lehmann-Willenbrock, 2013). Being easy to create and publish, blogs allow the generation of new personas and the construction of new worlds (Penrod, 2007). In addition, blogging is claimed to be an effective tool for user-centered, participatory learning. As such, it is possible for blogs to facilitate a significant contribution to the "reconceptualisation of students as critical, collaborative, and creative participants in the social construction of knowledge" (Burgess, 2006, p. 105). However, the real potential of blogs in ESL and EFL contexts, particularly in the ESL and EFL pre-service teacher education, remains to be explored. In fact, to date, how to effectively integrate blogs into EFL novice teacher education as an instructional strategy has been underexplored (cf. Aydın, 2014). Accordingly, this chapter investigates EFL pre-service teachers' perceptions regarding the impact of a collaborative blogging experience on their professional development in an autonomous, constructivist and blended learning environment.

Blogs and Constructivism

Constructivism underscores that learners' intellectual engagement is a sine qua non of learning (Garrison, Anderson, & Archer, 2000). The incorporation of blogs in EFL learning and teaching is in line with the constructivist approach, with an emphasis on contextualization (Duffy &

Jonassen, 1991), and contextualized learning (Noel, 2015), characterized by active learner engagement, learner-centeredness, active, social and interactive learning opportunities in an authentic learning environment (Kern, 2006; Sun, 2010) as well as promoting higher order thinking skills (Cunningham, 1991; Duffy & Jonassen, 1991; Farmer, 2006; Ferdig, 2007; Honebein, 1996; O'Donnell, 2006; Sun, 2010).

The co-construction of knowledge in a community of practice via information sharing and dissemination, collaborative content building, the presentation of diverse perspectives and the resolution of conflicting ideas (Petersen, Divitini, & Chabert, 2008; Sykes, Oskoz, & Thorne, 2008; Wang & Hsua, 2008; Xin & Feenberg, 2007) may facilitate cognitive restructuring, new insights and understanding (Meinecke et al., 2013; Wang & Hsua, 2008). In fact, blogging has been shown to encourage high-quality content creation, as the blog content is accessible not only to classmates but to worldwide audiences as well (Halic, Lee, Paulus, & Spence, 2010; Wang & Hsua, 2008).

Blogs provide learner-centered learning environments that can be used as a channel for publishing news and course-related information, or an online platform for collecting resources for learning and exchanging ideas and experiences (de Almeida Soares, 2008), and developing collaboration and social skills for group discussions and assignments (Churchill, 2009; Ellison & Wu, 2008). Given that blogs can be accessible for users globally, they increase opportunities for interaction with individuals having different perspectives and ideas (Comas-Quinn, Mardomingo, & Valentine, 2009; Liou & Peng, 2009). Within a sociocultural framework, the constructivist approach underscores the cognitive development influenced by the society and culture of EFL learners (Driscoll, 2005; Vygotsky, 1978). As well as encouraging independent knowledge construction (Aydın, 2014; Duffy & Cunningham, 1996; Ferdig, 2007; Jonassen, 2003), blogs promote peer learning (Armstrong & Retterer, 2008; Aydın, 2014; de Andrés Martínez, 2012; Godwin-Jones, 2006; Huffaker, 2005; Hung, 2010; Meinecke et al., 2013; Robertson, 2011; Thorne & Payne, 2005). Blogging procures benefits in the realm of classroom dynamics such as the promotion of class community (Miceli, Murray, & Kennedy, 2010), enhanced learner confidence, creativity and class participation (de Andrés Martínez, 2012; Hung, 2010), and the flexibility for the

development of language and literacy skills through collaboration (Warschauer & Liaw, 2011). Learners enjoy the social dimension of blogging, allowing them to create social relations with their readers (Gaudeul & Peroni, 2010), as well as the personal dimension, giving them an opportunity to provide personal responses (Jacobs, 2003). Hence, it fosters the pre-service teachers' development of multiple perspectives and the use of multiple modes of representation (Duffy & Cunningham, 1996; Honebein, 1996). Blogging promotes negotiation and group interaction in EFL learning (Armstrong & Retterer, 2008; Bruner, 1996; Thorne & Payne, 2005). It must be noted that the choice of appropriate content, the provision of scaffolding and the employment of appropriate instructional strategies should be procured so that blog usage should lead to a significant improvement in student learning in instructional settings (Ellison & Wu, 2008; Top, Yükseltürk, & Inan, 2010).

Although blogging activities promote constructivism in a variety of ways, they may also have some negative impact on constructivist learning. Blogs are not found to contribute to constructivism in certain ways, particularly from the perspective of cognitive engagement and collaboration (Noel, 2015). They may impede learners' creation of conceptual links among concepts, which is the case for two dimensions of cognitive constructivism such as engagement and reflection (Biggs, 1996). The quantity of information on the blogs might be overwhelming, conceptually dense or hard to process, and hence, hamper learners' rate of comprehension, which could be counterproductive in terms of cognitive engagement (Robertson, 2011). Students may find it difficult to read or comprehend and make hasty contributions that reflect a lack of in-depth understanding (Robertson, 2011). They tend to provide short comments—not adequate to reflect critical thinking skills—as well as offering minimal amounts of interaction (Biggs, 1996; Deng & Yuen, 2011; Halic et al., 2010). To enhance the quality of learner engagement and raise the level of learner motivation, the workload expectations need to match learner abilities, which requires consideration of such issues as content difficulty and activity timing, as suggested by Robertson (2011).

The previous research studies indicated that student reflections on blogs do not lead to meaningful conceptual developments (Deng & Yuen, 2011; Kerwalla, Minocha, Kirkup, & Conole, 2009). Although

blogging is said to promote cognitive development through the restructuring of knowledge, this affordance changes in line with the learner reflection quality, as Biggs (1996) has reported. In fact, it has been pointed out that students' contributions to reflections tend to be minimal (Kerwalla et al., 2009).

Blogs and Autonomy

Blogging has a natural connection to learner autonomy, which is regarded as "the product of interdependence rather than independence" (Little, 1994, p. 435) or as synonymous with "autonomous interdependence" (Ryan, 1991, p. 227). Autonomous learning is characterized by "a capacity for detachment," "critical reflection," "decision-making" and "independent action" (Bhattacharya & Chauhan, 2010, pp. 1–2). It is also associated with making informed choices, having independent ability, a willingness to make responsible decisions (Campbell, 2005; Crabbe, 1999; Dam, 1995; Dickinson, 1993) and employing learning strategies (Comas-Quinn et al., 2009; Wang & Peverly, 1986). Blogging facilitates autonomous learning characterized by independent decision-making skills and the ability to take independent action, leading to the advancement of self-expression, self-evaluation and a sense of language progress (Bhattacharya & Chauhan, 2010).

Blogs are regarded as an appropriate platform for the promotion of autonomous learning in certain respects (Aydın, 2014), by enabling learners to exercise control over their learning and to make decisions related to content and privacy settings (Comas-Quinn et al., 2009). In other words, blogging encourages ownership in learning (Duffy & Cunningham, 1996). Blogs are also considered a medium for self-expression, self-evaluation and language progress among undergraduate EFL students in student-initiated interactions (Sykes et al., 2008; Trajtemberg & Yiakoumetti, 2011). In addition, language learners can use a personal blog as an electronic portfolio that shows their interlanguage development over time. Along these lines, previous research studies revealed the affordances of blogging for self-reflection and professional development (See Hung, 2010; Yang, 2009), and that blogs contribute to the development of communication skills and relatively quick and effortless access to knowledge for research groups (Sauer et al., 2005). In the same vein, Absalom and de Saint Léger (2011) and de

Andrés Martínez (2012) suggested that blogs can provide learning spaces complementing traditional face-to-face courses. Blogs also offer a learning environment conducive to the creative engagement, leading learners to focus on their interests (Comas-Quinn et al., 2009).

Still other research focuses on how blogs affect learners directly. Blogs facilitate interaction, negotiation and collaboration, which, in turn, leads to learner autonomy (Little, 1994). In line with Farmer (2006), blogs facilitate "centered communication," where the individual is highlighted as a valuable member of the community of empowered learners (Farmer, 2006, pp. 95–96). In light of the compelling arguments for the pedagogic value of blogging and its autonomy-inducing and constructivist features, this chapter aims to explore EFL majors' perceptions of the impact of collaborative blogging as a reflective tool for professional development in an autonomy-inducing, constructivist and blended learning environment. An understanding of these psychological elements is imperative to uncovering how such elements could affect Turkish EFL pre-service teachers.

Research Questions

The study set out to address the following research questions:

1. What are EFL pre-service teachers' perceptions regarding the contribution of a collaborative blogging experience on their professional development from a constructivist perspective?
2. What are EFL pre-service teachers' perceptions regarding the contribution of a collaborative blogging experience on their professional development from an autonomy-inducing perspective?

Methodology

Participants

The study was conducted with a group of 40 Turkish EFL pre-service teachers in the Department of Foreign Language Education of an English-

medium university in Ankara, Turkey, for 15 weeks during the spring semester. The participants' ages ranged from 20 to 23 years. The participants were chosen via convenience sampling. They all had an advanced level of proficiency in English and possessed basic computer skills, but were not familiar with online tools such as blogs and wikis. They had no experience of blog use prior to the implementation of the study.

The Study Context

The collaborative blog project was integrated into a face-to-face course called *Instructional Principles and Methods,* which is offered to the prospective EFL teachers at the Department of Foreign Language Education. The course was offered in a blended learning environment for study purposes. It was a three-credit course and the pre-service teachers met with the instructor and their peers for three hours a week for the entire semester of 15 weeks. The course covered the following themes:

- Lesson planning
- Learning styles and strategies
- Communicative teaching and communicative competence
- Personality factors
- NLP (neuro-linguistic programming) and multiple intelligences
- Sociocultural factors

The course aimed to inform pre-service teachers of the instructional principles and methods underlying foreign language learning and teaching as well as instructing them how to prepare effective EFL lesson plans to cater to the learning needs of diverse learner profiles (with different ages and proficiency levels in English).

The course involved face-to-face course sessions at university and the collaborative online group blog preparation activity. Regarding face-to-face sessions, the pre-service teachers were provided with theoretical input through lectures, classroom activities and course materials related to the different themes covered in the course sessions. In these sessions,

the participants learned how to prepare EFL lesson plans individually, which they later shared with their peers and presented in class so as to receive feedback. Apart from that, the course instructor provided a collaborative learning opportunity for these pre-service teachers in the form of a theme-based blog preparation project designed for groups. Group members were asked to share with their peers, in an innovative, appealing and informative way, diverse aspects of the themes they were assigned, such as new understandings and insights that they might have discovered about the themes.

Collaborative Blog Activity and Procedures

The collaborative blog preparation activity commenced in the fifth week of the fall semester and lasted eight weeks, including a one-week training period. The group members presented their blogs in class upon their completion of the activity. Regarding the collaborative blog preparation activity, at the beginning of the study, the prospective EFL teachers were asked to form groups of four voluntarily and to choose their project partners. Each group randomly chose an English language teaching (ELT)-related theme that was covered in the course and was asked to prepare a blog collaboratively. The groups were asked to find relevant articles (articles about the theories or research studies related to the topic), pictures, polls, questionnaires, blog visitors' opinions, links to websites and discussion questions related to the topic for their peers.

The course instructor, who was also the researcher in the study, provided them with one week of a hands-on blog training program (five hours) that involved how to create and design a thematic blog. The training program was held in the computer laboratory at the department. During the training sessions, the pre-service teachers were instructed to create an individual blog in the computer lab at the department by following the instructions the instructor gave them. Additional materials, primarily tutorials for blog creation, were uploaded to the online course website (METUCLASS) to provide additional assistance to those who needed extra guidance outside of the

classroom environment. *Blogger* was used as the blog creation tool. It is a free online tool for authoring and hosting information, which allows for the creation of thematic blogs that are open to the public. This transparency policy enabled the pre-service teachers to interact with their peers online and increased the accessibility and visibility of their blogs, giving them an opportunity to reflect on and provide feedback on the content published on their blogs. The awareness that their blogs were open to public prompted the pre-service teachers to adopt "a professional, collegial, and semi-formal attitude within and across thematic blog groups" (Savas, 2013, p. 197). Although all of the groups were asked to follow the same instructions for the blog preparation, they were also asked to exercise autonomy in terms of their blog design, with the aim of having them prepare a visually appealing informative blog with an authentic design and interactive tasks.

After the participant pre-service teachers created their blogs collaboratively, they shared their group blog addresses online. Later, they were asked to visit other blogs to read the articles posted, follow the websites and comment on the audiovisual materials such as videos and pictures related to the ELT theme of the blog and then reply to the discussion questions posted on those blogs. The questions were open-ended and related to that particular group's blog themes.

The participants also prepared a video related to their blog preparation process as a group. At the end of the semester, the pre-service teachers presented the final version of their blogs in class. The instructor acted as a facilitator during the blog preparation process. As the blogs were an integral part of the overall course design, their creation and the subsequent assigned tasks were considered as a part of the students' grades. If the participants failed to properly follow the blogging instructions as stated by their course instructors at the beginning of the project, they would not be able to receive the full 20% of the total course grade designated to the thematic blog project.

Research Design

The case study research design was employed in here as it "allows in-depth, multi-faceted explorations of complex issues in their real-life settings" (Crowe et al., 2011, p. 1). It is useful when an in-depth understanding is sought in relation to an issue, an event or a phenomenon in its natural context (Crowe et al., 2011). This single case study aimed to investigate an in-depth understanding of the impact of blogging on the EFL pre-service teachers in an autonomous, constructivist and blended learning environment in the Turkish context and to explore the insights learners gained during the thematic blog preparation activity from different perspectives.

Data Collection

The data in the study were collected via individual reflections, group video reflections and focus group interviews. In the study, the data obtained from a variety of sources were triangulated to ensure reliability. The detailed description of each data collection instrument is provided below.

Individual Reflections

All of the participants were required to prepare 400-word individual reflections based on different aspects of the blog preparation process and post them on their thematic blogs. They were also asked to provide any new understandings or insights they had gained during the thematic blog preparation project: their likes and dislikes about the project, the things they found useful about the project, the challenges they encountered in the project and the suggestions they had for further improvement of the project. Each participant was also asked to visit two blogs each and comment on the blog layout, the audiovisual materials, articles, questionnaires and polls uploaded to these blogs as well as replying to the discussion questions on the blogs they visited.

Group Video Reflections

All of the thematic blog members were asked to get together as a group and shoot a video of approximately five minutes to describe their reflections on the thematic blog project. They were asked to impart their reflections on the blog project in the video recording. Later, each video was inserted into the group's blog, so it could shared with other blog owners and commented upon. In addition, they were asked to provide information on the following: the steps used during the project, the insights they gained and lessons they learned through their project involvement, the challenges and the ways they overcome them, and the things that need to change in the project. The members were asked to shoot the video in Turkish to avoid any potential expression problems in the target language (English).

Focus Group Interviews

Six focus group interviews were held with the participants to explore their perceptions of the contribution of the thematic blog project to their professional development. The interviews were non-intrusive and the students were allowed to speak without any intervention. They were held in the researcher's office and took 45 minutes. They were held in Turkish to ensure that the participants did not have any difficulties expressing themselves. Focus group interviews were preferred as opposed to individual interviews, since the former can create synergy and empower the participants to express their ideas from different perspectives (Cohen, Manion, & Morrison, 2011).

Data Analysis

The data in the study—collected through the semi-structured interviews, individual and group reflections as well as group video reflections—were transcribed by the researcher, who was also the course instructor. Back-translation was employed to the transcribed data to ensure reliability. The

transcripts, which were originally in Turkish, were translated into English and then back to Turkish. The member-checking technique, also known as participant or respondent validation in qualitative inquiry methodology (Rager, 2005), was also employed to improve the accuracy, credibility and validity of the semi-structured interviews, focus group interviews and group video reflections (Barbour, 2001; Coffey & Atkinson, 1996; Lincoln & Guba, 1985). The transcripts of the data collected from the three different sources were sent to the pre-service teachers via mail so that they could check the transcripts for accuracy.

All of the data collected from the participants were subjected to inductive content analysis, which incorporates open coding, category creation and abstraction (Elo & Kyngas, 2007; Hsieh & Shannon, 2005). During the open coding phase, the researcher and a departmental colleague (experienced in qualitative data analysis) read the reflections iteratively to gain a sense of the whole and to extract the main points or ideas that the participants were trying to express. Later, they divided the reflections into smaller parts, to form condensed meaning units, by ensuring the retention of the core meaning. Next, they labeled these condensed meaning units by formulating codes, which allowed grouping the data into categories and sub-categories. Following this, they continued the process of abstracting data to a higher level, forming the recurring themes by grouping two or more categories together (Elo & Kyngas, 2007; Hsieh & Shannon, 2005). When they failed to concur at any stages of the inductive analysis, the researchers turned back to the meaning unit and checked whether there was a match between the meaning unit and the category or they revisited the preliminary coding and revised it to come to an agreement (Erlingsson & Brysiewicz, 2017). They resolved areas of discrepancy via discussion.

Results and Discussion

The findings obtained from the study are presented in line with the research questions in this section. Regarding the first research question, the teachers' perceptions of how the collaborative blogging activity affected their professional development from a constructivist perspective,

the main themes and sub-themes that emerged in the data analysis are displayed in Table 6.1.

As can be seen from Table 6.1, the pre-service teachers, in general, held favorable views concerning the impact of the thematic blog experience on their professional development. They reported various affordances of the blog project, which are in line with constructivist principles (Driscoll, 2005), with a couple of challenges.

Regarding their professional development, prospective teachers revealed that the learner-centered constructivist learning environment, the first main theme, established through the thematic blogging activity, facilitated knowledge construction. The pre-service teachers indicated that through the blog preparation activity, they felt they were actively engaged in knowledge sharing and reported enjoying the feedback exchange with other group members while expanding their pedagogical content knowledge (Godwin-Jones, 2006; Petersen et al., 2008; Sun, 2010). The following quote is revealing:

- I gained new perspectives related to teaching ELT to diverse learner profiles. The audiovisual materials as well articles were really informative. I also liked commenting on the discussion questions on other blogs and being involved in a fruitful academic exchange of new perspectives and ideas on an online platform.

In line with their active engagement in the thematic blogging activity, pre-service teachers played a variety of roles simultaneously. Instead of being passive recipients of knowledge without any control over their learning process, they acted as experts, co-learners and instructors. They expressed their satisfaction in becoming subject matter experts through their involvement in the thematic blog preparation project, in accordance with Savas (2013).

Being part of an interactive community of practice is the second main theme uncovered. The pre-service teachers' engagement in the blog preparation helped in the establishment of an online community of practice where they could participate in the co-construction of knowledge and collaborative content building (Sun, 2010; Sykes et al., 2008; Wang & Hsua, 2008; Xin & Feenberg, 2007). This collaborative learning experi-

Table 6.1 Themes regarding EFL pre-service teachers' perceptions on the impact of blogging experience on their professional development from the constructivist perspective

Main themes and sub-themes	Frequency
1. A learner-centered constructivist learning environment	**145**
a. Knowledge construction	30
b. Knowledge sharing	38
c. Pedagogical content knowledge development	32
d. Feedback exchange	25
e. Playing multiple roles in the blogging activity	20
2. An interactive community of practice	**120**
a. Knowledge co-construction	29
b. Collaborative content building	26
c. Situated education	30
d. The provision of an opportunity to share diverse perspectives	35
3. The development of negotiation and problem-solving skills	**50**
a. Learning how to approach diverse perspectives with respect	30
b. Conflict resolution skill development	20
4. The development of digital competence	**92**
a. Digital skill development	30
b. Online content creation and activity design skill development	32
c. Raising one's digital self-efficacy level	30
5. Enhanced motivation to learn in a relatively stress-free learning environment	**169**
a. A sense of control over one' s own learning	28
b. The creation of high-quality content	29
c. A ubiquitous learning opportunity	25
d. A contextualized learning opportunity	32
e. A peer learning opportunity	27
f. The promotion of meaningful learning	28
6. Blogging challenges	**72**
a. Cognitive challenges	**30**
i. Information processing difficulty due to the overwhelming quantity of information on the blog	15
ii. Difficulty with the comprehension of the written, audio and video content provided on the blog	15
b. Socio-constructivist challenges	**42**
i. Time constraints regarding the detailed, insightful, critical peer comment provision	20
ii. Time constraints regarding the quantity of the peer comments	22

ence, as Comas-Quinn et al. (2009) also suggest, reflects the tenets of situated education by emphasizing the importance of community on learning. The prospective teachers pointed out they had fruitful interaction and collaboration with the other group members during the blog preparation process (Sun & Chang, 2012). They reported enjoying the provision of opportunities to share their diverse perspectives.

The development of negotiation and problem-solving skills is the third main theme suggested by the pre-service teachers in the study. The participant teachers emphasized that the involvement in the blog preparation project improved their ability to negotiate and developed their problem-solving skills (Bhattacharya & Chauhan, 2010; de Andrés Martínez, 2012; Trajtemberg & Yiakoumetti, 2011). They also pointed out that they learned how to approach diverse perspectives, values and opinions with respect while trying to gently resolve the conflicts they faced during the blog project. The following quote is an illustrative example of how the participants resolved the conflicts they faced during blog preparation:

- In general we had a nice relationship in our group but that does not mean that we always agreed on the decisions that we made while preparing our blog. Sometimes we had a hard time making a decision as a group, particularly when deciding on the layout and choosing the most appropriate instructional materials to upload to our blog. In such cases, we discussed different alternatives together and by discussing the pros and cons of each, we tried to find the best alternative.

The development of digital competence is the fourth main theme that stands out in the study. The pre-service teachers pointed out the contribution of the blogging experience to their digital competence. They reported that their engagement in the blog design, online materials uploading and the preparation of online activities raised their technological self-efficacy level, in line with Hung (2010).

The enhanced motivation to learn in a relatively stress-free learning environment is the fifth main theme that emerged in the study. The pre-service teachers reported some affective benefits of blogging such as enhanced learner motivation, which echoes de Andrés Martínez (2012)

and Stevens et al. (2008). The participants emphasized that their involvement in the thematic blog project had a favorable influence on their motivation to learn the course content, as they were quite satisfied by the sense of control they had over their learning that blogging provided for them (Comas-Quinn et al., 2009). They revealed that they felt highly motivated to create high-quality content due to the availability of the content worldwide (Halic et al., 2010; Wang & Hsua, 2008). They also reported that classroom anxiety about face-to-face teacher-student interaction disappeared in the context of blogging (Bhattacharya & Chauhan, 2010). The teachers felt relaxed while interacting with other blog members in a blended learning environment that is relatively non-face threatening. The pre-service teachers in the study indicated that the student-centered learning environment and the contextualized learning opportunity provided by the blogs further fueled their motivation to learn the course content (Comas-Quinn et al., 2009; Istifci, 2011; Kim, 2008). The blog preparation activity encouraged them not only to construct knowledge independently, but also to learn from their peers by reading different points of view, commenting on peers' posts and debating them (Kim, 2008; Meinecke et al., 2013). The participants regarded thematic blogs as "external sources to further their understanding" (Noel, 2015, p. 619), in addition to the theoretical input supplied by the course instructor at university (see also Halic et al., 2010; Kim, 2008; Meinecke et al., 2013). The prospective teachers reported that the archive facility the blogs provided enabled their accessibility of the previously posted information, making it possible to generate new connections between ideas, fostering meaningful learning (Noel, 2015). The participants also mentioned their satisfaction with the ubiquitous learning opportunity without any temporal boundaries that blogs provided for them (Comas-Quinn et al., 2009; Halic et al., 2010).

Besides the usual and expected technical challenges, there were also blogging challenges from a constructivist perspective, the final main theme related to the first research question. As previously reported in Robertson (2011), some prospective teachers reported cognitive challenges such as finding the quantity of information on the blog overwhelming and hard to process. Thus, they failed to attain a detailed understanding of the long articles due to time constraints. They also

reported finding some of the instructional materials on the blog conceptually dense, leading them to lose their concentration on these materials. In addition, they acknowledged that some of the videos uploaded to the blogs were largely inaccessible to them.

The participants also mentioned challenges from the socio-constructive perspective. They indicated that time limitation was an issue that affected the quantity and quality of their comments on their peers' blogs, which was pointed out by Deng and Yuen (2011) and Halic et al. (2010) as well. They felt they could not provide insightful responses to discussion questions that reflected critical thinking under time pressure (cf. Kerwalla et al., 2009). To overcome the challenges, the prospective teachers indicated that they tried to allocate more time to reading and understanding lengthy blog materials. In cases where they could not understand the blog posts, they consulted the blog owners for a more detailed explanation in the form of peer comments on the blogs.

As for the second research question, pre-service teachers' perceptions of the impact of thematic blogging on professional development can be seen as autonomy-inducing to a certain extent. The themes that emerged in the study pertinent to this research question are shown in Table 6.2.

As Table 6.2 indicates, taking responsibility for one's own learning is the first main theme that emerged in the study from the autonomy-inducing perspective. The pre-service teachers reported that they were content with directing, monitoring and managing their own learning process. To be more specific, they liked the idea of being responsible for designing their blogs, acting as the sole decision-maker for the layout and organization of their blog elements. They enjoyed exploring various resources on their blog topics by themselves and choosing the most relevant ones to upload to their blogs, in addition to making informed choices regarding their blog preparation. While choosing the instructional sources to upload to their blogs, they reported conducting thorough research. They were of the opinion that the thematic blog preparation facilitated their independent decision-making skills as well as learner interdependence (Bhattacharya & Chauhan, 2010).

The pre-service teachers relied on their peers more than the instructor during the blog preparation. In fact, the minimum instructor intervention paved the way toward creative task engagement of the pre-service

Table 6.2 Themes regarding EFL pre-service teachers' perceptions on the impact of blogging experience on their professional development from the autonomy-inducing perspective

Main themes and sub-themes	Frequency
1. Taking responsibility for one own learning	**145**
a. Decision-making skill development	30
b. Making informed choices related to blog preparation	29
c. Learner interdependence through peer scaffolding	26
d. Peer learning	30
e. The establishment of a collegial spirit among blog members	30
2. Cognitive skill development	**148**
a. Academic reading and writing skill development	**89**
i. Higher-order critical thinking skill development	30
ii. The development of effective written expression	29
iii. Paraphrasing, summarizing and referencing skill development	30
b. Research skill development	**59**
i. The development of revision skills	29
ii. Peer feedback provision skill development	30
3. Metacognitive skill development	**132**
a. The freedom to initiate, monitor and manage their own learning process	34
b. The freedom to determine the learning outcomes of the thematic blogs	33
c. The stimulation of the independent thinking process	35
d. Being motivated to think outside the box	30
4. Pedagogical content knowledge development	
a. The provision of a blended learning space complementary to the traditional learning space	30
b. Gaining new insights into differentiated instruction and how to cater for the needs of diverse learner profiles	32
c. Raising awareness toward the importance of individual differences in learning and teaching	32
5. The development of a reflective teacher identity	**126**
a. Reflection on one's strengths and weaknesses as a prospective teacher	26
b. Reflection on one's teaching philosophy and teaching style	30
c. Enhancement of one's conceptual understanding of the instructional principles	35
d. Pre-service teachers' engagement in online professional development	35
6. The sense of empowerment as a prospective teacher	**64**
a. Promotion of centered communication	32
b. Personal expressive dynamics of blogging	32

(*continued*)

Table 6.2 (continued)

Main themes and sub-themes	Frequency
7. Blogging challenges from the autonomy-inducing perspective	**43**
a. Instructional challenges related to the choice and evaluation of instructional materials on the blog	25
b. Organizational challenges related to the group meetings for the blog members	18

teachers (Comas-Quinn et al., 2009), their collaboration with their peers and their use of online resources, promoting the co-construction of knowledge and peer learning opportunities, in agreement with Bhattacharya and Chauhan (2010). This echoes what Trajtemberg and Yiakoumetti (2011) conclude, "blogs may promote scaffolding in the sense that less knowledgeable learners can learn from more advanced learners simply by being exposed to their peers' work" (p. 2). Throughout the thematic blogging process, a collegial spirit was established among the blog members through scaffolding (Savas, 2013).

Cognitive skill development is the second main theme voiced by the participant teachers from the autonomy-inducing perspective. The pre-service teachers indicated that their collaborative engagement in blogging enhanced their research skills, which is in accordance with Bhattacharya and Chauhan (2010). While searching for obtaining relevant, informative and engaging instructional resources to upload to their thematic blogs, the pre-service teachers reported developing their higher-order critical thinking skills such as analysis and synthesis (Witte, 2007) as well as their academic reading and writing skills such as the development of effective written expression in general, facilitating their writing process by developing their paraphrasing, summarizing and referencing skills (Colwell, Hutchinson, & Reinking, 2012; Johnson, 2010; Klages & Clark, 2009; Palombo, 2011; Sun & Chang, 2012). Blogging, as pre-service teachers reported, fostered written work revision, feedback reception and provision as well as participation in peer reviews (Aydın, 2014; Liou & Peng, 2009).

Metacognitive skill development emerged as the third main theme in the study in relation to the autonomy-inducing perspective of blogging for prospective teachers. The participants regarded metacognitive skill

development as the greatest contribution to their professional development, which echoes Lee (2010). The pre-service teachers in the study indicated that they were actively involved in the decision-making process throughout the thematic blog preparation activity. They emphasized that they took the initiative to choose their topics, organizing their blog layout and determining which instructional resources to upload to the blog. This stimulated their independent thinking process and facilitated their classroom implementation, which echoes the findings of Bhattacharya and Chauhan (2010). Thanks to the freedom they had to initiate, manage and monitor their learning process (Dam, 1995) and to determine the learning outcomes of their thematic blogs (Crabbe, 1999), the pre-service teachers became motivated to think outside of the box (Bhattacharya & Chauhan, 2010).

From the autonomy-inducing perspective, the pedagogical content knowledge development is the fourth main theme that is emphasized. Participants indicated that blogs provided them with a blended learning space complementary to the traditional learning space in face-to-face courses, which reinforces de Andrés Martínez (2012). The following quote expresses the pre-service teachers' views concisely:

- I think blogs provided us with an additional learning opportunity in terms of our professional development in addition to the things we learnt in our course sessions at university.

Pre-service teachers also added that their involvement in the blog preparation process, particularly, enabled them to gain insights into differentiated instruction and how to cater for the needs of diverse learner profiles, raising their awareness toward the importance of individual differences in learning and teaching. They remarked that they found the learning strategies introduced on the blog very useful and decided to incorporate some of the strategies into their own teaching in the future.

The provision of an opportunity for the development of a reflective teacher identity is the fifth main theme regarding the autonomy-inducing perspective (Yang, 2009). The participants pointed out that they reflected on the insights they gained into the professional learning experience through blogging both individually and collaboratively at each step of the blog

preparation process (Hung, 2010; Ryan, 1991; Yang, 2009). They emphasized the important role the blogging experience played in shaping their teaching philosophy and teaching style, in reflecting on their strengths and weaknesses as prospective teachers and in enhancing their conceptual understanding of the instructional principles. Blogs also served as a tool for the pre-service teachers to be engaged in online ongoing professional development.

The prospective teachers also reported clarifying their vague understanding related to important instructional principles and concepts as well as their misconceptions. The following quote is revealing in this respect:

- What I learnt from the NLP and multiple intelligences blog is the term *language ego*. I found that I heard of it before. I think I was familiar with the concept but I did not know it is called language ego.

The sense of empowerment as a prospective teacher is the sixth main theme that was mentioned by the participants concerning the contribution of the thematic blogging activity to the professional development from the autonomy-inducing perspective, which echoes Farmer (2006). The pre-service teachers in the study reported that the they felt empowered as prospective teachers through their blogging experience. The prospective teachers pointed out that the personal expressive dynamics of blogging also helped them gain a sense of individual empowerment and a sense of self-worth.

As for challenges from the autonomy-inducing perspective of blogging, the last main theme is concerned with the choice and evaluation of the blog materials. Pre-service teachers in the study found it difficult to choose the most reliable, effective and appropriate instructional materials from the internet. Apart from the instructional challenge, they pointed out an organizational one. They reported having difficulty organizing the group work sessions, as they found it hard to schedule a meeting with all of their group members. They reported handling this challenge by holding Skype meetings and forming Google documents for online collaboration.

In short, as this small-scale case study demonstrated, the provision of a collaborative blog-enhanced blended learning environment for the EFL pre-service teachers, in general, contributed to their professional development in different ways from a constructivist and autonomous learning perspective, along with presenting certain challenges. The findings indicate that the collaborative thematic blogging experiences can serve as a fruitful experiential professional learning opportunity for prospective teachers and act as a bridge to the long-standing gap between theory and practice. The study revealed that the prospective teachers enhanced their digital as well as pedagogical competence in a collaborative and autonomy-inducing blended learning environment that involved peer support and scaffolding. The provision of such an environment for the prospective teachers lowered their anxiety levels related to technology integration, diminishing their barriers toward learning how to incorporate Web 2.0 tools into their future teaching career as well as raising their technological self-efficacy.

Conclusions

This case study pointed out that blogs can provide online, innovative and interactive learning spaces complemening traditional learning spaces; in other words, blog tasks promoted autonomous and constructivist learning for these prospective EFL teachers. The findings indicated that the integration of blogging activities into an EFL pre-service teacher education program proved to be of great importance, as it provides an opportunity for the prospective teachers' voices to be heard by allowing them to self-direct their own professional development in a collaborative learning environment. The study also revealed that the integration of collaborative blogging activities not only enhanced prospective teachers' intrinsic motivation toward developing their pedagogical and digital competence, but also contributed to their ongoing professional development. In addition, the blogging experience triggered the prospective teachers' self-directed capacity to reflect on their learning experience, make informed instructional decisions and take wise actions (Brookfield, 1993), using their cognitive, affective and metacognitive skills in an autonomous and constructivist learning space.

The study also pointed out the link between learner independence and learner interdependence, which is facilitated by group coordination, peer learning and peer evaluation (cf. Bhattacharya & Chauhan, 2010). In fact, the findings show clearly that learner autonomy thrives in collaborative educational settings which promote learner interdependence, particularly through the group spirit created via the online community of practice, keeping in perspective the arguments of Bhattacharya and Chauhan (2010), Little (1994) and Ryan (1991).

The results act as a call for action to consider the potential of weblogs in the instructional realm for EFL pre-service teachers, which reminds us of Robb (2006), suggesting that "technology is no longer in the exclusive realm of specifically trained CALL (Computer Assisted Language Learning) instructors, but something which all instructors will be increasingly incorporating in their classes" (p. 346).

The findings also act as a reminder for EFL teacher educators in that prospective teachers who are novice bloggers should be provided with continuous guidance and scaffolding in order to cope with the technological challenges so they may be able to enjoy the benefits of blogging fully, tapping into its full potential for their professional development (Ellison & Wu, 2008; Top et al., 2010).

It must, however, be stated that the findings of the study should be interpreted with caution due to several limitations such as the small sample size, the inability to monitor the peer comments due to time constraints and a lack of focus on the impact of the blogging experience on prospective teachers' interlanguage development or on their professional development over time. In addition, a longitudinal follow-up study might be suggested whereby practicing teachers, who have had such blogging experiences as prospective teachers, are observed in their English K-12 classes to see if and how they integrate weblogs into their lessons.

Several implications for teachers might be drawn from a study such as the present one. To begin with, the thematic blog activity might be incorporated into language skills courses as well as content-area courses in the EFL learning environment, taking into consideration the exam-oriented traditional instructional settings where learners are regarded as passive recipients of knowledge. The integration of the blogging activity into content-area courses, which was illustrated in this chapter, may stimulate

participants' research skills and enhance their amount of exposure to authentic materials online. The blog project is likely to contribute to the development of group cohesion, strengthening the group dynamics in class, enhancing the amount of knowledge sharing and negotiation of meaning. The blogging activity has the possibility to create a collaborative learning space for learners so that they can engage in self and peer reflections, sharing ideas on a virtual platform with their peers, irrespective of time and space limitation. The use of asynchronous tools such as blogs is likely to create a comparatively stress-free learning environment for introverted students, who have a tendency to avoid sharing their views in traditional settings for fear of losing face among their peers. The integration of blogging into content-area courses should enable prospective language teachers to adopt a holistic perspective toward learning and teaching and enable them to have a deeper understanding of their students—they can become more cognizant and empathetic teachers—or put another way, simply better teachers.

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7

EFL Student Engagement in an English for Specific Purposes Tourism Class: Flipping the Class with Facebook

Quyen Thi Thanh Tran and Loi Van Nguyen

Introduction

Research on student engagement is of paramount significance to educational innovations, especially in contexts where instruction remains lecture based and didactic. It has been suggested that engaging students in active learning fosters improved learning outcomes, motivation and attitudes toward learning (Bransford, Brown, & Cocking, 2000; Eison, 2010; Freeman et al., 2014). Huba and Freed (2000) observed that while most college faculty used lecturing, innovative methods were found to be more effective in engaging students and promoting learning. In the educational context of Vietnam, however, Le (2001, p. 35) has pointed out that "central to pedagogical practices is the traditional view of the teacher-student relationship [which] supports teacher-centred methods and a structured curriculum." This divide warrants attention toward the

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possible reformation of teaching and learning approaches to foster students' engagement in their learning.

In this high-tech era, a shift toward the application of technology in education has advanced rapidly, as the students of the twenty-first century show increased comfort with the use of information and communication technologies (Somyurek & Coskun, 2013). Consequently, alternative methods and models have evolved the classroom, one of which is the flipped classroom, which has attracted increased attention of educational institutions and has generated a considerable body of empirical research (Brunsell & Horejsi, 2011; Butt, 2014; Clark, 2015). The flipped classroom model employs educational technology to provide direct instruction of key content and course materials before class while using the valuable face-to-face class time for engaging students in active learning activities to foster a deeper understanding of contents and to have them develop problem-solving skills. Such activities as discussion, self-reflection and case studies, which require high levels of participation, can be created to engage and motivate students in cognitive processes that can improve their skills and knowledge (Prince, 2004). In fact, evidence on the potential success of flipped classroom instruction (FCI) has been accumulating in the literature (Gross, Pietri, Anderson, Moyano-Camihort, & Graham, 2015; Morgan, 2014; Tran & Nguyen, 2018). However, very few studies explore student engagement in this instructional model (Norazmi, Dwee, Suzilla, & Nurzarina, 2017; Steen-Utheim & Foldnes, 2018), with a focus on learning English for specific purposes (ESP) in the foreign language context and none using Facebook to flip the ESP instruction. This chapter thus presents the results of a study conducted at a large university in the Mekong Delta of Vietnam to address this need.

Engagement in Learning

The term 'engagement' has been defined in different ways in the literature. Coates (2009) describes engagement as students' participation in activities and as conditions which are inclined to produce high-quality learning. In more detail, Harper and Quaye (2009) view student engagement as "par-

ticipation in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes" (p. 2). This definition dovetails nicely with the notion of flipped classroom instruction, which comprises students' participation in both online learning outside and inside-classroom activities.

Engagement is composed of various dimensions and attributes. For example, the Center for Postsecondary Research (2012) presents a framework of student engagement which is composed of five dimensions: the level of academic challenge, active and collaborative learning, student-faculty interaction, enriched educational experiences and a supportive campus environment. Frydenberg, Ainley and Russell (2005) describe three aspects of engagement: behavioral, emotional and cognitive. Behavioral engagement includes positive conduct, rule obedience, adherence to conventions, at-hand task involvement, persistence, attention and effort, as well as participation in school- or university-related activities. Emotional engagement involves affective reactions to the classroom setting (such as interest, boredom or anxiety), to the institution and to the teacher. Cognitive engagement relates to investment in learning, intrinsic motivation and self-regulation.

According to Fredricks, Blumenfeld and Paris (2004), student engagement consists of behavioral, affective or emotional, and cognitive domains. Behavioral engagement is typically defined as participation in either academic or extracurricular activities, on-task attention, effort, persistence and positive conduct. Affective or emotional engagement involves enjoyment, a feeling of belonging, value and positive emotions. Finally, cognitive engagement is clearly defined as individuals' persistence, beliefs and self-perceptions regarding learning, as well as planning, investing and self-regulating. In other words, cognitive engagement comprises the use of sophisticated learning strategies and active self-regulation aspects in making sense of information (Fredricks & McColskey, 2012).

The aim of this study, then, is to examine students' engagement in the flipped instruction, following the conceptual framework of Fredricks et al. (2004) because it offers specific descriptions. Figure 7.1 illustrates this engagement framework.

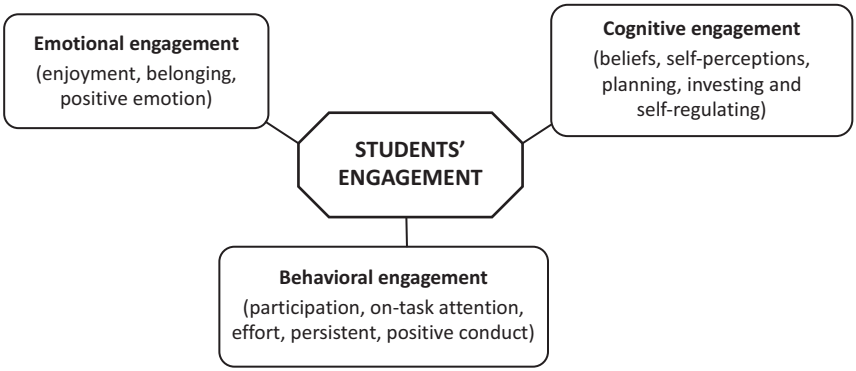


Fig. 7.1 Engagement framework (adapted from Fredricks et al. (2004))

Potential Learner Learning and Engagement in Flipped Instruction

Recent research has confirmed that appropriate use of technology can foster student engagement and enhance their learning. A review of over 350 studies in foreign and second language learning situations comprising classroom-based technologies, individual study tools, network-based social computing, and mobile and portable devices showed that a great number of studies confirmed the positive effects of information and communications technology (ICT), engendering joyful experiences, more engagement in the process of learning and a more positive attitude toward learning (Golonka, Bowles, Frank, Richardson, & Freynik, 2012). Using ICT to blend learning modes can also create a favorable learning environment for better learning achievements (Mason, Shuman, & Cook, 2013; O'Flaherty & Phillips, 2015).

Emerging as a blended learning model (Franciszkowicz, 2008), flipped classroom instruction, also known as the inverted classroom or reversed instruction (Bergmann & Sams, 2012), facilitates a shift of focus from the teacher to learners to create active learning and participation. According to Pettis (2014), in flipped instruction, the focus falls on transforming the learning space in class to an interactive one, with the educator guiding students as they engage with the subject matter. The instructor becomes continuously creative, monitors and facilitates student learning, using in-class time not only to actively engage students in the learning

process, but also to support them individually (Hamdan, McKnight, McKnight, & Arfstrom, 2013). Gerstein (2011) sees the flipped classroom as a method to provide room for students to solve problems, work out advanced concepts as well as engage in collaborative learning.

Flipped classroom instruction is thus aligned with the constructivist learning perspective as well as the general principle underlying the communicative approach. Accordingly, students learn by creating new knowledge, building upon ideas, events or activities they have acquired before (Uredi, 2013). The mechanics of a flipped learning approach supports constructive learning through student-centered activities outside and inside the classroom. The roles of students and teachers can be actively transformed as students become more engaged by setting their own goals and participating in meaningful learning activities (Cubukcu, 2012). The teacher, in contrast, becomes a facilitator who "provides resources, helps students plan and follow their own interests, and keeps records of learners' activities and use of time" (Chall, 2000, p. 29). Underpinning the flipped classroom model is also the view of social learning, which encourages social interaction for successful cognitive growth (Vygotsky, 1978).

The desired goals for flipping classes have also been contemplated and discussed. Brame (2013) proposed four principles, namely (1) opportunities for students to gain exposure to the language input prior to class meetings, (2) an incentive for students to prepare themselves before class, (3) a mechanism to assess students' understanding and (4) in-class activities that focus on higher-level cognitive activities. Recently, Hung (2017, p. 188) proposed *F-L-I-P* principles for ESP courses. The *F* principle refers to a flexible language learning environment to provide comprehensible input with flexibility, accommodating individual preferences and proficiency levels as a means for creating acquisition-rich flipped classrooms for second language (L2) learners. The *L* principle indicates a language learning culture which offers interaction opportunities by using active learning strategies to increase learners' L2 exposure and use in the flipped classroom. The *I* principle refers to a design with an intentional focus on target L2 meanings and forms to connect the pre-class and in-class activities. The *P,* standing for a professional language educator, is to maintain updated professional knowledge and skills to build a transformative learning community in the flipped classroom that empowers L2 learners to be active

and responsible for their own learning. The design of the present flipped classroom was based on the two frameworks, since they are compatible with flipped classroom stages and the nature per se of ESP courses, that is, a flipped English for tourism course, focusing on both form and content.

Concerns About Flipping Related to Student Engagement

In the flipped classroom, advanced processing of ideas and concepts is supported by the teacher and peers (Gilboy, Heinerichs, & Pazzaglia, 2015). For Bishop and Verleger (2013), flipped classrooms should require students to review the course content online prior to attending class and then spend time on problem-solving activities together with exercises in the classroom. Behaviorally, students can participate more efficiently in the classroom, as they are prepared in advance in terms of knowledge. Authentic materials available online can be exploited to engage students emotionally as well. Cognitively, Bergmann, Overmeyer and Willie (2011) claimed a flipped classroom to be an environment where students are responsible for their own learning and receive personalized instruction.

Nonetheless, some concerns have been raised about how to best create student engagement in flipped instruction. According to Chen Hsieh, Wu and Marek (2017, p. 17), "the key to success of the flipped instruction is whether the students do the preparation work outside of class. If they do not, the teacher cannot engage them at an advanced level inside the class," where they can apply what they have learned and expand their understanding. Therefore, there should be a question-and-answer component or some other means to check students' participation so that they can be fully engaged in their learning. McLaughlin, White, Khanova and Yuriev (2016) further argue that the feedback students receive from their performance during the in-class phase of flipped instruction can elicit reflection upon on their learning experience so they are able to self-regulate the learning process, which contributes to generating more cognitive engagement. To Dörnyei and Ottó (1998), perceived successful learning experiences stimulate students to seek out the sources of their success, further empowering them, which leads to engagement with course materials

and additional language gains. Reeve and Tseng (2011) stated that students' behavioral, emotional and cognitive engagement can be stimulated if they have a positive relationship with their teachers and receive instructional support.

Another promising measure aimed at encouraging student engagement so they complete the assigned tasks before class may be the extrinsic motivation generated by awarding grades. To Looney (2003), grading eliminates the possibility of poor performance in one area of a course being offset by good performance in another. In definitional grading, the teacher defines the minimum requirements for each component of a course. Students naturally become more involved in all tasks assigned, since this strongly influences their final grade of a subject matter.

Student Engagement in Flipped Classrooms

Empirical research has provided evidence that active learning in flipped instruction promotes student engagement, ultimately leading to increased gains in knowledge as compared to the traditional lecture approach (Smith & Cardaciotto, 2011). However, research has revealed contrasting evidence regarding its impact on students' participation and learning. Research on student engagement in the flipped classroom, especially in English as a foreign language (EFL) classrooms, remains scant.

Smallhorn (2017) has investigated the positive impact of a flipped classroom on student engagement and academic achievement within various fields of study. All pre-class preparatory resources were made available through a Moodle platform called Flinders Learning Online (FLO). The students watched short online videos and completed 11 summative quizzes over the semester; each was designed to include one non-assessed reflection question. Face-to-face time was used to problem-solve and discuss learning content at a deeper level. The study used data from a survey, attendance records, learning analytics and exam scores before and after the implementation of the flipped classroom. The results indicated an increase in student engagement and a positive attitude toward the learning method, but no increase in student learning outcomes. Qualitative evidence from Steen-Utheim and Foldnes (2018) also substantiates student engagement in the flipped classroom. A total of 12

students out of 235 first-year mathematics students in a Norwegian business school were invited to in-depth interviews after two semesters of learning mathematics. The flipped model was applied in the first semester, whereas students followed the conventional lecture-based approach in the second semester. The flipped classroom provided teacher-made videos online as preparation material prior to each class session. The results indicated that overall the students showed a more positive learning experience and higher engagement in the flipped classroom.

In a different context, Norazmi et al. (2017) explored student engagement in a technical writing course using flipped classroom instruction to prepare students to write a research proposal for their final year. A total of 118 student participants followed a flipped design through three main stages. In the pre-flipped classroom approach (FCA) stage, each student listed 20 interesting problems; then, groups of five compiled a list of the problems they would propose for their own research in the while-FCA stage. In the post-FCA stage, the teacher addressed common problems such as choice of topics, length, depth, literature review, grammar and others; then, the students made corrections and submitted the revised copy. Using a questionnaire based on the conceptual framework of Fredricks et al. (2004), Norazmi concluded that the flipped approach could engage students in the writing process.

In an EFL context, Nguyen (2018) investigated the effect of the flipped model on English language learners' skills at a Vietnamese university. Findings from a semi-structured interview indicated that the students appreciated the flipped approach. Likewise, Tran and Nguyen (2018) also conducted a quasi-experimental study with 60 EFL students and found that the students had a positive attitude toward this model. These studies, however, failed to examine learners' engagement fully.

Other studies have revealed contrasting evidence. Strayer (2007) reported that students were less satisfied with the flipped class organization and the various learning activities, which made students feel 'lost.' Furthermore, Toto and Nguyen (2009) noted that students were easily distracted when watching the video lectures and suggested that further classroom time be added for problem-solving and hands-on activities, while video lectures be used to explain engineering concepts and provide examples and solutions. Also, students in disadvantaged areas were found

to have technical problems related to the internet and the latest technologies that the flipped classroom requires (Du, Fu, & Wang, 2014; Ramírez, Hinojosa, & Rodríguez, 2014). In English for academic purposes (EAP) teaching, Cunningham, Fägersten and Holmsten (2010) revealed that students at a Vietnamese university were not inclined to participate in listening to teacher-generated podcasts online.

In summary, research on the relationship between flipped instruction and students' engagement has revealed inconsistent findings. Most studies have centered on subjects other than English as a foreign language, especially in Vietnam (Nguyen, 2014). Research on EFL student participation in terms of cognitive, affective and behavioral dimensions is also underrepresented in the literature. Hence, this study fills the gap by investigating the following research question, "What is student engagement like in an English for tourism flipped course via the Facebook platform?" Specifically, we examine the three types of engagement: behavioral, emotional and cognitive.

Methodology

The current study explores students' engagement in an English for tourism course where the class was flipped with the Facebook platform. Facebook was chosen in consideration that "tools and platforms such as Facebook are useful to improve communication, human interaction, and language learning" (Godwin-Jones, 2008, p. 8). Also, a majority of high school and university students use this site on a daily basis for both academic and social goals (Kirschner & Karpinski, 2010). The network is also quite familiar to Vietnamese students.

The flipped class used available online videos selected (some with subtitling) to meet the course objectives, accompanied with self-designed comprehension quizzes. The quizzes were composed by using Google Form to track the students' work and participation. The links to the specific quizzes and relevant videos were posted on a Facebook page. The flipped course prepared students with language samples and communicative situations related to English for tourism on Facebook, leaving

face-to-face class meetings for practice and application of what they had learned to maximize the target language use.

Several days prior to each class, a video lesson was posted on Facebook. The students viewed the lesson and completed a comprehension quiz to prepare for in-class participation. The video lessons focused on content such as booking a hotel, checking in and out of a hotel, reserving a table in a restaurant, dealing with guest complaints about services, interviewing foreign tourists, guiding in a museum, qualities of a good tour guide, planning an itinerary and other tourism-related tasks. In class, the students took part in activities that focus on higher-level cognitive activities, active learning, peer learning and problem-solving (Abeysekera & Dawson, 2015; Brame, 2013). The students mainly discussed in groups what they had learned from the videos with the teacher's guided questions and facilitation. Both English and Vietnamese were used during this session. On occasion, students were asked to raise questions for clarification and explanations about the lesson. They were assigned English-speaking interactive activities with their peers, mainly role-plays or acting in skits, which were related to the design of the course.

Using a descriptive approach, the study collected data from one group of students using a questionnaire survey and an in-depth semi-structured interview, supported by online records and in-class observations. The questionnaire was adapted from Norazmi et al. (2017) based on the conceptual framework of Fredricks et al. (2004), including 27 items categorized into three clusters: behavioral engagement, emotional engagement and cognitive engagement. The questionnaire was translated into Vietnamese and cross-checked by two researchers.

The interview was conducted in Vietnamese with 10 of the 37 students in the course. A semi-structured format was employed to elicit responses to open-ended questions which focused on three aspects of engagement, which was further bolstered by prompts seeking reasons and explanations. Online tracking records from Google Forms were then retrieved to track the students' participation, primarily as a way to check whether the students had completed the quizzes prior to class meetings or not.

The main researcher was also the teacher in-charge of this course, so she noted observations on students' participation in class. At the end of

the course, 37 questionnaires were administered directly to the students. Ten students were subsequently invited for the interview portion.

Participants and Context

The 37 third-year students were majoring in Tourism at a large university in the Mekong Delta. There were 23 females (62.2%) and 14 males (37.8%), with an age range of between 18 and 22 years. They registered for the English for tourism (EfT) course as part of their training program. The course consisted of 45 face-to-face class hours, focusing on EfT. Prior to this course, the students had completed three General English (GE) courses as the prerequisite. These courses were designed to focus on the A2 level of the Vietnamese Standardized Test of English Proficiency (VSTEP).

Results

The present study addresses the research question, "What is student engagement like in an English for tourism flipped course via the Facebook platform?" The results from Table 7.1 show that the students were highly engaged in three respects: behavior, emotion and cognition.

The mean scores for all three dimensions were all higher than 4.0 on a 5.0 Likert scale, and the variances were quite low. Behavior-related items had mean scores ranging between 3.86 and 4.4, while the mean scores of emotion-related items ranged from 3.27 to 4.43. In consideration of this dimension, question 18, which is "learning without teacher instructions makes me worried and fearful," had a low average score of 3.27 with a high standard

Table 7.1 Mean scores of dimensions of student engagement in the EfT course

Dimensions	Mean	Min.	Max.	Range	Variance	Number of items	Cronbach's alpha
Behavior	4.07	3.86	4.40	0.541	0.032	9	0.739
Emotion	4.08	3.27	4.43	1.16	0.129	8	0.767
Cognition	4.07	3.78	4.40	0.622	0.045	10	0.885

deviation (SD = 1.07), which reflects variation in the students' perception of their engagement. Many students felt worried and fearful of the new way of studying, while others did not. Likewise, the mean range of the cognition-related items was high, between 3.78 (item 19) and 4.4 (item 26), generating a mean score of 4.07.

From the teacher's notes on the course activities, the students did have a positive attitude toward working on both online and in-class activities. Most of the students brought their own notes of what they had watched previously. They also took part actively in group discussions and volunteered to participate or perform in role-plays. Tracking records on Google Quiz showed that over 90% of the students completed the online quizzes. This is likely a good barometer of their participation online because the test items were designed as open-ended questions, which required the students to watch the videos to understand the content before providing answers.

The interview data which also focused on the three dimensions of student engagement uncover detailed descriptions.

Emotional Engagement

The students' responses were very positive regarding their affective engagement. They showed their interest in classroom instruction for a variety of reasons. A majority of the interviewees acknowledged that the inverted lessons provided them with flexibility in viewing and learning, good preparation prior to class meetings, and more confidence and interest than the conventional teaching method based on learning via printed handouts.

For instance, Student 1 said, "I like this learning approach because I have a part-time job and study many other subjects, I do not have much time for my study. As English video lessons were posted in advance, I could be more flexible in preparing for the lessons."

Flipping was preferred by students because it prepared them well, boosting their confidence to participate in the class activities and giving them a sense of greater control over their learning. Student 3 mentioned, "I could be more flexible to prepare the lessons in advance. I was well-prepared, learnt more vocabulary and language expressions so I was

more confident and interacted more with friends and the teacher in the classroom." From the students' point of view, due to their beneficial flipped class learning experiences, they had better preparation before class with the teacher's guidance when compared to their previous English for tourism 1 and 2 courses. Student 4 said:

- In previous courses, I accessed materials only in class meetings, worked with many new word handouts. So, students who did not have internet connection to check new word meanings easily got bored in class. I quit my classes frequently. With FCI, I could be well-prepared at home, and I asked the teacher for more clarification and took more notes in class.

The students in general preferred the flipped classroom instruction to the traditional classroom, as they were engaged in meaningful deep learning with authentic language materials through video lessons. In this sense, the flipped model offered students more opportunities to rehearse, review and apply materials to enhance their deeper learning. Students took note:

- In previous courses, I didn't have any prior preparations, didn't activate my thinking and didn't learn effectively. With FCI, I was well-prepared at home; then, with in-class discussions, I could remember my lessons and practice role-plays, which enhances my retention and I could apply what I learnt. (Student 1)
- The traditional method is too boring. This type is more interesting. I could practice listening, answer more questions in class and learn essential knowledge to become a tour guide. (Student 9)

The authentic video materials as well as the multimedia effects had a strong influence on student learning engagement. The students felt interested in the lessons because they could hear and see the authentic input, as well as practice using English throughout the class time:

- Thanks to real videos, I could learn English authentically, listen to and understand native speakers' pronunciation, then apply it in-class activities through role-plays. In traditional classes, teachers just taught

language expressions through hard copies so students did not know how to apply their skills flexibly in real situations. (Student 2)

From the students' responses, it can be inferred that the students were dissatisfied with the previous courses they took, as there were more lectures and fewer practical applications of what had been taught.

Nevertheless, fear of preparing the lessons through videos without the teacher's instruction was one of the reported problems. About half of the interviewees admitted they were a bit worried and not confident in their ability to learn on their own, given that their English level was still limited"

- I was a bit worried when looking up new words in the dictionary and I still could not understand the meanings in context or was not quite sure about its pronunciation and waited for class meetings to check. (Student 6)
- I was worried because my English ability is limited, especially, for the first few times. After I got familiar with and was able to catch the speakers' speech, I became more confident. (Student 7)

Behavioral Engagement

The students expressed their robust engagement regarding the behavioral construct. They participated more in both online and face-to-face activities in the classroom. They also made great efforts to understand video lessons at home and expressed a high level of concentration while doing online quizzes as well as demonstrating persistent concentration during in-class meetings.

Regarding the frequency of participation in course activities, all interviewees concluded that they had participated much more in both online and in-class activities than in previous courses on English for tourism, which were less communicative or more didactic:

- I did almost all of the online quizzes at home—together with the teacher's explanation and knowledge expansion in the classroom, this helped me participate in activities much more than before. In traditional classes, I just kept silent, not daring to volunteer because I usually did not know the answers. (Student 2)

Other students also reported that they had become more confident volunteering during classroom activities, as well as speaking in front of the class. Confident behavior in the classroom derives from the fact that students were adequately prepared for the learning activities. In Vietnamese culture, this is especially important, as speaking runs the risk of face loss when not well-prepared:

- In previous courses, I did not like to participate in in-class activities because I did not know anything in advance; I worried about making mistakes and was hesitant. With Flipped Classroom Instruction (FCI), I was well-prepared, confident about my answers, ready for group discussions, even when performing in front of the class. Besides this, in such a learning atmosphere, everyone seemed prepared and basically understood the lessons, so if I mispronounced a word, they could still understand what I was trying to convey. (Student 6)

Interestingly, one student changed his very negative attitude toward learning English into a more positive one, thanks to flipped classroom instruction:

- Before I did not like learning English, and rarely participated in activities. With FCI, I accessed the videos and prepared the lessons at home, so I could volunteer to answer the teacher's questions in class. I think I can remember what I have learnt better if I repeat and talk about it more, which motivates me to study more. (Student 7)

Students made different levels of effort in their learning depending on their existing levels. On the one hand, top students were able to learn through authentic videos at an appropriate pace to their acumen. Student 4 said: "It's ok for me. I can understand all posted videos." On the other hand, most students had to make a great effort to catch the native speakers' speech and accents to understand them. Nevertheless, this truly engaged them in learning. Student 1 commented:

- I did try a lot to understand the videos because my listening ability is rather limited; I had to listen at least 4 times to understand the lessons.

I also related my prior knowledge to the topic and looked up unknown vocabulary in a dictionary.

Regarding their concentration on learning, the students reported very positive evidence supporting how tuned in they were. Concentration was affected by the design of the quiz, with time control to maintain students' focus and attention. Student 2 revealed this:

- I could concentrate longer because the quizzes had a feature that if I did not keep listening to answer the questions, with just a click, they would disappear and I would also lose the previous answers. Therefore, I usually prepared a laptop and a mobile phone to listen to the videos and answer questions in the quizzes simultaneously. Generally, I spent the whole time learning.

The students also reported their great concentration during in-class activities. Student 3 said, "I could keep focused because there were always activities or questions from beginning to the end of the periods." She continued, "We always activated our mind and discussed with our peers. In previous courses, though there were also group discussions, many students could not contribute any ideas."

The fact that this course was more interesting and pressured students less helped the students stay focused on the activities. As Student 4 stated, "This course did not tempt me to play around; I was feeling more excited and focusing more on the classroom activities than before." Student 5 further explained, "In the previous course, because the teacher was strict, we also concentrated on in-class activities but could not remember much. In this course, we focused on the activities naturally and comfortably so we remembered more, I felt it was easy to understand the lessons and so learned more effectively."

Cognitive Engagement

Generally, a similar process in which the students approached the video lessons showed serious investment in their learning. They did undergo

cognitive processes when learning online through the videos. Student 2 described his process of learning online as follows:

- First, I checked on the date for class meetings, watched the whole video once to get its general idea. Then, I looked over questions in the quizzes and tried to understand them. After that, I watched the videos again, and scrolled through them forwards and backwards. If I still did not understand, I tried to relate them to my background knowledge about the topic and noted new words.

Student 3 also made use of the videos effectively, engaging cognitively in the lessons to understand them:

- I usually listened to easy videos about three times, but six or seven times with more difficult ones. For the first time, I listened for general ideas, then, listened again and again, looking for the answers, and writing them down. I also wrote down scripts and looked up unknown words in a dictionary and finally, listened to the whole video again to double-check my understanding.

Processing information is technically supported with accessible online tools. Student 8 made use of these tools to try to make sense of the lesson contents:

- I checked meanings of new words on my laptop. If I still didn't understand, I paused and used Google Translator. I noted down key words in the questions, tried to understand them, then listened to videos and looked for relevant answers.

In terms of collaboration in preparation of the online assignments, the students presented different viewpoints. A total of 50% of the interviewees reported that they worked on their own. In contrast, the other students often shared answers together using technology to snapshot the answers and send them to one another via Zalo (a Vietnamese messaging app). Student 4 said:

- I did connect with some other friends and we continuously texted messages back and forth. Some friends asked me to send the answers, and I was willing to share my preparations. However, I did not know if they understood or not.

Not all students' perceptions were positive, however. Students revealed that their own poor listening skills and insufficient vocabulary were challenges for them. This was made worse if the materials contained "speakers' speeches [which] are fast and have no subtitles." Some students found it difficult to change their learning styles, still expressing a preference for a traditional teacher-fronted classroom. As one student mentioned, "I like this method, but a little bit of traditional instruction should be integrated, about 30%."

One student expressed his dissatisfaction with flipped classroom instruction because he became distracted while learning on Facebook and longed for the traditional view of learning and teaching, where the teacher is the only knowledge provider. He believed that it would be fairer if students were taught by the teacher, as every student would receive similar information at one time. This implies a hindrance to his adaptation to the new learning method:

- I do not like this method because I am easily distracted when learning from videos on Facebook. For example, while I was doing the assignments, a message came, and I read it. Mailbox is more effective. Although prior preparations at home helped me understand the lessons better, one thing I don't like is that I could not review the quizzes after submitting them. For me, the conventional method is fairer and more interesting. With FCI, those who prepared well in advance could perform well in class but those who didn't prepare would lack knowledge to participate or were left behind.

Discussion

This study generally indicated that the students were engaged in the FCI course. High levels of their engagement could be observed for all three constructs: emotion, behavior and cognition. This result was consistent

with Smallhorn (2017), Norazmi et al. (2017) and Steen-Utheim & Foldnes (2018), which similarly showed students demonstrating a high level of engagement.

In detail, the students' responses to affective engagement were very positive. They liked flipped classroom instruction because of its flexibility; they could study at any time and place and made use of their time effectively. This dovetails well with Bergmann and Sams (2012), who concluded that students can manage their own learning by playing and pausing the video lessons as they want. As already pointed out, using the flipped method to deliver curriculum targets maximum utilization of students' own time (Pettis, 2014). In addition, Spencer (2012) has identified active learning activities generated by the flipped classroom can stimulate higher confidence levels and increase overall learner engagement. This study adds further evidence in this regard; students were well-prepared and ready to perform tasks. Especially, engaging with the materials online and during in-class practice can help students to strengthen their retention and transfer information (Estes, Ingram, & Liu, 2014). As for behavioral engagement, the more students got involved in the videos accompanied by more frequent participation in the in-class activities and practices, the more they remembered what they learned.

The content additionally seems to have provided a more dynamic and engaging experience (Forsey, Low, & Glance, 2013). From the student perspective, as compared with the previous courses, which they took with black-and-white textbooks and handouts, video lessons in this flipped course provided them with interesting images and sounds. They found these video lessons beneficial not only for their future career as a tour guide, but also for their communication in English on a daily basis. Indeed, research has indicated that students of the flipped classroom model value the opportunity to apply learned content (McLean, Attardi, Faden, & Goldszmidt, 2016). In addition, the students improved their vocabulary knowledge, pronunciation and the ability to use English naturally in lifelike situations, a finding congruent with Tran and Nguyen (2018), who showed that the prior class preparation and instructional videos provided opportunities for students to master conversational strategies, vocabulary, pronunciation and other communication skills.

With this new approach, the students' attitudes toward self-study and self-preparations before class attendance were different. In fact, some students found no problem understanding video lessons as well as doing quizzes alone. However, other students in the flipped sections found it rather challenging to fully understand native speakers' talks, especially with non-subtitled videos. However, they could overcome this problem by reviewing videos many times until they understood the content in those videos and were able to complete the quizzes. Zainuddin and Attaran (2016) found that both confident students and hesitant students were very satisfied with the flipped classroom because it provides more opportunities for them to learn through the recycling of materials multiple times. Because the video lessons were posted on Facebook, the students could access the materials at any time or place and as many times as they wanted, making them better prepared for in-class activities and resulting in more confident students.

Students' frequent participation in online assignments can be attributed to the instancy of Facebook and other social networks, where they receive frequent reminders from peers. In the Vietnamese context, most students have long used social networking sites such as Zalo, Instagram, Viber and Facebook, making access quick and poignant. According to McLean et al. (2016), flipped classroom students value the peer-peer and student-educator interaction. Good preparations by students fostered student engagement, motivation and confidence to partake in classroom activities, even encouraging a student who had a negative attitude toward English learning, which is one of the most significant findings of the study. This further lends support to the strong potential of flipped classroom model instruction to engage unmotivated English language learners.

The students also focused on the activities from the beginning to the end outside of class and in it. The in-class investment and engagement were effectual because the teacher continuously organized activities related to what the students had learned from videos and quizzes to pique their attention, activate their mind for further discussions and aide them in practice with peers. As suggested in the flipped classroom model, the teacher should frequently pose questions, give feedback and allow students unlimited attempts to resolve problems (Gibbs, 2014). This is harmonious with the constructs of social interactionist theory (Vygotsky, 1978) in that the collaborative and social

nature of the flipped classroom, with the help of peers and instructors, accelerates the learner to a higher level of learning.

Another factor that contributes to the student engagement and satisfaction is the classroom atmosphere the teacher creates. In this environment, the students felt relaxed, were naturally interested in and followed the learning activities step by step without as much pressure. In fact, flipped learning can be a positive influence on even basic issues such as students' attendance in class, which can improve both learning and engagement (Deslauriers, Schelew, & Wieman, 2011).

Serious cognitive investment in making sense of the video lessons such as reviewing videos, checking dictionaries, using translation tools online, note-taking, sharing notes with friends and linking what they had learned with prior knowledge as well as reading along with videos can be attributed to the flexibility and dynamicity of the learning space created by Facebook and supported tools. The flexibility to pause and rewind the videos allows students self-paced learning and cognitive engagement (Kahu, 2013). In class, they contributed ideas in discussions on disputed ideas together and volunteered to perform in front of class, essentially enabling them to be more productive learners in the classroom (Musallam, 2010).

It is noticeable that using Facebook as a learning space can be distracting. This has already been cited by Toto and Nguyen (2009). This finding implies that not all students are ready for an entirely new teaching method, so there should be a step-by-step integration of flipped instruction, incorporating it methodically along with the traditional one. Although the active learning and additional time available in class improved the students' understanding and perceptions, it was also revealed that some traditional lectures should be maintained (Johnson & Renner, 2012; Zappe, Leicht, Messner, Litzinger, & Lee, 2009).

Conclusions

The study contributes evidence to the literature about the role played by flipped classroom instruction toward deeper student engagement in learning. We confirmed that students learning in an English for specific purposes class in an EFL context were highly engaged in flipped classroom instruction:

emotionally, behaviorally and cognitively. The students also reported their great appreciation of FCI, which brought them more confidence, motivation, participation, language practice and even retention in learning compared to previous ESP textbook-based and teacher-fronted courses they had taken. However, evidence also shows that students needed time to transform their role of learning in the new learning approach, which could possibly affect their engagement.

Psychologically, the present study indicates that online learning with access to lively images and authentic videos made EFL/ESP students more motivated and engaged in their learning. A shift in higher education from traditional lecture-based formats to teaching methods that integrate cutting-edge technology is the most recent attempt to increase student engagement (Perrotta & Bohan, 2013). In addition, accessing the language input from videos and quizzes via such a user-friendly platform like Facebook provided students with flexibility to learn at any time, in any place and at their own pace, contributing to lowering the students' cognitive resistive barriers. According to Krashen (1982), when language learners possess high motivation, self-confidence and a low level of anxiety, they have low affective filters and so receive and assimilate plenty of input. In addition to this, students' self-directed actions at home enhanced their own confidence to participate more in the classroom, resulting in increases in engagement.

Based on the findings of the study, we suggest here that the flipped approach could be implemented at classroom levels in higher educational EFL contexts, especially where students' English-learning motivation remains low. Some considerations should be taken into account when applying the flipped model to engage students further. First, video lessons should reflect students' language capabilities, carry interesting and relevant topics to the course content, and have subtitles to ease their learning hurdles, especially for lower-ability students. Second, videos should be delivered to students early on so that they have sufficient time to view and prepare for class participation. Third, for contexts where students are still familiar with and depend on traditional instruction, the shift to flipped instruction should be gradual. Finally, EFL teachers also play an important role in designing interesting and meaningful tasks for both online and

in-class sections to persistently pique students' attention and participation, leading to maximized engagement during learning opportunities.

Future research can be conducted with a larger sample and focus on various skill areas to confirm and generalize findings. Such research can also identify the contexts in which the flipped classroom instruction works best for specific fields (e.g., education, engineering and nursing) and how to effectively apply the elements of this model to enhance course designs. In addition, flipped learning is an alternative way to deliver curricula to meet the demands of the ever-increasing amount of knowledge and skills students are expected to retain and use upon graduation (O'Flaherty & Phillips, 2015). Thus, further research can measure the impact of this model on students' retention of language skills following their graduation and entry into the working world.

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8

Learner Autonomy and Responsibility: Self-learning Through a Flipped Online EFL Course

Hsin-chou Huang

Introduction

The flipped classroom is a recent pedagogical concept that aims at replacing the traditional classroom with classes that place a great emphasis on interactive tasks and pre-class work (Abeysekera & Dawson, 2015). Flip teaching reconstructs the classroom by assigning lectures on instructional content as homework (Roehl, Reddy, & Shannon, 2013). Within this approach, students are required to view lectures prior to attending classes so that they can devote in-class time to activities such as problem solving and cooperative learning. Computer-aided instruction (CAI) can be used to enhance the success of the flipped classroom, with teachers spending limited class time, guiding students toward successful and active learning. Flipped classrooms are beneficial to students in a variety of ways (Roehl

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et al., 2013). One example of the psychological advantages available is that students in flipped classrooms tend to become more cognizant of their own learning processes as they freely deal with content according to their own learning styles and as they write their own reflections. In addition, the flipped classroom encourages students to ask for clarification and assistance—it prioritizes class interaction whether or not a teacher is present.

As for second language teachers, focusing on learning rather than teaching permits teachers to make use of methodologies such as videotaping, screen-capturing software and visual aids as well as clips from YouTube and TeacherTube. The flipped classroom allows teachers to concentrate on students' methods of grasping information in the course of learning itself, rather than exclusively in test settings, thus increasing students' involvement.

In recent years, the flipped classroom has been actualized via various language management systems, including Blackboard, MOODLE, and Massive Open Online Courses massive open online course (MOOC) platforms, as well as software such as edX, Coursera and Udacity (Godwin-Jones, 2014). These systems enable teachers to blend both online and offline elements of given courses to promote active learning. Until recently, massive open online courses have generally been offered in sciences (McCallum, Thomas, & Libarkin, 2013), statistics (Strayer, 2012) and machine learning (Bruff, Fisher, McEwen, & Smith, 2013). Relatively few MOOC arrangements have presented language-related materials (Hung, 2015). As empirical studies on the effects of the flipped classroom on language learning are lacking, the present study therefore aimed to investigate the effects of flipped classrooms on English as a foreign language (EFL) language teaching and learning from the standpoints of curriculum design and, more importantly for this volume, learner autonomy. More specifically, the researcher first designed a reading course and then deployed her flipped reading curriculum in an EFL setting to examine its effects on EFL learners' autonomy. The research questions that guided the study were set as follows:

1. How can an online reading course be designed for flip teaching?
2. To what extent does flip teaching enhance EFL learners' autonomy?

Literature Review

Defining the Flipped Classroom

To gain some perspective on psychological processes, the flipped classroom approach enhances learners' motivation and controls cognitive loads (Abeysekera & Dawson, 2015). Abeysekera and Dawson (2015) analyze the advantages of the flipped classroom through two educational theories: the self-determination theory and the cognitive load theory. The former focuses on motivation as a predictor of students' learning outcomes, performance, satisfaction and well-being. It concludes that success will largely depend on competence, relatedness and autonomy. The flipped classroom aims to improve students' motivation through its concentration on out-of-class activities and small group work. These, in turn, increase students' intrinsic and extrinsic motivation to seek self-determined outcomes, that is, learning by choice to achieve personal satisfaction, and to enjoy the process. The cognitive load theory suggests that learners' working memories can become overloaded, and that this hinders the learning process. Abeysekera and Dawson (2015) claim that the flipped classroom can reduce this problem by introducing self-pacing of studies of pre-recorded lectures.

When comparing different approaches to teaching, it is noteworthy that traditional classes have been found to be relatively ineffective in improving students' learning skills (Abeysekera & Dawson, 2015). The flipped classroom approach, which engages students in solving tasks, can create a suitable environment for active learning, as it replaces traditional lectures with a wide variety of interactive, sometimes web-based, tasks. Within this approach, the role of the teacher is that of facilitator of the learning process rather than director of it. Flipped classrooms basically utilize in-class and out-of-class time to carry out pre-class and post-class activities. These activities rely on technology, especially videos, screencasts and podcasts. Design principles include peer work, active learning and problem solving. Abeysekera and Dawson (2015) argue that undergraduate students need to feel competent, autonomous and connected to social contexts. Flip teaching can help language learners achieve these

goals because students prepare work before class and become active discussants in class. They assert that flip teaching satisfies students' needs to feel in control and to be independent—their prior engagements foster autonomy. Finally, being active participants enables students to achieve greater levels of relatedness with peers and instructors. This pedagogical rationale prompted the author to design an online flipped reading course in an EFL context.

Empirical Studies on the Flipped Classroom Approach

The flipped classroom represents an important trending movement for many disciplines, and as such, it warrants continued research for use in language teaching and learning. Flipping a classroom involves techniques such as interactive engagement, just-in-time teaching and peer instruction (Berrett, 2012). Students do not simply passively receive materials, as is typical of teacher-fronted classrooms with set time periods; rather, they must acquire the majority of information by reading, watching prerecorded lectures or listening to podcasts outside of class hours. Class time is devoted to solving problems and applying what students have learned, which allows misunderstandings to be addressed more expediently. Although the flipping of classrooms has received recent interest in language learning environments, many of the tenets of flipping a class can be tied to other disciplines. This is vital knowledge inasmuch as it offers L2 researchers and teachers details of how flipped classrooms should operate, and more importantly, such information helps to lay the groundwork for looking at psychological aspects of language learners in a flipped environment; hence, some detailed examples follow.

Roehl et al. (2013) suggest that the flipped classroom meets the needs and learning styles of millennial students, who differ from students of the past inasmuch as they gravitate toward the concepts of active learning. They go on to argue for use of the flipped classroom model for today's students in particular. Millennials are digital natives who have 24/7 information connectedness, who prefer multitasking-supported environments, who tend to gravitate toward group activity and who appreciate the social aspects of learning.

Active learning involves pedagogies that focus on student engagement during learning. Active learning strategies fall into four broad categories:

individual activities, paired activities, informal small groups and cooperative student projects. According to Berrett, (2012), flipped classrooms with active learning and technology build students' higher-order thinking skills and enhance their creativity. Additionally, active learning by way of flipped teaching can be used to teach vocabulary, supported by a spaced repetition app (Fallows, 2013). It also helps students to better prepare for discussions and improves critical reading and thinking (Gaughan, 2014); however, caution must be exercised to carefully integrate blended learning environments to achieve better results (Strayer, 2012).

Berrett (2012) also suggests that flipped classrooms entail less effort to create lecture presentations than traditional classrooms, with the scheduled class time being used instead for activities. This in turn deepens the understanding of concepts and improves knowledge retention. Contact hours can be devoted to problem solving, skill development and enrichment of understanding. Experiments with computer-aided instruction (CAI), a common flipped teaching tactic, found that students enjoyed CAI and their knowledge of subject matter improved.

Another positive aspect of flipped teaching is that time is set aside for student reflection as part of learning. This allows teachers to better track student progress and provide one-on-one engagement. It also permits a class to stay on track despite student or teacher absences.

The flipped classroom method may not suit all courses. Challenges include difficulty adapting traditional lectures to alternative media, difficulty in adjusting lecture material, the requirement that students take more responsibility for learning and financial limitations. 'Cognitive strain' in the flipped classroom may cause both resistance and success.

Vaughan (2014) adapted the flipped classroom approach for two sections of a world history course using videos (one introductory and nine content based) posted to YouTube and linked through Blackboard. Class time was devoted to discussion, exploring primary sources and interpreting their meaning. Small group discussions among five students included the roles of recorder, reporter and facilitator. Whole-class discussions and group activities also took place. The flipped classroom style helped students better prepare for class discussion, taught them how historians work, made them better critical readers and thinkers, and improved their confidence in the ability to interpret and draw conclusions. Results from

an end-of-course survey reflected positive learning experiences. Students who watched most or all of the available videos found them useful, while those who did not cited length of time involved as their reason for failing to watch as directed. Students said that they believed they learned a great deal about the work of historians and the world before the year 1100, and that they learned the most from in-class discussions. The instructor enjoyed using the flipped classroom approach. Adaptions included asking students to take notes on videos and update the videos themselves. A drawback to an approach reliant on videos is that students may not watch them, which can be mitigated with the implementation of a classroom response system, like iClicker.

Strayer (2012) compared the learning environments of inverted and traditional introductory statistics classes, using the College and University Classroom Environment Inventory (CUCEI), audio-taped classroom sessions, field notes, interviews, focus groups and reflective journal entries. The study relied on the ALEKS (Assessment and Learning in Knowledge Spaces) intelligent tutoring system to teach introductory statistics content outside the classroom. The inverted class met in a computer laboratory, where students completed activities to engage with content learned on their own and then interacted with peers and a professor. The traditional class was lecture based and heavily content driven, and had opportunities for students to answer and ask questions. Homework problems were given every two to three class periods. Students from the inverted class reported lower levels of task orientation than students in the traditional classroom. Inverted class students were dissatisfied with the loose class structure, but became more receptive to cooperative learning and endorsed innovative teaching methods. Traditional class students were less willing to engage in class activities and group learning. This study showed that blended learning environments must be carefully constructed. Other implications include that an inverted classroom may not be suited to introductory material, students in inverted classes need more space to reflect on their learning activities and make connections, and students need support structures to monitor learning, with activity and task completion checks.

Demetry (2010) used flipped classroom approaches to encourage student engagement before students came to class. Some of these strategies

included asking students to review lecture notes, extensive textbook readings and warm-up activities such as Blackboard-deployed and open-ended questions. During class time, Demetry relied on problem solving, think-pair-share activities, clickers and feedback. Demetry wanted to increase student involvement during class and dedicate more time to task solving. He modified course objectives to include practice at higher-level thinking and enhancement of permanent learning skills. To achieve these goals, he redesigned the class and its teaching strategies, bringing in pre-recorded multimedia lectures instead of text-based presentations. Students took five-question Individual Readiness Assessment Tests (IRAT) before they came to class and engaged in more team-based learning strategies. During class time, students compared their answers to the IRAT. The teacher discussed misconceptions and clarified the most important concepts. Then students worked on more advanced team problem set applications and more complex materials. Participation-based grading was replaced by criterion-based mastery grading. The teacher gave assistance, feedback, clickers and clarification when necessary.

In another study, Vaughan (2014) investigated the feasibility of using the flipped classroom to engage pre-service teachers taking a course called 'Introduction to the Teaching Profession.' The participants in this course were second-year college students who had either decided to work in the teaching field or were considering doing so. The overall purpose of the introductory course was to help students make and validate positive decisions with respect to their potential careers as teachers. For the sake of credibility and authenticity, the researcher decided to flip the whole semester. Blackboard was employed as a management system with audio, video, and presentation displaying and sharing features. Students were able to see the content of upcoming or past lectures anytime and anywhere from their own devices, due to the system's ability to convert materials to MP4 or MP3 file formats. Taped lectures lasted from 20 to 30 minutes, and sometimes involved extra content such as classroom videos, documentaries and student interviews. These extra resources were discussed in class, but the researcher tried to save as much class time as possible for interactive content. The lectures were also taped for the sake of referencing and connecting all content.

To insure that students were able to follow the course and that they watched the videos, a discussion board was equipped with a device that

told the teacher whether students had in fact downloaded the videos. Blackboard allowed the teacher to hide students' answers to discussion questions until all had responded, at which point answers were visible. After students watched a given video, they had to answer discussion questions to check whether they were on track. In the classroom, meaningful activities and group debates were used to examine issues related to course content. Results from the study indicated that students showed high levels of reflection on lecture content and demonstrated a high ability to connect content to related themes.

As for language learning environments, Fallows (2013) examined the feasibility of using the flipped classroom in a foundations program level-03 EFL course, where students had to learn 30 words from a target vocabulary list weekly. Teachers were responsible for designing videos, each one of which contained ten words to be presented to students. The videos offered clear pronunciation of words, dictionary definitions, one-sentence examples and Arabic translations. Using the video-compatible application Articulate Storyline, three of the videos were presented each week. The aim of using such authentic videos was to provide students with sufficient knowledge about vocabulary items so that they would be able to engage in interesting and useful vocabulary activities during class time. Before the beginning of each week, students had to watch the three videos and answer questions about the vocabulary items in the form of drag-and-drop matching exercises and fill in the gaps with suitable words. During class time, students were given quizzes on their laptops via the Socrative application. Results from this study revealed that the flipped classroom was effective in saving class time and alleviating pressure on teachers to come up with novel ways to teach lists of words. Most students expressed positive attitudes toward using the videos, and they also responded positively to the spaced repetition application.

Learner Autonomy Through Technology-Enhanced Flip Teaching

The rise of networked technology offers new opportunities for users to collaborate and learn online, and has thus presented students with new

ways to express autonomy (Lewis, Cappellini, & Mompean, 2017). Researchers have developed models for learner autonomy in different educational contexts. Holec's (1979) seminal work suggested:

> An autonomous learner is a learner who is willing to take charge of his/her own learning and is capable of doing so. This involves among other things that the learner—independently or together with others—is capable of:
> - Specifying aims and purposes for the work undertaken
> - Choosing relevant methods, tasks, and materials for the aims set up
> - Organizing and carrying out the tasks, and
> - Choosing criteria for evaluation and applying them. (p. 3)

One of the major components of learner autonomy within this definition is independence, that is, learners' responsibility for and control of their own learning (Benson, 2007; Suvorov & Cabello, 2017). Benson (2009) also suggested that learning takes place most effectively in the course of self-access arrangements rather than in physical classrooms. The learner-centered paradigm views autonomy as "an internal capacity of the learner: the capacity to take charge of, responsibility for, or control over one's own learning" (p. 218). In light of the rise of new technology, such autonomous learning does not occur in isolation; instead, learners interact with peers and teachers in a social context (Suvorov & Cabello, 2017). Shetzer and Warschauer (2000) identified a digital dimension of learner autonomy that involves students' digital literacy and positive interdependence with technology to enhance learning.

Recent research has looked into how technology facilitates learner autonomy (Peeters & Ludwig, 2017; Suvorov & Cabello, 2017). Suvorov and Cabello (2017) implemented an adaptive learning system that provided online lessons with exercises. They evaluated student learning performance among 35 Spanish learners in a university in the United States. Results showed that the online learning program enhanced learner autonomy because it provided extended practice outside of class. Students could complete learning activities at their own pace, thus promoting autonomy. The instant feedback generated by the system also encouraged self-reflection. Additionally, Peeters and Ludwig (2017) investigated how social media such as Facebook developed students' autonomy. A two-year

writing project carried out at the University of Antwerp invited first-year EFL students to write 300-word essays and post them onto a closed *Facebook* group. They then undertook peer reviews by discussing their writing processes with the *Facebook* group. Results from questionnaires showed that such collaborative writing practices made students responsible co-learners. Their discussions on *Facebook* demonstrated their efforts to establish and refine unique tactics to improve their essays.

In EFL contexts in Taiwan, some studies have addressed the need to foster learner autonomy, particularly in flipped English language classrooms (Hsieh, Wu, & Marek, 2017; Hung, 2015). Hung (2015) adopted an active learning strategy through WebQuest to investigate the impact of flipped curricula on EFL learners' academic performance and learning attitudes. Flipped lessons were designed with the aim of preparing students to develop a presentation on movie topics in digital storytelling formats. Three tactics were used: (1) structured flipped groups, in which students watched movie trailers and completed vocabulary and comprehension questions before class (learning materials organized in WebQuests using Google sites); (2) semi-structured flipped groups, in which students watched movie trailers and completed vocabulary and comprehension questions before class (learning materials organized by TED-ED); and (3) and non-flipped groups, in which materials were presented in printed formats without any before-class activities or online flip tools. Results showed that students in structured flipped classrooms outperformed those in semi-structured and non-flipped groups. In addition, in terms of students' learning satisfaction, both structured and semi-structured groups showed higher levels of satisfaction than the traditional classroom group. Students offered positive feedback in response to active learning strategies provided in flipped and semi-flipped teaching conditions.

Hsieh et al. (2017) taught EFL learners in flipped classrooms using the LINE app (a social media app) to introduce idioms. Prior to in-person class meetings, students in the flipped classroom group watched instructional videos and wrote short stories using idioms learned from the videos. They also posted to the LINE group and received feedback from peers. Students then recorded revised versions of their stories and uploaded them to the LINE group. The non-flipped group simply

attended lecture-based classes, where instructors elaborated on idioms. The flipped group showed significantly better performance with respect to idiomatic knowledge and also demonstrated higher levels of motivation. This study concluded that flipped instruction contributes to active, student-centered learning and increases autonomy.

In a European context, Adnan (2017) investigated English language teaching (ELT) students' perceptions of a flipped teacher training course by comparing non-flipped classrooms featuring traditional lectures with flipped classrooms where watching videos was required before attending class. Results from journals and interviews showed that the flipped classroom approach boosted students' confidence and enabled them to be more active and disciplined learners. The time saved through elimination of classroom lectures freed time for in-class discussions, which increased students' interactions.

The above empirical studies demonstrate how technology-mediated learning systems and flipped teaching approaches affect learner autonomy. The present study represents an exploratory investigation into how flipping a reading course can be used to enhance learner autonomy in an EFL context in Taiwan, specifically to see if students take more responsibility for their own learning.

Methodology

The current project aimed to implement the flipped classroom approach with respect to tertiary-level English curriculum in Taiwan. The first step was to design and develop a reading course tailored for college EFL students. The next step was to implement the course and investigate whether the flipped classroom approach would enhance EFL learners' autonomy and hopefully encourage students to take responsibility for their own language learning.

Design of the Course

Authentic reading texts were selected by the researcher, based on topic relevance and difficulty level. As the experiment was situated at a

university focused on marine science, reading topics were related to marine education, including marine life, marine environment, legends of the sea, marine industries, tourism associated with recreational activities near the sea and marine cultures. The researcher and her research assistants worked collaboratively in turning the reading materials into instructional videos for the online course. Each lesson was designed to include warm-up, during-reading and post-reading activities. Table 8.1 presents a sample lesson structure.

Bergmann and Sams (2012) offer pointers on making videos appealing to students: (1) keep them short—under 15 minutes, and if possible at approximately 5 minutes per topic; (2) animate the voice; (3) add annotations; and (4) add callouts—postproduction editing to re-emphasize course content. The researcher bore these principles in mind while producing the video lectures.

To facilitate implementation of flip teaching, the researcher constructed an in-house course platform at http://140.121.102.115/flip-classroom. Students could access this link to download all teaching videos.

Taking a lesson drawn from the video 'Yami Tribe: Culture at a Crossroads' as an example, the researcher designed various activities for before-, during- and after-reading stages. The researcher used multimedia course production software iSpring to pre-record each module of the reading lessons. These included annotations to the text, highlighting important key concepts or words and integrating PPT and video files for course materials. In the before-reading phase, the researcher listed keywords and briefly explained them in a video lecture format. An overview

Table 8.1 Reading course design

Before reading	During reading	After reading
• List keywords • Give an overview of the text • Ask prediction questions • Summarize the text • Present an outline of the text	• Read the article with text narration • Explain course content • Ask comprehension questions	• Project-based activities • Treasure hunt-related topics • Work in groups to present findings

of the reading text was provided to give students an overall understanding of key points. The researcher then asked two prediction questions via pictures extracted from the text or related videos gathered from online resources. A sample screenshot is shown in Fig. 8.1.

In the during-reading phase, video lecturing with explanations of major sentence structures was provided. After explaining the entire lesson, the researcher gave a short comprehension quiz to test students' understanding of given paragraphs. These instant quizzes were important to determine whether students were making progress.

In addition to online quizzes, in the post-reading phase, the researcher designed treasure hunt activities to develop students' critical thinking and problem-solving skills for active learning. The task topic was related to the target reading lesson. Students were invited to work in groups, search for relevant information online, find answers and orally present their findings. For example, in a lesson on endangered marine mammals, students learned that human beings are the major cause of high mortality among such mammals as a result of pollution and overhunting for com-

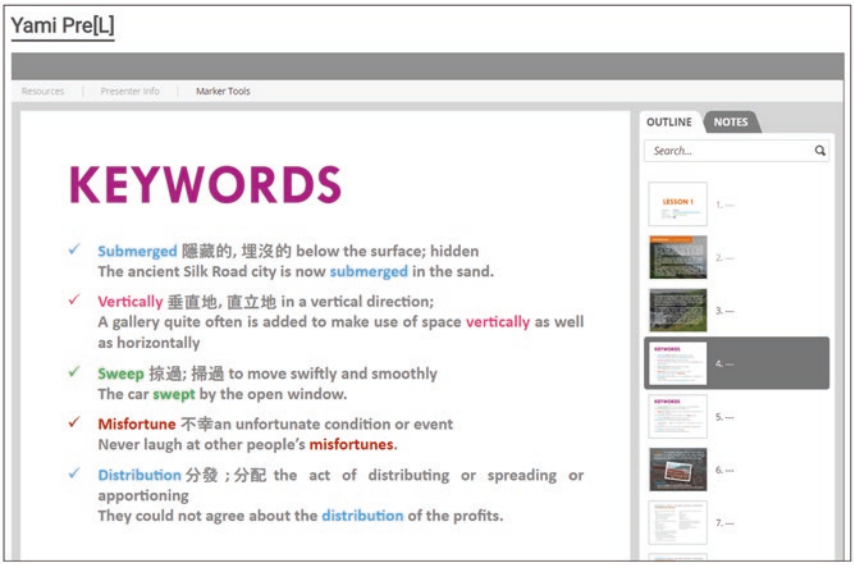


Fig. 8.1 Pre-reading video lesson

mercial purposes. The after-reading activity tasked students with designing a flyer to raise public awareness of the importance of marine environment protection. Students worked with team members to discuss how best to design the flyer and to integrate useful information from links provided by the instructor. Students needed to present their findings orally and to answer peer questions and comments to ensure full participation of the class. The final assessment of the course included quizzes on vocabulary and reading comprehension cloze tests, a treasure hunt project and students' learning records.

Data Collection and Analysis Procedures

The flipped reading course was implemented in a freshman English class. Thirty-eight students participated. During this semester-long project, they needed to complete four reading lessons taught via the three-stage design, that is, pre-, during-, and post-reading activities. Students finished pre- and during-reading video lessons at home. When they came to class, they could raise questions to the teacher and their peers. They did post-reading activities in class to extend their understanding of given topics. A detailed description of the procedure is shown in Table 8.2.

A central tenet of this project was to assess students' autonomy. An initial learner autonomy questionnaire adapted from Chan, Spratt, and Humphreys (2002) was administered as a pretest and again at the end of the experiment to measure any change. This questionnaire, as designed by Chan et al., was deployed among Hong Kong undergraduate students to report on (1) students' views of English teachers' responsibilities and their own, (2) their views on their decision-making abilities and (3) the frequency with which they undertook out-of-class activities. The first two sections were scored on a 1–5 Likert scale, whereas the third was scored on a 1–4 Likert scale. This questionnaire was used in the present experiment in Taiwan because target students were all undergraduates and the common purpose was to examine their levels of autonomy in learning English. Questionnaire data were analyzed using a paired-samples *t*-test measuring any changes in autonomy.

Table 8.2 Flip teaching implementation process

Flipped reading classroom
Course materials Online reading materials with video lectures were stored on the class server. **Before class** • Students watched video lessons prepared by the instructor. They were reminded to ask questions about any points of confusion and to summarize the course content. They wrote learning journals each week after they finished the video lessons. • Students went through ***before-reading*** activities, such as keyword explanations, previews, predictions, summaries and outline preparation. • Students went through ***during-reading*** activities, such as watching lecture videos prepared by the instructor and answering comprehension questions. • As encouraged by the instructor, students took notes when watching videos and posted discussion questions onto the discussion board of the class website. **During class** • Students brought their questions to discussions with peers and instructors. • The instructor learned where students needed help via these questions and offered explanations to guide their learning. • Students practiced performing the skills they were expected to learn. • The teacher asked students to complete reading activities such as True/False questions to ensure their understanding. • Students started ***after-reading*** treasure hunt activities in class. They worked with peers in groups to find suitable headings for their flyers. They communicated with peers and worked on the spot to solve problems. • The instructor guided the treasure hunt process with feedback. • Students were ready for the next week's presentation. **After class** Students continued to apply their skills based on instructor feedback.

Results and Discussion

Learner autonomy changes at the end of the flipped reading course are shown in Table 8.3. Regarding responsibilities for learning, after the semester-long treatment through flip teaching, students required less responsibility from their teachers to ensure progress (*Meanpre* = 3.24 ± 0.83; *Meanpost* = 2.94 ± 0.86; $t_{(37)} = 2.06$, $p < 0.05$). Students tended to agree that that they themselves needed to take responsibility for their own progress during lessons (*Meanpre* = 3.58 ± 0.75; *Meanpost* = 3.79 ± 0.78).

Table 8.3 Pre- and post-learner autonomy

Question	Pretest		Posttest		
	Mean	SD	Mean	SD	*T*-test
Section 1: Responsibilities	3.40	0.71	3.47	0.77	–1.81
1. It is your responsibility to make sure you make progress during lessons.	3.58	0.75	3.79	0.78	–1.19
2. It is your teacher's responsibility to make sure you make progress during lessons.	3.24	0.83	2.94	0.86	2.06*
3. It is your responsibility to choose what materials to use to learn English in your English lessons.	2.79	0.89	2.97	0.85	–0.97
4. It is your teacher's responsibility to choose what materials to use to help you learn English in your English lessons.	4.00	0.66	3.67	0.78	2.97*
5. It is your responsibility to evaluate your learning.	3.39	0.66	3.24	0.87	0.82
6. It is your teacher's responsibility to evaluate your learning	3.82	0.58	3.55	0.79	2.18*
7. It is your responsibility to evaluate your course.	3.24	0.87	3.42	0.61	–1.10
8. It is your teacher's responsibility to evaluate your course.	3.82	0.64	3.52	0.83	2.15*
Section 2: Abilities	3.23	0.62	3.37	0.78	–0.59
If you had the opportunity, how good do you think you would be at:					
9. Choosing learning activities in class	3.36	0.65	3.45	0.75	–0.55
10. Choosing learning activities outside class	3.27	0.57	3.48	0.76	–1.27
11. Choosing learning materials in class	3.18	0.64	3.30	0.88	–0.70
12. Choosing learning materials outside class	3.18	0.68	3.21	0.78	–0.19
Section 3: Activities	2.14	0.59	2.26	0.62	–1.68
How often have you done the following outside of class?					
13. Read grammar books on your own	1.85	0.57	2.03	0.64	–1.53
14. Written English letters to pen pals	1.42	0.61	1.67	0.69	–2.27*
15. Read newspapers in English	1.88	0.74	1.91	0.68	–0.22
16. Sent e-mails in English	1.64	0.70	1.94	0.79	–2.15*
17. Watched English TV programs	2.67	0.99	2.73	0.84	–0.33
18. Listened to English radio	1.88	0.70	2.24	0.90	–2.67*
19. Talked to foreigners in English	2.18	0.64	2.42	0.66	–1.85

(*continued*)

Table 8.3 (continued)

Question	Pretest		Posttest		
	Mean	SD	Mean	SD	*T*-test
20. Practiced using English with friends	1.82	0.68	2.12	0.70	–1.90
21. Done English self-study in a group	1.24	0.44	1.61	0.79	–2.99∗
22. Done grammar exercises	1.91	0.58	2.09	0.72	–1.18
23. Written a diary in English	1.39	0.66	1.70	0.64	–2.55∗
24. Used the internet in English	2.27	0.76	2.39	0.75	–1.07
25. Done revision not required by a teacher	1.91	0.72	2.00	0.75	–0.55
26. Attended a self-study center (e.g., CILL)	1.58	0.71	1.79	0.78	–1.56
27. Collected texts in English (e.g., articles, brochures, labels, etc.)	1.88	0.82	1.97	0.73	–0.68
28. Gone to see your teacher about your work	1.24	0.56	1.58	0.75	–2.60∗
29. Asked the teacher questions when you did not understand	2.18	0.73	2.48	0.62	–2.06∗
30. Noted new information in writing	2.48	0.80	2.61	0.83	–0.73
31. Made suggestions to your teacher	2.09	0.68	2.15	0.80	–0.34
32. Discussed learning problems with classmates	2.36	0.70	2.58	0.87	–1.19

$*p < 0.05$

A similar trend was found when students were asked about responsibilities to choose learning materials for English lessons. More agreement was found with the concept of less responsibility for teachers (*Meanpre* = 4.00 ± 0.66; *Meanpost* = 3.67 ± 0.78; $t_{(37)} = 2.97$, $p < 0.05$) than for students themselves (*Meanpre* = 2.79 ± 0.89; *Meanpost* = 2.97 ± 0.85). With regard to evaluating learning, students showed more agreement with the importance of their own responsibilities at the end of the project (*Meanpre* = 3.39 ± 0.66; *Meanpost* = 3.24 ± 0.87). Moreover, students required less responsibility from their teachers in evaluating student learning (*Meanpre* = 0.82 ± 0.58; *Meanpost* = 3.55 ± 0.79; $t_{(37)} = 2.18$, $p < 0.05$).

With regard to abilities in choosing learning activities and materials in or outside class, results showed that students had more capabilities in all these areas after the project, though the differences did not reach statistical significance. Still, students seemed to display autonomy in learning activities after completion of the project.

Finally, in relation to English-learning-related activities outside of class, students said they would participate more frequently after the project, including writing English letters to pen pals (*Meanpre* = 1.42 ± 0.61; *Meanpost* = 1.67 ± 0.69; $t_{(37)} = -2.27$, $p < 0.05$), sending e-mails in English (*Meanpre* = 1.64 ± 0.70; *Meanpost* = 1.94 ± 0.79; $t_{(37)} = -2.15$, $p < 0.05$), listening to English radio (*Meanpre* = 1.88 ± 0.70; *Meanpost* = 2.24 ± 0.90; $t_{(37)} = -2.67$, $p < 0.05$), doing English self-study in a group (*Meanpre* = 1.24 ± 0.44; *Meanpost* = 1.61 ± 0.79; $t_{(37)} = -2.99$, $p < 0.05$), writing a diary in English (*Meanpre* = 1.39 ± 0.66; *Meanpost* = 1.70 ± 0.64; $t_{(37)} = -2.55$, $p < 0.05$), seeing a teacher about their own work (*Meanpre* = 1.24 ± 0.56; *Meanpost* = 1.58 ± 0.75; $t_{(37)} = -2.60$, $p < 0.05$) and asking the teacher questions when they did not understand (*Meanpre* = 2.18 ± 0.73; *Meanpost* = 2.48 ± 0.62; $t_{(37)} = -2.06$, $p < 0.05$). Although other English-learning activities (reading newspapers in English, using the internet in English and noting down new information) did not reach statistical significance, the tendency of more active participation was found after comparing students' viewpoints prior to and after the project.

The above results show that students exhibited more autonomy after the flipped reading course. In the process of listening to video lectures prior to entering the classroom, students learned to take more responsibility for their own learning. Positive feedback was consistent with Vaughan's (2014) findings that flip teaching encourages more active learning and Hsieh et al.'s (2017) findings that learning through instructional videos prior to class meetings supports independent learning. The present study's findings also corroborate Fallows' (2013) and Adnan's (2017) conclusion that flip teaching frees teachers to practice individualized teaching and gives students more opportunities to learn by themselves, which in turn encourages learner autonomy. With regard to instructional techniques, the study's treasure hunt activities in the post-reading phase demonstrated students' autonomous learning intent, in keeping with Hung's (2015) conclusion that WebQuest activities promoted students' learner autonomy. The multiple-choice reading comprehension tests providing instant feedback also fostered learner autonomy because students took charge of their own learning and engaged in self-reflection. This finding corroborates those of Suvorov and Cabello (2017)

in their study of learner autonomy in an online adaptive learning system (see also Lai & Gu, 2011). The flipped reading classes in the present study encouraged learner autonomy because students did exercises at their own pace outside of classes. In the final section of the questionnaire asking students to rate the likelihood of exchanging e-mails with foreign peers and engaging in study groups outside of class, students in this flipped reading course showed willingness to interact with peers and join group activities. This positive finding fulfills the social dimension of learner autonomy, as called for in Peeters and Ludwig's (2017) conclusion that social interaction encourages students' shared responsibility for peer reviewing one another's writing.

Conclusions

This project was a starting point for designing flipped teaching courses. The researcher and her assistants have successfully constructed a flip course platform to engage students in active learning. Students showed increased learner autonomy in the areas of (1) assuming more responsibilities in classroom activities, (2) making decisions and (3) engaging in out-of-class English-learning activities. Having documented participants' changes in autonomy in flipped classrooms, and gaining their feedback on course design and development, the researcher hopes that the findings of this study can provide a blueprint for additional flipped reading course design, and that new groups of EFL readers will participate in learning activities more voluntarily. Future studies will extend the design described herein to other language skill courses and further investigate students' motivational changes as a result of flip teaching.

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Part IV

Language Learner Identity

9

A Spanish Speaker and a Friend: Identity Transformation in Foreign Language Chat

Adam Mendelson

Introduction

Online L2 Identity and Offline L2 Use

Within research on language learners' online identities, Lam's (2000) *L2 Literacy and the Design of the Self: A Case Study of a Teenager Writing on the Internet* is already considered a "classic of its kind" (Beavis, 2008, p. 1225). Lam describes an English as a second language (ESL) student who, through maintaining a Japanese pop fansite and communicating online with fellow fans, created an online identity as a competent and confident English language learner and user. His experience contributed to a change in his perceptions of himself in relation to his target language, "from a sense of alienation from the English language in his adopted country to a newfound sense of expressivity and solidarity when communicating in

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English" (Lam, 2000, p. 468). Additionally, these positive perceptions were accompanied by improved written expression in his classes and an increased willingness to engage in oral communication. Lam followed this study with another two female English as a second language (ESL) students who frequented a Cantonese-English bilingual chat (Lam, 2004). She claims that these girls took part in the collective construction of a new identity that enabled them "to develop a sense of fluency and confidence in speaking English that has to some extent been transferred to the local American context" (p. 59). These studies support two propositions about the online identities of language learners. First, in online environments, language learners can potentially present themselves more positively than they might be perceived, or perceive themselves, in face-to-face situations. Second, aspects of these online identities can potentially transfer offline, facilitating oral use of the target language.

The first of these two propositions is supported by other research on online identities in second language acquisition (SLA). Some claim that computer-mediated communication (CMC) can empower immigrant students by providing opportunities for egalitarian communication in the target language that might otherwise be denied both inside and outside classrooms (Spiliotopoulos & Carey, 2005; Warschauer, 2000). ESL students have even been found to be able to "assume the role of native or near-native speakers" online (Spiliotopoulos & Carey, 2005, p. 93). Similarly, foreign language students labeled as shy or inhibited in the classroom have presented much more outgoing personalities in chat (Beauvois, 1998; Hudson & Bruckman, 2002).

Claims that language learners' online identities embody greater confidence and willingness to use their target languages resonate with positive findings regarding CMC and attitudinal, motivational and affective factors believed to influence SLA. Findings include improvements in motivation, confidence, willingness to communicate, learner attitudes and self-image (Beauvois, 1998; Compton, 2002, 2004; Coniam & Wong, 2004; Freiermuth & Jarrell, 2006; Hudson & Bruckman, 2002; Kern, 1995; Spiliotopoulos & Carey, 2005; Thorne, 2003; Ushida, 2005; Warschauer, 1996).

With regard to the second proposition suggested by Lam's (2000, 2004) work that language learners' more positive online identities can

transfer offline, there is less empirical evidence. However, the illustrations of transfer in Lam's work complement research that has found the use of text-based synchronous CMC (i.e., chat) in foreign language instruction to promote the development of oral proficiency (e.g., Abrams, 2003a; Beauvois, 1997; Blake, 2009; Payne & Whitney, 2002; Satar & Özdener, 2008; Sykes, 2005; see Lin (2015) for a meta-analysis of this research). While these studies have documented oral gains through pre- and post-evaluations, they do little to illustrate or explain the phenomenon of transfer between chatting and speaking. Lam's (2000, 2004) ethnographic case studies point to one possible explanation: The construction and adoption of positive online identities may support language learners' oral language use and development. From a learning sciences' perspective, this explanation is best aligned with dispositional views of transfer-of-learning that attribute transfer to the embodiment of attitudes, habits and dispositions (Bereiter, 1995; Packer, 2001).

The premise that language learners can create alternate identities online resonates with pioneering research on virtual environments that depicted the ease with which individuals managed multiple and often fantastical online identities (Rheingold, 1993; Turkle, 1995). The medium's facility for enabling users to present themselves selectively (Walther, 1996) led some to refer to it as a "great equalizer" because "how people look or what their cultural, ethnic, or social background is become irrelevant factors" (Palloff & Pratt, 1999, p. 15). However, not all early research on online identities supports these claims. Baym (1995, 2000) found that in an online community of soap opera fans, users identified themselves by their real names and disclosed their offline experiences in relation to the shows. She points out that much of the early research that highlighted fantastical identity play took place in game-based environments that valued that sort of play (e.g., Turkle, 1995). Baym's (2010) later research led her to conclude that online self-presentation is generally more honest than not, and that social norms have a greater influence on self-presentation than medium.

Furthermore, more recent conceptualizations of online identities link them to offline relationships, as online interactions take place between interlocutors who also interact in person (e.g., Baym, 2010; Boyd, 2007; Leander, 2008; Mitchell, 2003). Boyd (2007) argues that individuals

attempt to present themselves online according to the expectations of their offline peers. Baym (2010) adds, "[t]o the extent online self-representations are grounded in explicit connections with identifiable others…it is difficult to create online selves that wander too far from the embodied ones" (p. 115).

A related finding is that online communication plays a fundamental role in the development and maintenance of offline interpersonal relationships (e.g., Baym, 2010; Fung, 2006; Leander, 2008; Leander & Lewis, 2008). In one review, Leander (2008) notes that "youth routinely remarked that they would not have their particular set of offline friends without the opportunities to meet and develop relationships online" (p. 52). Similarly, Fung (2006) reports that "[c]yberlife has evolved into a vital part of the real life to the extent that real social relationships have become inseparable with cyberlife" (p. 131–2).

It seems then that understanding the online identities of language learners and how they might transfer offline calls for considering the interpersonal relationships that learners develop and/or maintain through online interactions, especially when those interactions take place between classmates who also interact in person. A small number of studies include anecdotes that touch on this entanglement of online identity and relationship development. Students have reported that online interactions help them express themselves more freely and facilitate building better relationships with their classmates, increasing their comfort and motivation to speak to their peers in the target language (Beauvois, 1998; Hudson & Bruckman, 2002; Spiliotopoulos & Carey, 2005). Hudson and Bruckman (2002) refer to a student quote to amplify this idea: "[Now,] when I see some of the people outside of class, I'll say something in French to them. The friendships that were built though the chatroom has given me the confidence to speak more" (p. 129). This statement reinforces the notion that dispositions associated with language learning and use manifest themselves in relation to specific situations and interlocutors, not necessarily as fixed traits (MacIntyre, Clément, Dörnyei, & Noels, 1998).

Interestingly, in her groundbreaking study on the impact of text-based chat on oral proficiency, Beauvois (1997) suggested interpersonal relationships as a mediator. Her analysis of chat logs led her to hypothesize

that chatting enabled students to "[connect] affectively and intellectually" (p. 109), and that perhaps these interpersonal bonds transferred to offline class activities, facilitating oral language use and development. Thorne and Payne (2005) lend weight to this possibility by reporting that "embedding the learning of a foreign language in the larger context of significant relationship development has demonstrated considerable positive effects" (p. 376).

Analytical Framework

The approach used to analyze online identities in this study can be summarized as a view of *identity as performance of local metapragmatic models on multiple timescales through language*. This requires a bit of piece-by-piece unpacking for clarity.

Concerning *identity as performance*, Goffman's (1959) dramaturgical approach has been popular in research on CMC (e.g. Bargh, McKenna, & Fitzsimons, 2002; Donath, 1998; Ellison, Heino, & Gibbs, 2006; Walther, 1996) and CMC in SLA (Hudson & Bruckman, 2002; Lam, 2000), probably because it resonates with assumptions about online identities. According to Goffman, during interactions we perform 'fronts' of how we hope to be perceived, attempting to give certain impressions while trying to avoid inadvertently giving off others that might reveal us as imposters. In CMC, the distance between performer and front is accentuated because electronic mediation separates the person at the computer from the performance on the screen. An assumption that this distance provides greater control over one's performances lends weight to claims that CMC facilitates selective and idealized presentations of oneself (Bargh et al., 2002; Walther, 1996).

As for *of local metapragmatic models*, the notion of identity as performance does not mean that one has full agency to be whoever he or she wants to be. Performances are limited to the range of fronts that will be recognized by the audience (e.g., Blommaert, 2005; Goffman, 1959). Wortham (2006) refers to these recognizable performances as "metapragmatic models," emphasizing a semiotic approach in which one's observed behaviors are understood because they index shared "model[s] of recognizable kinds of

people…participating in a recognizable kind of interaction" (p. 32). In CMC, the notion of local metapragmatic model enables analysis to go beyond identity as community member (e.g., Donath, 1998) to considering the various ways of being a member (or non-member) in the range of interactions typical to that community.

Regarding *on multiple timescales*, Lemke's (2002) notion of identity as performance on multiple timescales is invaluable for considering how individual identity both changes and stays the same over time. In the context of CMC, its application can be illustrated as follows: An analysis of a single chat log might show how an individual participant performs a range of metapragmatic models over a relatively short period of time, potentially taking a different position with every posted comment. An analysis of several logs might reveal how this participant tends to perform the same metapragmatic model in a certain way across a range of interactions. According to Baym (2000), this is how individual identities emerge in online communities, through repeated and distinctive performances of a certain type of community member. Wortham (2006) refers to this repetition as 'thickening,' as individuals become associated with predictable performances. As demonstrated by this chapter, an analysis of all chat logs from a semester-long project can reveal the thickening and fading of different metapragmatic models performed by a specific individual over time, reflecting transformation on this timescale.

In consideration of *through language*, it is language that is arguably the most important semiotic resource for performing identity (e.g., Blommaert, 2005; Butler, 1997; Cameron, 1997; Coupland, 2007; Weedon, 1987). Every utterance can be considered an "act of identity" (Coupland, 2007) that positions the speaker, the audience and any third parties mentioned in relation to one another (see also Schiffrin, 2006). In analyzing the identities of language learners, of special interest are the evaluative and affective stances the learners take toward themselves and other users of the target language (Ochs, 1996; Thompson & Hunston, 2000). In online, text-based environments, given the relative absence of other semiotic resources, language is fundamental to identity performances, as individuals must "write themselves into being" (Boyd, 2007).

The approach taken here to analyze chat logs for evidence of friendship development and maintenance is guided by Baym's (2010) work that

shows that "communication changes as relationships develop and strengthen" (p. 124). Initial markers of friendliness and camaraderie include informal and playful interactions (Abrams, 2003b; Danet, 2001). As people become closer, their conversations span a wider range of topics, and they disclose deeper aspects of themselves (Parks & Floyd, 1996). Another indicator is 'media multiplexity,' as individuals increase the channels through which they communicate (Haythornthwaite, 2005).

The Study

This chapter presents an initial study from a larger, multiple-case study on transfer between chatting and speaking in foreign languages (Mendelson, 2014). This initial study focused on online interactions only; no oral language data were collected. The research questions are as follows:

1. What sorts of online identities do foreign language students develop and perform during chat-based instruction?
2. How do those identities change over the course of a semester?
3. How might those identities and their changes support oral language use?

In accordance with the Spanish department of a California university, the researcher offered voluntary CMC-based tutoring to second-semester Spanish students. This population was chosen because they had been taught a section of the first-semester course the previous semester by the researcher, creating a degree of familiarity with some of the potential tutees. Tutoring activities took place through the university's learning management system and consisted primarily of two weekly chat sessions of approximately 60 minutes each. These chats focused on a combination of course-related topics, questions from students and reflections on learning Spanish. Over the semester, 24 chat sessions took place, with attendance ranging from one to eight students, in addition to the researcher acting as a tutor.

An embedded case study design was used to make observations about the group of participants as a whole while also zooming in on the experiences of individual students (Yin, 2009). The chat logs comprise the

primary data source. During the initial rough-grain analysis, Xiao's case stood out because of the salience of his transformation. He was not the most frequent participant in the project, but a very compelling case emerges from the transcripts of the 13 sessions he attended and the additional 2 in which he was mentioned but not present. During and after the tutoring project, Xiao and the researcher exchanged several e-mails through which he provided his perspectives on participating in the project and on his overall trajectory as a Spanish learner and user.

Xiao's Transformation

Xiao was born in China and moved to North America as a child. At the university, he majored in biology and minored in education, studying Spanish to prepare for his future as a teacher in California. For Spanish 1, the researcher was also his instructor. Xiao was a motivated student who actively participated in all classroom activities. He reported that his favorite aspects of class were group activities and daily practice speaking and listening. The following semester, as a Spanish 2 student, Xiao was one member of a core group that participated in online tutoring.

While Xiao and his classmates performed many different local metapragmatic models while chatting, this chapter focuses on two: (1) *the critical student and inadequate speaker*, and (2) *the student who speaks Spanish with his/her classmates and enjoys it*. At different times throughout the project, Xiao exemplified these two metapragmatic models. For the first several chat sessions of the semester, Xiao regularly performed the critical student and inadequate speaker. However, after the ninth session, these performances disappeared and Xiao increasingly performed the student who speaks Spanish with his classmates and enjoys it. This transformation coincided with evidence of a strengthening friendship with Anthony, Xiao's classmate during both Spanish 1 and Spanish 2.

During the ninth session of the project, over a span of just a few minutes, Xiao performed both metapragmatic models. This segment of chat log serves as a fractal for Xiao's overall transformation: His changing performance during this segment mirrors his greater transformation over the entire semester (Kramsch, 2002a; Larsen-Freeman, 1997). Here, Xiao's

transformation is presented through a detailed analysis of this fractal, first focusing on the critical student and inadequate speaker, and then the student who speaks Spanish with his classmates and enjoys it. For each pass, turns are only included based upon their relevancy to the corresponding metapragmatic model. The full segment is included in the Appendix. Spanish has been copied directly from chat logs, while English translations (in italics directly below Spanish) generally reflect more normative language. During the analysis of the discourses that transpired, due to the narrative nature of the data themselves, the researcher will refer to himself in the first person.

Xiao the Critical Student and Inadequate Speaker

Early in the ninth session, Xiao informed us that he would not participate as actively as usual because he was concurrently chatting with classmates from another class about an assignment. His participation was sporadic, including a 15-minute stretch during which he made no comments. He rejoined the conversation when it turned to evaluations of the students' current Spanish classes:

1	Adam:	a ustedes les gustan tus clases de espanol este semestre?
		do you guys like your Spanish classes this semester?
2	Xiao:	mas o menos pienso que debemos hablar mas
		more or less, I think we should speak more
4	David:	um… es un poco aburrido. No hacemos muchos actividades en grupos
		um… it's a bit boring. We don't do many group activities
6	Adam:	no se si recuerdan, pero el semestre pasado no empezabamos a hacer
		actividades en grupo hasta la segunda mitad del semestre
		I don't know if you guys remember, but last semester we didn't start doing group activities until the second half of the semester
8	Adam:	Xiao, en tu clase haces proyectos en grupo, no?
		Xiao, in your class you guys do group projects, right?
10	Xiao:	si recientemente
		yes, recently
12	Xiao:	nunca hay demasiado tiempo para hablar
		there's never too/very much time to speak

Here, I asked the students if they liked their current Spanish classes (line 1) and Xiao broke his temporary silence by evaluating his class as "mas o menos," literally meaning "more or less" but perhaps better translated as "so-so" (line 2). He justified this lukewarm evaluation by explaining that the class *should* dedicate more time to speaking the language (line 2). David, a classmate of Xiao's from Spanish 1 but in a different section for Spanish 2, also gave a critical evaluation of his class, citing an absence of group activities (line 3). I tried to give them some encouragement by suggesting that perhaps there would be more group activities in the future (line 6), and then, based on my knowledge of the teaching style of Xiao's instructor, to some extent I challenged Xiao's position by suggesting that his class must have included some group activities (line 8). Xiao acknowledged that recently there had been some (line 10), but reiterated his general criticism that there was *never* enough time in class for speaking Spanish (line 12).

Xiao's critical evaluation of his class was linked directly to his desire for more opportunities to speak Spanish, a desire that reflected his perceived inadequacies as a Spanish speaker. In prior performances of the critical student and inadequate speaker, he had made this relationship more explicit. During the first chat of the project, he referred to himself as "tan 'awkward' para hablar con otras personas" (*too awkward to speak to other people*) and then added, "tengo que practicar hablar…porque no tengo mucho tiempo en clase para hablar" (*I need to practice speaking…because I don't have much time in class to speak*). During the fourth session, he referred to himself as "inartículo" (*inarticulate*) and complained, "nunca tenemos tiempo para hacer [las actividades orales] pero me gustaría hacerlo" (*we never have time to do the oral activities, but I'd like to do them*). Over the first several chat sessions, Xiao's negative evaluations of himself and his class thickened into a tight relationship in which the criticisms of the class were justified by his own perceptions of his continuing inadequacy. As an inadequate speaker, Xiao desired more opportunities to practice, which from his perspective his class was not providing.

I showed Xiao this segment from the chat log and asked him what he remembered. His response corroborated my analysis:

> I remember this part of the conversation—it was the beginning of the semester and I was still feeling a bit nostalgic about our class because there

> were so many people who were eager to practice speaking Spanish and you gave us many opportunities to do that. I remember being struck by the difference with my new instructor because, up to that point, she had spent more time explicitly teaching Spanish grammar. *I felt that I had a solid grasp of Spanish grammar and the basic vocabulary for the most part, but [was] anxious to develop my verbal abilities because in my opinion they lagged behind my writing abilities. Based on some of the lectures, I was starting to worry that I wouldn't get a chance to develop those speaking skills in class.* (Emphasis mine)

Xiao's repeated online performances of the critical student and inadequate speaker were aligned with his experience in class. That said, his mention of nostalgia does warrant consideration of my position as his former instructor. I return to this issue in my discussion.

Xiao the Student Who Speaks Spanish with His Classmates and Enjoys It

A second pass through the fractal illustrates how multiple conversations sometimes take place in parallel during text-based chat (e.g., Crystal, 2006), and that identities performed through text can be fluid and even contradictory (Ivanic, 1998). As Xiao and David complained about their classes, Amanda, a former classmate of theirs from Spanish 1 but in a different section for Spanish 2, presented a contrasting evaluation of her class. In responding to Amanda's comments, Xiao took a different position than the one discussed above by giving his first performance of the semester of the student who speaks Spanish with his classmates and enjoys it:

1	Adam:	a ustedes les gustan tus clases de espanol este semestre? *do you guys like your Spanish classes this semester?*
5	Amanda:	si si! mi profesora es muy bien *yes yes! my professor is very good*
7	Adam:	Amanda, cuales son las cosas que te gustan de tu clase? *Amanda, what are the things you like about your class?*
9	Amanda:	la profesora es alegra y muy divertida *the professor is happy and fun*
11	Amanda:	y casi dia hacemos actividades en grupos *and almost (every) day we do group activities*

13	Adam:	entonces todo prefieren actividades en grupos? *so all of you guys prefer group activities?*
20	Amanda:	encontro los estudientes interesantes en grupos *I think the students are interesting in groups*
24	Xiao:	jaja si Amanda es verdad *haha yes Amanda that's true*
25	Xiao:	me gusta mucho hablar en grupo con Anthony *I like speaking to Anthony in groups very much*
27	Amanda:	es divertido a practicar espanol con los otros estudiantes en grupos *it's fun to practice Spanish with the other students in groups*

Again, the stretch starts when I ask the students if they liked their current classes (line 1). Unlike Xiao and David, Amanda responded with an emphatic yes (line 2), highlighting her instructor (lines 2 and 9) and the frequency of group activities in the class (line 11). I asked if all the students preferred group activities (line 12), a question that bridged the two temporarily divergent conversations in the fractal, and Amanda explained that interacting with students in groups was interesting (line 20). Xiao laughed and agreed with Amanda (line 24) before performing the student who speaks Spanish and enjoys it by acknowledging his in-class interactions with Anthony (line 25). The stretch of discourse ends with Amanda performing the same metapragmatic model (line 27).

From this point forward in the project, Xiao's performances of the student who speaks Spanish with his classmates and enjoys it thickened. During almost every chat for the rest of the semester, he made references to speaking Spanish, both inside and outside of class. He acknowledged oral group activities in class and thanked classmates for participating with him, for example: "carmen! gracias por estar en mi grupo hoy!" (*Carmen! Thanks for being in my group today!*). He reported meeting with classmates outside of class to practice and made additional plans to do the same, for example:

Anthony:	Xiao, quieres conocer el miercoles para practicar *Xiao do you want to meet on Wednesday to practice?*
Xiao:	bien, el tiempo mismo? *okay/yes, the same time [as last time]?*

He also reported bumping into current and former classmates on campus and speaking Spanish with them, for example: "oh! este viernes pasado encontre a david y se hablamos en espanol por 10–15 minutos" (*oh! this past Friday I bumped into David and we spoke Spanish for 10–15 minutes*).

At the same time, while this metapragmatic model thickened for Xiao, his performances of the critical student and inadequate speaker disappeared. Even in session 13 when Anthony criticized their current class by saying that the previous semester had been better "porque muchos los estudiantes hablaban en espanyol" *(because many students spoke in Spanish*), instead of explicitly joining in this criticism, Xiao only jokingly validated the comment, saying "jaja… los recuerdos" (*haha… the memories*):

> Through email I asked Xiao about the change I noticed. He responded:
>
> I gradually changed my opinion of the class in part because I began to get to know my classmates more and also our instructor began doing a variety of things in class, including more group-based activities, listening to songs, watching videos and stuff like that. I think the most important factor for me in a language class is feeling good about interacting with my classmates and practicing with them. During that time, I met other students who also tried hard to learn and speak Spanish in class and were pretty friendly.

Again, Xiao's online representation was faithful to his offline experience. The transformation of his online identity reflected changes in his offline experiences.

However, in the same e-mail, I asked Xiao what role, if any, chatting may have played in the observable change. He responded:

> [Chatting] facilitated that connection that I made with the other students in our class, making speaking to them easier in person. The people I felt most comfortable practicing and speaking Spanish to were the students who I ended up knowing on contexts outside of class—either during the chat, or in another class, or just talking to them on campus.

According to Xiao, then, the chat logs did not simply reflect offline changes, but documented interactions that formed part of those changes. What developed online for Xiao and transferred to his subsequent oral use of Spanish was perhaps more social than linguistic.

Xiao and Anthony

It is no coincidence that Anthony was the student whom Xiao mentioned in the fractal while performing the student who speaks Spanish with his classmates and enjoys it. About half of Xiao's performances of this metapragmatic model involved references to Anthony. These references represent one of several indications of a strengthening friendship between these two.

From early in the project, Xiao and Anthony engaged in the type of playful teasing that Abrams (2003b) linked to camaraderie. For example, during the fourth session of the project, Xiao made a joke about online dating which he then retracted, causing Anthony to tease him in English:

Xiao:	lo siento, es una broma er... lame *sorry, that joke was lame*
Anthony:	hahahahah, lo siento por mi ingles....but Xiao, i'm literally laughing out loud *hahaha, sorry for my English... but Xiao, I'm literally laughing out loud*
Anthony:	"es una broma er.....lame" *"that joke was lame"*

In a later session that coincided with the syllabus topic of health issues, the two of them took up my course-related question jokingly while explicitly aligning themselves with one another:

Adam:	ustedes que hacen cuando estan estresados? *what do you guys do when you're stressed?*
Anthony:	tenia mucho miedo y lloraba en los hombros de mi novia *I was scared and I cried on my girlfriend's shoulder*
Xiao:	lloro en la cama *I cry in bed*
Xiao:	Jaja *Haha*
Xiao:	Anthony y yo pensamos uhh... alike *Anthony and I think alike*
Anthony:	estamos en acuerdo *we agree*

Xiao and Anthony's strengthening friendship also manifested in other ways. During the fourth session of the project, in the middle of a conversation about a class activity, Anthony addressed Xiao directly about a totally different topic.

Anthony:	Xiao, hoy era mi primera dia de enseniar, no estaba bien……. era muy desorganizada *Xiao, today was my first day teaching, it wasn't good… it was very disorganized.*
Xiao:	uh oh, por qué era desorganizada? *uh oh, why was it disorganized?*
Anthony:	no podia encontrar los 'worksheets' para mis estudiantes…. por eso, por 7 minutos, no hicieron nada *I couldn't find the worksheets for my students… so for 7 minutes they didn't do anything*
Xiao:	es una problema común de los maestros, no? *It's a common problem for teachers, right?*

Through e-mail, I later learned that Xiao had convinced Anthony to do some volunteering in a local elementary school. In the above interaction, Xiao and Anthony were essentially ignoring the rest of us to engage in some otherwise personal commiseration about the challenges of teaching. Exchanges like this illustrate Xiao's and Anthony's increasingly wide range of shared interests and their willingness to disclose their own failures and shortcomings (Baym, 2010; Parks & Floyd, 1996).

As their friendship strengthened, they also reported interacting through an increasing number of channels (Haythornthwaite, 2005). During session 13, they exchanged instant messaging (IM) usernames so that they could continue chatting after our session had ended. Through e-mail, Anthony later told me that they ended up interacting regularly through Facebook and IM. By the end of the tutoring project, Xiao and Anthony were in frequent contact in person, both in class and out of class, as well as online, through the tutoring sessions and other platforms.

A full year after the tutoring project, Xiao reported that he maintained contact with Anthony and considered him a friend. He added that he was continuing to use Spanish in his work as a California school teacher, and he credited his informal use of Spanish with Anthony as a crucial factor in preparing him to understand peer interactions between his Spanish-speaking students.

Discussion

Xiao's transformation toward performing a positive language learner identity is in some ways similar to the experiences of the ESL students described by Lam (2000, 2004). However, the relationship between his online identity and his offline experiences differs greatly from what Lam described. Lam depicts her subjects as marginalized in the classroom and liberated online. Their positive online identities are presented as fundamentally different from their offline counterparts. In contrast, Xiao's online identity seemed to be clearly aligned with his offline experiences. When he was unhappy in the classroom, he expressed that discontent online, and when he became satisfied in the classroom, that satisfaction was manifested in the discourse online. One possible explanation for this difference is that while Xiao was interacting online with interlocutors that he also interacted with in person, Lam's subjects, for the most part, did not interact with the same interlocutors across environments. In other words, Lam's subjects may have sensed greater freedom to perform alternative identities (Baym, 2010).

There are also similarities and differences between Xiao's experience and those of Lam's subjects in terms of implications for transfer. In all cases, there are indications that what happened online transferred positively to subsequent oral communication, but what specifically transferred is quite different. In Lam's work, learners are described as adopting online identities that embodied positive dispositions toward using their target language. These dispositions are then reported to have transferred offline, facilitating oral language use. In this sense, it is the learners who changed online, enabling them to behave differently in the pre-existing conditions of their offline contexts. In Xiao's case, what appeared to transfer offline were his strengthening friendships with his classmates, especially with Anthony. These online changes were actually an integral part of similarly changing conditions in his offline environment. His online relationship development and maintenance supported the emergence of increasing opportunities for him to practice speaking Spanish both inside and outside of his class. So while his online transformation reflected offline changes, it was also part of those same changes. Unlike Lam's subjects, Xiao was not designing a better language learner

identity that would eventually manifest itself offline; he was developing relationships that supported that identity across environments.

Having claimed that Xiao's online transformation reflected changes in his offline language learning environment, I must also consider my possible role in shaping his transformation. The possible link between Xiao's performances of the critical student and inadequate speaker and his expressions of nostalgia toward the class I had taught the prior semester could reflect a desire to praise my class, the so-called halo effect. Furthermore, in the fractal used in this chapter, to some extent I challenged Xiao's criticism of his class and aligned myself with his current instructor. Perhaps the fading of his criticisms was partially motivated by a perception that I no longer wanted to hear negative evaluations of my colleague. That said, my actions in no way account for his subsequently thickening performances of the student who speaks Spanish with his classmates and enjoys it. Additionally, many of Xiao's reports of speaking Spanish, and especially those from outside of class, were corroborated by other students. When Xiao was not present, other students sometimes reported speaking Spanish with him.

Conclusions

Generalizations from a single case study are always limited, but Xiao's experience does invite consideration of greater implications. Complementing prior reports of communicative and dispositional benefits of text-based chat in foreign language instruction, Xiao's case reveals the possibility of social and interpersonal benefits as well. It is not the intent here to make a technologically deterministic argument by suggesting that chat, by default, leads to interpersonal relationship development (see also Thorne, 2003). Instead, as Xiao explained, for him, chatting represented an out-of-class context through which he got to know his classmates better. He never mentioned anything about the electronic nature of chatting, but instead stressed the importance of developing relationships that spanned multiple contexts in making him feel more comfortable speaking Spanish with his classmates.

The importance of friendship development appears relatively infrequently in research on foreign language instruction (with Thorne &

Payne (2005) marking an important exception). In ESL research, however, friendship development is reported as a significant factor. In their review, Gándara and Orfield (2010) cite findings that "the best predictor of an immigrant student gaining a firm mastery of English and doing well in school was if he or she had a good friend who was a native speaker of English" (p. 13). In light of findings such as these, how Xiao's experience of friendship development in chat might generalize is a question for thought. How might computer-mediated communication be used in both foreign and second language instruction to provide students with more opportunities to engage with target language speakers? Could such interactions support the development of friendships that could in turn support language learning?

Xiao's case also points to the relational nature of dispositions associated with language use and acquisition (MacIntyre et al., 1998). His transformation could perhaps have been presented in terms of traditional 'individual differences' such as attitudes, motivation and personality traits (e.g., Lightbown & Spada, 2006), but such an analysis would have only told half the story. Xiao's transformation, from awkward and critical to comfortable and content, took place in relation to specific interlocutors and changing social conditions. He changed in relation to the greater language learning ecology that he and his interlocutors were simultaneously changing (Kramsch, 2002b). If his online identity and its associated dispositions had been conceptualized as purely individual traits, the link between his transformation, his relationships with his classmates and the role of chatting in developing those relationships might have been missed.

Appendix: Fractal Segment from Chat Session 9

1	Adam:	a ustedes les gustan tus clases de espanol este semestre? *do you guys like your Spanish classes this semester?*
2	Xiao:	mas o menos pienso que debemos hablar mas *more or less, I think we should speak more*
3	Xiao:	(hola estoy aqui) *hi, I'm here*

4 David: um… es un poco aburrido. No hacemos muchos actividades en grupos
um… it's a bit boring. We don't do many group activities
5 Amanda: si si! mi profesora es muy bien
yes yes! my professor is very good
6 Adam: no se si recuerdan, pero el semestre pasado no empezabamos a hacer
actividades en grupo hasta la segunda mitad del semestre
I don't know if you guys remember, but last semester we didn't start doing group activities until the second half of the semester
7 Adam: Amanda, cuales son las cosas que te gustan de tu clase?
Amanda, what are the things you like about your class?
8 Adam: Xiao, en tu clase haces proyectos en grupo, no?
Xiao, in your class you guys do group projects, right?
9 Amanda: la profesora es alegra y muy divertida
the professor is happy and fun
10 Xiao: si recientemente
yes, recently
11 Amanda: y casi dia hacemos actividades en grupos
and almost (every) day we do group activities
12 Xiao: nunca hay demasiado tiempo para hablar
there's never too/very much time to speak
13 Adam: entonces todo prefieren actividades en grupos?
so all of you guys prefer group activities?
14 Xiao: solamente en mi opinion
only my opinion
15 Xiao: si
yes
16 Adam: les explico algo…
let me explain something to you guys
17 Amanda: a veces, la profesora habla ingles para explicar mejor
sometimes, the professor speaks English to explain better
18 Adam: a muchos profesores de idioma no les gusta hacer actividades en grupo porque tiene miedo que los alumnos hablen ingles
many language instructors don't like to do group activities because they are afraid that the students will speak English
19 Xiao: pues… es verdad pero creo que con paciencia (patience) los estudiantes van a hablar en espanol
well… that's true but I think with patience ∗(patience)∗ students will speak Spanish
20 Amanda: encontro los estudientes interesantes en grupos
I think the students are interesting in groups
21 Xiao: si no son confidantes, no van a hablar inmedianmente en espanol
if they aren't confident, they're not going to speak in Spanish immediately

22	Xiao:	∗shrug∗
23	Xiao:	no se *I don't know*
24	Xiao:	jaja si Amanda es verdad *haha yes Amanda that's true*
25	Xiao:	me gusta mucho hablar en grupo con Anthony *I like speaking to Anthony in groups very much*
26	Adam:	amanda, en tu clase, durante las activitidades en grupos, hablan en espanol o ingles? *amanda, in your class, during group activities, do you guys speak in Spanish of English?*
27	Amanda:	es divertido a practicar espanol con los otros estudiantes en grupos *it's fun to practice Spanish with the other students in groups*

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10

Catalan Teenagers' Identity, Literacy and Language Practices on YouTube

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Introduction

This chapter addresses the interconnection between identity building and the use and learning of language and literacy online. We will do so through a case study that investigates the specifics of three Catalan teenage language users and learners who use YouTube as a multimodal space of confluence for making meaning. We will particularly address three research questions:

1. How do teenage language users and learners in Catalonia appropriate YouTube?

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2. What means of performing identity do teenagers in Catalonia employ on YouTube?
3. How do teenagers in Catalonia as youtubers develop such means of identity representation and performance in relation to language and literacy practices?

Theoretical Framework and Literature Review

Theoretically, our study draws on (1) the concept of the 'participatory culture' as a contextual framework, (2) *New Literacy Studies* (NLS) as a flexible and comprising theory for (digital) literacy and language learning, (3) the work on identity by Gee (2000) and (4) the empirical study on identity and language learning by Thorne and Black (2011). These theoretical perspectives allow us to pin down the identity traits of language learners when using digital technologies and spaces, as in the case of Catalan youtubers.

The Participatory Culture

Opposed to the consumer culture with static and compartmental roles of active authorship and passive readership, the participatory culture enables participants to adopt and adapt ways of artistic and cultural expression and civic engagement, as well as opportunities to create and share such creations and some sort of mentorship scheme where knowledge is transferred horizontally among participants (Buckingham, 2011; Jenkins, 1992). With roles of authors and readers blurred, the participatory culture thrives under the umbrella of the internet, amplifying its capabilities (Jenkins, Mizujko, & Boyd, 2015). This applies directly to language learning online, as it becomes increasingly necessary to develop skills to contribute to, create and curate texts online in the language that is the medium of communication (Godwin-Jones, 2015).

New Literacy Studies

New ways of participating online inextricably open up spaces and opportunities for expressing the 'self' in multiple new ways, with new literacy

practices and language encounters. These new literacy practices coexist—or even collide—with school practices because often they are not "recognised as valid or valuable by dominant institutions of society" (Barton & Papen, 2010, p. 10). *New Literacy Studies* (NLS) cover both dominant and vernacular literacy practices, with a conceptualization of reading and writing as socially and culturally embedded practices with social purposes (Barton, 2007). In parallel to NLS, we converge with the study of *digital literacy practices* (also known as *new literacies*), which are social interactions mediated by written texts—in a broad, multimodal sense of *written*, or 'wrighting' (as Ivanič (2006) has termed it)—generated and/or distributed on the Web (Barton & Lee, 2013; Lankshear & Knobel, 2011). Additionally, such literacy practices found online often use English as the lingua franca. Sauro (2017) suggests that practices such as fanfiction or amateur translation and subtitling offer teachers avenues to incorporate fannish activities in the language classroom.

Gee's Conceptualization of Identity

Catalan youtubers are at an intersection between a multilingual context and the superdiversity of the internet. While the Catalan part can be more of an essential marker provided by each individual's sociocultural background, the 'youtuber' self is socially negotiated: "the identity of the fan is constructed through interpersonal relations and feelings" (Lamerichs, 2018, p. 31). To explore this intersection, we chose Gee's conceptualization of identity (Gee, 2000). The 'virtually' natural trait of being a youtuber can, according to Gee, show markers tending to different types of identification: (1) affinity identity, experiences shared in the practice of affinity groups; (2) discourse identity, traits recognized in the discourse of or dialogue with rational individuals; and (3) institution identity, a position authorized by authorities within institutions. In the case of YouTube, these identification practices occur in a 'semiotic social space' (Gee, 2005). People access YouTube as a portal where signs and meaning are generated by content produced and consumed by people who engage in literate practices, with the contents and with other people. Acknowledging the fact that identity and language learning cannot be

separated, Thorne and Black (2011) offered an empirical study on Nanako, an English as a foreign language (EFL) learner in Canada who, thanks to participating in fanfiction sites, developed her English skills. Fanfiction sites are parallel to YouTube in that they create a space for affinity and identification, while YouTube favors multimodal meaning making rather than written production.

Methodology

This is a qualitative-interpretative, multiple-case study (Yin, 2003) focusing on three Catalan teenage youtubers. We follow the principles of digital ethnography (Hine, 2015), in a hybrid manner. We have face-to-face access to informants through interviews while also observing and capturing their activities online.

Participants

From previous studies in formal educational settings (Author 1), some students stood out as active users of Web 2.0 (Facebook, Twitter, Instagram, YouTube, blogs, forums) prompted by fan activities (sports, fashion, anime, manga, gaming). We focus on three of those users who upload content on YouTube.

These three uploaders belong to a group of friends of five boys residing in Barcelona and having Catalan and Spanish as their first language (L1). All of them used YouTube, but our three participants use it in a productive way. The participants are (with pseudonyms) presented in Table 10.1.

Instruments and Corpus

Interview

We conducted a semi-structured interview in Catalan covering the informants' sociolinguistic background, fan practices, literacy and technological habits, perceptions about which activities they do online, and how

Table 10.1 Participants (own creation)

Name	Age	Birthplace	Residence	First language(s) and contexts of usage	Foreign language and context of usage of self-reported Common European Framework of Reference (CEFR) level (used in schools and familiar to students) (Council of Europe, 2001)
Jova	14–16	Catalonia	Barcelona	CAT: Home, school, friends SPA: School, some family	ENG (B1): Videogames, music, films, family travels abroad, school
Sema	14–16	Argentina	Barcelona	SPA: Home, school CAT: School, friends	ENG (B1): Videogames, music, films, school
Marse	13–15	Catalonia	Barcelona	SPA: Home, school, friends CAT: School, some family	ENG (A2): Videogames, YouTube tutorials about technology, music, school

and why they do them. After the online observation, we conducted a second interview for validation and further in-depth exploration. The quotes used in this chapter are translated into English for easy reference.

Observation

We conducted non-participant observation of their activities online, by keeping a diary with field notes and screenshots. The observation took place at various times over a year (2017–2018).

Videos

During the observation, we have also considered the YouTube videos themselves and eventually included them as part of the data corpus for

analysis. The data in this corpus highlight the discursive genre of the video (gameplay, enactment of self-created fictional drama, vlogs on trips, tutorials), the type of participation (individual, collaborative), and the technical and linguistic features used.

Overall, the corpus of data is composed of six interviews of about 45 minutes each, 200 screenshots from the online observation and 159 videos uploaded on YouTube by the observed participants. The data allowed us to triangulate participants' discourses, perspectives and practices. We conducted content analysis (Kohlbacher, 2006) to unearth recurrent trends and topics, and establish possible relationships between them and our research questions. We triangulated data by obtaining information through various instruments and internally confirming our analysis, which was conducted by two researchers.

Inspired by *New Literacy Studies* (Barton, 2007), we reduced the complexity of data by analyzing three categories: (1) roles and functions, (2) norms and behaviors, and (3) production practices, because these three provide more explicit cues and markers of identity building and performance. Throughout the findings, we signal some events of translanguaged practice and language use that show the value of affinity spaces and social semiotic spaces such as YouTube for engaged language practice.

Ethics

In keeping with the standards laid out by the international Association of Internet Researchers (Markham & Buchanan, 2012), our study follows updated protocols of internet research and was approved by the Ethics Committee at Pompeu Fabra University, where the study originated. The servers of the said institution properly store all data, including participants' consent forms. However, concerns with copyright issues led us to exclude some figures containing screenshots from YouTube from the text body of this chapter. To remedy any loss of information, we have agreed to provide access to a Dataset folder containing contextualized, anonymized figures relevant for the proper reading of the chapter (files are Dataset A to Dataset J, and a Read Me document). The link to this Dataset folder is http://bit.ly/Dataset_Ch10. Throughout the 'Findings'

section, we refer to this link and specific files within the Dataset folder. The Dataset folder with the ten files features a DOI number and is usable under a CC-By.4.0 license. The Read Me document provides a recommended reference for the Dataset folder, also present in the bibliography section at the end of the chapter.

Findings

Roles and Functions

Multiple roles and functions emerged from our participants' discourses and practices (Fig. 10.1). Namely, we found that participants can act as watchers, followers, commentators and youtubers. Within the youtubers group, we identity tutors and gamers. And within gamers, we identified the beta-testers. We can locate these roles along two axes: (1) the degree of engagement in the social network and (2) the level of specialization (Fig. 10.1).

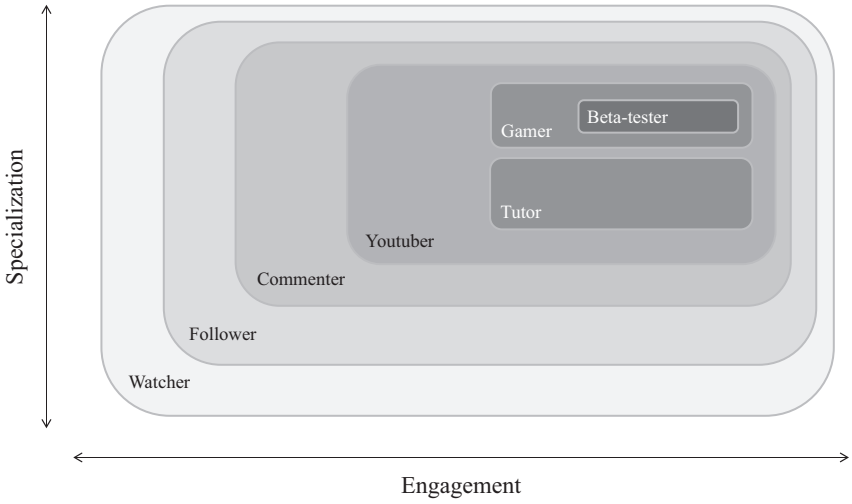


Fig. 10.1 Participants' roles and functions on YouTube (own creation)

First, along the engagement axis, we see how a particular role comprises more production-oriented or consumption- and curation-oriented practices. Second, on the specialization axis, we look at how these roles are thematically produced by and targeted at specialized users or not. These roles and the corresponding functions are not static and separate. They are a continuum of social and linguistic engagement on the internet. This means that one user can perform multiple roles and functions concomitantly. For instance, users can watch, like and comment on a video that tutors them on how to edit a second video to publish later. More specifically, we infer the following tentative definitions of predominant roles and specializations based on our observation. More specialized and engaged roles incorporate less specialized and engaged ones:

- *Watchers* watch videos of all kinds and genres and for any or no purpose and leave no intended trace (though the visit count increases with their visits)
- *Followers* watch videos of all kinds and genres but follow contents of their liking (music, sports, news, games). Following is enacted by liking and/or subscribing. Liking endorses the adequacy of a video in relation to its function, and subscribing shows interest in or endorses the quality of a particular channel. While liking is less engaging than subscribing, the two tend to appear together as a conjoint performative act and are called upon by youtubers who want more followers in the manner of 'like & subscribe' users or the local language variants (e.g., 'm'agrada i subscriu-te,' 'me gusta y suscríbete,' or even 'translanguaged' versions such as 'like y suscríbete'). For an example on Jova's video disposition and petition for likes, see Dataset A here: http://bit.ly/Dataset_Ch10.
- *Commenters* watch videos of all kinds and genres from channels that they may or may not follow and like, but the video motivates them to leave a comment. Comments can either be positive or negative, highlighting features of the youtuber or the contents of the video. They can also point out new lines of discussion in relation to some of those features. Other commenters can like, dislike and reply to earlier comments.

- *Youtubers* upload videos of all kinds and genres to the channels they have created. As seen in the literature review, youtubers can be categorized according to their celebrity status or professional outlook (more amateur/more professional), as well as their level of engagement (former youtuber/active youtuber).
- *Gamers* mostly upload content pertaining to gaming. If youtubers are strongly affiliated to the gaming affinity space, they may choose to use YouTube as a conduit to express such an affiliation. Beta-testers are gamers, who occasionally are also youtubers, who are contacted by gaming companies to test games prior to commercialization in a quasi-professional experience.
- *Tutors*, in like manner, mostly upload how-to tutorials. They teach or tutor users on the procedures to do a task or activity of any sort.

In consideration of membership in these categories, Jova would be a youtuber and a gamer, Sema would be exclusively a gamer and Marse mostly a tutor, while his beginnings on YouTube deal with games and gaming.

Let us address now how these distinct levels of engagement and specialization translate into different ways of self-representation and performance online.

Norms and Behaviors

Being part of YouTube becomes a social practice among the group of boys. To participate in YouTube, there is no requirement other than having internet access and navigating the site. However, all participants report that they set up an account on YouTube with several decisions to make. Users must provide an e-mail, choose a username and a profile picture, and potentially configure details of the channel background and layout. This is interesting, as it shows a clear disposition of being part of sites online. Even if it means being simply a watcher, it is an 'active' watcher who is a member of the community.

All informants try to separate their formal and academic lives from their vernacular counterpart, and that is relevant because it shows an

awareness between two different social spheres requiring different practices, such as setting different e-mail accounts: one for school and a second one for social media and games.

Informants also choose nicknames for their channels. In creating them, our youtubers exhibit multiple linguistic strategies, with varying degrees in separating personal from digital identities. For anonymization purposes, we cannot show their real names or nicknames, but, using the Catalan name Antoni Gaudí, we supply consistent examples of how participants linguistically think up nicknames.

Table 10.2 shows a direct correlation between literacy and language practices and the awareness of separate identities online and offline. The more sophisticated literacy practices are (including complex word-formation strategies, creativity and translanguaging), the more separate the digital identity from the offline counterpart. Through language

Table 10.2 Participants' strategies for choosing usernames on YouTube (own creation)

Digital name vs. real name: Less separate ↓ More separate

Strategy	Informant	Example
[real name+series of numbers]:	Marse	Fictitious real name: *Antoni Gaudí* Fictitious YouTube nickname: *Gaudí123*
[initial letter(s)+real name]:	[seen in informants' friends]	Fictitious real name: *Antoni Gaudí* Fictitious YouTube nickname: *agaudí (A(ntoni)+Gaudí)*
[apocopes from real names+blending]:	[seen in informants' friends]	Fictitious real name: *Antoni Gaudí* Fictitious YouTube nickname: *Antandy (Ant(oni)+candy*
[identity trait as hypocorism or hypocorism+identity trait including words in English, e.g., player or gamer]:	Jova (production channel for gaming)	Fictitious real name: *Antoni Gaudí* Fictitious YouTube nickname: *TheGamer_AG* or *Toni_TheGamer*
['translanguaged' creative respelling, anglicized version of real name]:	Jova (production channel)	Fictitious real name: *Antoni Gaudí* Fictitious YouTube nickname: *Anthony Gaudious*
[novel creations with hypocorism]:	Sema	Fictitious real name: *Antoni Gaudí* Fictitious YouTube nickname: *Gauton (Gau(dí)+(An)ton(i))*

use, participants are putting into practice the figures of speech that they learn in the language classroom.

Similarly, in order to identify and be identified as users of YouTube, they need to choose and customize profile pictures and background pictures. Personalization and self-identification on this multimodal level also encompasses an awareness of separating the digital and the offline selves. The profile picture of their online persona or avatar, and its colors and shapes contain important psychological cues (Liu, Preot, & Ungar, 2016) and in our view, social and playful identity making, too (Table 10.3).

Marse does not create an online persona different to his real self. His avatar coincides with his nickname, and his nickname coincides with his real name. He does not separate his online and offline identities at all. However, Jova's and Sema's sophisticated choices regarding avatars and nicknames project numerous cues on how they construe YouTube as a digital environment and their activity in it. Let us examine these two special cases in detail.

Jova's Strategy for Creating an Online Persona as a Youtuber

Jova's focus is to play and discover YouTube as a part of a process wherein he develops his IT and media skills as an 'executive director':

> I love the idea of having and developing creativity, not just searching for creativity elsewhere. So, I love putting the activities I do on my videos and see if people like it. My activity on YouTube originates, mainly, watching other people who are devoted to YouTube professionally, and since I was a child, I've liked cinema. That's why I wanted to make this project, which is sort of a task in which I am the director and executor of the idea, and that finally this idea of videos, which is a process, has a result people commenting and liking. I wanted to have this 'extra' in my life, this new leisure activity. [Jova, May 2017, quote 1]

Jova's four self-representations clearly maintain a multimodal, discursive and even stylistic coherence regarding color choice. It becomes clear that green and red are the colors Jova identifies with and wants to be identified with. The red cap and the green hoodie help him convey a

Table 10.3 Participants' strategies for profile pictures and background pictures choice. (For avatars, see Dataset B here: http://bit.ly/Dataset_Ch10)

Online persona or avatar vs. real person

Less separate

More separate

Strategy	Informant	Avatars and background picture from channel
[Avatar, nickname and real name coincide]:	Marse	[Blue-circled background with overwritten nickname featuring Marse's real name]
[Avatar and nickname coincide, but not with real name. Avatar is accompanied with background identifiable features]:	Jova (production channel, for gaming and miscellanea)	[Green-circled background with typical character from Minecraft and red cap by Santa Cruz™]
[Extra avatar in background picture of channel]:	Jova (production channel, for games and miscellanea)	[Cartoon-like version of Jova in green background]
[Avatar is a fictional persona from games, replicating physical appearance and image as a youtuber]	Jova (production channel for gaming exclusively)	[Minecraft-like version of Jova in green hoodie and red cap, and in green-and-red-striped background]
[Avatar is a fictional persona from games, unrelated to the real person]:	Sema	[Minecraft character used by Sema when playing. Character is an older male character than a teenager, wears a moustache and, in the shot, playfully shows his tongue while lying in bed to the camera, which takes the photo from the ceiling]
[Avatar acts as a real person in background channel]:	Jova (production channel for gaming exclusively)	[Minecraft-like version of Jova in green hoodie and red cap that looks to the horizon while holding a sword, in a cosmic, sci-fi, outer-space-like background]
	Sema	[Translucid Minecraft character used by Sema when playing that looks to the horizon against sunlight and is flanked from behind by a horde of characters from the game Paladins in position of defense. There is also a petition to subscribe to the channel and links to Sema's social network sites]

Dataset

message as the persona he becomes when participating on YouTube. To examine how Jova coherently creates his online persona multimodally, see Dataset C here: http://bit.ly/Dataset_Ch10.

This online persona is enacted, too, by portraying a real-life image of 'Jova as a youtuber,' which is consistent with Jova's color and outfit choices. Interestingly, Dataset C features Jova wearing his red Santa Cruz™ cap and his green hoodie. He appears before his computer, surprised by the notification of having reached 'this many' subscribers (40) and commenting on it in this video targeted at curating his own channel. Interestingly, we know this video was filmed before choosing all the profile pictures and background pictures we were able to see later on and present here. Therefore, this strategy of choosing colors and features for nicknames, avatars and profile pictures was part of a deliberate, conscious, long-term strategy. From our online exploration, we learn that Jova would previously have a selfie as the profile picture and a sunset scene as the background picture. To cross-check how Jova celebrates his reaching to 40 subscribers and how his YouTube channel background looked like back then, see Dataset D here: http://bit.ly/Dataset_Ch10.

Jova is quite conscious of this deliberate construction of his online persona covering iconography, language choice and style, to name a few aspects. He does not report any critical moment, but a progression. During the interviews, he reports:

> There're a lot of people who tell me that Jova, the real person, and Jova, the YouTube Jova, are two different individuals. It is as if I had created a character, an avatar of myself but different from me. On my videos, I try to convey happiness, even though it's a gloomy day and I am sad. And as for the cap, it is like a trait of myself I have, always wearing a cap, to signpost exactly that I am Jova, the youtuber, and not Jova (real name). In the beginnings of my channel, I uploaded videos as Jova the real person, and I was shyer, more introverted. So Jova the youtuber, the character, originated gradually by wearing my cap, wearing my hoodies, which is also a classic part of me. Then I decide to make a video, and I feel more self-assured with my character. That means that when I make a video, I put on my cap, I put on my hoody, and I am ready to start recording. When I am on the street, I do not wear a cap!! So, it is like sensing my character as a youtuber, and I have the capacity of dividing between Jova, the real person, and Jova, the

> youtuber. There are people who only know Jova, the youtuber, for example if I go to football lessons (extracurricular activity); there are people who know me only from my videos and not in person, and they call me by my nickname on YouTube. But in this context, I like being Jova, the real person (he emphasizes his real name) and tell them: 'Please, now I am Jova (he emphasizes his real name), and on the videos, I am Jova, the youtuber (he emphasizes his nickname on YouTube).' [Jova, May 2017, quote 2]

Sema's Affinity-Focused Strategy to Create an Online Persona as a Gamer

Sema wants to be a gamer. His activity online revolves around games and gaming, and YouTube is another venue where he can express this passion of his. He arrives to a level where companies contact him to be a beta-tester (of the games Paladins and Smite), where he drafts a report in English of the 'map making', 'playability' and other mistakes and bugs in the games he is invited to play (see 'Production Practices'). To see Sema's affinity-focused strategy for creating an online persona as a gamer, see Dataset E here: http://bit.ly/Dataset_Ch10.

Sema's idea of an avatar is also purposeful. He decides to join YouTube because of Jova, who drives the group of friends into joining in and participating:

> Jova gave me the idea of opening a YouTube channel, he convinced me, and I liked it. Jova explains how to do things with the videos, I have learnt lots from him. [Sema, May 2017, quote 3]

In time, the initial avatar takes on identity traits because of his activity online: the personification is obvious in the profile picture, the background picture and the snapshots presenting the last gameplays published, which present Sema's avatar accompanied by Jova's avatar, acting in particular ways, such as taking a selfie together (Dataset E). This is interesting because in the initial gameplays, the presentation snapshots are of the game itself, but not the avatar. There is a dialogic, reflective learning relationship between Sema and his avatar:

> When I decided to start uploading videos, I was searching for a character different from those avatars I saw, and I thought about it for some days, and since green is my favorite color, that's why my avatar has green eyes. In the beginning, the avatar of Sema was very similar and like me, but not now. Sema, the avatar, makes up words, sometimes speaks weird and is very unlucky playing video games. But he laughs at it all. Even if many times he endures patches of bad luck in the games, like the internet getting cut off, he puts a lot of emotion into it, that is, he lives it!! Sema, the real person, would not be the same if Sema the avatar hadn't existed. Sema, the real person, has also changed because of the avatar. Sema has learned from his avatar to put more emotion into the things he does, not only in video games. [Sema, May 2017, quote 4]

We have seen that teenage youtubers construct identity by means of nicknames, avatars and personas, with a multimodal consciousness of the self that expands monomodal conceptualizations of literacy and text. A main finding is that the more separate the digital identity traits from the real one, the more conscious and sophisticated literacy practices we encounter. This reflects what happens in the videos teenage youtubers upload, too. Let us explore video production practices next.

Production Practices

Jova, Sema and Marse are uploaders. They started off their experience as productive youtubers with gaming, but they followed different paths of appropriating YouTube and using language on it. They capitalize on different affordances of YouTube as a 'social semiotic space' (Gee, 2005), along the lines of the different levels of specialization (Fig. 10.1).

Jova and YouTube as a Space for 'Mainstream' Socialization and Training of IT and Cinematographic Skills

Jova uploads videos that cover miscellanea with a comical, just-for-fun, socializing purpose: vlogs on travels or trips, self-directed drama series (tragicomedies where Jova and his friends [or even relatives] play out

characters like spies from a spy agency trying to solve a crime) or challenges like Dataset F. To see how Jova and his friends record and enact a 'challenge' video, see Dataset F here: http://bit.ly/Dataset_Ch10.

Jova plays 'the executive director' role in making videos and pulls all of the friends together. He is the generator of collective content (Gee, 2005) in the group of friends and their fandom, and replicates ideas for videos of celebrity youtubers with a lot of care and planning as to the story line, video editing and sequencing, as well as the language employed. He uses Catalan, although he is well aware that with Spanish or English, he could possibly have more success. Interestingly, the social and cultural capital of his family (technologically rich environment, technology-savvy parents, liking for cultural production and cinema, intercultural experiences with trips abroad) has been transferred to him and has an effect on him, partly explaining why Jova is, in fact, the generator of content in his group of friends:

> There are many people who think that using YouTube can be boiled down to recording a video and uploading it, but no, it is more of a process. You make a video, not when you record it, but when you edit it. It is actually more complex to edit it than to record it, and it is a task you have to conduct when you are truly aware of what you are doing, and when you are calm and focused. The resources I use to edit videos are iMovie, which is already good, but also a microphone I bought to record myself, and play with friends also, and also my family's video camera. My father has taught me to edit videos: after every summer trip, he edits a video of our holiday photos and videos, and I have learnt in this way with him. On my channel, you can see how my editing skills have changed over the years, and also my voice!! [Jova, May 2017, quote 5]

To see how Jova and his friends record and enact a 'comedy' series as fictional spies, see Dataset G here: http://bit.ly/Dataset_Ch10.

On a linguistic level, it is interesting to see how Jova's written text is full of translanguaging instances. These come from the lexicon in YouTube in film and video editing, in which he is interested, or from an informal variety of urban Catalan that mixes Catalan wording and grammar with words from Spanish Castilian. In Dataset F, for instance, Jova uses English extensively while communicating in Catalan: abbreviations like 'w/' (with), 'challenge' as a YouTube genre, his nickname is anglicized (see the

word-formation strategy '"translanguaged" creative respelling' in Table 10.2) or the introductory sentence for the video mixing Catalan, Spanish and English (*Madremia com patirem! Like si a la intro estavem molt sexys*). *Madremia* is 'madremía' (my goodness) in Spanish or 'like' as a verb; 'intro' and 'sexy' are loanwords from English that he chooses to incorporate in his informal Catalan to appear cooler. None of these loanwords is accepted in the normative *Dicctionari de la llengua Catalana*.

Also, among the many activities on YouTube, Jova celebrates different milestones in his channel, such as reaching a certain number of subscribers (40 subscribers, 100 subscribers, etc.). In his '100 subscribers' commemoration video, Jova, along with a friend, decided to take a challenge that consisted of chatting with random internet users and persuading them to utter or write the phrase 'Jova one hundred subscribers.' In this brief linguistic exchange, Jova uses English orally and in written form, in order to introduce himself as a youtuber from Spain and to ask people to complete the challenge for him as a way of celebrating the evolution of his channel. He talks to boys and girls his age from Albania, Finland, Chile or Andalusia, using basic English language skills and confronting different dialects and accents both in English and in Spanish. For instance, when introducing himself to a chat buddy from Finland he utters: "Hello, man, hello, yeah? Can you listen? Can you repeat Jova… Tell this: 'Jova, one hundred subscribers.'"

To see an instance of a virtual exchange where Jova and a friend chat with and video call random users online, using English as a lingua franca, see Dataset H here: http://bit.ly/Dataset_Ch10.

While these exchanges are simple and informal, they promote the notion that virtual exchanges and telecollaboration are a nice way of engaging young language learners in meaningful, situated communicative contexts because, actually, they themselves are using these channels of communication constantly and for their own vernacular purposes.

Sema and YouTube as an Affinity Space for Gaming

Coherent with his initial choices of an avatar, Sema starts and continues on the gaming theme for his YouTube channel. He starts off with collaborative videos with Jova (series of Minecraft) and then gradually goes on

to discovering new online, multiplayer games like Paladins or Smite. He only produces gameplays. He is a beta-tester of games, meaning he gains exclusive access to pre-commercial versions of the games in exchange for short reports for the company to improve the games.

As a passionate fan of games, Sema participates in online communities of gamers, in a give-take relationship. Gaming and producing gameplays on YouTube have benefited Sema in two ways: (1) he reports learning and (2) he was able to know and join the community Gaming.cat. Catalan gamers whom he knows virtually or personally are as advanced players as he is and can play in Catalan, too (his language of choice and schooling). His remarks on the learning identity processes related to the YouTube context (language, coding, teamwork formation or second chances in life) are remarkably specialized, and we would argue that his profound discursive knowledge of and engagement in details reflect deeper learning processes:

> With Mario Bros, I have learned that when you ought to walk a certain direction to arrive at a destination, maybe you tumble and fall or you get killed, but you get another chance; you can go on; you can jump off the obstacles and continue until arriving at the destination. Doing reports as a beta-tester, I have learned vocab in English, that I look up on Google Translate, although I am not so good at talking. You have to master 'commands and codes' too, to manipulate the game. In Paladins and Smite, it is important to have a good team, and you have to choose the right team, each member of the team must complete their own task and do their part, or else it won't work, and you'll lose. [Sema, May 2017, quote 6]

To see how Sema's uploaded gameplays look like, see Dataset I here: http://bit.ly/Dataset_Ch10.

He tries other games, too, but when he does not like them so much, he does not create a 'series' of the game (marked with '#'). Interestingly, the voice of Sema is more present in his critical comments (Dataset I: "Creia que era més bo… / WarThunder" > "I [Sema as a gamer] thought it was a better game"). The voice of his avatars and characters take on more of a protagonist role in the series of gameplays of the games he loves. In those, he talks about "Un nan dins un robot" (A boy [Sema] inside a robot [his

gaming character]) or when his Minecraft avatar is "atrapat al nether" ([Sema as a gaming character and online persona is] stuck in the nether). Note here too the ever-present translanguaging and appropriation of the specific and distinct discursive features of the games: nether, for instance, which Sema knows refers to "some place beneath the surface" in the game. This supports the notion that gaming and the metalanguage in gaming supply a fruitful source for language learning. The word 'nether' that Sema uses in Dataset I is an uncommon English word for a foreign language learner and user such as him to know.

Besides these translanguaging instances that are commonplace among our participants, as noted before, Sema also produces reviews and critiques as a beta-tester of games. These are written in English and consist of grading the playability of the game and commenting on playability issues that need fixing by the developers. In Fig. 10.2, there is an excerpt of how the reviews look. They are normally a form to fill out that is embedded in the game and pops out when a match is over. This is Sema's job as repayment for gaining access to games prior to their commercialization.

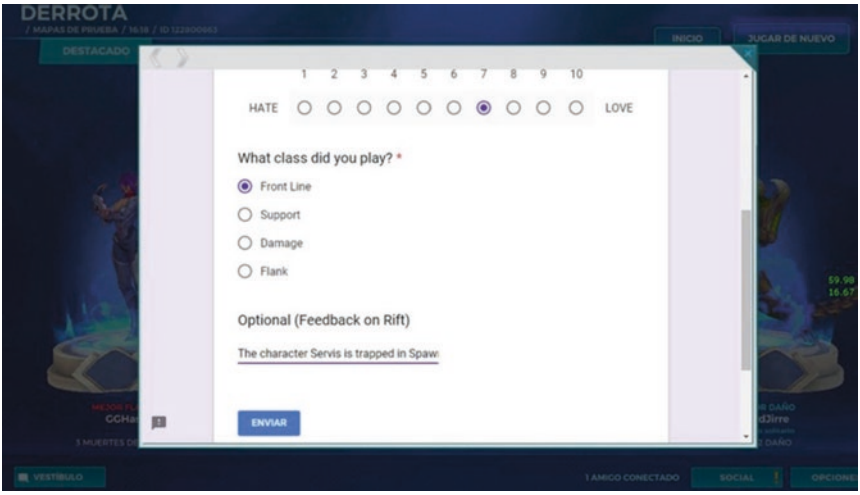


Fig. 10.2 Sema drafting a review of a game as a beta-tester (screenshot provided by Sema)

In Fig. 10.2, Sema was playing Smite, a multiplayer online battle arena game where gamers control mythical figures and fight in teams. While playing, Sema skillfully detected a playability error with a playable character on Smite that would not regenerate or 'respawn' if dead in battle. This, together with the chats online conducted by Jova, reinforces the idea that foreign language use and code switching are very common among young people, who are very active online, using words that are common in the metalanguage of games but that might be advanced for the average 12-year-old learner in Catalonia. Using 'nether' as a common word or phrases like "the character Servis is trapped in spawning" as Sema does is an illustrative instance of how teenage youtubers develop language in an implicit but meaningful and situated manner, prompted by their affinity to games and their knowledge of their internal formulaic expressions and lexicon, or what Gee (2005) tags 'internal grammar'.

Marse and YouTube as a Self-directed Teaching and Learning Environment

Finally, we have the case of Marse. First, Marse consistently uses Spanish in his videos (it is his main language of communication). Second, while he starts off with gameplays, he soon covers tutorials to solve doubts with hardware or software. For instance, in his last tutorial he explains how to delete some credit card information from a given website. Similarly, when he has some doubt and searches for tutorials on the Web, he realizes that there might be tutorials in English but not in Spanish, and that is when he decides to make his version in Spanish. To see Marse's uploaded tutorials on YouTube, see Dataset J here: http://bit.ly/Dataset_Ch10.

Marse sees himself as a proud youtuber and would not mind becoming a professional youtuber one day. We can check that on his Facebook initial profile, where he leaves traces of this vocational aspiration (Fig. 10.3):

Marse checks out the analytics of his channel, where he becomes aware that his tutorials reach thousands of viewers from Latin America. Thanks to this, he receives money for some of his videos from YouTube. YouTube as an institution is authorizing and backing Marse's activity.

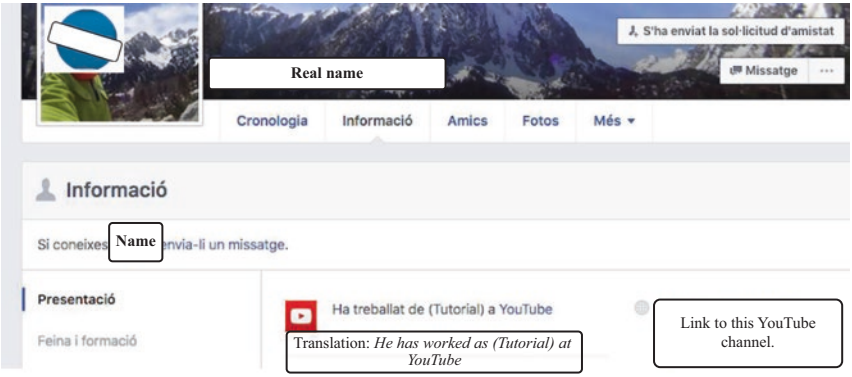


Fig. 10.3 Marse's Facebook presentation site (screenshot taken by researchers)

However, most videos are not so well received, with only a few dozen visits, like in the case of Sema and Jova. Marse reports that making videos is 'easy'; he thinks about what he is going to utter during the video, but does not prepare much more than that, unlike Sema and Jova. This implies that he is less aware of the work behind youtubing. In contrast with Jova, Marse does not do any sort of video editing or formal linguistic preparation for the videos.

Regarding his identity, Marse mixes academic and vernacular practices in the same space provided by his channel. His nickname is transparent regarding his real identity (Table 10.2). Viewers of his channel can easily access his name, family names and the name of his school. "I have not learnt anything; without YouTube I'd be the same person," declares Marse.

The tutorials Marse produces are normally doubts he had and could solve watching videos in English but could not find in Spanish. He consumes therefore English as a means of instructing himself in becoming a better user of technologies, but besides that, he finds the lack of videos in Spanish as an informational void he can fill. In this sense, we cannot extrapolate findings on a linguistic level but on a communicative one, as he acts as a (very informal) informational broker between the videos he sees in English and the videos he produces in Spanish. We can highlight Marse's sense of audience that allows him to reach wider audiences. His

tutorials are fairly simple, but he is aware that his audience is not interested in quality, entertainment or wit, but in practically solving a problem or doubt about how a piece of software or hardware is used. He is good at tagging his videos so that viewers or watchers of YouTube can easily find his tutorials. Finding a void of information on YouTube in Spanish and filling it is the foundation for his success. The fact that Marse's Spanish-speaking tutorials on technology reach a global audience and the reinforcement he receives from YouTube are key factors influencing his identity. In contrast, regarding the Catalan-speaking uploaders, the gameplays in Catalan of Sema or the socializing videos in Catalan for the teenage friends of Jova, Sema and Jova receive no backing or support other than from their friends.

Discussion

The pursuit of different identities on YouTube depends on multiple factors, intrinsic to the individuals' 'personal interest' (Ting, 2010), 'affiliations' (Gee, 2005) and 'language identity' (Baxter, 2016), and extrinsic to them, like 'the (lack of) institutional backing' (Gee, 2000).

Following Ito et al.'s (2010) classification between interest-driven and friendship-driven practices, gaming as a friendship-driven practice initially unites our group of friends and motivates all of them to join YouTube as another space for socialization, an affinity space in Gee's terms. However, from that point onward, each boy is engaged on YouTube in diverse ways, reflecting multiple identification processes, forms of engagement and taking and acting upon the various semiotic resources YouTube has to offer.

Following Gee's analytical categories of identities (natural, discursive, affinity, institutional) (Gee, 2000), we argue that the 'naturally digital' trait of being a youtuber materializes in three different ways of becoming a youtuber and performing the roles and functions it entails (Research Question 1). First, Marse predominantly develops an institutionally backed identity of youtuber, receiving money and thousands of views, yet little feedback on his videos because they are not meant for discussion or interaction, but for solving a particular problem. Second, Jova clearly

exhibits more of a discourse identity, being aware of the limits of his channel, the language he chooses and the purpose for which he conceives his online activity (fun, friendship). Third, Sema exhibits more of an affinity identity, with his mono-thematic channel for gaming, beta-testing other games and searching for gamers who can match up to his high-level gaming skills.

In addition, following Thorne and Black (2011), we were able to identify some identity markers to pin down Gee's predominant identities in a digital environment (Research Question 2). These included (1) indexical linkages to macro-level categories (such as being more or less Catalanist); (2) functionally defined subject positioning (watcher, follower, commenter, youtuber, gamer, beta-tester, tutorial producer); (3) fluid shifts in video production; (4) conscious language choice on the part of the Catalan-speaking participants to the detriment of more viewers or publicity, (5) more or less conscious literacy practices concerning nicknames, avatars and online personas, and thus a digital identity which can be more or less separate from the real one; and (6) language practices that are, at least, good practice for our participants to deploy their linguistic skills in their foreign language and in their first language(s), being that Catalonia represents a naturally multilingual society.

The institutional backing from YouTube may reinforce self-identifying processes as a youtuber. However, negotiation of meaning (team work in Jova's and Sema's channels), training and feedback from parents (Jova) and peers (Jova, Sema) and strong allegiances to language (Jova, Sema) or fan practices (gaming, the technical aspects of cinema and video editing) provide more solid grounds for greater sophistication of digital literacy practices, both textually (oral, written) and through multimodal forms of making meaning (Research Question 3). Teenagers employ instruments such as creativity for nicknaming, with complex and sophisticated word-formation strategies, dissociating the real self and the online persona by means of multimodal, personified avatars or characters that allow them to explore and acquire new skills and practices, at several levels: emotional (more resilience), social (less shyness, team work), communicative (better public speaking skills, L1 and second language [L2] language development), digital (video editing, marketing oneself online) and symbolic—co-constructing what Kramsch (2009) has termed 'a signifying self' in intercultural, translocal and networked settings.

This emerging classification from our findings reveals two developing arguments in informal language learning. First, our participants can engage in "communicative activities in authentic and meaningful contexts, supplying both more volume and more variety than is the case in instructed language learning. In this way, language is learned through meaningful experiences, and language structures emerge from repeated use" (Godwin-Jones, 2018, p. 11). In a similar fashion to previous studies on fan translation (Vazquez-Calvo, Zhang, Pascual & Cassany, 2019), in the present study we have found examples of language being learned, such as the chats of Jova or the game critiques of Sema, but the focus is not on explicit language learning events but rather, as Godwin-Jones suggests, on language development in a fluid manner. Second, this fluidity is represented by a context online that favors superdiversity (including multilingual and multicultural practices, translanguaging, etc.) (Blommaert & Rampton, 2011) and multimodality. The avatars, nicknames and translanguaging instances discussed display the characteristics of communicating online, which, in our opinion, problematize clear-cut epistemological and disciplinary boundaries between informal and formal learning, as well as between language learning, use and development (Godwin-Jones, 2018). However, our study supports the notion that mostly in informal language learning contexts, the identity dimension shifts "the individual from L2 learner to L2 user, as learners gain both proficiency and confidence" (Godwin-Jones, 2018, p. 13). This shift through the lens of identity is a source of exploration for teachers and scholars in formal language education for future pedagogical guidance and classroom-based research that merge language learning and identity, with some theoretical proposals worth noting (cf. Fisher, Evans, Forbes, Gayton, & Liu, 2018).

Our study manifests that some young people "know how to build their online presence through social networking sites, avatars, audio/video casts, mash-ups, and/or by taking part in online gaming" (Kurek & Hauck, 2014, p. 123). However, not every user is an active uploader, or if they upload content, this content and the literacy practices attached may be disregarded and tagged as 'popular culture', and thus deemed not valid for instructional purposes (Barton & Papen, 2010). This has implications for language, literacy and IT education, because some users might remain outside the more active and performative roles of engagement that we have described. Teachers need to acknowledge this new reality of

social and communicative engagement in the form of instructional scaffolding so that every student has equal opportunities for communication and language development in the spaces where communication actually occurs. As Jova says, "what happens in the schools goes in another direction," discounting new ways of being, doing and communicating, and opportunities for critical (language) learning (Godwin-Jones, 2015).

Our study also has several limitations. Methodologically, this a case study depicting in-depth uses and experiences of a group of teenage friends from Catalonia. It is not representative of every teenager or YouTube user in any way, but it is valuable in the process of gaining knowledge of a particular situation and phenomenon, and might help "cut a path toward scientific innovation" (Flyvbjerg, 2006, p. 227). It is a good starting point to understand how young people appropriate YouTube and other multimodally intensive social networks, in our case using Catalan (a lesser spoken language), Spanish and English. It highlights the 'qualified or limited' nature of the participatory culture when speaking a minority language, as it will not reach global scale or receive institutional support from YouTube. Catalan-speaking communities online mostly rely on their vigorous endeavors to preserve their cultural and linguistic heritage online, which may be particularly true in relation to off-stream or socially disregarded practices like gaming or other popular culture practices and products. Furthermore, our participants are all teenagers and boys. It would be positive to supplement this study with a more diverse age population and incorporate the gender dimension, as well as participants from culturally and socially diverse backgrounds.

With these caveats in mind, it is important to remember that language and literacy development, including learning second languages integrally, involves a learner's identity, and this identity cannot be created solely in computer labs or via teacher effort. In this study, we took a snapshot of three young boys regarding their own thoughts about first and second languages and how they effectively appropriate language in their own personal spaces to meet their own needs. To begin to grasp a deeper understanding about this intersection of psychology and language learning highlights just how important language learner identity is—for readers, for researchers and, of course, for teachers.

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11

The Phenomenology of Experiencing Oneself Online: Critical Dimensions of Identity and Language Use in Virtual Spaces

Liudmila Klimanova

Introduction

Recent research has shown that social technology and digital communication have complex effects on identity enactment. Technology enables its users to employ a variety of means and affordances to mediate self-positioning and self-expression (e.g., Darvin, 2016; Domingo, 2016; Thorne & Black, 2011; Thorne, Sauro, & Smith, 2015). A virtual self, however, retains its ties to the symbolic self—"a self that, sitting at his or her computer terminal, perceives, emotes, feels, remembers, projects, and fantasizes based on the verbal and non-verbal symbolic forms he or she apprehends on the screen" (Kramsch, 2009, p. 160), thus experiencing itself in the virtual reality that is conducive to dreams of escape, anonymity and performativity power. By engaging in social virtual spaces and trying on social positions unavailable to them in their offline

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reality, learners create experiences that tie their past and present insecurities, their memories, real and imagined identities, self-proclaimed ideologies and perceptible boundaries of language use in the formation of the new reality of the digital L2 self. These experiences are intrinsically idiosyncratic and need to be understood as a *phenomenon*, a psychological factor and a fundamental building block of virtually mediated social encounters.

In this chapter, *virtual experience* is theorized as a philosophical construct and a psychological factor that predetermines the ways in which we interact with social technology for L2 learning. This approach to the study of *virtual experience* unveils the ways in which learners act in online contexts as a result of their past experiences with technology and their uniquely situated ideologies about language use that guide their choice of identity representations in virtual social networks. This discussion is grounded in the critical, post-structuralist view of *experience*; that is, how one current experience can be and often is an intricate amalgamation of past successes and failures, a person's perceptions of non-native language use in and outside the virtual world and a person's motivations to become a multilingual speaker. How an individual lives through a virtual experience is about how this experience is constructed and perceived by the 'experiencer.'

This chapter explores the perceived experiences of three multilingual subjects, whom, for the sake of keeping their true identities confidential, we shall call the *3As*—Aaron, Alina and Andrew. Their relationship with foreign language(s) is inflected with personal meanings, desires, histories and memories that give idiosyncratic symbolic interpretations to their real and imagined identities—"their conscious or unconscious sense of self as mediated through symbolic forms and meanings" (Kramsch, 2009, p. 18). We will follow their paths of discovering themselves as L2 speakers and users as they construct intersubjective relations with the cultural 'other' in monolingual networking spaces where their speaker positions arise from mutually constructed chains of signification and meaning. Their sense of a new L2 self becomes deeply rooted in the socially constructed systems of knowledge about the symbolic power of language available to them in their immediate social contexts. Their past encoun-

ters with L2 use give meaning to their present subject positions, experiences and actions as they interact with technology and target language speakers. In this discussion, theorizing "lived" experience as a *phenomenon* opens a new dimension of knowledge explaining language learners' interactions with the L2 virtual world through a post-structuralist lens (Baxter, 2016).

Experience as a Phenomenological Construct

Experience as a philosophical problem is a complex existential phenomenon. From the phenomenological perspective (discussed here both as a theoretical foundation and as an established method of empirical investigation), the study of individual human experience attempts to "penetrate the essential meaning of human experience, to focus on the phenomenon or 'thing' in order to generate understanding from within" (Richards, 2003, p. 18). In its traditional approach, a phenomenological study of experiences focuses on the subjective and social conditions of experience as well as structures as they are experienced from a first-person point of view. Phenomenological investigation involves interpretation of a particular experiential account: moving from exploring what the experience was like to penetrating the meaning of the experience—what it meant to the actor (Moustakas, 1994; Smith, Flowers, & Larkin, 2009; Smith & Osborn, 2008). *Experience* as a phenomenon is studied by proceeding from the first-person point of view, acquiring a background of having lived through a given type of experience, and identifying the elements of the experience that carry life significance for the "experiencer" (Smith et al., 2009). The phenomenological lens zooms in and out on how people perceive, recount and understand significant events in their lives and connect these events to their present reality. Conceptualizing individual learner experience with language use in virtual settings as a *phenomenon* deepens our understanding of what exactly technology, and particularly, social technology, contributes to the building of offline and online L2 selves. The rich detail of the phenomenological method and the preeminence of first-person narratives offer a profound understanding of the meaning-making process as L2 learners engage in experiencing them-

selves online and construing this experience as a social action. Drawing from the conceptual repertoire of Interpretative Phenomenological Analysis (IPA) (Smith, 2010), the general questions posed for this type of empirical focus can be framed as follows:

- *What is it like to use second (non-native) language in virtual domains of language use while engaging in social communication with native speakers?*
- *How is this lived experience shaped and perceived as a phenomenon through individual first-person narratives?*
- *What sense do L2 users make of this experience from reflecting on their past involvement with technology, their past subjectivities and subject positions?*

The Context: Meet the *3As*

Before we hear their individual life stories of the *3As* (Aaron, Alina and Andrew), they require a formal introduction of sorts. Aaron, Alina and Andrew were three students enrolled in Russian language at a large private university in the United States. At the time of the data collection, Alina and Andrew were enrolled in their fourth semester of Russian, while Aaron was a first-year language learner. Andrew was a typical American youth from the Midwest (a traditional Russian language student or RL), who was interested in Russia and planned to pursue a master's degree in Russian history and international relations upon completion of his undergraduate studies. Alina's parents came to America from Russia when she was six years old. Her Russian ability was native-like and she felt empowered by her impeccable, native-like pronunciation that made her stand out among her peers in her language class. Her internal sense of self, however, was conflicted by her non-American identity. Even after spending most of her teenage life in the United States, she still thought of herself as a 'white crow' (a Russian idiomatic expression for an 'oddball')—someone who did not fit the typical profile of first-generation American immigrants. Aaron's global identity was that of a typical American L2 learner of Russian in a college-level language class. Aaron's military background (MIL-Russian Learner) and his

purely instrumental goals for the study of Russian, however, distinguished him from other students in his class. He was paid by the US government for taking Russian language courses at his university, and his relationship with Russian was, in many ways, shaped by the nature and objectives of his military training. Andrew, Aaron and Alina, *the 3As*, were selected to be focal participants in this study because they represented three typical global identities of Russian learners in American universities—a typical American student, a student of Russian heritage and a military cadet enrolled in the Reserve Officers' Training Corps Critical Language Program.

The experiences with social technology that *the 3As* shared in this chapter were constructed during the time when they were asked by their Russian classroom instructor to complete a series of online language-learning activities, involving native Russian keypals in the popular Russia-based social network, *vkontakte* ('in contact' or 'in touch'), a leading Russian analog of Facebook. During the first phase of the virtual experience, the Russian learners were paired up with a group of students from Russia for one-on-one online task-based virtual chat that was similar to a traditional keypal exchange over the internet. The second phase of the class project engaged Russian learners in an active exploration of virtual communities. (The *vkontakte* virtual platform is home to hundreds of online interest groups that cater to all ages and affinities; some are more active than others.) Mandatory participation in each selected virtual community was presented by the instructor as a course challenge. In particular, the instructor emphasized the importance of getting each community to respond to her students' comments and posts as a competition where each student was required to count and document the number of responses he or she received in each virtual group.

Overall, the entire project lasted six and a half weeks—with the first three weeks devoted to the keypal virtual exchange, and the second three weeks spent on the exploration of virtual interest groups—culminating in a classroom discussion of individual successes and failures in the virtual world of the Russian social networking. Table 11.1 summarizes the sequence of learning activities in each phase of the *vkontakte* project.

Table 11.1 Weekly project assignments

Phase 1. One-on-one interactions	Phase 2. Virtual group interactions
Week 1. *Online Task*—Meet your assigned partner online *Report to instructor*: Written portrait of project partner	**Week 1**. *Online Task*—Identify three virtual communities, obtain membership and explore each community *Report to instructor*: Written report about each community
Week 2. *Online Task*—Ask your partner about their studies and identify seven differences between Russian and American universities *Report to instructor*: Newspaper-style report about Russian education	**Week 2**. *Online Task*—Post messages in selected communities and initiate group discussions with seasoned members *Report to instructor*: A list of posted questions and discussion threads in each group
Week 3. *Online Task*—Choose any culture topic of your interest and interview your partner *Report to Instructor*: Newspaper-style report about discussion and findings	**Week 3**. *Online Task*—Join three new virtual communities, post messages and initiate online discussions *Report to instructor*: A list of posted questions and messages; a summary report on activity

Qualitative Data

Measuring Individual Experience

We met with Aaron, Alina and Andrew at the end of each phase of virtual immersion in a casual setting on the campus of their university. While these one-on-one meetings resembled traditional open-ended interviews, we tried to turn them into free-flowing laid-back conversations—occasionally structuring them as 'therapy' sessions focusing a particular concern the students were eager to share (Moustakas, 1994). Following the phenomenological interview protocol, students were asked broader questions about the participants' feelings and emotions at various stages of virtual language immersion (e.g., *How did your engagement with Russian virtual communities make you feel? Do you remember feeling the same way previously, for example, in class or outside your classroom experience?*) During the interview students were probed to talk about their past and present lives in general as well as describe individual experiences with the Russian social network.

The Salmon Line technique (Salmon, 1994, 1995, 2003) was integrated in the structure of each phenomenological interview to elicit more detailed accounts of virtual activities. The Salmon Line technique is commonly used as a measure of individual perception of life events in personal construct therapy (Kelly, 1955; King & Horrocks, 2010). In this study, virtual engagement with the Russian social space was presented to students as a continuum from very negative to very positive experiences. At the beginning of each interview session, participants were presented with a piece of paper representing the Salmon Line (Fig. 11.1) and asked to take a moment and mentally relive each week of the project activities. Then, they were asked to describe each week's virtual engagement with the *vkontakte* medium using one descriptive attribute of positive or negative valence and position it on the continuum representing their experience as negative, neutral\undefined or positive. For purposes of clarity, it is necessary to have a clear understanding of the term *valence*. In psychology, the term 'valence' is used when measuring and evaluating emotional states and attitudes toward a life event, object or situation in terms of its intrinsic attractiveness or 'good'-ness (positive valence) or its averseness or 'bad'-ness (negative valence) (Frijda, 1986). Various emotions and feelings may be characterized as having positive or negative valences based on how participants experience them. Certain events may trigger feelings that have conflicting positive and negative valence-carriers. A valence-based approach to studying affect, individual judgment and choice creates an opportunity to examine L2 learners' experience with social technology through the prism of its personal value to the 'experiencer' and to identify the emotions, motivations and feelings that influence

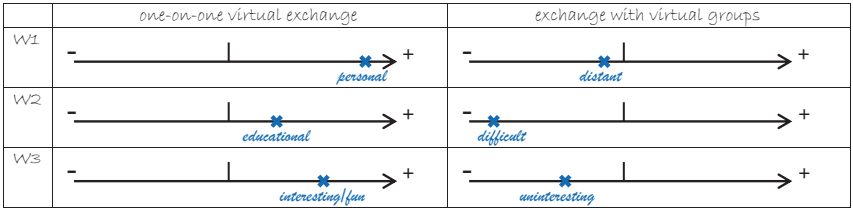


Fig. 11.1 Example of the Salmon Line exercise (Aaron—MIL-RL) based on Salmon (1994)

learners' judgments and choices when it comes to making decisions about enacting particular identities and social positions. In consideration of this, we use these constructs here.

In the study, then, the lines corresponded to each week of the virtual immersion, and the participants could position new attributes in relation to their previous placements. The attributes (e.g., adjectives or descriptive phrases) described their individual perception of online activities during each week of the virtual exchange, totaling between six and seven attributes, or *experiential descriptors*, corresponding to the six weeks of the virtual engagement. The Salmon Line exercise was completed at the end of each exchange. The *3As*' responses were then further scrutinized in relation to obtained interview material during the interpretative stage of data analysis. The placement of attributes on the line served as the springboard to additional questioning and as a stimulus for deep reflection during phenomenological interviews.

For descriptive purposes, experiential attributes were coded as attributes of positive valence and attributes of negative valence (Table 11.2).

The list of experiential descriptors identified four domains that were represented in the learners' perceptions of their virtual exchange. Table 11.3 groups all descriptors by experiential domain type: *relationship-oriented* descriptors, *learning-oriented* descriptors, *emotion-driven* descriptors and *purpose- or task-driven* descriptors (Fig. 11.2). The *relationship-building* domain of virtual experience revealed how experiencing oneself online involves building new relationships of *personal* and *formal* nature through language and interaction. Along with relationship building, experiencing oneself online was described by the *3As* as a language-learning experience, being *educational*, *intriguing* and *interesting* for the one-on-one exchange and *interest-piquing*, *helpful*, but yet *difficult* and *uninteresting* for the group engagement. This type of emotion and feeling can be construed as a *learner-oriented* domain of experience where learning an L2 culture by getting to know a person from that culture was viewed as *enriching* and *educational*, but also as a *thought-provoking* process of reevaluating one's cultural positioning in reference to the cultural other. The *task-driven* domain of experience was represented by the attributes of learning tasks that the *3As* perceived as hurdles that made their experience with the Russian virtual world *difficult*, *formalized*

Table 11.2 Key experiential descriptors for the *3As*

	One-on-one interactions			Interactions with groups		
Project timeline (weeks)	*Week 1*	*Week 2*	*Week 3*	*Week 4*	*Week 5*	*Week 6*
MIL–RL Aaron second semester learner	Personal	Educational	Interesting/fun	***Distant***	***Difficult***	***Uninteresting***
HS–RL Alina fourth semester learner	Unique	***Nervous***[a]	***Condescending***	Interactive	Interest piquing	***Frustrating***
RL Andrew fourth semester learner	Personal	***Difficult***	Meaningful ***Formal***	***Impersonal***	Casual	Quick

[a]Descriptors with negative valence are shown in bold italics

Table 11.3 Cues and clues encoded in the *3As*' experiential descriptors

	Relationship oriented	Learning oriented	Emotion driven	Task driven
One-on-one interactions	Personal (+) Unique (+)	Educational (+) Interesting (+) Meaningful (+)	Fun (+) *Nervous* (–) *Condescending* (–)	*Difficult* (–) *Formal* (–)
Group interactions	Interactive (+) Casual (+) *Impersonal* (–) *Distant* (–)	Interest piquing (+) *Uninteresting* (–)	*Frustrating* (–)	Quick (+) *Difficult* (–)

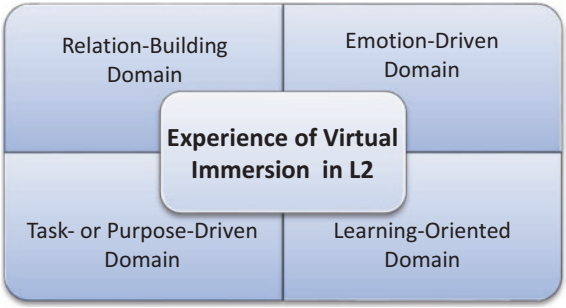


Fig. 11.2 Constituents of L2 learner experience with social technology and virtual exchange

and *time-consuming* in both formats of online engagement, but also *quick*, not requiring sophistication and effort in virtual groups. Experiencing oneself online in a foreign cultural setting also involved a spectrum of emotions and an investment in building a new identity and a new self (Norton, 2013; Norton Peirce, 1995), revealing the *emotion-driven* domain of experience.

When a descriptor was assumed to have neutral (or conflicting) valence, its general meaning was triangulated with the participant's own interpretation of its valence (positive + or negative −). The learners' phenomenological accounts of experience were recorded, transcribed and coded for references to one of the four domains of experience identified through the Salmon Line technique. The experiential descriptors collected during the Salmon Line exercises were then triangulated with per-

sonal accounts of virtual engagement with the Russian social network elicited via phenomenological interview sessions. All interviews were transcribed and coded using the phenomenological interview protocol (Smith et al., 2009), identifying connections between the participants' virtual activity, global identity and language-learning histories. Their narratives about prior experiences with social technology and non-native language use provided an additional layer for rich descriptions of the *3As*' virtual engagement with the Russian social network.

The four domains or dimensions of 'experiencing oneself' online as a multilingual subject unveil the complexity of learner experience with social technology. In phenomenological terms, *experience* as a flow of events in everyday activities is distinguished from an *experience* of something major in a person's life trajectory that is seen as a major transition from one state to another. An *experience* of enacting one's persona in the virtual world (when compared to the artificial communicative setting of a language classroom) can be construed as an important milestone in one's language-learning process that leads to the emergence of a multilingual subject (Kramsch, 2009). Such events engender making sense of oneself in the multilingual world of the internet and social virtualities. Access to the entirety of this individual experience is dependent on what participants tell us about that experience, and the researcher then needs to interpret that account from the participant in order to understand their experience (Smith et al., 2009, p. 3). Then, the participant's voice is the creator of the story that connects what is said, remembered and relived, on one end, to what is heard, observed, interpreted and transformed into a comprehensive unit of interpretative phenomenological analysis, on the other. The account of individual experience is inherently constrained by the voice of the 'experiencer' and by the pre-reflected *first-hand* acquaintance with a newly experienced reality and with the content of our action in it. It is with this understanding of 'lived experience' we finally turn to the *3As* and their told stories.

Aaron

At the time of the study, Aaron was 21 years old and a junior at his university. Focusing on political sciences and history as his major fields of

study, he identified himself as a 'military boy' who was enrolled in the Critical Language Incentive Pay (CLIP) Program to study Russian, a language of strategic military significance for the US Defense Forces. Growing up in a military family and learning about the tensions of the Cold War from his family members, through the years, Aaron had developed an infatuation with Russians and wanted to learn their language because they were always portrayed as 'bad guys.' The goal of learning to speak Russian to serve his nation intertwines with Aaron's desire to earn trust of those who used to be his 'country's worst enemy.' By positioning himself as an American soldier who wants to learn about Russian culture for professional reasons, Aaron enacts an identity of an L2 learner from the very start of his virtual engagement with the Russian social network. This positioning allows him to feel comfortable with making errors in his writing and at times switching to English when he needs to clarify a point which he is unable to express in Russian. Fluent in conversational Spanish that he picked up from Mexican workers on a construction site, Aaron feels that through speaking a language one could earn trust and respect and learn about the culture of the people who speak that language natively.

Aaron: At first it was that skepticism towards me—the white boy. But then when I spoke Spanish to them, they were like, "Wow, this guy speaks Spanish. He must respect our culture." So, they'd open up a lot more because I knew the language. If I took the time to learn their language, it must mean that I respect them, that I don't feel them inferior, feel they're different from me. I think it puts us on a level when you have common ground, you have a similarity. It's a lot easier to connect.

This prior contact with Spanish defines Aaron's Russian learner identity. He feels skeptical about learning from textbooks, especially learning L2 culture, and he perceives an opportunity to interact with a native Russian speaker online as a way to obtain experience in natural, authentic expression and gain 'safe' access to his country's former 'enemy.' What makes Aaron's case unique is his orientation toward obtaining an insider's status by showing interest in a person's culture and language. He con-

strues his L2 self as a social tool rather than another side of his global persona, whereas his investment in his military identity shapes his virtual experience as an opportunity to try out his role of a future soldier on a military duty where his sense of self and his understanding of his relationship with the L2 is strategic and premeditated. Engaging in the Russian virtual space for Aaron means interacting with a cultural *other*, and he construed this engagement primarily as a military training activity. Aaron is not a passive actor in this engagement. In his experiential account, he presents himself as a strategic planner who carefully thinks through his social tactics.

Aaron: I kind of have a plan how I want to approach it—to be a little more formal at the beginning, and get a basis down, the foundation down, and then become more personal, be able to just chit chat with her {…} So, by growing a relationship first, it will let you ask questions that are more personal, and also it gives you more straightforward and honest answers. I think if you start off asking more personal questions, you will get either false answers or uncomfortable answers. That was my sort of approach to it.

Although Aaron avoids presenting himself as a competent user of Russian to his keypal, Dasha, his offline self-image as a Russian learner undergoes a critical transformation. As his virtual relationship with Dasha begins to develop, Aaron grows more confidence in his ability to express himself in Russian, and he feels more and more in control of their online conversation. Aaron's perception of his role as a language learner motivates him to stay within the boundaries of the project assignments, try out the skills he learned in class and let his keypal act as his teacher and mentor in this partnership. However, Aaron does not want this relationship to be strictly a teacher-student one, but rather a relationship of insider-outsider where his exchange partner acts as his source of knowledge and his connection to the L2 cultural capital.

Aaron: The textbook can teach you how to speak the language, and it can teach you how to understand the language, but in

> order to actually connect with people you need to learn from the people because the slang and stuff is not taught to you. […] That's why I asked her to teach me Russian, so I will learn Russian from the point of view of a twenty-year-old native instead of the point of view of a textbook.

On the Salmon Line Aaron describes his experiences with the one-on-one exchange with Dasha as *personal*, *educational* and *interesting*. Being a *personal* experience for Aaron meant growing into a personal relationship from meeting a stranger to making a new friend across the globe that he could trust and comfortably ask for help. Establishing a personal relationship with Dasha becomes a social accomplishment for Aaron, as he feels that he can use the L2 as a social tool. It was also an *interesting* experience because the project spurred Aaron's curiosity and brought the sense of his childhood fascination with the Russian culture to the fore of his virtual relationship with Dasha. Aaron's interactions with his Russian keypal were *educational inasmuch as the* virtual experiences facilitated multiple learning gains, both culturally and linguistically. He also feels that his positive experience with his keypal project stemmed from his bringing his learner identity to the forefront of his relationship with his Russian speaking partner.

Aaron's depiction of his positive experience with the one-on-one exchange contrasted with his experience of negative valence in virtual communities. For the virtual group assignment, he participates in the community of Chicago Blackhawks fans and in the group devoted to American baseball. His intention was to find a group in which he could be perceived as a legitimate member, given his American identity and his expertise in sports. Aaron's desire to seek acceptance and establish the legitimacy of his membership reveals his preoccupation with how the group would perceive his contributions. He wants to have a certain advantage over other long-standing members in the group to compensate for his limited language skills. Choosing groups devoted to his favorite sports enables him to use his knowledge and his experience as an athlete to ask pertinent questions and participate in the virtual group on equal terms with already seasoned members. Aaron expects that, by positioning himself as an American and a baseball player, he can earn credibility for

his online persona and gain social acceptance and even recognition by the group members. The group project, however, made Aaron acutely aware of his non-belonging and intensified his sense of non-native speakerness that rendered this experience intimidating and even threatening. The fear to be rejected pushes Aaron to perceive the entire group experience as just another class assignment: "I felt it was a task the entire time. I have to have it done for class and that's about it." Despite the good response to his group posts, Aaron describes his group experience as *distant*, *difficult* and *uninteresting* in the Salmon Line exercise. The lack of personal contact in group interactions rendered his group experience *distant*: "I didn't want to get assimilated to the group. I didn't really care what the group was doing. I was going to use the group for a week and be done with it." Aaron realizes that attaining an insider status in an online social grouping requires of him significant virtual presence and a serious investment in his online L2 speaker persona. This was not the experience he had envisioned for himself, given his overall orientation toward learner-teacher interactions with members of the virtual communities.

Unlike Aaron, who eagerly fashioned his Americanness in the virtual social spaces, Alina, the second focal student in this study, found herself in the position where she had to question her global identity affiliations in one virtual experience and foreground them in the other.

Alina

Alina was 22 years old and in her junior year, studying psychology as her major concentration. Her parents spoke Russian at home but Alina preferred to speak English to her parents. She eventually developed an anxiety toward speaking her mother tongue because her parents never encouraged her to use Russian at home. Our conversations with Alina revealed three facets of her global identity that would define her self-identification strategies in the *vkontakte* social space. The first global identity theme was connected to her heritage speaker status and the facts of her family history that affected her positioning as an L2 speaker. Alina admitted that her relationship with the Russian language was a conflicted one, and her Russian speaker identity was non-unitary, contradictory and

was often felt as illegitimate. Alina had retained the memory of being fluent in Russian as a child and being afraid to speak English when her family first moved overseas. Her memories about her childhood fluency in her mother tongue empower her to position herself as a competent *vkontakte* project participant and enable her to claim a privileged status in her Russian class. Although Alina admitted that she lost the ability to speak Russian after her family had finally settled in America, as she grew older, the sense of empowering pride in being able to speak Russian natively at least at one point of her life became a quintessential part of Alina's self-identification. She views her Russian ability as an important trait of her Russian identity that distinguishes her from the rest of her classmates.

Alina: I'm not saying that {my way of expression in Russian} is much more extensive than theirs is, but there's a little more of an understanding what I'm trying to phrase. So my translation can be a bit more casual and forward as opposed to, as I feel, theirs might have been. […] I think they do an amazing job of it, but theirs … [laughing] I don't think it can be as flexible as what *I* can figure out how to write.

The second important theme in Alina's story pertained to her affiliation with vegetarianism. Alina first mentioned vegetarianism when she described her motivations behind choosing online groups for the group project. While her other interest in animal rescue is presented as a passion and an activity in which she engages daily, the theme of vegetarianism penetrates her self-identification as an *atypical* Russian. Vegetarianism dissociates her from her Russian heritage roots because of the well-known stereotype that most Russians are compulsive meat eaters who wholeheartedly reject the ethical and environmental beliefs of vegetarian eating. Being vegetarian for Alina signifies a non-Russian part of her global identity. She self-identifies as an American in the virtual community of vegetarians because her entire family is vegetarian, and that made them different from a typical Russian household: "We are a family of vegetarians who rescue animals … a lenient, hippie-like household which in a sense is very Americanized."

The third major theme in Alina's global identity narrative pertained to her attitude toward social uses of the internet. As Alina's experience with

the *vkontakte* project unfolds, she assumes an identity of an *Internet-non-user*, stating that she did not see the digital world as relevant to her. Alina frequently resorts to this facet of her global identity when she describes her experiences in the group project. In one of her diary entries, she notes that her lack of enthusiasm for the group project was likely the result of her general lack of interest in internet-mediated social activities: "If I could avoid e-mail, if I could avoid Facebooking and everything, I'd probably do so. I just don't find myself sucked into it."

Alina's perception of her Russian self evolves as her online communication with Tina, a native Russian speaker from Ukraine, unfolded in a fashion that Alina had not predicted. Alina enters the keypal exchange in the privileged status of heritage speaker, and from the very first posts, she seeks to establish an equal relationship with her project partner: "to be somewhat on her level, not in a competitive sense at all, but so that we could correspond not as a teacher–student, but just friend–friend." The desire to pass as a native speaker motivates Alina to become obsessed with the quality of her written posts. She frequently resorts to her family resources and e-mails her mother when she needs help with crafting her error-free messages to *Tina*.

The orientation toward self-authentication as a legitimate speaker of Russian is also evidenced in the way Alina describes the *vkontakte* project as a language-learning exercise. While she feels that the idea of interacting with a native-speaking (NS) peer via an authentic social network presented a unique opportunity for traditional L2 learners, she does not see it as beneficial to her in the same way: "You learn about one another's cultures, which is a huge perk of this assignment, which to me is not a huge deal because I heard from my parents about it." This sentiment was echoed in Alina's diary, particularly after Tina corrected her on the use of the informal negative particle which, in Tina's words, she should not use because she was not Russian. The realization that her Russian skills were not adequate for her to be perceived as a competent Russian speaker, particularly in the domain of informal language use, intensified Alina's disappointment with herself and her frustration with the keypal activity in general. By the second week of the keypal exchange, Alina begins to reevaluate her relationship with Tina and her role in this relationship. At that moment her obsession with her grammar in her posts took on an entirely new

social meaning and intensified her sense of embarrassment for not being able to meet her own expectations.

An interesting turn in Alina's online chat with her project partner took place when she asked Tina to correct errors in her (Alina's) posts. Following Alina's request, Tina began to incorporate corrective feedback by opening every message with a list of words from Alina's previous post in which Alina made an error. But Alina did not like Tina's corrections.

Alina: I just didn't want her to see my mistakes and correct them instantly. Maybe it was not the most natural speech, but, by golly, it sounded okay.

Alina's narrative reveals a contradiction between her deliberate request for linguistic feedback from her keypal and her perception of Tina's corrections as coming across as too immediate and harsh. It appears that Alina may have requested feedback on her writing only to mitigate her non-native speaker role in the keypal exchange or to elicit a compliment on her writing. When, however, Alina offers to help Tina with English, Tina declines the offer by stating that she had enough exposure to English and that she did not need Alina's feedback. Tina's self-positioning as a competent, self-sufficient English speaker in this presumably reciprocal relationship between two language learners heightened Alina's sense of non-nativeness even more.

On the Salmon Line, Alina described her experience with the keypal exchange as *unique*, *nervous* and *condescending*. It was a unique experience for Alina because she was fascinated with the way the *vkontakte* project was conceived as a learning activity, and she enjoyed the novelty of experiencing herself as a Russian learner/speaker in an extended social contact with a peer from Russia. This contact, however, was perceived by Alina as a relationship of unequal distribution of social goods where condescension was taken as the norm—"some of the little things she said … I don't know why she said it but it may be too strong of a word." Experiencing herself in a Russian virtual space evoked a number of deep feelings, including nervousness and an acute sense of insecurity, which affected her confidence and self-esteem. For Alina, the state of being *nervous* as an experience with the virtual social communication encompasses deeply

hidden fears that activated and resurfaced as Alina began to interact in the language that she once spoke natively. Alina's experience with her keypal can be described as transformational. She enters the exchange with an assumption that her affiliation with Russia through her heritage would enable her to interact with her keypal on equal terms. Her perception of her Russian speaker identity was, however, challenged as she continued to chat with Tina, which led her to evaluate this experience in negative terms.

Alina's engagement with virtual communities is closely tied to areas of personal significance. For the group project, she joins two communities devoted to animal rescue, a fan club focused on the American TV show *House* and a community of vegetarians. What is interesting in Alina's choice of groups is her dedication to finding groups that matched her personal interests and passions. Alina posts extended messages in which she explains that she lives in the United States and wants to obtain information about Russia from group members. Alina's identity as a Russian American was particularly welcomed in the animal rescue group, where she received the most response. On the Salmon Line Alina marked her group experience as *interactive*, *interest-piquing*, but also *frustrating* because of the significant time contribution it required. The opportunity to interact with people who shared her interest in animal rescue initiatives and her direct affiliation with an animal rescue group in her city enables Alina to position herself as a legitimate member. In the interview she described her experience with the group as an important personal accomplishment: "That's where I found this group's experience interactive because people actually RESPONDED."

Alina's success in the groups counterbalances her rather problematic one-on-one chat interaction with her project partner. Her experiential account seems to be contradictory. As a person of Russian origin, Alina strives to be recognized as a legitimate Russian speaker by her keypal. Tina, however, continues to perceive Alina as a language learner despite Alina's near-native ability to write in her mother tongue. In contrast, Alina's participation in the groups rendered her learner identity irrelevant, and her positioning as both an American and a competent Russian speaker made the other group members notice and acknowledge her contributions to the group discussion. Her virtual experience appears to emerge mainly from its *emotion-driven domain*. Alina's online L2 identity

does not evolve but rather becomes more conflicted as she continues to virtually engage with Russian peers.

Finally, we turn to Andrew, who undergoes a similar experience to Alina; however, his emerging Russian identity is challenged by his inability to express the 'actuality' of his global persona in his L2.

Andrew

Andrew enrolled in Russian courses because he was fascinated by Russian politics and culture and felt that the history of the Russian people was rich, and the language they spoke was 'enigmatic.' Growing up in an English-speaking household, Andrew saw little value in the study of foreign languages. A Communication Studies minor, Andrew was more attuned to the intertextual dimensions of online communication, and particularly to the cultural nuances that underpin texts in the news media than the other *As*.

Andrew: When I think about my active participation in English media, I think of the way that I can read ideas into the words. The words are written out, and they explain something or tell a story or a quotation, and there is a meaning behind that—an intended meaning than the actual meaning. I don't think I can get that intended meaning [in Russian]. I can read it at the surface level in Russian, but I don't get cultural intricacies.

Andrew's virtual experience can be reconstructed from the stories that he told during our phenomenological sessions. As with the other *As*, Andrew's narratives often took him outside the context of his class project to his past reality where native and non-native speakers of English structured their coexistence around mundane work and family-related tasks. These stories, often intertwined with various ideological underpinnings, can be theorized as more or less unmediated and transparent representations of Andrew's subjectivities actualized in the *vkontakte* virtual space. One such story features a group of Albanian refugees in Andrew's home

community 'where English was spoken entirely,' and where diversity among local populations was not a widely established norm. In this environment, non-native English speakers were disparaged, and non-native English use was often construed by residents as a lack of intelligence and education. In his narrative, Andrew describes a gradual transformation of his beliefs and his rising disapproval of locally established ideologies that dominated the upper middle-class English-speaking population of his hometown—the ideologies that later informed his own subjectivity when he himself assumed a non-native speaker position.

Andrew: Working with the Albanians, I know that three out of the ten speak English. The other seven know a couple of words. So, they can't express themselves to me. And when you initially meet people that can't express themselves to you that speak another language, there's a disconnect. You don't see the person as they are, as they want to be seen, as they CAN be seen. So, there's a disconnect between the perception of a person and the actuality of a person. And language is one of the ways as I, AS AN INDIVIDUAL, try to determine the actuality of a person. So, now I'm on the other end, trying to express myself, and I feel that I can't express the actuality of my person.

By revealing this past experience, Andrew implicitly reestablishes his sense of self-denigration. His frustration with his inability to express his real persona through L2 and his fears that the 'actuality' of his person may be perceived in online contexts in the same way as his Albanian coworkers were perceived by monolingual Americans. Andrew's virtual engagement with Maria, his Russian project partner, is closely tied to his past encounters with Albanian construction workers in his home community. His childhood recollections fuel language anxieties connected to the way Maria construes his identity through the imperfect language of his posts. His obsession with grammatical correctness motivates him to devote a significant amount of time to crafting and correcting his messages. His sense of insecurity forces him to accept an inferior position in the virtual exchange allowing Maria to take the lead in moving their com-

munication forward. Andrew compares his partnership with Maria to a relationship with a person with 'more knowledge,' and he explains his positioning moves as a way of acknowledging his partner's superiority. These aspects of Andrew's virtual identity were coarticulated and drafted jointly by both interactants in this exchange—first by Andrew when he chose to put himself in a less powerful position due a lack of linguistic means of expressing himself and then by Maria, who immediately accepted a more powerful position offering unsolicited comments on Andrew's language skills, correcting his mistakes and providing unwarranted praise as she saw fit. This perceived lack of linguistic mastery was the biggest challenge for Andrew who found himself struggling with projecting his real persona through his L2 discourse.

Andrew: In English when someone presents something on the internet or in writing, word choice is important, syntax is important, you know, the length of sentences, the use of clauses, stuff like that, it all plays into how you perceive a person. And I'm at a loss when it comes to that in Russian because my lack of knowledge about word choice, my passing familiarity with syntax and grammatical structure, and my lack of knowledge of the cultural norms. When I read something in English, there's a WEALTH OF KNOWLEDGE JUST IN THE WRITING. It's a much richer experience than it is in Russian, which I really took for granted.

It is not surprising that Andrew often resorted to English in his messages to Maria, privileging the social language of Russian-English code-switching as a resource to exercise power in the one-on-one conversation with his bilingual partner. The presence of occasional English inserts in Andrew's messages is perceived by him as a natural way of maintaining a smooth conversation with a person from a different cultural background and utilizing the multilingual capital each of the interactants possesses to establish a relationship of peers. This facet of Andrew's emerging multilingual identity arises from the following childhood recollection:

Andrew: I think it's a natural way to go about it. One of my friends grew up speaking Polish. There were times when we would

> do things, and he would call his parents, and it would be a rapid fire, a mixture of English and Polish. This was just a natural way for him to speak. He spoke two languages; his parents spoke two languages. […] It does affect it, when you are learning a language; it does interfere a little bit with the learning, with the conceptualizing of the language, but when you speak it, it's an effective way to communicate.

Andrew's narrative suggests that multilingual interaction may be given a special status in virtual social spaces, which creates a legitimate form of online literacy in intercultural encounters. In this respect, Kramsch (2009) wrote that "the electronic medium seems to increase the possibilities of playing one linguistic code against the other" (p. 162). The internet is a unique space where one can try subject positions that reflect multiple languages, cultures and identities at the same time and experience himself or herself as a multilingual speaker rather than a monolingual, static self. This presents an interesting detail about Andrew's experiences—a pivotal shift in self-efficacy as he discovers that multilingual communication better reflects the actuality of his global identity.

During the group portion of his virtual experience, Andrew joined two virtual Russian hockey fan clubs. He posted simple questions in both groups with the hope to garner as many reply posts as possible to score the highest point for the project assignment challenge. On the Salmon Line exercise, Andrew described his virtual group experience as *impersonal*, *casual* and *quick*, comparing his engagement with *vkontakte* groups to fishing with nets—"You get a lot, but you don't really worry about quality. It's all about quantity. I think it is a good way to get many responses. But I don't think it was a good way to engage. You get a lot of one-time responses. You want a faster discussion." Andrew's engagement with *vkontakte* groups was strategically framed within the boundaries of his class assignment. His first post, 'Who would win the Stanley Cup?' was carefully presented to the group membership as a 'safe' question on the topic that was, in his prediction, easily translated into different languages that would generate 'a flurry of responses even with a biased audience.' While his initial posts generated some interest in the groups, and he received many friend requests from other group members, he chose not to engage with the fan community in a more personal manner, puz-

zled by the fact that his identity of an American student from Detroit appeared more attractive to the group membership than 'Andrew, an ardent hockey fan.'

For Andrew, the group project was a fundamentally different experience, "much more anonymous" than the one-on-one conversation with a Russian peer: "It was all about the responses and not so much about personal communication." As a regular user of the English social networks, his contributions to virtual discussions were limited to the topics that he knew well, and his virtual identity was implicated by his past experiences with video gaming chat rooms and online discussion forums. For Andrew, active participation and social presence in a virtual social space entailed serious personal commitment and responsibility:

Andrew: It's a unique group of people that spend a lot of time on forums. And to be part of this sub-culture, you need to invest time [pausing] you need to invest yourself in participating: to be an active participant, you have to be very much involved.

Andrew's identity in the group project lacks credibility and requires authentication—his strategy entails making his online identity valid and legitimate by authenticating his group affiliation through a shared affinity, a geographical connection or familiarity with the group's theme.

Andrew: If you were to go on to a NASA website or a NASA forum, and someone said that they are from outside Cape Canaveral; they would instantly have more credibility because of that […] their proximity to the place gives them more credibility, more weight. At least that's been my experience.

Nevertheless, Andrew's agency was not invested in the *vkontakte* group experience where he could build a legitimate member identity in the virtual groups of his choice. He carefully plans his self-presentation to make it appealing to the group's membership so as to generate responses, but he does not expect a genuine interest in his global identity and his posts, comparing his posts to 'a drop in a pond' and his engagement with the

virtual groups to the proverbial analogy of the 'bug hitting the bus'—'The bug definitely knows when it hit the bus, but the bus does not even notice the bug hit it.'

Andrew's positioning in the virtual community evokes the *task-oriented* domain of experience and triggers the engagement trajectory that is oriented toward getting responses rather than engaging with the group membership at a deeper, personal level. Task requirements determine his choice of strategy and frame his virtual identity within the instructional boundaries of the group exchange. As did the other *As*, Andrew seems to give more weight to personal communication. For him, interacting one-on-one with a Russian peer creates a more meaningful and intimate experience because of the 'sense of importance' that underpins the act of speaking directly to another person. He perceives his exchange with Maria, his Russian project partner, as an experience that requires accountability, obligation and a close connection to the person on the other side of the globe. However, he did not experience the same level of personal commitment when he engaged with *vkontakte* virtual communities; he was 'a stranger in that environment.' This experience was 'impersonal, like talking in a bar—you strike up a conversation, and then you go somewhere else. And there is no real personal connection … no pressure that carried it through.' The feeling of being noticed and approved in the keypal exchange and unnoticed in the online communities prompts virtual experiences that produced fundamentally different kinds of Andrew's virtual L2 self—two personas of a distinct public value. As an experienced user of the English-speaking internet, Andrew struggles with reconciling his habitual casual use of social technologies outside the Russian class with the formal context of teacher-controlled course assignments and project deadlines.

Discussion

Experiencing Oneself Online as a Multilingual Subject

The *3As'* stories depicted in the previous section are an attempt to construe individual experience as shaped by a multitude of identities and

subjectivities a multilingual subject assumes when enacting itself in a social interaction with a cultural and linguistic 'other.' Their phenomenological narratives demonstrate how L2 learners' personal histories, emotional and intimate insecurities, prior experiences with the virtual world of communication, and their global and locally constructed identities are implicated in the quality of their investment in instructor-orchestrated virtual activities, and in the ways they construe their L2 personas in virtual encounters with native speakers.

Aaron's conception of an L2 identity, for instance, is inseparable from his global persona. He construes his L2 self as a social skill rather than as a facet of his multilingual self; as such, his global identity remains unmalleable. Aaron's military background shapes his social profile in the Russian virtual space, and his virtual experience is that of a strategic language learner. He chooses not to hide his 'Americanness' and instead gives prominence to the areas of his expertise and his offline experiences as a young American. The scripted roles assigned to him by his instructor facilitate interactions with his project partner. Yet, the fear of being rejected renders Aaron's virtual experience intimidating as he begins to realize that attaining an insider status requires his significant virtual presence and an investment in his online Russian speaking persona.

Alina's account of her activities in the Russian social medium is mixed with contradictory statements and conflicted interlocutor stances. Her split identity reveals itself as she describes her stable global affiliations (e.g., a Russian American, a vegetarian, an animal rescue worker) and locally defined facets of her conflicted heritage speaker self (e.g., internet nonuser). Being a heritage speaker of Russian, her sense of linguistic superiority took a discomforting and discombobulating hit during her personal Russian encounters, making the group venues, where the content of her comments was prized, more attractive.

Andrew's experience is deeply embedded in his understanding of the social dynamics in the English-speaking virtual social spaces. For him, interacting one-on-one with a Russian peer creates a meaningful and intimate experience because of the 'sense of importance' that, in his view, underpins any act of speaking directly to another person. He perceives his virtual exchange with his Russian project partner as a task that requires accountability, obligation and a close connection to the person

on the other side of the globe. Similarly, an underlying driving force in his motivation in the group exchange is closely tied to his understanding of 'moving forces' in public virtual domains. Unlike the other *As*, he is acutely aware of the norms and rules of virtual communication, including the levels of investment required of an individual who seeks social acceptance and approval in virtual social structures. Andrew struggles with reconciling his casual use of social technologies outside the Russian class with the formal context of teacher-controlled project assignments and deadlines—the lingering feeling that he describes in his interview:

> Andrew: The social media 'space' that we utilize for the project isn't 'work space.' In my daily life, I use it as 'social' space, a place where I connect with friends. I never use social media for work, unless it is to collaborate on an assignment. That made it difficult to see it as 'work,' and correspondingly difficult for me to assign it the personal priority it deserved.

Andrew's narrative unveils ideologies of genre-tool connections: historically shaped preferences for certain tools and contexts for engaging in a certain social activity, as it is prescribed by or widely accepted in a certain internet community. "Technologies come to be identified with specific forms of interaction as well as expectations of genre-specific communicative activity"—the idea that the use of technologies for social action are historically evolved and structured forms of internet culture "which evoke preferred and dispreferred social, relational, and interactional possibilities" (Thorne & Black, 2011, p. 262). Thorne (2003, 2016) refers to these established uses of internet tools as "cultures-of-use" or "historically sedimented characteristics that accrue to a CMC [computer-mediated communicative] tool from its everyday use" (p. 40). The established uses of online tools and contexts for particular types of interactions appear to constitute the ideologies of computer-mediated language use for social action. In Andrew's case, the 'culture-of-use' ideologies operated at the level of his articulated preference for certain modes of interaction, and also at the level of distinct self-positioning strategies in each form of virtual exchange.

Conclusions

Shared stories give testimony to significant events and experiences in a person's life, whether they are told for research, teaching, socialization or entertainment. Stories are privileged forms/structures/systems for making sense of self by bringing the coordinates of time, space and personhood into a unitary frame so that the sources behind these representations can be made empirically visible for further analytical scrutiny in the form of "identity analysis" (Bamberg & Georgakopoulou, 2008, p. 378). The stories told by Aaron, Alina and Andrew are rich and meaningful as they unveil the hidden nuances of contextualized experience in the virtual space. They reveal ways of being, thinking and acting in the multilingual world where political ideologies, relations of power and the hegemony of the English language uniquely frame individual language experiences in the manner that uncovers the complexity of non-native language use in and outside the virtual domains of human existence. Virtual experiences do not unfold in isolation to the person's agency and historical memory. By examining learner experiences with technology as a phenomenon, we add a critical dimension to our understanding of virtual identity enactment as a historically situated symbolic practice bringing a uniquely framed personal meaning to the life of the "experiencer" (Kramsch, 2009). Learners' stories reveal how *experiencing oneself online* may be perceived as a uniquely idiosyncratic phenomenon for each individual, and how the phenomenological aspects of each individual experience are implicated by the person's past encounters with non-native language use. At a broader methodological level, this chapter has attempted to embrace the complex nature of virtual identity as a *psychological construct*. Understanding *experience* and *experiencing an L2 identity* as a critical event and a liminal state in which L2 learners reconfigure their perception of L2 selves may lead to more empirical studies focusing on individual experiences ontologically framed in phenomenological terms. More research on virtual identity may produce new psychological theories explaining *the lived virtual experience*, whereas individual stories may give testimony to the events that underpin the ways of being, thinking and acting in the liminal virtual spaces of human reality.

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12

Leveraging Multilingual Identities in Computer Science Education

Sharin Jacob, Leiny Garcia and Mark Warschauer

Introduction

In the past decade, considerable effort in the United States has been dedicated to promoting equity in computer science education by broadening participation of students from marginalized and culturally diverse backgrounds. However, scholarship on promoting quality computer science instruction for linguistically diverse students is sparse (Jacob, Nguyen, Tofel-Grehl, Richardson, & Warschauer, 2018). As one of the fastest growing populations in US schools, language learners remain dramatically underrepresented in computer courses and careers (Martin, McAlear, & Scott, 2015). This is likely due to lack of access to courses (Martin & McAlear, 2015), lack of diversity in the workforce (Royal & Swift, 2016), lack of representation in the media (Royal & Swift, 2016) and/or pervasive stereotyping in the field (Margolis, 2010). Given this limited

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experience and lack of relatable role models, students from diverse backgrounds may perceive members of the computer science discipline as being unlike themselves and lose interest in the field (Aish, Asare, & Miskioğlu, 2018). This qualitative study explores how multilingual students leverage their identities during computer science instruction to support the development of computational thinking practices and promote interest in computing. Results from student semi-structured interviews indicate that identity expression supports positive social and academic outcomes for multilingual students in computing.

Background

Despite economic forecasts projecting a shortage of qualified candidates for computing jobs (BLS, 2015), underrepresentation of students from marginalized groups in these fields continues to be a critical issue (NSF, 2017). Underrepresentation in computer science is particularly alarming for students from linguistically diverse backgrounds. Schools with a student population that comprises 11% or more English learners of the total student body offer half as many computer science courses as schools serving fewer than 11% English learners (Martin & McAlear, 2015). In California, the site of this study, Latinos represent 54% of California K-12 enrollment (Ed Data, 2018), yet they made up only 22% of the students who took the Advanced Placement Computer Science exam in the state (College Board, 2017).

Concerted effort has been dedicated to exploring the causes of such underrepresentations in computer science in the United States. Students from low socioeconomic status backgrounds have lower levels of computer and internet access (McFarland et al., 2017) and lack exposure to professionals in computer science fields (Royal & Swift, 2016). Limited access and exposure are exacerbated by inadequate media representation of diverse populations in computer science (Royal & Swift, 2016) and an overall dearth of student experiences related to computer science both at home and at school (Google & Gallup, 2015; Wang, Hong, Ravitz, & Moghadam, 2016). Given this limited experience and lack of relatable role models, students from diverse backgrounds may perceive members

of the computer science discipline as being unlike themselves and thus lose interest in the field (Aish et al., 2018). Research findings indicate that increasing identification with computer science disciplines leads to increased persistence in pursuing computer science degrees (Mercier, Barron, & O'connor, 2006; Packard & Wong, 1999). Efforts targeting marginalized students to promote identification with computer science have been laudable and numerous. While these efforts have typically targeted underrepresented groups such as women and students from diverse racial backgrounds, scant attention has been given to exploring approaches to computer science education that attract and retain multilingual students (see Jacob et al., 2018).

In addition to lack of representation, language learners face pervasive stereotyping in the field, which sends exclusionary messages, particularly with respect to who 'does' computer science. This stereotype is based on a fixed mindset, in which certain types of individuals, often those from privileged backgrounds, are endowed with particular talents and abilities (Margolis, 2010). Such inflexible thinking leads to the setting of expectations based on group characteristics, in which lower expectations limit the opportunities for participation and growth of students who do not fit these stereotypes. To address these issues within computer science education, initiatives such as Computer Science for All (Smith, 2016) recognize the systemic cultural and historical inequities that lead to differential learning opportunities for underrepresented students. These movements address systemic inequities by maintaining high expectations for all students regardless of geography and for lessening inequality related to language, race, ethnicity, and socioeconomic status. Equity-minded educators combat deficit-based views by embracing diversity and viewing students' backgrounds as repositories of knowledge that contribute to and enrich learning.

Conceptual Framework for Characterizing Multilingual Identities

In underscoring multiple modes of cultural identification, Norton (1997) made significant contributions to second language acquisition (SLA)

research by challenging the dichotomous relationship underlying assimilation-based models of identity. Drawing from the work of Pierre Bourdieu, Norton (1997) proposed the idea of investment as a means for attaining "symbolic capital" within a given institutional setting, such as classrooms. Multilingual students use language not only to express themselves but to position themselves within the world. Speech is a form of performativity in which these students navigate existing power relations, as well as subsequent modes of inclusion and exclusion (Norton, 2013). Both investment and resistance to cultural norms, then, exemplify the struggle for power undertaken by language learners who choose to obtain capital within specific social, cultural and historical contexts. Because identities are not dichotomous—they are constantly shifting and often contradictory—language learners traverse multiple spaces as they navigate their relationship in the world.

The ability to fluidly accommodate multiple identities is a uniquely valuable characteristic of digital spaces that benefits students from culturally and linguistically diverse backgrounds. The advent of the internet, social media and instant messaging has allowed for myriad forms of communication that transcend temporal and spatial boundaries (Warschauer, 1999). These spaces have opened new possibilities for language learning, fostering interaction in multiple languages (Warschauer, 2009) that traverse linguistic and cultural norms (Canagarajah, 2013). Given these opportunities, educational technologies broaden the ways in which students identify with the curriculum and present marginalized students with more opportunities to leverage knowledge learned outside of school to facilitate formal learning.

While digital spaces have transformed the ways in which individuals negotiate their identities, scant attention has been paid to identity construction through the creation and development of these digital spaces via computer programming. Despite this paucity of research, computer science continues to shape the digital terrain in which we find ourselves immersed. Given the rise of automation, artificial intelligence and machine learning in our daily lives, computing is increasingly being used to solve everyday problems. In fact, thinking computationally is so embedded within social patterns of human communication and interac-

tion that it arguably represents a fundamental literacy (diSessa, 2000) and can be leveraged to develop literacy (Jacob et al., 2018; Jacob & Warschauer, 2018; Peppler & Warschauer, 2012). Engaging language learners in using computational approaches to express their identities will prepare them for full participation in society while increasing career opportunities and enhancing potential for civic engagement.

What Is Computational Thinking and Why Should We Teach It to Our Students?

In her groundbreaking discussion in the *Journal of the Association for Computing Machinery*, Jeanette Wing (2006) coined the term computational thinking and described its significance in solving complex problems that extend across a broad array of disciplines. Computational thinking utilizes concepts that are essential to computing to systematically characterize problems, process information and test solutions. By formulating thoughts and questions in a manner that can be interpreted by a computer, computational thinkers are able to instruct computers to carry out sets of tasks in a specified order to achieve desired results (Wing, 2006). While the exact definition of computational thinking is still a matter of debate (Barr & Stephenson, 2011; Grover & Pea, 2013), the International Society for Technology in Education (ISTE) (2011) identifies algorithmic thinking, automation, abstraction, modularization and data analysis as being essential skills to carry out computational processes. Computational thinking is not to be confused with computer programming or coding; the latter involves the teaching and learning of computer programming languages. Rather, computational thinking is typically operationalized through computer programming but can be learned with or without the use of computers, the latter approach often dubbed as 'unplugged' activities in computer science education.

To date, there is no consensus on the exact definition of computational thinking in scholarly research (Barr & Stephenson, 2011; Grover & Pea, 2013). Some researchers define computational thinking according to key computational concepts involved (i.e., events, conditionals, loops, etc.)

(Grover & Pea, 2013). Brennan and Resnick (2012) argue that focusing solely on concepts represents a limited perspective of computational thinking, proposing that computational thinking practices and perspectives provide a more robust understanding of the skill. These practices have been examined with children programming in Scratch, a media-rich, block-based programming environment designed to engage novice programmers in coding (Resnick et al., 2009). This chapter borrows from Brennan and Resnick (2012) in examining student computational practices along four dimensions: (1) experimenting and iterating, (2) abstracting and modularizing, (3) testing and debugging and (4) reusing and remixing.

Each of these four practices is intended to examine the design process that students engage in as they develop their computational artifacts (Brennan & Resnick, 2012).

- The practice of experimenting and iterating involves viewing project design as a process that involves designing, developing and testing algorithms in an iterative manner—after testing steps, students revisit their programs to further develop their projects based on new experiences and ideas. Creativity is integral to this practice as students use their imaginations to design and refine their projects.
- Abstracting and modularizing involves the process of decomposition, or breaking a problem down into smaller, more manageable pieces. Abstraction and modularization is typically used during the initial conception of a project as well as when organizing and arranging stacks of code to synchronize design features.
- Testing and debugging entails dealing with problems in code by identifying causes and finding solutions. In general, students who use Scratch learn debugging through trial and error, from their experience with other projects, and by receiving help from others (Brennan & Resnick, 2012).
- Reusing and remixing involves building on one another's code and designs to create new, and potentially more complex, projects. With it brings the question of how to give others credit for their work, which represents an understudied area.

Current Study

Through funding from the National Science Foundation, we have formed a collaborative network of universities, K-12 researchers and practitioners to promote computational thinking for students in grades 3–5 in a way that better meets the needs of language learners. The Collaborative Network of Educators for Computational Thinking for All Research (CONECTAR) represents the first phase of a larger effort aimed at validating and disseminating instructional materials for broader implementation and assessment. Phase one is exploratory in nature and seeks to iteratively develop and test instructional materials and data collection instruments in upper elementary classrooms to better meet the needs of multilingual students. The work is situated in a Southern California school district, where the majority of students are low-income (89.7%), Latino/a (93%), English learners (overall 41% but higher in elementary grades at 62.7%). The goals of this project are the following:

1. To investigate the teaching and learning of computational thinking in grades 3–5 in the districts and nationally, and their potential for successful engagement of diverse learners.
2. Based on this, to develop and pilot instructional materials that align with the Common Core State Standards—specifically related to English Language Arts—that best meet the needs of the predominantly Latino/a language learners.
3. To iteratively pilot test these instructional materials for broader implementation and assessment.
4. To establish a successful researcher-practitioner partnership (RPP) that can ultimately serve as a model for other RPPs in support of Computer Science for All.

This chapter is part of a larger study that uses principles of design-based implementation research (DBIR) to study, design, implement and refine a computational thinking curriculum developed in collaboration with researchers, teachers, administrators and curriculum specialists. The study utilizes qualitative methods to explore how multilingual students leverage their identities while engaging in the computing curriculum. In

addition, the study explores how students' identities can be leveraged to support the development of computational thinking practices. Data collection includes semi-structured interviews that ask students to analyze their About Me Scratch projects. The About Me project is geared toward self-expression: students are encouraged to share facts about themselves with their peers in Scratch. The interview engages students in analyzing their projects according to four computational thinking practices: (1) experimenting and iterating, (2) abstracting and modularizing, (3) testing and debugging and (4) reusing and remixing (Brennan & Resnick, 2012).

Research Questions

Under the umbrella of these broader aims, we ask the following research questions:

- How do multilingual students leverage their identities while engaging in computing and computational thinking?
- How does multilingual identity expression support the development of computational thinking practices?

Methodology

Sampling Procedures

This study took place in six upper elementary classrooms (third through fifth grade) across the Santa Ana Unified School District (SAUSD). The SAUSD, with about 56,000 students, is the seventh largest school district in California, and one of the districts in the United States with the highest percentage of Latino/as (93%), low-income learners (89.7% receiving free or reduced-price lunch), and 41% language learners (62.7% in the elementary grades). SAUSD is seeking to improve student academic achievement and interest in science, technology, engineering and mathematics (STEM) through programs that support instructor innova-

tion and emphasize integration of STEM and English language arts curricula.

Teachers were selected based on their experience in teaching computer science to upper elementary students. In the larger study, maximum variation sampling was used to select 28 students (four from each classroom) to be interviewed based on differences in programming experience and linguistic proficiency. Of these 28 students, a convenience sample of eight students was selected for this chapter to explore the relationship between identity and computational thinking for multilingual students.

Instruments: Semi-structured Interviews

Semi-structured interviews were adapted from artifact-based interviews developed by the ScratchEd team at Harvard Graduate School of Education. They were adapted from a rubric that assesses students' fluency with computational thinking practices, including experimenting and iterating, testing and debugging, reusing and remixing, and abstracting and modularizing. Open-ended questions that evoke a more conversational tone were modified from the existing rubric to capture more in-depth data on student experiences while developing their computational thinking artifacts.

Procedures

The semi-structured student interviews were administered to eight students after they finished their About Me projects. A team of four researchers was trained to ask open-ended questions and make active decisions about when to probe or ask follow-up questions, shift topics, and/or modify the original protocol to accommodate new themes. Researchers used an interview protocol to conduct the semi-structured interviews and audio-recorded student responses. The researchers also video-recorded students' screens as they were demonstrating their project to gain a better understanding of the block-based commands that corresponded to students' verbal responses. Audio recordings were transcribed using the

Temi software and again by a team of researchers. MAXQDA was used to code the interviews and conduct reliability checks.

Data Analysis

RQ1: How Do Multilingual Students Leverage Their Identities While Engaging in Computing?

We used open and axial coding (Saldaña, 2015) to identify how students leveraged their identities to engage in computing and computational thinking. Our coding scheme was guided by existing theory on identity development (Norton, 1997; Ricento, 2005; Wortham, 2006) and inductively from student responses, as they pertained to the research question. The coding scheme was formulated initially by the first author. Weekly meetings were conducted with the second author to iteratively refine the codes and categories. Through multiple iterations, a codebook was devised to answer our first research question. The coding scheme addressed how students leveraged their identities to engage in designing their computational artifacts.

RQ2: How Does Multilingual Identity Expression Support the Development of Computational Thinking Practices?

The semi-structured interviews were examined using deductive and inductive qualitative coding (Saldaña, 2015). The generation of first cycle codes in this study is situated within a procedural, deductive frame of analysis (Boyatzis, 1998; Cummins, Hu, Markus, & Montero, 2015; LeCompte, Schensul, Nastasi, & Borgatti, 1999). In this approach, protocol coding was used to discover how students engaged in computational thinking practices when developing their About Me projects. This process consisted of reading the data multiple times to categorize computational thinking practices and subcategories within each practice. The Harvard ScratchEd Student Artifact analysis rubric was used to guide the deductive coding. Student responses were categorized according to their reported use of four computational thinking practices: (1) experimenting

and iterating, (2) abstracting and modularizing, (3) testing and debugging and (4) reusing and remixing. Because the goal of analysis was exploratory, that is, to identify emergent themes in participants' responses about their computational thinking practices, researchers also generated new codes in the process when the existing codes from the rubric did not fit with particular excerpts of text. Credibility of qualitative findings was ensured through triangulation, member checks and negative case analysis (Lincoln & Guba, 1985).

Findings

The nature of the About Me project allowed for students to define their identities by expressing multiple experiences, interests and characteristics across a variety of contexts. Specifically, students mentioned hobbies and favorite items or activities that they enjoy as well as stories about their lives, families and communities. The multiple modes of identification were translated and represented on the Scratch site through the customizable features of the program: sprites (created animated caricatures), backgrounds and sounds. An example can be seen with students like Ricardo, Abby and Eduardo (pseudonyms). First we have Ricardo who decided to display his various interests for his About Me project, which include playing basketball, video games and enjoyment of mathematics:

Ricardo: "So I decided like, what sprites is like, I added like the things that I liked, like my favorite um thing is basketball, so added a basketball player [inaudible] and like a little thing. And then since my favorite subject is math I added a plus sign, a division, and a minuses right there and I added a controller for like the gaming part."

We can see that Ricardo chose sprites that he felt would directly represent his interests. Most of his sprites were provided by the Scratch library; however, he also designed his own sprite to resemble a gaming console and indicate his love for video games. In addition to Ricardo's method of identity expression, students also remade an experience they associated

themselves with. Below we have Abby whose identity piece involved the recreation of a party event:

Abby: "I want it to make [the project] a little bit extreme. So for the background I just put like a little party because I love going to parties and then [the background] was perfect because it had a bunch of balloons and I was wondering how I can make it like even funner than it looked. So then, um, I got some color changing blocks and I was, just want like an adventure for the blocks. […] [The code block] is the change color effect by 25 […] then I went to my events and under 'Control' and I got a 'Repeat' and 'Forever' block and, and um, I wanted it to last forever, but then I did the 'When flag is clicked.' It's opposed to do a rainbow background."

While Abby ultimately incorporated sprites that directly symbolized some of her characteristics, she also attempted to recreate her interests in fun party experiences for her project. To her, having a background that shifts between all colors, or in other words a rainbow background, in a continuous manner symbolized her conception of a lively event. Because of her desire to express this enjoyable experience, Abby incorporated computational concepts such as events and loops to create this special color effect.

Similar to Abby, Eduardo added additional elements to his project to provide a full representation of his identity. Here we have him explain his efforts to set a certain tone for his project as he describes his favorite weekend activities with his siblings:

Eduardo: "I think it would have been like a little bit like fun and like a little bit of smooth, like, and not too much […] like just like a pretty like just smooth […] I didn't know you can actually play music until I saw the sound and I clicked on it and there was like buttons and all that and I didn't know what they did at first. I just started exploring. And then I heard, I saw like this little button, like I saw all these and I didn't know what they did. So, um, I went to

> sound cause I saw them and then I clicked one of these buttons and then I clicked on here and there was a bunch of sounds and it clicked one that was my favorite and I clicked on it. And then once I got it I went to scripts and sounds and then I saw which one was the sound. For example, 'play sound', 'chill out,' dance 'chill out.' And then I'm put it in my blocks."

In efforts to have a project that truly portrays his experiences, which in this case included the use of music, Eduardo was intrinsically motivated to explore coding blocks that he never tried before. While he focused on finding the right music to set a 'smooth' tone, he practiced the skill of modifying coding parameters and incorporating the code into a larger project.

Despite the different approaches in expression, Ricardo, Abby and Eduardo focused on their chosen forms of identity, which then informed the coding functions they deemed important for any user to understand their lives. As their coding experiences were guided by their chosen forms of identity, students leveraged their identities to engage in four key computational thinking practices:

Experimenting and Iterating

Students recalled instances where they discovered, explored and tinkered with coding blocks as they created functions for specific elements of their projects. Here we have Melanie, who shared her process in programming a sprite to display information about her interests.

Melanie: "Yeah. So I was on this sprite. And I have my things but I didn't know that you had to—when you change the sprite you had to change um this—like right here you had to change them right here. So what I did is I just added more blocks onto this [code blocks] and just kept on doing it and I'm like, why is this doing this? And then I noticed this, and that's how I figured out how to do this. And then I did like

> 'Basketball is my favorite sport' because I love basketball. I said 'Llamas are my favorite animals' and 'My favorite book is The Land of Stories: The Enchantress Returns.' And 'My home is cozy.' And 'My favorite food is spaghetti.'"

Melanie experimented with coding blocks by including them in her program and looking for any potential outcomes of her program. In her case, she wondered how despite the inclusion of blocks a certain action was still occurring, which led her to wonder about 'changes' in parameters that she might need to control. As a result, she had a program where her sprites could display speech bubbles to 'say' corresponding facets of her identity. Similarly, Omar experimented with his code by understanding the outcomes as he attached or detached certain coding blocks in his program. Below he discussed how he understood the importance of event blocks while trying to make his sprite 'glide' on his screen.

Omar: "Yeah, so once, I used [event blocks], but then I took them off and just left like the 'Glide' block […] Um [the code blocks] didn't work and they like—they had these things [event blocks] on, but then I took them [event blocks] off and I left like these blocks alone and then I clicked the flag, but nothing happened […] [Event blocks]—they like really do stuff or you just click on it and it happens."

Although Omar was using an event block at the start of his subprogram designed to make his sprite glide, he did not fully understand its purpose. It was not until he was attempting to debug his code to execute the gliding function that he experimented with the blocks and realized how Event blocks fully work.

Abstracting and Modularizing

As the purpose of the About Me project was to engage students in self-expression, each element of their identity that they chose to express contributed to students' thinking of the main functionalities and subprograms

that would ultimately inform users of their identities. Eduardo's project revolved around a description of his relationships, and so he compartmentalized his project as such:

Eduardo: "I organized [my script] by putting, I'm not like in sections but like one by one, like about my family then about me. And then about my friends, so like one, two, three. Like first about my family's second about me, then my brothers and then my friend."

Many students used facets of their identity to practice abstraction or to decide which components to include in their projects and which to leave out. Students then identified how to express these elements in a sequential fashion by modularizing their code. In Abby's case, she incorporated her initials in her project through the provided sprites Block-a and Block-o.

Abby: "So I looked at one of the letters and I was thinking to myself what can I make with these letters? So then I clicked on one of the letters and I wanted it to turn because it was an O, and like, I was thinking of like various kinds of [movements] and then I clicked one of [the movement blocks] and I knew that turn 15 degrees and the other way turn 15 degrees would make like a circle and it would turn around and I wanted it to turn it around forever. So I clicked the 'Forever', forever block and the 'Repeat.'"

Students also repeated their modularized programs for some elements of the projects to help them express other elements. Here we have Marcos who expressed his identity using direct representation of sprites, which included dogs, food and his brothers.

Marcos: "I did the same thing [for a sprite] like the dog [sprite]; when, I put press D and then right here [in the script] says "When D clicked" to let it say [my interests] over here [in the stage]."

Marcos created a subprogram that had users press a specific letter key in order to activate a sprite to explain a specific part of his identity. He decided to incorporate this same subprogram that he initially created for his dog sprite and used it to explain his other interests.

Testing and Debugging

With their end goal in mind, students debugged toward achieving a level of functionality that allows for identity expression. Students shared debugging strategies that they implemented.

Marcos: [To make the sprite spin around] I tried "Move 10 Steps." Then I put the-the "Repeat Forever" 10 Steps. But it didn't work.

Camila: "So with the background, I wanted it to play sound. So I clicked all of these together, and with one of [the sound blocks] and with one of [the change color blocks] together [the program] started to glitch. When the sound played in the middle [of the program], it start to glitch. And [the sprite] would turn a little bit grey, and when I took [the sound blocks] out and put them in this form it started to work […] It probably needed like another [event] block to like get it because probably one wasn't enough."

Students generally debugged their programs via trial and error, revealing the experimental and iterative nature of their programming experience.

Reusing and Remixing

While there are many existing online resources for users, students revealed that their main source of help were their peers. They reported instances in which their peers inspired their design choices or helped them fix pieces of their code.

Melanie: "I looked at my friends so my friend Andrea's, and it gave me ideas on to make it moving and to, to make it move. The llama. And I'm like, oh I need to move it because it would just be that and I didn't really want that. I wanted to make it more special. So that's when I decided to make the llama move. It wasn't really my project that I created that gave me ideas for this, but it was my friends."

Abby: "Well, I didn't know how to do that, so I asked my friend, he showed me how to do that and it was with with like when space key press, and I got one of those, and he told me to use whichever, like the up Arrow or the J or any letters or numbers on it and I wanted and I wanted the letter J, and because it's right here in my name. And when that happened it would say my nickname is JoJo."

Outside of peer support, some students still showed use of external online resources such as tutorials and videos. An example here is Camila who watched tutorial videos and explored existing projects through Scratch's library to gather ideas on how to make her project interactive. In an effort to make her fruit salad, a symbol of her love for eating fruit, she watched "a video about Scratch and it showed how to swirl the letters and I tried the fruit salad on that." Additionally, she selected a sprite that represented herself and decided to make it interactive by having it move with arrow keys.

Camila: "Because um I was going to try and move it to another direction (interviewer: mmmm) because I wanted to click these two (presses on left and right arrow keys), but it wouldn't work, it would just go (points towards the right direction). I tried to um use different events for it could move to another direction, but it wouldn't really work."

Although these actions do not directly help her specifically express her identity, the motivation to make her project interactive led to the reuse and remixing of code.

Additional Findings

Aside from personal experiences informing their learning of computational concepts, students established personal expectations and goals for their project that were influenced by the target audience—their peers.

When asking Marcos what he wanted the project to say about himself, he further emphasized how he wanted to "do my stuff good and my friends can like it." He acknowledged that many design decisions were inspired by his desire to create a program that his peers would appreciate. He said he would "try blocks that I never tried to see what it would do. Then I realized all of the blocks to do … (I: Ok, nice) … To make my thing creative." This external motivation for the project was expressed by other students as well, like Eduardo who "just wanted [the project] … like as fun as like, like when people see it, like from one of my classmates here to just make it like, as like, as fun as I can be and that's it."

Despite having a focus on expressing their self-defined identity, students still considered the user experience and presentation of the project, like the student Ana below.

Ana:	"For the Giga I put 'When the flag is clicked' [code block]."
Interviewer:	"Why did you do that?"
Ana:	"When you present [the program], there's usually a flag in the middle and I would find it like a little weird if it like didn't say to click on the Giga, and I didn't think of putting that so when flag clicked-when the flag is clicked it would probably work well."

Discussion and Conclusions

The About Me Scratch project appeared to produce positive social and academic outcomes for these multilingual students. These positive outcomes can be attributed to the bridging of out-of-school and in-school learning environments by drawing on students' identities to create a "third space" for student participation. They disrupt the traditional roles

between students and teachers to create more horizontal, symmetrical spaces in which teachers and students co-navigate their official and informal identities. In doing so, students begin to see the parallels between their existing skills and the curricula, which not only engages them in computational thinking practices but likely serves to increase their identification with the discipline.

Under an acculturation model of identity development, students' rich linguistic and conceptual backgrounds are viewed as obstacles to overcome as they assimilate to formal learning environments. On the other hand, when identities are viewed as multiple and fluid, students are encouraged to utilize their home- and school-based resources interchangeably to navigate academic and technical spaces. Instructional materials that draw upon students' identities facilitate parallels between academic content and what students already know, thereby increasing their opportunities to identify with the curriculum as well as communicating their own identities through the development of their projects.

Considerable effort has been dedicated to leveraging students' existing resources to increase identification with STEM fields. These efforts include drawing from students' existing family expertise to promote science and engineering practices (Kafai, Searle, Martinez, & Brayboy, 2014), diversifying the curriculum through the simulation of multicultural artifacts (Eglash, Gilbert, & Foster, 2013), and engaging students in action-based initiatives that seek to solve problems within their local communities (Goldman et al., 2009). As we have seen with the computational thinking curriculum described in this study, drawing upon students' identities contributes to deeper learning and enriches and broadens the discursive practices students utilize to engage with the curriculum.

Beyond leveraging students' identities, the programming environment Scratch has the unique capacity for providing language-neutral spaces for language learners (Tofel-Grehl et al., 2017). In addition to translating features, the multimodal nature of the interfaces reduces the linguistic load for language learners and enables them to more readily access content. Thus, computational thinking practices have the potential to represent an equalizer for linguistically diverse students, providing a variety of entry points for student participation that leverage, instead of tax, their existing resources (Tofel-Grehl et al., 2017).

Although, little research has focused on leveraging students' *linguistic* resources to promote computing and computational thinking for language learners, from our interviews, we see that students use their everyday sensemaking capabilities to describe their projects. To this end, students' discourse choices reveal a lack of academic and discipline-specific language. While theoretical frameworks for exploring the relationship between computational thinking and literacy have been established (Jacob & Warschauer, 2018), scant attention has been paid to promoting discipline-specific literacy in the field of computer science. Future research should focus on empirical studies that examine how students' existing resources can be leveraged to promote the development of academic literacy as well as the language forms and functions of computer science (see Jacob et al., 2018).

By engaging students in using their existing tools to access content while infusing content with artifacts and themes from their lives, responsive computing education sends an alternative and compelling message regarding who 'does' computer science. This has the potential to shift teacher and student biases to engender a more inclusive approach to computer science education. The perception of exclusivity in computer science runs in stark contrast to the pervasiveness of computing and computational thinking within society and the workforce. If computational thinking is indeed a fundamental literacy required for full participation in society, then the myth that only certain, prodigious talents can 'do' computer science needs to be dispelled. This can be achieved by integrating culturally responsive computing education into existing K-12 curricula that leverage students' identities to engage them in computational thinking. When students are able to utilize their existing skills to engage in computer science, they develop a sense of competence and ultimately the belief that they can succeed as professionals in the field.

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13

The Implications of Using Online Social Networks for EFL Learner Self-Concept

Nourollah Zarrinabadi and Ensieh Khodarahmi

Introduction

The concept of technology-assisted language learning (TALL) has moved to the center stage in recent years and has emerged as a separate research field. The extant research in this area, however, has mainly addressed the effectiveness of using technology as it corresponds to learners' language achievement (e.g., Cavus & Ibrahim, 2017; Chapelle, 2001; Gromik, 2012; Ko & Goranson, 2014; Salaberry, 2001; Stockwell, 2007, 2008). The reciprocal relationship between this approach and a learner's emotional well-being has gone largely unnoticed. Considering the various challenges that learning a foreign language (FL) may pose to learners (Ganschow, Sparks, & Javorsky, 1998), research on any FL learning and teaching approach is incomplete without addressing its relationship and

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likely influences on learners' psychological states. One of the psychological constructs which has been frequently highlighted in second language acquisition (SLA) research as a central part of the language-learning process is FL self-concept. It has long been regarded as a determining factor in learners' motivation and attitude toward learning (Williams & Burden, 1999).

Although past research has shown a reciprocal relationship between FL self-concept and a language learner's approach to learning (Horwitz, Horwitz, & Cope, 1986; Mercer, 2011b; Skaalvik & Valås, 1999; Williams & Burden, 1997), the relationship between this construct and technology-assisted language teaching and learning has remained relatively under-researched. The research reported in this chapter seeks to bring together the current lines of inquiry in TALL and FL learner psychology by examining whether, as well as if so how, using online social networks as a teaching and learning tool is likely to influence the global and speaking-specific FL self-concept of adult English as a foreign language (EFL) learners. As a new virtual ecology, social networks have expanded the area of research in TALL by providing the opportunity for language learning and socialization (Toetenel, 2014). This study focuses on the Telegram messaging application developed by Durov and Durov (2013) in the UK. It is a participatory online environment, which is available on smartphones as well as personal computers (PCs). According to the Iranian Ministry of Communication, Telegram has been the most popular messaging service in Iran in recent years, likely due to the fact that users can exchange messages, photos, videos, audios and other types of files online.

FL Self-Concept

Self-concept refers to one's ideas, feelings and knowledge about oneself, which is not only affected by one's own perceptions but also amenable to the surrounding environment (Cantor, Markus, Niedenthal, & Nurius, 1986). It is a complex multidimensional construct which relates to various aspects of an individual's psychological makeup, including belief systems, emotions, motivation, goals and strategic behaviors (Mercer, 2012).

Indeed, it is not "the 'facts' about an individual but it is an individual's beliefs about themselves" (Sahinkarakas, Inozu, & Ramoo, 2017, p. 2).

One unresolved issue regarding the nature of self-concept which has given rise to great discussion is the extent to which it is a dynamic construct (Mercer, 2011a). While, in its earliest conceptualizations, it was conceived of as a unidimensional construct (Byrne, 1984), its malleability has been attested to frequently in the literature. Empirical studies have shown that some aspects of self-concept are likely to change according to the context of the communication (Harter, Waters, & Whitesell, 1998, cited in Sahinkarakas et al., 2017), gender (Kling, Hyde, Showers, & Buswell, 1999) and academic disciplines (Skaalvik & Skaalvik, 2004; Sullivan, 2009). Thus, individuals are expected to hold different self-concepts about themselves correlating to the different aspects of their lives. Markus and Wurf (1987) distinguished between core and peripheral self-conceptions and argued that while an individual's core self-concept may be resistant to change, the peripheral ideas about self continuously change. In effect, the more general and higher-order aspects of self-concept seem to be more resistant to change (Hattie, 1992; Markus & Wurf, 1987), whereas aspects which are more domain specific (e.g., mathematics learning self-concept) are less stable and are more likely to change (Markus & Wurf, 1987; Mercer, 2011b).

In mainstream educational psychology research, academic self-concept has been widely highlighted as a central factor in learners' academic achievements (e.g., Denissen, Zarrett, & Eccles, 2007; Hattie, 1992; Huang, 2011; Marsh & O'Mara, 2008; Marsh & Yeung, 1997). It is "an individual's self-perception of competence and their related self-evaluative judgments in the academic domain" (Mercer, 2011a, p. 14). In FL pedagogy, the importance of learners' perceptions of themselves and the FL learning process has been one of the core issue debates for quite a long while (e.g., Dörnyei, 2001; Mercer, 2011b, 2012; Williams & Burden, 1997). FL self-concept has been described as a multidimensional construct (Mercer, 2011a) with interrelated affective and cognitive aspects (Marx & Winne, 1978; Mercer, 2012). Given that learning an FL implicates learners' identity and self-expression (Horwitz et al., 1986; Mercer, 2011b; Williams & Burden, 1997), FL self-concept seems to play a more vital role in the process of FL acquisition when compared to other academic fields

(Mercer, 2011b; Skaalvik & Valås, 1999; Wigfield & Karpathian, 1991). It is closely related to second language (L2) achievement and other important psychological factors such as motivation and interest (Mercer, 2012).

There is a growing body of empirical research seeking to clarify the dynamic nature of FL self-concept. In a three-year longitudinal case study, Mercer (2011a), for example, examined the dynamism of an adult FL learner's self-concept using journals and interviews. Based on the findings, she described her self-concept as a complex, multidimensional set of interconnected self-beliefs which can vary according to situations. In another case study, Mercer (2012) examined the EFL self-concept of an advanced adult learner. She concluded that the learner's EFL self-concept has both stable and dynamic dimensions, with the dynamic dimension varying according to the learner's prior self-concept and the centrality of the learner's related self-beliefs. Despite the findings showing the dynamism of FL self-concept, there is limited research examining whether and if so how various learning and teaching approaches can facilitate a positive sense of FL self. Given the significance of promoting positive FL self-concepts among language learners, it seems imperative for language teachers and researchers to gain a deep understanding of the factors involved in learners' self-concept development.

Overall, the extant literature suggests that L2 self-concept has an influence on learners' achievement, so focusing merely on the L2 in the classroom, although necessary, may not be sufficient to improve learners' L2 proficiency. The study described in this chapter has juxtaposed the likely effect of TALL on adult Iranian learners' FL self-concept.

Technology-Assisted Language Learning (TALL)

The advent of various new technologies has facilitated access to educational opportunities and provided increased flexibility in the presentation of learning materials. In the context of FL learning, too, information technology has revolutionized teaching methods and has paved the way for more interactive instruction (Chapelle, 2001; Salaberry, 2001; Zhao & Frank, 2003). PCs and smartphones seem to be the most frequently

used technologies in FL learning (Kao, Hu, & Kao, 2017); hence, the acronyms CALL (computer-assisted language learning) and MALL (mobile-assisted language learning) have been widely used and understood in the SLA literature. Associated with CALL and MALL, a recent type of information technology which has witnessed a dramatic popularity in the past decade is online social networks such as Facebook, Telegram and Instagram (Andreassen, Pallesen, & Griffiths, 2017). Approximately a third of the world's population reportedly have accounts on these networks (Samaha & Hawi, 2016). The ubiquity of these networks has resulted in their widespread use in educational settings as well (Tian, Yu, Vogel, & Kwok, 2011), which has opened doors to new and unexplored avenues.

In addition, recent studies have investigated the effectiveness of using information technology for various aspects of L2 learning and teaching, including vocabulary acquisition (Esit, 2011; Ko & Goranson, 2014; Lu, 2008; Stockwell, 2007, 2008; Stockwell & Liu, 2015), sensory and cognitive affordances (Uther & Banks, 2016), oral skills (Baltova, 1999; Cavus & Ibrahim, 2017; Hwang, Huang, Shadiev, Wu, & Chen, 2014), understanding the L2 culture (Herron, Dubreil, Cole, & Corrie, 2000), learners' attitudes toward technological learning devices (Dashtestani, 2016), communication opportunities (e.g., Warschauer & Kern, 2000), individualized feedback (Salaberry, 2001) and enhancing FL learning motivation (Huifen & Dwyer, 2010).

Despite the extensive literature on TALL, research into the affective domain of FL learning is still relatively unexplored, particularly in relation to online social networks. In mainstream educational literature, more studies have addressed the relationship between affective variables and technology-assisted learning. For example, several studies have examined how online social networks are likely to reinforce learners' group identity (Greenhow & Robelia, 2009; Selwyn, 2009), boost their ability to express themselves online (Valkenburg & Peter, 2007) and develop their self-esteem (Helliwell & Putnam, 2004). The general impression gleaned from these studies suggests that pedagogical applications of technology are likely to have a positive or a negative impact on learners' emotional well-being.

Given the corroborating evidence provided by SLA research regarding the significance of psychological variables in the process of FL learning over the years (Dörnyei, 2009; Dörnyei & Ushioda, 2009; Gardner, 1991; Zhang, 2009), understanding how instructional methods are likely to affect learners' psychological characteristics merits attention. The purpose of this chapter is to answer the following questions:

1. Is there any relationship between technology-assisted FL instruction and Iranian EFL learners' self-concept in the process of learning English?
2. In what ways can technology influence FL self-concepts of learners from varying levels of English proficiency?

Methodology

Participants

The participants of the study included one intermediate class and one advanced-level class in a private English language school in a city in Western Iran. The principal researcher who was the instructor of both classes briefed students on the study and invited them to participate in the project. Students of both classes volunteered to take part. There were six and eight students in the advanced group and the intermediate group, respectively. However, one student from each group did not participate in some of the tasks. In the end, there were five students (two males and three females) and six students (two males and four females) in the intermediate and advanced classes, respectively. The participants' ages varied from 14 to 18 years (M = 15.5). The classes met for two sessions a week at the time of the data collection. Prior to the study, participants completed an informed consent and a demographic questionnaire, specifying some general information including age, gender, the highest level of education and approximate length of time they generally spent on the Telegram application per day.

Treatment

This study was conducted using the Telegram application. Telegram is a social networking and messenger application. According to the Iranian Ministry of Information and Communications Technology (ICT), it has more than 45 million users in Iran. This application has different options such as messaging, creating discussion groups and channels, as well as the possibility to send multimedia files of any format.

After all the participants created an account on Telegram, a Telegram group was created for each class. The classes met for two sessions a week during the time of data collection. Participants were asked to perform three speaking tasks a week on Telegram (two group discussion tasks and one individual speaking task). They were supposed to be online at a predetermined time to discuss the topics which were chosen by the teacher based on the materials taught in the classroom. Each topic was condensed into two or three questions to help participants come up with ideas more easily. Each topic was posted two days prior to the online discussion session. The same task was used for both the advanced and the intermediate classes. Each online group discussion task continued for about one hour.

In addition to the group discussion, an individual speaking task was also assigned to individual students. They were supposed to talk about the topic for about one to two minutes and share their voices in the group. Similar to the group discussions, the instructor proposed the topic two days prior to the day the assignment was due.

At the end of each week, the instructor provided the participants with individual feedback on their speaking, grammar and vocabulary skills by sending them written and audio comments to their personal account on Telegram, explaining grammatical and lexical problems as well as giving suggestions for improving their speaking. The same procedure was repeated for both intermediate and advanced classes.

Data Collection and Analysis

The data for this study were collected through semi-structured interviews and stimulated recalls. Each participant was interviewed twice, before and after the Telegram intervention. The interview questions were devised to

provide information concerning their L2 self-concept as well as their L2 speaking-specific self-concept (See Appendices 1 and 2). In the interviews, the participants were asked to talk about their feelings concerning L2 use and the ways they perceived their language learning experience. In addition, the first researcher recorded her observations of the changes in the students' behavior during the speaking tasks as they performed them in the classroom. At the end of the study, each participant was interviewed once more to see whether any changes had occurred regarding self-concept. The interviews were conducted in the language institute one week before and one week after the intervention. The interviews were conducted in Persian and were audio-recorded. Each interview lasted for about 30 minutes. The interviews were conducted in a casual setting by the principal researcher who was the instructor of the courses. Participants were informed that they could choose not to answer any question they considered to be personal or private information. Also, they were given assurances that their answers would not affect their course grades in any way.

To analyze the data, the interviews were first transcribed using Microsoft Word and were then printed out. This resulted in 230 pages of transcribed interviews and the assistant researcher reviewed the documents twice so as to immerse herself in the data (Dörnyei, 2008). Following the general tenets of grounded theory (Charmaz, 1995), the data were then coded using the thematic-based analysis in several steps. The primary researcher then read through the data to immerse himself in the data and to get familiar with the participants' stories. Following this, he read the transcripts and employed some descriptive annotations and labels to identify phrases in the data, which seemed meaningful and contained insightful information. This resulted in the recognition of different codes such as 'the way we learned,' 'the new teaching strategy' or 'my beliefs about learning.' Afterward, the researcher grouped the codes and labels to form categories. At this stage, similar codes were grouped together, and the category that best captured the essence of those codes was decided. The categories were compared and refined to form the themes for interpreting the data.

In order to ensure the soundness of the interpretations and as a way to minimize bias, several quality criteria were attended to. First, the results of data analysis and their respective interpretations were returned to the participants for the purpose of member checking to help improve the

accuracy and validity of the data analysis. The participants' positions were aligned well with the researchers' interpretations, ensuring that learners' views had been properly reported. In addition, a researcher outside the study was asked to analyze the entire data set. This process confirmed the soundness of the codes and categories but also precipitated some changes in the name of the categories and themes developed. The inter-rater agreement was 94%, which is acceptable for reliability in a study such as this with descriptive data. The primary researcher translated the quotes from Persian into English.

Results and Discussion

The results indicated that using Telegram did influence particular aspects of participants' self-concept in both the intermediate and advanced groups. Table 13.1 presents the key themes in the data and the number of text units that included such themes. Moreover, the analysis of learners' reports indicated that four (80%) intermediate and five advanced (83%) students reported positive comments about the intervention. It should be noted that two students (one in each group) reported no significant change in their beliefs. The key findings of the qualitative analysis are presented below.

First, from the participants' interviews, we realized that their self-concepts had changed following their use of Telegram:

- I thought I couldn't speak English. After this semester, I think I can do it. I found that I could use technology and social networks to learn grammar, vocabulary and idioms. (Interviewee 3, intermediate)

Table 13.1 The category/theme display across advanced and intermediate groups

Qualitative themes			
Groups	Positive beliefs about language learning	Change in certainty, positivity and affective quality	Change in feelings about language learning
Advanced	10 text units	15 text units	11 text units
Intermediate	13 text units	14 text units	13 text units

- It isn't difficult anymore. I believe it is possible. I think the main change for me this semester was change in view toward learning English. (Interviewee 5, advanced)
- Things have changed now. I think I'll be a fluent speaker of English one day. After the course, I am more confident that I can learn English, improve my grammar and write better paragraphs. (Interviewee 6, advanced)

The study asked the participants to compare their current beliefs about language learning with their beliefs prior to taking part in the study. As the data show, both the intermediate and advanced-level students' beliefs about language learning had changed throughout the course. The students associated this change with the teaching method and the teachers' use of Telegram. As they commented:

- Using Telegram was great. It gave me better feelings and views about learning English. (Interviewee 1, intermediate)
- My views related to language learning have become more positive. Telegram was a very useful and informative method for learning English. We practiced what we talked about before the class. (Interviewee 9, advanced)
- I think Telegram should be used more in language classes. It was a very effective use of creativity by our teacher. I think I can learn grammar and vocabulary better with Telegram. (Interviewee 3, advanced)

The results also indicated that learning via Telegram created changes in certainty, positivity and the affective quality of learners' beliefs. The first aspect of learners' self-concept that seemed to have changed during the course was certainty of beliefs about English learning. Mercer (2011a) explains certainty as the strength with which a conviction is held. The participants referred to the changes in their beliefs about English and the conviction with which they were held. The following can be taken as some representative examples:

- I think I am able to learn English more easily. I might have had some doubts before but now I am confident I can learn it. (Interviewee 2, intermediate)

- Now, I have no doubts that I can speak English fluently one day. (Interviewee 4, intermediate)
- Speaking English was a great challenge for me, and I was always struggling to do it. I think I have made progress during this course and I feel I can do it. (Interviewee 1, advanced)

This is in line with Mercer (2011a, 2011b), who posits that the certainty with which self-concepts are held can change over time. When the students were asked about the reasons for this change, they referred to the teaching method as the influential factor. As they commented:

- I think it was the teacher and the way we studied during this course that changed my view about learning English. I didn't know that it was possible to use social networks to learn English better. If I was in doubt about language learning, I am not now. It is possible to improve your language with new technologies. I can use many newly developed technological tools to learn language and this is great. (Interviewee 6, advanced)
- I think the teaching method was really effective. It was totally different from our previous classes. I learned many points and I am willing to learn more. (Interviewee 3, intermediate)

Moreover, the data indicate that using the intervention significantly influenced the affective aspect of the learners' self-concepts. The analysis of the interview data revealed that learning via Telegram created some changes in the affective dimension of learners' self-beliefs. This change in the affective aspect produced positive feelings. As the participants commented:

- I think the teaching method generated positive beliefs about language learning. This is the brightest side of language learning for me. I was always worried and stressed about learning language but the teaching method reduced my uneasiness. (Interviewee 5, intermediate)
- This was the best English learning experience for me. I learned through a different and novel method. (Interviewee 5, advanced)
- I believe I really had a great period of learning English. It was really useful and effective. (Interviewee 1, advanced)

These findings bolster the findings of Mercer (2011a) who reported that the affective dimension of learners' self-concept could change. Of course, it must be noted that in Mercer's (2011a) study, the affective quality included positive and negative feelings. The affective quality of learners' students in this study, as seen in the data, moved toward a positive affective change. This may be due to the fact that students perceived the intervention as encouraging and useful. Another aspect of change in learners' self-concept is positivity. The participants were obviously more positive about the future of learning English and expressed optimistic views regarding learning English. This can be seen in the following excerpts from the data.

- I had a very good time learning via Telegram. The teaching method was very good. If it had lasted longer, I could have learned more. The method has really influenced my speaking level and I have become more and more confident. I think I can learn English easily if the teacher and teaching method are good. (Interviewee 4, advanced)
- I am really optimistic about improving my English in the future. If the teaching is good, I will certainly learn more and more. I was really bad at grammar. I admit that. However, during this period, I made progress. It was obvious for everyone in the course. (Interviewee 3, intermediate)
- I could have learned more if we had been taught through this method right from the start of language learning. I think I need to use applications such as Telegram to learn English; it will certainly help me learn more. (Interviewee 2, advanced)

As could be seen in the interview data, the intervention produced positive beliefs about students' ability to learn a foreign language. The interviews showed that the intervention had created optimism in regard to both their ability to learn language and their beliefs about learning via new teaching methods. This is in line with the findings of previous research on self-concept (Mercer, 2011a, 2011b), which argues that some aspects of self-concept including content and positivity are subject to change.

Finally, the data also revealed that both intermediate and advanced groups benefited from the intervention. Also, as the data show, the intervention created changes in L2 self-concepts for both intermediate and advanced learners.

Conclusions

This study examined the effect of teaching via Telegram on Iranian intermediate and advanced EFL learners' self-concepts. The participants were taught via Telegram for a period of one semester. They were then interviewed three times to see if the intervention had created any changes in their FL self-concepts. The results indicate that teaching while using the Telegram application can create positive beliefs about language learning and effectively change different aspects of learners' FL self-concept beneficially; in our case the psychological benefits included certainty, positivity and their affective quality. It can be concluded from this study that by employing mobile-assisted and technology-assisted language teaching tools, teachers can positively improve beliefs about self among language learners. The findings of the study also support claims about the dynamic nature of language learners' self-concept in that the intervention used in this study created positive changes in different aspects of learners' FL self-concept.

Future research in this area should examine the effect of using Telegram or other mobile-assisted or technology-assisted language teaching interventions on various psychological aspects of language learning. It is also interesting to note the possibilities of the technological intervention used in this study to improve other individual difference variables such as learners' willingness to communicate and motivation. Future research may also examine whether using TALL and CALL can create long-term changes in language learners' autonomy.

Finally, it should be mentioned that this study has some limitations. The results of this study are limited to the context and the sample of the study. Due to practicality issues, it was not possible for the researchers to include larger class sizes. Moreover, this study is also limited to the data collection tools of the study. The authors believe that further studies

using qualitative and quantitative designs are needed to examine whether using social networks can create similar effects on learners' self-concepts. Nevertheless, we can say without hesitation that we are very encouraged by the positive psychological changes students experienced, which was reflected in their comments about their own language learning abilities.

Appendix 1: The Interview Protocol Before the Intervention

1. Could you please tell me why you are learning English?
2. How do you feel about your language ability?
3. How would you describe your English ability?
4. Has the way you feel about yourself changed since you started learning English?
5. Can you tell me about your positive and negative language-learning experiences?
6. Is there anything you found particularly useful/inhibiting your language learning?
7. What factors affect the way you feel about speaking in English?
8. How do you feel about speaking English?

Appendix 2: The Interview Protocol After the Intervention

1. What was your opinion of this period of learning?
2. How did you feel about your language before this experience?
3. How did you feel about your language during this period?
4. How did you feel about your language after this period?
5. How do you describe your English before, during and after that Telegram teaching experience?

6. How did you feel about yourself as an English language learner before the Telegram teaching experience?
7. Has the way you feel about yourself while learning English changed during the period? If so, why and in what ways?
8. What kind of 'key' experiences have you had during the period and how have they affected you?
9. Is there anything you found particularly useful/inhibiting during this period?
10. What factors affect the way you feel about speaking in English?
11. How do you feel about speaking English?

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Part V

Attitudes and Perceptions

14

EFL Blogging in the Greek Secondary School Classroom: The Effects on Student Participation and Attitude

Gina Paschalidou

Introduction

As computer-mediated communication (CMC) has conquered every facet of our lives, it cannot be excluded from the classroom world, especially if we believe that communication is at the core of teaching and learning. Researching various technologies in the context of education, ranging from e-mails, forums, blogs, wikis and Web 2.0 tools to flipped classrooms, blended learning, mobile technologies and virtual/augmented reality has revealed positive attitudes toward digital communication and has increased involvement as well as motivation on the part of learners (Chee, Yahaya, Ibrahim, & Hasan, 2017; Koufadi, 2014; Tay, 2016; Tyrou & Mikros, 2012; Warschauer, 2001).

Additionally, it is maintained that people who were born in the digital age, the so-called digital natives, process and learn information differently from

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previous generations, interacting with one another through alternative channels of communication due to their technological capabilities (Prensky, 2001). Thus, computer-assisted language learning (CALL) has been established as a 'sine qua non' for any reputable language program, and, as such, national educational policies in most European countries have been incorporating CALL in their curricula (Scott & Beadle, 2014). The use of the term CALL, however, may lead to misconceptions, as CALL techniques are not restricted to computers alone; in fact technology-enhanced language learning (TELL) is perhaps a more accurate acronym to fit the present context.

This chapter examines the impact of blogging, and specifically, tutor-class blogging (for a categorization of educational blogs, see Campbell, 2003), on the attitudes and actual engagement of a class of 24 high-achieving Greek junior high students before and after a two-month experience with blogging. The literature review that follows starts with a delineation of research on new literacies and blended learning, under which blogging can be positioned, defining and analyzing the rationale for its implementation. It continues with an exploration of affective parameters that influence learning processes and comments on the intersection between technology and learner psychology. Then, it presents the specific problem, hypotheses, methodological design and findings, offering interpretations of them. Finally, it attempts to synthesize and propose a framework for a principled tutor-class EFL blog implementation which should generate a more productive learning experience.

New Literacies and Blended Learning

As with the notion of *intelligence*, a concept formerly referred to in the singular but expanded to the plural *intelligences* with the work of Gardner (2011 [1983]), the term *literacy*, meaning the ability to read and write, is today seen as involving different *literacies*, including digital, technological, visual, information and media, which may overlap with one another. These "fresh" literacies are usually treated collectively as *new literacies* or *21st literacies/skills* (Coiro, Knobel, Lankshear, & Leu, 2014) and refer to the knowledge, skills and strategies necessary for a learner—any learner of any age—to function in the digital world and, therefore, should be incorporated in the classroom.

It can hardly be questioned that "the appearance of the internet […] at schools is one of the most powerful social revolutions" (Leu, Kinzer, Coiro, & Cammack, 2004, p. 1570). Consequently, it is imperative that contemporary classrooms combine foundational literacy skills (phonemic awareness, word formation, grammar, syntax, comprehension, etc.) with new literacies. The EFL classroom is the perfect learning context for the integration of such skills since there is an abundance of available materials in the target language, both authentic and non-authentic (i.e., created especially for English language learning). For more than 30 years, researchers (Kern, Ware, & Warschauer, 2016; Persson & Nouri, 2018) have argued that technological integration can have beneficial effects in EFL.

As new literacies can be developed through the use of technology and digital applications, they are often materialized through *blended learning*, which refers to a hybrid format of learning combining face-to-face and online learning in various degrees. Blended learning is considered by many researchers to be an effective method to enhance knowledge acquisition (Hannafin, Hill, Land, & Lee, 2014; Schwartzman & Tuttle, 2002).

Ideally, blended learning integrates the best elements of classroom work with the best elements of distance learning. There are three essential ingredients:

1. Appropriateness: which aspects of learning are most appropriate for each part of the "blend."
2. Integration: suggesting that a blended course is not just a face-to-face course with bits of online parts.
3. Teacher's attitude: this should be positive toward the blended approach, a key factor which determines how learners perceive it (Hockly, 2018; Sharma & Barrett, 2007).

Any blended learning format should abide by the rules and concepts of learning in general. Educational technology should not be merely used for the sake of using technology. Strambi and Bouvet (2003) stress the risks of developing materials that are technologically driven but not pedagogically sound. Therefore, stakeholders should always set specific learning and/or educational goals and objectives first and only then develop delivery systems that serve these goals (Vlachos, 2009).

Blogs: Theoretical Framework for Using Blogs in EFL

A blog (a blend of the word web and log (Boas, 2011)) comprises journal-like web pages updated by the blogger's entries, which appear in a chronological order and can be commented on by readers. A blog can be considered a tool in blended learning in that it achieves many of the EFL teaching/learning goals: facilitating reading and writing, encouraging listening and providing free and simple access and maintenance (Mah & Liaw, 2011).

Pennington (1996) posits that using a computer instead of paper to write enhances learners' sense of ease and eventually their skill at writing. Additional research supports the above claim, reporting that blogs can enhance vocabulary and grammatical accuracy (Rahmany, Sadeghi, & Faramarzi, 2013), improve content and organization (Simsek, 2010) and increase quantity as well as lexical sophistication (Fellner & Apple, 2006).

Participating in a blog is an authentic communicative act in itself because writing and publishing on the web entails having a potential real audience, consisting of classmates and/or unknown readers (Noytim, 2010; Trajtemberg & Yiakoumetti, 2011; Ward, 2004; Warschauer & Matuchniak, 2010). This is a unique type of authorship where learners can be simultaneously authors and readers and benefit from both roles. Responding to posts, apart from providing written practice in a language, enhances learners' critical thinking skills, as it requires them to compose entries and comments carefully (Godwin-Jones, 2003; Yang, Chan, Lik-ko Ho, & Tam, 2005; Zhang, 2009), given that the teacher will not be the sole recipient of their work. Finally, blogging can build confidence (Wang & Fang, 2005), encourage self-reflection (Yang, 2009) and help to develop interpersonal skills, such as a sense of community and mutual support among the learners (Hall & Davidson, 2007).

Affective Variables and the Socio-constructivist Approach

Associated with these aforementioned benefits, affective variables, such as motivation, self-confidence, anxiety and attitudes (Dörnyei, 1994; Gardner & Tremblay, 1994; Krashen, 1982), play a significant role in blogging. Whereas a written document connected with a conventional

lesson is transient in the minds of most students, expressing oneself in a written form while blogging in a foreign language can magnify such variables. Any entries, comments, questions or suggestions that students share are visible to others, not only the teacher, but also to classmates and even outsiders—any readers in the blogosphere.

It is generally accepted that the emotional variables mentioned above have a considerable influence over learning and language acquisition (Arnold & Brown, 2000; Dörnyei & Ushioda, 2013; Ifinedo, 2017; Muñoz & Ortega-Martín, 2015; Stern, 1983). When motivation and confidence are high, attitudes toward a target language or toward specific learning settings are positive, anxiety is low and learning is encouraged and occurs more naturally. In relation to this study, foreign language anxiety—referring to anxiety under the specific set of conditions unique to foreign language contexts (Horwitz, Horwitz, & Cope, 1986) and not the general anxiety (trait anxiety) of an individual—is most evident in listening and speaking activities (communication apprehension) and in testing situations (test anxiety) but it also emerges in situations where evaluations by others are made (fear of negative evaluation) (MacIntyre, 1999; MacIntyre & Gardner, 1991). This is the area most relevant to the present research.

Studying learners' attitudes and engagement in EFL blogging may yield insight into how to effectively combat foreign language anxiety and foster learning instead. According to relevant research, particularly with university students, blogging has been shown to stimulate motivation and engagement, essentially encouraging language learning (de Almeida Soares, 2008; Blackmore-Squires, 2010; Kitchakarn, 2012; Miyazoe & Anderson, 2010; Noytim, 2010; Rahmany et al., 2013).

Additionally, as we have veered away from knowledge transmission models of teaching and moved toward constructivist approaches, process-oriented (Scardamalia & Bereiter, 2014 [2006]) and, indeed, socio-constructivist principles, whereby knowledge is built among all members of the teaching/learning context, emphasis has been placed on interaction, negotiation and collaboration (Vygotsky, 1978). Information and communications technologies (ICT) in education and computer-supported collaborative tools are rooted in socio-constructivism (Bereiter & Scardamalia, 1996), and a tutor-class blog represents a tool that can operationalize all of these principles.

Research Objectives

The driving force behind the present research was twofold. In the course being taught, the official EFL textbook was poorly regarded by the students and in-class time for language learning was limited, consisting of only two 45-minute sessions every week. To address these issues, a tutor-class blog with regular postings and with the teacher-researcher serving as moderator was created. The blog's aims included: (a) initiating discussions through comment and reply sections with control gradually being given over to students; (b) providing students with one extra hour of interaction in the target language at an appropriate level outside of class time and (c) providing more relevant and interesting materials than those offered in the textbook.

With this in mind, the following research questions were posed:

1. What are students' attitudes toward blogging before and after the use of the tutor-class blog?
2. How can blogs motivate and engage learners while simultaneously providing a challenging supplement to textbooks?

Methodology

Participants

The learner sample was a class of 24 lower secondary public school students of an elite school in a provincial city near Athens, Greece. The students were 12 or 13 years old and attended an advanced EFL stream in Grade A. Their English competence was at the B1–B2 level according to Common European Framework of Reference for Languages (CEFR) standards (Council of Europe, 2001), based on the researcher-teacher's judgment after five months of teaching and the knowledge that students had been enrolled in afternoon EFL classes in private institutes or with private tutors for a minimum of five years prior to this research. The majority were high achievers, competitive as a group and with good internal rapport. The rationale behind selecting this particular group of students for the research involved their independent-user level of English,

which meant that they had the linguistic capacity to communicate in English using a blog exclusively designed in that language. Also, they comprised a relatively homogeneous cohort of learners.

The classroom was equipped with a projector where presentation and modeling of the blogging procedure took place. Students, seated in pairs, met for class twice a week for 45-minute lessons. As for the blog experiment, it lasted two months from the beginning of March until the end of April toward the end of the school year.

Instruments

The study applied a mixed-method approach, including pre- and posttest questionnaires reporting on the students' attitudes toward, perceptions of and involvement in the EFL blog. Data also included detailed teacher observations and record keeping. The pretest questionnaire took the form of a casual in-class discussion. The posttest questionnaire (Appendix) was distributed after the blog intervention, and it comprised 15 questions, including three open-ended ones.

The Roles of Teacher and Students and the Blog Profile

The teacher-researcher who created the blog on the free platform blogspot.com (http://ourflippedclassroom.blogspot.com/) decided how it was to be used and assumed the role of moderator. At the outset, students merely addressed the teacher's open-ended questions, expressed opinions, commented and responded to other students' comments. As they became more accomplished using the blog, they were given the opportunity to suggest activities that could be pursued collectively on the platform. As alluded to, the initial plan was to assign more responsibility to those students who showed greater interest, allowing them to become co-moderators (thus the name 'tutor-class blog,' as it was to function as an intermediary between tutor and class). As such, it is a distinctive model, different from other EFL research that focuses on personal blogging by students, primarily at the tertiary level.

The overriding rationale was to make participation optional, fostering the use of everyday informal language with an emphasis on open-ended questions and activities, as well as personal opinions and views. As the main motive for its implementation was to engender more interaction and practice in the target language, the demands of the posts were: interacting with teacher and peers, responding to peers' views, commenting on specific topics, exchanging information and thoughts, and using multimedia (video, presentations and pictures).

The blog consisted of four tabs: (a) a home page, where topics were regularly uploaded; (b) a suggestions tab, where students could propose activities for the blog; (c) a story tab, where students' compulsory short story assignments were posted (by the teacher); and (d) a poetry tab, to which learners could contribute voluntarily. The total number of posts was 25, including posts about festivals and celebrations, open-ended questions for personal expression, video-viewing comprehension activities, material for expanding class activities and word games.

The pretest was carried out in mid-February. Following this, explanations on how students would work on the blog from home were provided, which were also presented and practiced by a few students on the projector during class time. The blog was mentioned by the teacher in every lesson, referring to posted topics as a means to solicit students' comments on it. After the two-month experiment, the posttest questionnaire was distributed.

Findings

Findings from the pretest questionnaire, which took the form of a casual in-class discussion, show that all 24 students had positive attitudes toward supplemental activities in English. Most students (n = 20) were in favor of using technology and specifically a tutor-class blog, although a couple of the remaining four confessed unfamiliarity with the tool.

Despite the students' positive predispositions, the 25 optional activities/posts of the blog received only 64 comments, replies to comments and suggestions in total. Of these, 25 were from the teacher, who tried to accommodate learners and sustain interaction and discussion. The students contributed only 34 comments and responses to comments. As

shown in Table 14.1, these were made by only nine of the learners, seven of whom were regular participants of the blog providing more than one entry. Apart from the comments and their responses, there were also five suggestions for improvements in the blog, three of which were made by the regular participants. In other words, less than one-third of the class (≃29%) regularly participated in the activities of the blog, an incongruent outcome when considering the initial attitude of students.

The obligatory task of writing and sending short stories by e-mail, which were to be subsequently uploaded to the blog, was eventually performed by 12 of 24 students. Five were written by the regular participants and seven from students not previously involved. The optional poetry activity attracted five students, four of whom belonged to the regular participants' group. In the end, only one student officially joined the blog, although instructions on how to do so had been provided to all students.

Participation data reveal an inconsistency between actions and attitudes which had not been anticipated, considering that students had indicated broad interest in EFL blogging. The posttest questionnaire was designed to uncover the reasons for the lack of participation. Interestingly, similar results were obtained by Wu (2005), who found that the number of students' posts was disappointing in view of consideration of participants' positive attitudes toward the use of blogs. Lin (2015, p. 446) also commented that "enthusiasm did not translate into much actual blogging activity."

Table 14.1 Participation rates

Actual participants	No. of comments/ replies	No. of suggestions	No. of comments/replies and suggestions
Student 1	3	1	4
Student 2	5	0	5
Student 3	5	0	5
Student 4	4	2	6
Student 5	7	0	7
Student 6	7	0	7
Student 7	1	2	3
Student 8	1	0	1
Student 9	1	0	1
Total	34	5	39
Average			4.33

The posttest questionnaire was distributed in paper form, and 23 participants completed it. The 15 items mainly addressed the following themes, which are analyzed and discussed in subsequent sections:

1. Students' overall attitudes before and after the two-month experiment
2. Frequency of reading and writing on the blog
3. Reasons for their demotivation or lack of motivation
4. Ease of material and instructions
5. Anxiety about negative evaluations by others
6. Perceived improvement in the L2
7. Feelings of ownership

Students' overall attitudes toward EFL blogging were measured in terms of willingness to get involved in such a project again (item 15). Compared to their initial attitudes and motivation, where 20 students indicated interest in participating in the digital innovation, the number in the posttest dropped to 15 (Fig. 14.1). There were also three students

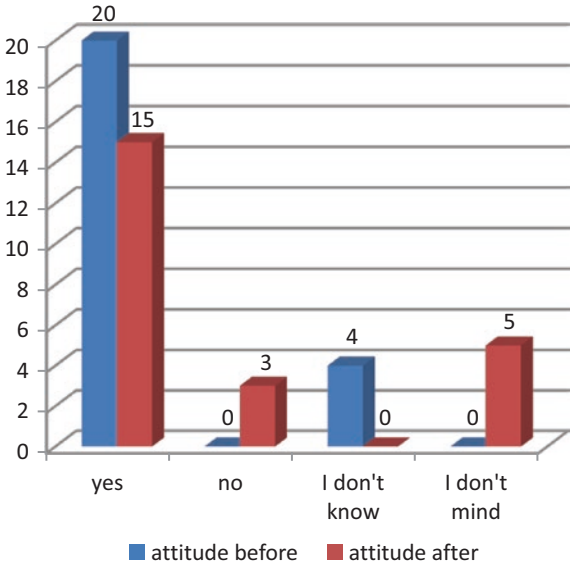


Fig. 14.1 Attitudes before and after blog implementation

who stated that they would not want to participate in an EFL blog again, a view absent from the vote prior to the intervention. Although a bigger drop would seem more congruent with the participation data analyzed before, the drop of five students (21.73%) is still considerable. This finding is in contrast to that of Blackstone, Spiri and Naganuma (2007), which reported extremely positive attitudes toward blogging among the 145 participating students.

Items 2 and 3 examined learners' reading and writing habits on the blog. A great majority (17) said they read the posts and comments, 11 of whom asserting that they did so weekly. Nearly half the class (11) acknowledged that they had never attempted to write (Fig. 14.2). We witness here a considerable variance in the number of students who only read and those who wrote as well, but no evidence can confirm the number of unique readers, as the veracity of their claims cannot be ascertained.

Item 4 was included to elicit students' own reasoning as to their limited involvement in the blog. The most common answers to this open-ended question, as shown in Fig. 14.3, were lack of time (7), difficulty in finding and using the blog (4) and forgetfulness (3). Lack of time was also listed as the main factor correlating with findings from de Almeida Soares

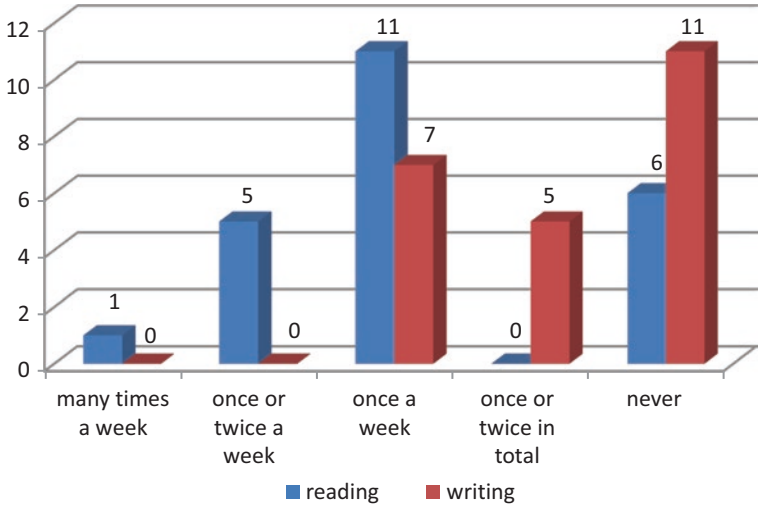


Fig. 14.2 Frequency of reading and writing on the blog

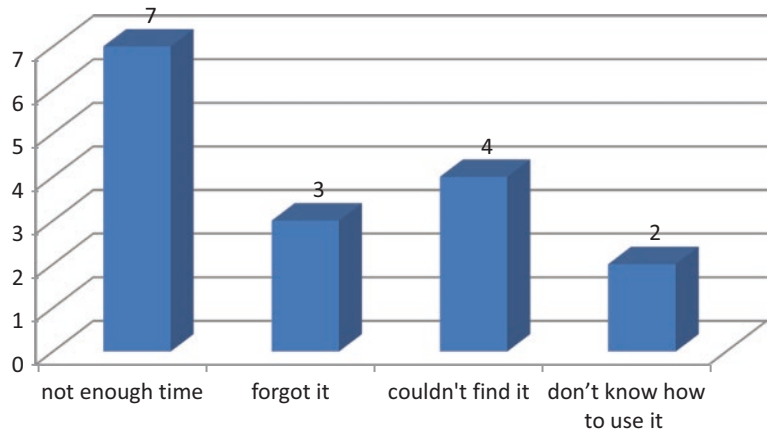


Fig. 14.3 Reasons for demotivation or lack of motivation

(2008). It is also in line with findings from Lin, Groom and Lin (2013) and Zhang, Song, Shen and Huang (2014) whose subjects considered blog writing to be time-consuming, but their subjects posted on personal blogs. The second most common reply from these students was inability to find the blog, which may indicate impediments or perhaps parentally imposed protective walls for online safety.

Figure 14.4 illustrates answers to item 6 and shows that 13 learners found instructions for the blog always easy and 8 sometimes easy to follow. Still, five learners had already admitted in item 5 that they had never tried the blog. We can conclude that difficulty of material was not a factor in discouraging learners from getting involved.

From item 7 we can see that 16 students felt either very or quite comfortable when interacting on the blog. The remaining seven learners—almost a third of the class—did not feel comfortable (Fig. 14.5). These seven students may include some who lacked technological skills in using a blog (see item 4). This finding concurs with Zhang (2010), who refers to technical problems as discouraging.

Nevertheless, feelings of discomfort may also be generated by anxiety and low confidence. That nonparticipants were demotivated by anxiety over public exposure is supported by answers to items 8 and 9, testing students' feelings when others, either classmates or unknown readers,

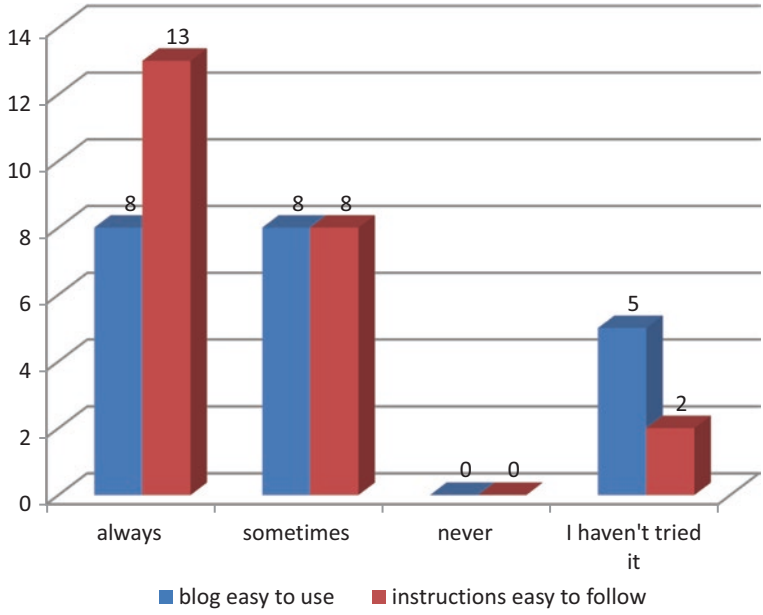


Fig. 14.4 Easiness of material and instructions

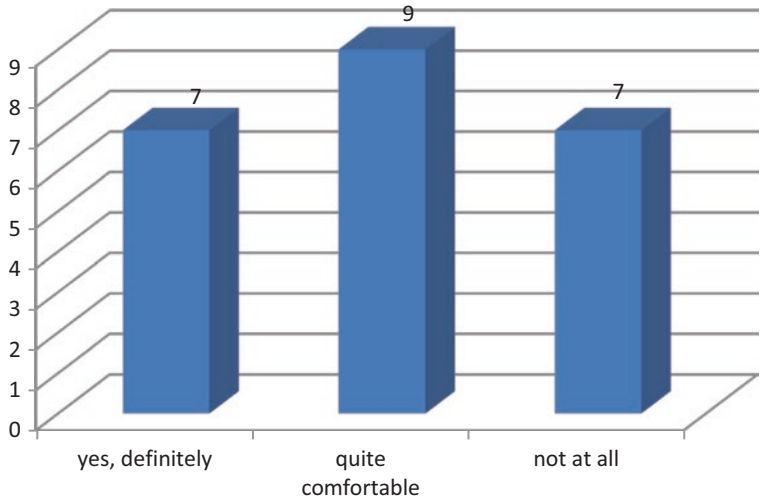


Fig. 14.5 Feelings of comfort when using the blog

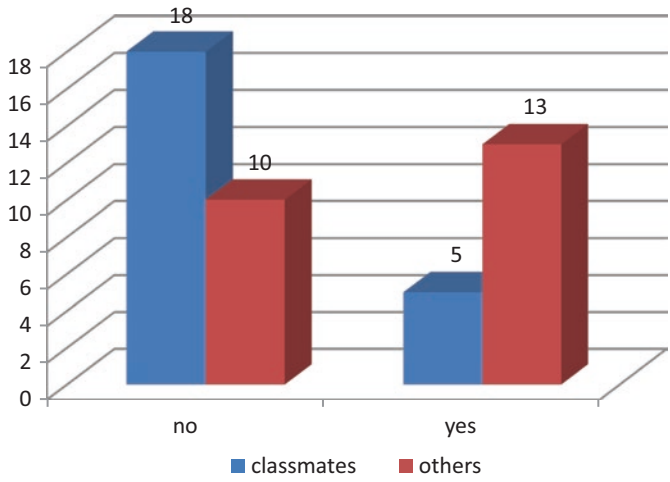


Fig. 14.6 Anxiety of exposure to classmates or others

read their public posts. As discussed previously, sharing opinions, writing comments, asking for clarifications and other written interactions in the context of an open L2 blog are all acts of maximum personal exposure, disclosing a learner's knowledge or lack thereof. Figure 14.6 reveals that 13 students felt anxious about their contributions being read by strangers while five said they felt this way even about classmates; however, 18 did like the idea of classmates reading their work. Anxiety is also an issue in other EFL blogging research, including Lin (2015), Noytim (2010) and Zhang et al. (2014).

Students' views on their perceived improvements were examined in item 10 (Fig. 14.7). Most said that the use of the blog helped them either a lot (9) or a little (9). Five learners, probably those who did not interact with the blog at all, said it did not help them with the L2. These findings coincide with de Almeida Soares's (2008) study, where students also thought the class blog improved their English. Blackmore-Squires's (2010) and Vurdien's (2013) research about writing personal blogs also reveals belief in L2 improvement, although other research has concluded that blogging does not involve sufficient cognitive operations to enhance high-level thinking and, consequently, lead to constructive improvement (Noel, 2015; Robertson, 2011).

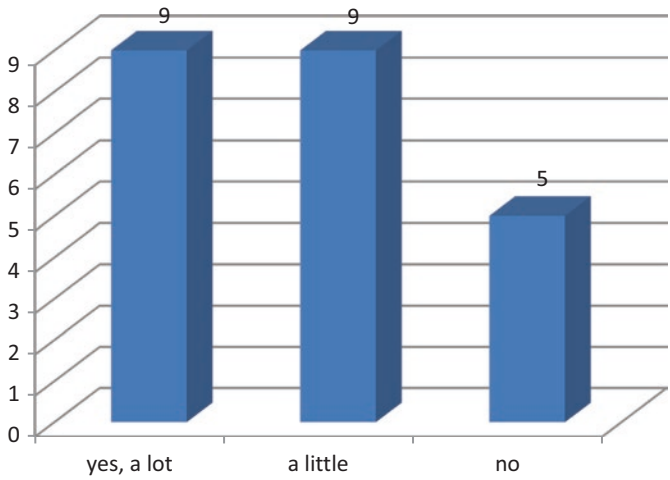


Fig. 14.7 Perceived improvement

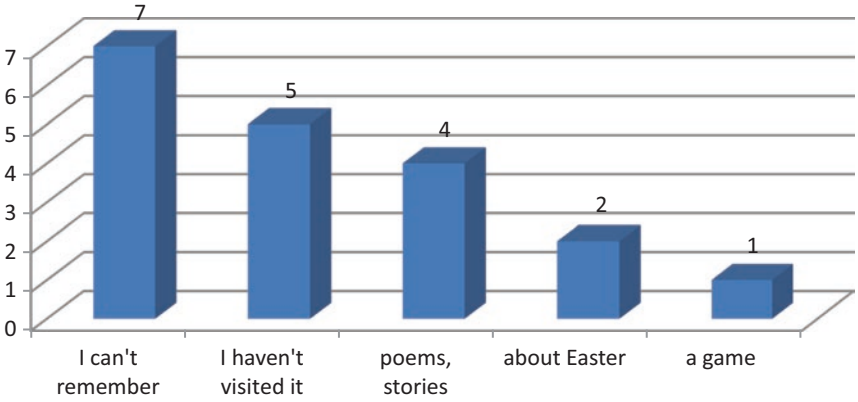


Fig. 14.8 Blog topics and activities that can be recalled

A principal rationale for a class blog is to give students a sense of ownership, authorship and group belonging. Any group project affords opportunities for identifying, reflecting collectively and sharing knowledge. Item 13 examined whether these factors motivated students or whether the blog was otherwise memorable. As is shown in Fig. 14.8, seven participants admitted to having no specific memories of group

dynamics. Four students said they recalled the story and poem sections of the blog. Three gave other answers, and the remaining four gave no answer. It is safe to assume that there was limited engagement with the blog in terms of both participation and its impact. This corresponds with findings by Hall and Davidson (2007) on the lack of evidence that blogs promote community.

Discussion

Blogging has become popular in various EFL learning contexts, but the present study did not indicate that a tutor-class blog was effective in fostering engagement in a lower secondary setting. The initial positive attitude of the sample dwindled after the experiment. Although 15 students said they would be willing to blog in English again, only a limited number actually blogged when presented with the opportunity. Other researchers have noted discrepancies between actions and beliefs among learners of any age (Paschalidou, 2016). The majority of the class did not actively blog through writing, suggesting that novelty was not sufficiently motivating to overcome their own reluctance to write. The apparent willingness of many (17) to read blog posts needs to be analyzed further.

The issue of anxiety is pertinent not only to digital learning but to any face-to-face EFL learning. Situation-specific anxiety, and particularly, fear of negative evaluation inhibits EFL blogging, a factor frequently underestimated (cf. Lin, 2015; Lin et al., 2013) despite the attention that the concept of L2 anxiety has attracted in general (Dörnyei & Ryan, 2015). Some research suggests that a certain degree of anxiety is facilitative (Negari & Rezaabadi, 2012; Young, 1992), but correlations are more often found between anxiety and poorer performance/writing production (e.g., Tsiriotakis, Vassilaki, Spantidakis, & Stavrou, 2017). The framework of a blog, as noted, amplifies fear of negative evaluation because simple errors that may go unnoticed during a lesson are recorded for posterity on a blog. Unlike student blogs, tutor-class blogs are constantly under scrutiny by everyone involved due to continuity, frequent visits, ongoing teacher and peer interaction and cross-referencing, all of which may deter participation, but in the present research, the notion of

extended readership seemed to trigger anxiety. In any case, steps must be taken to ensure that new technological applications do not introduce extraneous anxiety-producing elements for L2 learners.

It is possible that the learners from the present study preferred reading to writing on the blog because of lack of the necessary technological skills. Despite the belief that all youngsters are 'digital natives,' some may not be as savvy with educational applications. Several of the students mentioned that they could not 'track' the blog; only one of them joined as a follower, and some faced difficulties when entering comments. Learners may need support and hands-on practice with technology. Additionally, issues of limited internet access and parental restrictions may also play a role.

The nine students who participated in optional activities, in some cases, did so only sporadically, and in three cases, their motivation to participate waned. Generally, the optional participation aspect of the blog did not reinforce a sense of responsibility for learning. The forgetfulness acknowledged by some as a reason for not interacting with the blog suggests that certain young learners find difficulty in taking charge of their own learning.

A Framework for Effective EFL Blogging

Due to the limited participation in the blog, it is prudent to use the findings to address EFL blogging. Hence, this section outlines some ideas for a better EFL blogging experience. Beyond consideration of learners' profiles (L2 level and age), five parameters need to be observed for EFL blogging to be effective, namely (a) technological enhancement, (b) mandatory character, (c) extended time frame, (d) responsibility issues and (e) anxiety control.

We posit that there are some optimal L2 proficiency and age thresholds for blog participation. In this study, the participants did not have difficulty with the materials or instructions, so we can assume that intermediate (B1–B2 level) proficiency is adequate; yet, they were probably too young (12 to 13 years old) for self-directed blogging. Older teens presumably will likely have more maturity and skills necessary to interact on a blog;

this age group will also generally be afforded more internet freedom by their parents. Additional research would be fruitful on these issues.

Regarding technological enhancements, lessons for users within three areas need to be considered: (a) applications needed for blogging, (b) practice with blogging to anticipate difficulties and (c) digital citizenship training. The first two derive from particular blog platforms, whereas the third involves general digital literacy. Training and troubleshooting on specific platforms could involve creating avatars to protect students' identities, and teaching students to write comments, select and submit profiles (Google or name/url reply), get notifications, join sites and become moderators, to name a few ways. Training in the third category would raise awareness of one's digital footprint and respect for copyright laws and creative commons.

If blogs are to be used in classrooms, they should be an integral part of the core English curriculum. To make them obligatory, teachers can establish specific regulations, such as minimum number of posts per week and deadlines for projects. Decisions should involve parents and school boards as well. An extended time frame, the third parameter, is also paramount to normalization, that is, integrating technology to the point of invisibility (Bax, 2003, 2011). We would suggest that blogs be introduced in the middle of the first term, so that students have time to get accustomed to them and teachers have time to make adaptations. Blog duration of no less than five to six months seems advisable.

The fourth parameter, learner responsibility, is a function of age. Responsible students might act as administrators over the maintenance of a blog, or as peer mentors who remind others of obligations and deadlines, or as artists who choose images and add their own creations. As students become more accustomed to using blogs, they can be given more responsibilities for decision-making on the topics and/or the modes of deliverance. This could bring about a sense of shared ownership and community.

Lastly, measures must be taken to reduce writing anxiety. These should include adopting a general nonjudgmental approach within the EFL course, which would be applied to blog writing. It should be made clear to students that the blog's goal is to develop written fluency, not accuracy. Minimal attention should be paid to errors and an emphasis

should be put on participation, content, communication and self-expression. As a step toward writing and interacting with more confidence, learners could be encouraged to start writing freely in notebooks at regular intervals, with no obligation to present their work. Finally, and because participants in this study described greater anxiety in relation to unknown readers, using avatars to conceal real identities could lower anxiety while protecting privacy.

Conclusions

The study paints a complex picture. On the one hand, the majority of the learners interacted with the blog either actively or passively, reported that it contributed to EFL improvement and said they felt comfortable with instructions; yet, actual metrics on participation, future attitudes and exposure anxiety leave one wondering whether blogging simply amounts to a burdensome obligation for students satisfied with traditional class activities. Practitioners need to consider the effectiveness of innovations that push learners beyond comfort zones. Are they really necessary? On the other hand, is this not one of the primary roles of education? Although the results of this study were less promising than anticipated, they are not altogether discouraging. If we consider the motivation behind this study, that is, to provide the opportunity for more interaction in the L2 outside of class time, then the study shows that while blogging may have provided greater opportunities for the active participants in contrast to the more passive participants, it still provided more exposure and practice for most of the class.

Appendix

Blog questionnaire

1. Have you ever used blogs at school before?

a. yes b. no

2. How often did you read the blog?

a. many times a week b. once a week c. once or twice in total d. never

3. How often did you post a message to the blog?

a. many times a week b. once a week c. once or twice in total d. never

4. If your answers in questions 2 and/or 3 were c and/or d, explain why.

……

5. Did you find the blog easy to use?

a. always b. sometimes c. never d. I haven't tried it

6. Were the teacher's instructions easy to follow?

a. always b. sometimes c. never d. I haven't tried it

7. Did you feel comfortable using the blog?

a. yes, definitely b. quite comfortable c. not at all

8. Did you like that your classmates could read your posts and comments?

a. yes b. no

9. Did you like that other people could read your posts and comments?

a. yes b. no

10. Do you believe that the blog helped you improve your English?

a. yes b. a little c. no

11. Did you check what you wrote before you posted it?

a. always b. sometimes c. never

12. Who did you tell about this blog?

a. parents b. brothers/sisters c. friends d. others: .....

13. What was the most memorable thing you've read?

.....

14. What can we do to improve the blog?

.....

15. Would you like to use blogs in the English class again?

a. yes b. I don't mind c. no

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15

Chinese Language Learners' Intrapersonal and Interpersonal Perceptions of a Pinyin Text-to-Speech System

Goh Ying Soon, Saiful Nizam Warris and Rasaya Al Marimuthu

Introduction

One of the ways to assist language learners of Chinese is to use pinyin (i.e., Romanized characters of Chinese) in order to help them understand the sounds of Chinese more quickly and to aid them in their pronunciation. Through writing of the pinyin texts, non-native learners are able to learn to speak in Chinese more quickly. However, difficulties in pronunciation may still exist, so a system that enunciates pinyin sounds clearly may be beneficial to Chinese language learners as a means to develop their spoken Chinese skills. With the purpose of supporting the pronunciation of

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Chinese, a pinyin text-to-speech system was developed. (This system can be accessed at http://terengganu1.uitm.edu.my/mandarin/.) The system allows learners' access by way of typing in pinyin as well as numbers. Learners are subsequently able to download the sound files so they can listen to them with the aim of improving their listening and speaking skills. The learners may type in the syllables that they are not familiar with as well as phrases, sentences and even paragraphs using the pinyin-based system.

Although the system can be accessed and used by learners, what is not clear is how using such a system affects the psychological state of the learners. To this end, this study looks into the psychological aspects of using the system. To be specific, the research investigates the intrapersonal and interpersonal perceptions of the users in using the system. Concerning the aspect of intrapersonal attributes, focus is given to the learners' perceptions of whether the system is able to support their own listening and speaking skills effectively, and regarding the aspect of interpersonal attribute, the focus is on the perceptions of the learners as they use this system to assist them to listen to as well as speak to others more confidently. The overarching purpose of this study is to point to positive correlations between positive perceptions and the intention of using such technology in educational settings.

Literature Review

Rapid advancements in technology are creating new opportunities for educators to enhance their classroom techniques with digital learning resources. Once used solely outside of the classroom, smartphones, tablets and e-readers are becoming common in many school settings (Keengwe & Maxfield, 2015). However, there is a need to examine the implementation and success of the use of these digital learning tools; such issues are directly tied to language learning psychology.

The examination of psychological constructs is well placed to offer detailed insight into the necessary skills, preferences and behaviors necessary for successful learning to occur (Terras & Ramsay, 2018). Concerning language learning, insights from educational psychology point to particular constructs (Mercer, Ryan, & Williams, 2012). To better understand such constructs, there is a need to draw attention to the psychological

and psycho-pedagogical aspects of the use of information technology in education so as to understand the problems related to perceptions (Aysmontas & Uddin, 2016).

Listening and speaking represent two sides of a coin when it comes to producing language. Speaking is considered more difficult than listening because speech involves more processing (Baddeley & Hitch, 1974; Lee, Cerisano, Humphreys, & Watter, 2017). Research on listening effort intersects with the development of active theories of speech perception and contributes to the broader endeavor of understanding speech perception within the context of neuroscientific theories of perception, attention and effort (Strauss & Francis, 2017) as well as the speech-understanding problems encountered (Humes, 2013). The effort and attention (Wild et al., 2012) given in listening to recorded sounds are distinct and generally considered more difficult (Schneider, Avivi-Reich, & Daneman, 2016) when compared to the efforts rendered in listening to free and spontaneous conversation. The moderating effect of success-importance on the relationship between listening demand and listening effort needs to be considered when conducting listening research (Richter, 2016). In other words, it is important to be aware of the language learners' efforts in listening and consider that they may not be able to perform as well in actual listening tests as they hope to or as their teachers believe they should.

In addition, listening effort combined with the fatigue it causes can debilitate intake (McGarrigle et al., 2014). Learners who are engaged in long listening practices, for example, more than half an hour of listening, might complain that they have become too tired to concentrate on listening. Listeners must also cope with the effects of reduced perceptual acuity (i.e., when listening to masked or distorted speech), which depends on the availability of working memory resources. Poor sensory representations of speech tokens (e.g., lexical items) activate a potentially large number of valid representations (interpretations) that must be maintained in working memory until a correct interpretation can be determined (Heald & Nusbaum, 2014). In addition, other situations that can negatively affect a learners' comprehension of listening are beyond the control of the listener, such as interruptions of thought (e.g., processing language in a noisy location) (Carroll & Ruigendijk, 2013), listening in a highly structured environment, listening to a recorded file and trying to

decode simultaneous talk by different speakers. Such situational elements put additional capacity demands on learners' perception and cognition (Francis, 2010). In authentic listening and speaking situations, language learners will inevitably encounter situations whereby more than two speakers attempt to take the floor simultaneously. Hence, we need to know if learning technology such as the type used in this study can support listening skills and lead to speaking skill in actual circumstances. This is deeply connected to the perceptions of the learners. Put another way, listening, speaking skill and cognitive processing are also closely related.

Additionally, listeners may need to draw on additional cognitive resources in order to perceive and comprehend during the speaking process (Tao & Taft, 2017). Students who are able to listen well should be able to speak well as well. However, in practice, there are significant interferences, which impede the production of speech such as listening to foreign-accented speech, so additional cognitive resources may be required to process the speech signal (Van Engen & Peelle, 2014). Students might perceive that they are unable to speak well once they determine an inability to interpret the speech signals well. Such problems are clearly tied to the perception they have on listening and consequently speaking. Perceptions, whether accurate or not, can affect students' thoughts about their own capabilities to speak the language they are learning. A deeper understanding on perceptions facilitates a greater understanding of what drives students to speak in the new language they are learning. Instructors thus need to comprehend the cognitive process of speaking during their speech process, so they can better address students' needs.

In more specific terms, perception is the cognitive process in which users of learning technology become aware of which learning technology they are using. Perception occurs in five stages: stimulation, organization, interpretation-evaluation, memory and recall (Essays, 2013). These five stages can be reflected in intrapersonal and interpersonal incarnations. This chapter focuses on the intrapersonal and interpersonal perceptions on the use of this system to support language learners' listening and speaking skills. Evaluating and assessing the impact of such learning on language learners' perceptions is warranted as it is a determining factor of the viability

of the technology, which is highly related to the success of the application or technology (Connolly, Hainey, Boyle, Baxter, & Moreno-Ger, 2014; Ng, Karacapilidis, & Raisinghani, 2012). Thus, our overall aim is to check if the proposed learning technology can actually promote and enhance learning (Zosh, Lytle, Golinkoff, & Hirsh-Pasek, 2017).

The definition of intrapersonal interaction is related to experiences that exist within the user of the learning technology. This encompasses the developed self-knowledge, self-efficacy (Bandura, 2012), personal learning goals, strength, limitations, moods, anxieties, desires, acceptance (Junior & Marques dos Santos, 2017) and various other factors that the learner associates with the experiences of using the educational technology. An example of intrapersonal perception consists of awareness of how the use of a particular learning technology affects learning the language. Such intrapersonal perception is the most basic level of personal belief. Understanding what the learners think of themselves as users of a new technology is essential if the technology is to be considered a success. Intrapersonal perception considers the learners' perceived abilities, skills and learning beliefs, as well as the perceived usefulness of the learning technology (Henderson, Selwyn, & Aston, 2017). As a cognitive process, intrapersonal perception carries out an evaluation of a learner's internal and inner feelings, emotions, values, beliefs and processes which operate within the learners who are users of the technology (Ahmed, Van der Werf, Minnaert, & Kuyper, 2010). To briefly sum up, these intrapersonal personal experiences of using technology can be considered as self-feedback on the use of technology itself.

Interpersonal perception is an area of research in social psychology which examines the beliefs that interacting learners have about each other in the use of any learning technology. It relates to how the learners think the particular learning technology can assist them to communicate with each other. It also considers how interpersonal perception influences the communication process. Some interpersonal perception checks consist of clarifying the perceptions of the learners in the use of learning technology to facilitate communication, working out the points of view of the authentic benefits in the use of the learning technology for actual communication and letting the learners take responsibility for their own

communication with the assistance of the learning technology (Bueno-Alastuey, 2011).

In addition, both the intrapersonal and interpersonal aspects of perception affect both learning anxiety and the motivation to use the learning technology. Specific factors affecting learners' intrapersonal perceptions are general computer anxiety (Conti-Ramsden, Durkin, & Walker, 2010) and lack of computer literacy (Odogwu & Nyala, 2010); these will affect learner interest in using a learning technology. Learners who have negative attitudes (Rahimi & Yadollahi, 2010, 2011) and low motivation (Mohammadi, Moenikia, & Zahed-Babelan, 2010) when using computer-assisted language learning technologies to interact with others may lose interest in communicating. Such negative sensations are directly associated with a learner's interpersonal perceptions.

In short, negative perceptions of both intrapersonal and interpersonal aspects of using technology will impede the practical use of that technology. Negative perceptions by learners can lead to unenthusiastic use of the technology being employed. Thus, it is critical that instructors investigate the realities of digital technology use and examine student experiences as a way to ensure the affirmative use of such learning technologies. Only then can they be recommended to learners as a means of supporting their learning (Selwyn, 2016).

Concerning the present study, the framework of perception is shown in Fig. 15.1. The two aspects are the major areas to be investigated in this study.

Methodology

Participants of this study were 119 learners of Chinese as a foreign language at a major university in Malaysia. Of them, 61 learners were taking the Chinese level 1 course, while 58 of them had enrolled for the Chinese level 2 course (refer to Table 15.1). The level 1 course is an introductory level Chinese course and level 2 is the subsequent course. All of these students were diploma students (age range: 18–20 years), taking Chinese courses as a compulsory third language course. They were no native

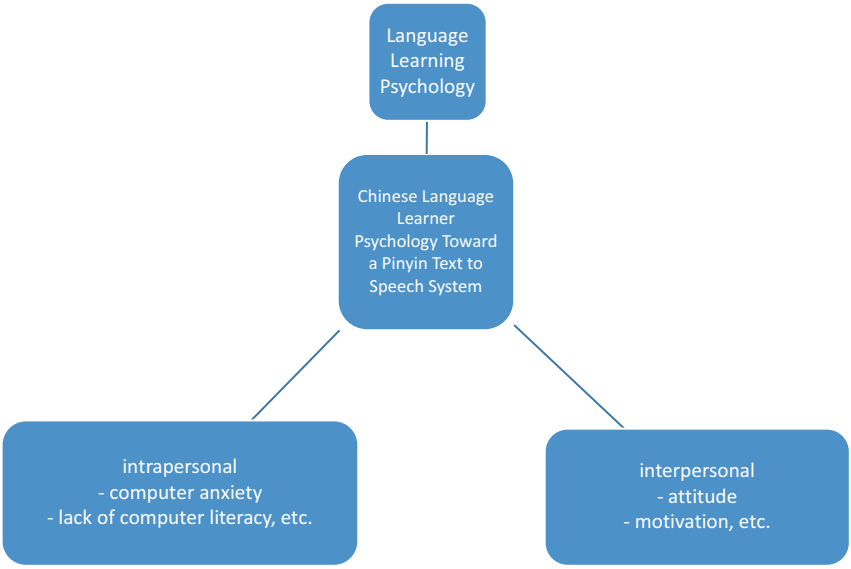


Fig. 15.1 Framework for the study

Table 15.1 Distribution of the sample

Level	Number of students	Percentage (%)
1	61	51.26
2	58	48.74
Total	119	100.00

learners of Chinese. The majority of the students in the study were female (91.1%), and they were all Malay students.

The learners were taught on how to use the Chinese pinyin system (http://terengganu1.uitm.edu.my/mandarin/) at the beginning of the semester (Fig. 15.2). The expressed purpose of the system is to assist the students in improving their Mandarin pronunciation. Hanyu Pinyin, often abbreviated to pinyin, is the official Romanization system for Standard Chinese. By using pinyin texts—entering letters and numbers of what they intend to say in Chinese using a keyboard—they can reflect what they would like to 'say' in Chinese. For example, if a student wanted to enter the pinyin for, 'I go to school,' the student would enter the

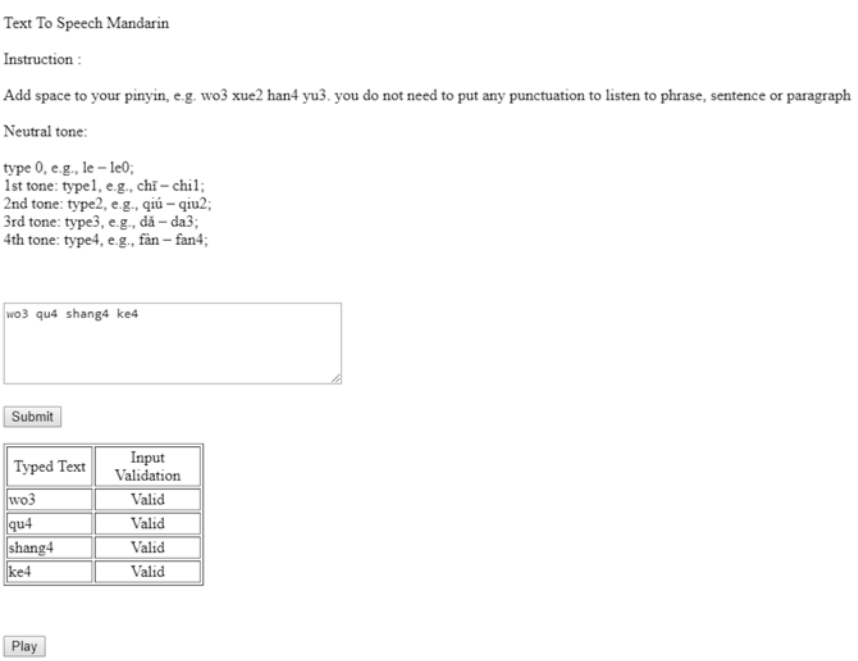


Fig. 15.2 Screenshot of the system interface

following Romanized code into the system: wo3 qu4 shang4 ke4. Students are able to key in the words, phrases or sentences to listen to the pronunciation by using pinyin texts. They can also download the sound files to listen to them later. This is to help the students to better prepare themselves for their final speaking project.

After using the system for one semester, the participants of this study were asked to complete a self-developed online questionnaire in English as a means to assess their intrapersonal and interpersonal perceptions on the use of this system to support their listening and speaking skills. A test and retest method was used to gain the reliability index for this questionnaire. The Cronbach's alpha of this questionnaire was 0.795, which is acceptable (Drost, 2011). For content validity, several subject matter experts were invited to review the content of this questionnaire. Additionally, students were also required on the questionnaire to record the frequency of their

visits to the system during the semester. Open-ended questions were also included in the questionnaire as a means to further understand the intrapersonal and interpersonal perceptions of the students.

Results

In this study, the differences in the intrapersonal and interpersonal aspects of perception while using the system were disclosed by examining the questionnaire's data. All of the items on the questionnaire employed a Likert scale of 1–5, in which 1 denoted 'strongly disagree,' while 5 denoted 'strongly agree.' The results are as shown in Table 15.2 below. All the negative items in the questionnaire were recoded into positive data prior to the SPSS analysis.

Table 15.2 Mean scores for the questionnaire items for intrapersonal perceptions for levels 1 and 2

Number	Items	Mean (Level 1)	Mean (Level 2)
1	I am not good at using computers	3.18	3.81
2	I don't like to use computers	3.12	3.51
3	Using a computer is very troublesome	3.40	3.51
4	It is better to ask my instructor or my friend than asking the system	3.51	3.77
5	I don't think any system is able to improve my pronunciation	2.84	2.26
6	I need to find an internet connection to access to the system	3.28	3.10
7	I prefer to learn pronunciation without the use of any system	3.57	3.17
8	I find it troublesome to use a system to check my pronunciation	3.43	3.79
9	I feel using any system to practice pronunciation is a waste of time	3.40	3.45
10	I find it difficult to find a computer with internet to access the system	3.58	3.78
	Overall mean according to levels	3.35	3.26
	Overall mean	3.30	

Regarding intrapersonal perception, level 1 students (mean: 3.35) had a more positive view than level 2 students (mean: 3.26). The overall perception concerning intrapersonal aspects was 3.30. This data result is somewhat negative. The difference in perception according to the levels of Mandarin was not significant (*t*: 13.47; df: 118, sig: 0.077 > 0.05) (Table 15.3). The questionnaire revealed that students at both levels had rather negative intrapersonal perceptions. Open-ended questions revealed some thoughts that supported these negative intrapersonal perceptions (see Table 15.4). These were the individual comments given by respondents in the section of open-ended questions. Some students responded and mentioned a few problems, which have been put together in Table 15.4 (Fig. 15.3).

As for the interpersonal aspect, level 1 students (mean: 3.76) had more positive views than the level 2 students (mean: 3.65). The overall perception on the intrapersonal aspect is 3.71. It depicts moderately positive interpersonal perceptions. The difference in perceptions according to the levels of Mandarin learning is significant (*t*: 16.96; df: 118, sig: 0.019 < 0.05). It shows that students of level 1 had more positive perceptions regarding the interpersonal aspect. Open-ended questions revealed the reasoning behind the positive perception in the interpersonal view (see table below) (Tables 15.5, 15.6 and 15.7) (Fig. 15.4).

Table 15.8 below shows the frequencies of access per semester of the learners. Level 1 students had more access (mean: 17.9) than level 2 students (mean: 12.7). It is significant (*P* value: 78.96; df: 1; sig.: 0.037 < 0.05) (Table 15.9).

Table 15.10 below shows the correlation of frequencies access with the perception. Kendall's tau-B correlation was used. For the intrapersonal perception versus frequencies of access, the correlation is moderate (correlation coefficient: 0.581) and it is significant (sig.: 0.026 < 0.05). It shows that students with more positive intrapersonal perception will

Table 15.3 *T*-test comparison between level 1 and level 2 for the intrapersonal perceptions

Level	*N*	Mean	Std. deviation	*T* value	df	Sig.
1	61	3.35	0.33	13.47	118	0.077
2	58	3.26	0.85			

Table 15.4 Open-ended questions—students' comments

Number	Students' comments
1	My hand phone cannot access internet
2	I have limited access to the internet
3	For language learning, I prefer face-to-face learning
4	I am not good in the use of computer
5	I don't like to use computer
6	My computer skill is not so good
7	I need to improve on my computer skill
8	I can't find anyone to assist me when I find problem in the use of the system
9	I need technician to assist me
10	It is a lack of technical support in the use of IT
11	The system is useful but to use it, I need to depend on internet
12	When I have encountered problems and have questions to asked, I don't know who I should refer to
13	Even if I know how to pronounce, I still feel shy to speak in mandarin
14	I do not have confidence to use mandarin for communication even if I have checked my pronunciation with the system
15	The system cannot tell me how well I have pronounced and imitated the pronunciation given by the system
16	I can listen well to the sound provided by the system. But I always find it difficult to produce the accurate sound required
17	I am not sure whether I have produced the similar accurate pronunciation as the downloaded sound files from the system

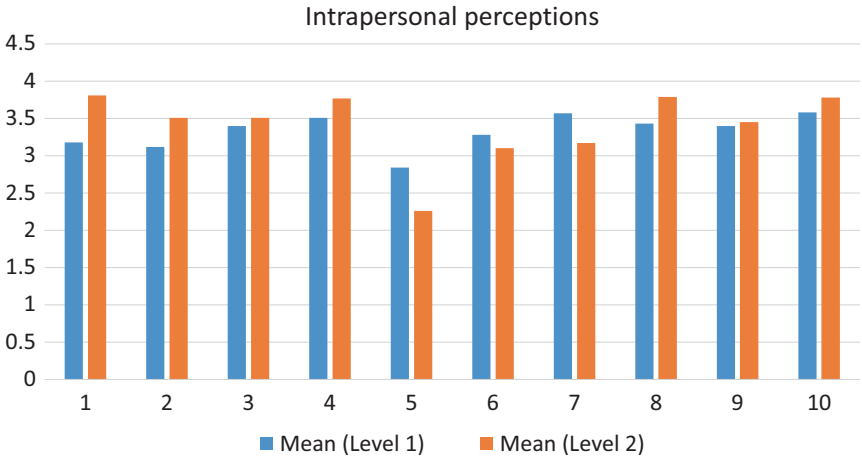


Fig. 15.3 Mean scores for the questionnaire items for intrapersonal perceptions for levels 1 and 2

Table 15.5 Mean scores for the questionnaire items for interpersonal perceptions

Number	Items	Mean (Level 1)	Mean (Level 2)
1	I can communicate better using the system with other learners	4.20	4.19
2	After checking the pronunciation in the system, my friends can understand more of my pronunciation	3.97	3.95
3	I am motivated to use the system as I notice that my friends can understand me more	4.36	4.12
4	I will check the system with pronunciation that I am having trouble with before I converse with my friends	3.90	4.19
5	When my friends inform me that I don't pronounce some words accurately, I will refer back to the system	3.65	3.74
6	I will discuss with my friends to find out the pronunciation of some confusing words	3.91	3.54
7	It brings me pleasure to improve my pronunciation by using the system together with my friends	3.94	3.74
8	I am more concerned about the improvement of my pronunciation which my friends can understand better by using the system rather than the little troubles that I may face in the use of the system	3.89	3.80
9	I will try to use the system more as I notice that it has been helping me to produce better pronunciation of Mandarin, thus making it more understandable to my friends	3.97	3.83
10	Even though using the system will use more of my time, I tend to quit or withdraw from using the using the system even though it has been helping me to produce better pronunciation of Mandarin, thus making it more understandable to my friends	3.22	3.25
	Overall mean according to levels	3.76	3.65
	Overall mean	3.71	

Table 15.6 *T*-test comparison between level 1 and level 2 for the interpersonal perceptions

Level	*N*	Mean	Std. deviation	*T* value	df	Sig.
1	61	3.76	0.10	16.96	118	0.019
2	58	3.65	0.46			

Table 15.7 Open-ended questions—students' comments

Number	Students' comments
1	The use of system allows me to correct my pronunciation and ease me in communication
2	There is limited classroom time to ask my instructor to correct my pronunciation. I can use this system to have self-correction whenever I need
3	System use can compensate limited classroom learning time
4	We can improve our pronunciation together by accessing the system together
5	I have tried the system and listen more; still I don't see that I can improve my pronunciation. My friends still critic my bad pronunciation
6	I can listen well to the system but I cannot listen well to the pronunciation of my instructor or friends
7	I can understand the speech of my non-native friends. But I have problems in understanding the speech of my native friends

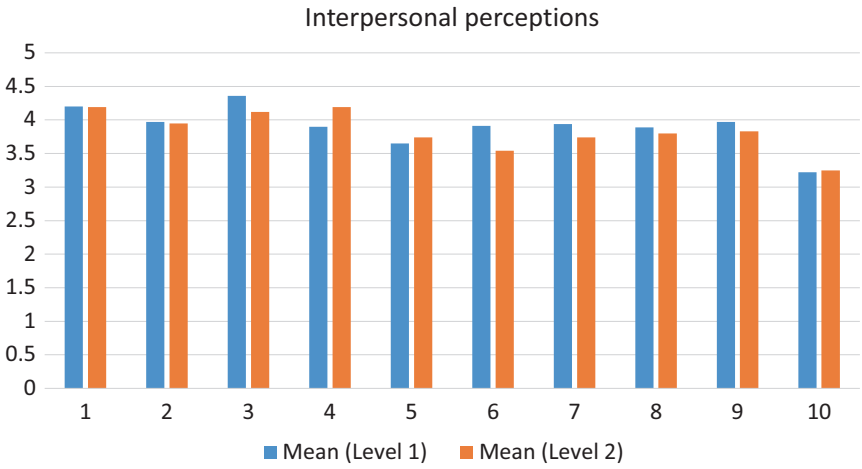


Fig. 15.4 Mean scores for the questionnaire items for interpersonal perceptions

access the system more frequently. Whereas for the interpersonal perception versus frequencies of access, the correlation is moderate as well (correlation coefficient: 0.671) and it is significant (sig.: 0.016 < 0.05). It showed that students with more positive interpersonal perception will access the system more regularly.

Table 15.8 Frequencies of access to the system

Level	Number of access to the system (mean)
1	17.9
2	12.7

Table 15.9 Comparison of frequencies—chi-square test

Level	*N*	Mean	Total access	Pearson chi-square value	df	Sig.
1	61	17.9	1091	78.96	1	0.037
2	58	12.7	736			

Table 15.10 Kendall's tau-B correlation test

Intrapersonal item versus frequencies of access		
Kendall's tau_b	Correlation coefficient	0.581
	Sig. (2-tailed)	0.026
	N	119
Interpersonal item versus frequencies of access		
Kendall's tau_b	Correlation coefficient	0.671
	Sig. (2-tailed)	0.016
	N	119

Discussion

The results and proposed subsequent research have pointed to many facets of perception that can be tied to the use of such educational technology. It was found that the students have a moderately negative perception concerning the intrapersonal aspect. Negative intrapersonal perception was mainly related to learners' perceptions of their own deficiencies when using computers as well as their own trepidations concerning the lack of adequate technological support. To mitigate these negative intrapersonal perceptions, improved technical support and stable internet access need to be provided. Students' comments provided relevant background context to the source of the students' fears related to computers; the better the knowledge of the obstacles and hindrances faced by the learners, the better we can assist them to address the deficiencies they have pointed out. The comments also gave us insight as to how the system can be

changed to ameliorate some of the negative perceptions, such as providing an interactive check of a student's pronunciation. As was stated in the Introduction of this volume, researching the psychology of the language learner means uncovering differences. Through this assessment we found that students had different needs (e.g., computer help) and different characteristics (e.g., introvert learners vs. extravert learners). When thinking about future research, such as artificial intelligence in speaking technology such as speech recognition (Mattys, Davis, Bradlow, & Scott, 2012), language learners' intrapersonal perceptions should be considered. When developing interactive systems, future research calls for the involvement of more language experts working together with experts in technology to better understand potential deficiencies not in the application but how it will affect the language learners who are using such applications. Experts working together can forgo problems by examining desirability, feasibility and viability of applications and systems prior to foisting these technologies upon the learners.

Pertaining to interpersonal perceptions, students reflected a somewhat positive sense. The research shows that students on the whole agreed that the system is able to improve their pronunciation as a means to heighten their speaking skill for communication purposes. This was especially the case for level 1 students as they represent new learners of Mandarin. Their perceptions reveal that they are more enthusiastic toward producing better Mandarin pronunciation compared to level 2 students. As two learners mentioned, the system gave them additional opportunities to supplement the limited class time spent on pronunciation, essentially giving them more confidence. With that said, some students' interpersonal perceptions were affected somewhat negatively by using the system because it highlighted a lack of improvement. As one student mentioned (even though she was a keen user of the system), her pronunciation had not improved much over time. In other words, learning technology cannot resolve all issues related to a student's interpersonal perceptions; there are still other aspects that have to be accounted for regarding interpersonal communication in speaking, for example, rate of speech, accent and differences between the native and non-native speech (Lecumberri, Cooke, & Cutler, 2010), to name a few.

Overall, the correlation findings have supported our purpose that there were positive correlations between the positive perceptions and intention of use of this type of educational technology. Resolving issues related to students' intrapersonal perceptions—primarily by reducing their fear about educational technology through knowledge and skill development—will likely increase students' embrace of the system to support their learning. As for the interpersonal perceptions, students already have a somewhat positive sense while using the system. Such positive mindsets play a critical role in encouraging students to use technology in learning a language (Macaskill & Denovan, 2013). This is an important step forward toward increasingly more autonomous language learning.

This chapter touches on a wide range of study areas, which includes cognitive psychology, educational psychology, educational technology and instructional design but with a strong focus on perceptions in learning psychology. Hence, we are also aware of the limitations of this study as there are many other aspects (e.g., readiness, satisfaction, expectations and wishes to name a few) which are not covered here. For further studies, design of the research can include making videos of how the learners are actually using the system, for instance, as a means to study the qualitative aspects that are related to the psychological issues raised by the use of such educational technology (Geist, 2012), and using other measurement methods in understanding the characteristics of the learners in relation to their intrapersonal and interpersonal perceptions, such as situational judgment tests and discrete choice experiments (Anderson, Thier, & Pitts, 2017). Design of learning technology that influences learning psychology is another issue that can be addressed by way of action research. Additionally, further advanced statistical analysis should be utilized in analyzing the characteristics of learning psychology with regard to learning technology such as structural equation modeling (SEM) (Magen-Nagar & Steinberger, 2017) and factor analysis to group the factors of intrapersonal and interpersonal aspects. In addition, comparisons of this system with other technology aimed at developing listening and oral skills (e.g., mobile instant messaging) are welcome (Al-Jarf, 2012; Andújar-Vaca & Cruz-Martínez, 2017).

Conclusions

Educational technology has been concerned with justifying and verifying the basic assumption that the processes and products of technology can improve instructional effectiveness (Spencer, 2017). Through this empirical study which was coupled with qualitative assessments, we were able to look at new directions and incorporate innovative approaches to both theoretical and methodological issues pertaining to the field of language learning psychology (Gkonou, Tatzl, & Mercer, 2016). Our work pointed to the vital importance of strengthening language learners' intrapersonal and interpersonal perceptions. This agrees with Roscoe, Wilson, Johnson and Mayra's (2017) suggestions that psychological aspects such as intrapersonal and interpersonal perceptions essentially affect the intention and interest of students to use any educational technology to support their learning. By having a deeper understanding of intrapersonal and interpersonal perceptions of the learners, we can address present and potential problems and drawbacks (Bueno-Alastuey, 2011) regarding why learners do not want to utilize a particular learning technology. In addition, studies such as this one can help language learning experts to properly understand students so as to assist them effectively, and through the feedback generated, such studies can improve learning technology for the betterment of students' perceptions.

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16

Gliding Across the Digital Divide with High Anxiety: Electronic Resource Selection Toward Self-Directed Writing Practice in a South African EAP Context

Jako Olivier

Introduction

Academic writing is a central aspect of academic life and assessment in South Africa and, in fact, in global higher education, and this generally means the application of technology, specifically the use of word processing software and, in some cases, other computer-based or online resources. In this chapter, specific student attitudes are examined and assessed. Extensive research shows that, in the South African context, several concerns exist about the quality of writing delivered by university students (Boughey, 2013; Butler, 2013; L. Olivier, 2016). It is generally understood that academic writing is not regarded as a separate skill and any problems that surface should be addressed through informed course design (Weideman, 2013) and via a multimodal approach to academic literacies (Archer, 2006). J. Olivier (2016, 2019) suggests that students

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should be channeled toward a practice of self-directed writing or autonomography. The latter idea draws on the concept of self-directed learning (Knowles, 1975). This chapter, then, focuses on student attitudes toward electronic writing resource selection within the context of language learning psychology and technology.

Conti-Ramsden, Durkin and Walker (2010) determined that there is a "complex relationship between linguistic, attitudinal and emotional factors and computer anxiety" (p. 143). Matsumura and Hann (2004, p. 403) also share this sentiment. In a wider sense, examples from published works are available in which literature reviews are presented on language learning and computers (cf. Beatty, 2013; Liu, Moore, Graham, & Lee, 2002). In this chapter, writing resource selection as a self-directed learning practice, the digital divide, computer anxiety and self-efficacy followed by the empirical research on electronic resource selection among students at a South African university are discussed.

Writing Resource Selection as a Self-Directed Learning Practice

In this chapter, writing instruction is approached with a view to supporting and fostering self-directed learning. In this regard, *self-directed learning* can be described as a process through which students take charge of their own learning (cf. Knowles, 1975, p. 15). Knowles (1975) defines the phenomenon of self-directed learning as "a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies and evaluating learning outcomes" (p. 18). In this case, 'identifying human and material resources for learning' bears significant importance as this aspect is explored specifically with regard to electronic writing resources. The focus was primarily on material resources and not human resources. According to Kellogg (1999), "[t]he process of writing, as opposed to performance, varies substantially with the tool selected" (p. 160), and students, therefore, need to be supported in order to independently choose appropriate resources for different parts of the writing process.

Vygotsky (1986) describes writing as being an abstract, voluntary as well as a conscious act (p. 183). Within the higher education context, writing still remains important for assessment through formal evaluation and in the form of academic essays. However, acquiring writing skills is a process that starts before students enroll in universities and continues even after they have left—meaning self-direction is essential. Self-directed learning has been discussed widely in terms of language learning, especially with a focus on the acquisition of second or additional languages (cf. Bordonaro, 2006; Mohammadi & Mahdi Araghi, 2013; J. Olivier, 2016; Thornton, 2010; Victori & Lockhart, 1995).

The confluence of self-directed learning and writing gives rise to the concept of *self-directed writing* or *autonomography* (cf. J. Olivier, 2016, 2019). This term is used as three distinct and relevant concepts in this context: the *self* (αὐτός), *regulation* (νόμος) and the *writing process* (γράφω). Lovejoy (2009) states that self-directed writing can be "an opportunity for students to draw on their own resources, not only what they know and care about but also how they may choose to say it" (p. 79). Castelló, Iñesta and Monereo (2009) also highlight the importance of self-directed writing and emphasize the need for writers to be cognizant of their own shortcomings, and how to address such difficulties in the process of self-regulation (p. 1126).

As for the writing process, students need to be able to use technology as a language resource in their research and as a tool to construct writing artifacts. The role of the computer in a writing classroom must be viewed as more than just word processing—collaboration and improved feedback must be accommodated as well (Braine, 1997; Foroutan & Noordin, 2012; Li & Zhu, 2013). A number of sources have indicated an advantage when computers are used in the writing process, especially when networked computers are being used (Braine, 1997) as a reflection method (Foroutan & Noordin, 2012), for collaboration through wikis (Li & Zhu, 2013), as feedback platforms (Matsumura & Hann, 2004) and even in contexts of English as a second language (Sullivan & Pratt, 1996). When considering language learners in South African universities, the realization of a digital divide means that their experiences with technology will be varied; naturally, this has an effect on their mindset toward engaging in computer-based activities.

Digital Divide

The concept of the *digital divide* is used to refer to the differences between individuals and communities with regard to access to technology facilitating increased wealth as opposed to those who are less fortunate and unable to achieve any degree of digital wealth (cf. Eastin & LaRose, 2000; Graham, 2006, p. 15; Holmes & Gardner, 2006; Lesame, 2005; Mason & Rennie, 2006). DiMaggio and Hargittai (2001) describe five broad forms of digital inequality: variation in the technical means; autonomy in use of the web; inequality in skill; inequality in social support; and variation in the purposes of using technology (p. 8). Lesame (2005) observes the following in terms of digital divide:

> The term 'digital divide' refers to the gap between the access of individuals, households, organisations, countries and regions at different socio-economic levels to ICTs and Internet Usage. Thus, the digital divide not only refers to the gap between the affluent, urban 'haves' and the impoverished, rural 'have-nots', but also to the digital and ICT chasm between the African continent and the developed world. (p. 3)

However, there have been researchers who question this binary view of a digital divide and a more nuanced and dynamic approach is, therefore, suggested (Hargittai, 2002). Similarly, Bennett, Maton and Kervin (2008) question the 'moral panic' around the so-called digital natives (cf. Prensky, 2001). It is evident that the relationship between people and technology is indeed more complex. Bennett et al. (2008, p. 783) state that, "[w]hile technology is embedded in their lives, young people's use and skills are not uniform. There is no evidence of widespread and universal disaffection, or of a distinctly different learning style the like of which has never been seen before" (Kennedy, Judd, Churchward, Gray, & Krause, 2008; Margaryan, Littlejohn, & Vojt, 2011).

In a South African context, a digital divide in experience and access to technology is also complex, with great differences in wealth often aligned with historical differences in racial backgrounds (Hoadley, 2017). The latest data from Statistics South Africa (2016) indicate that only approximately 24.5% of South African households own computers (p. 146), and

about 15,618,303 (or 28%) of South Africans have indicated that they have access to the internet (p. 150). Naturally, a lack of access to technologies also affects the experiences of students, potentially negatively influencing their self-efficacy or contributing to computer anxiety (Bozionelos, 2001).

Computer Anxiety and Self-Efficacy

One of the key sources of computer anxiety, as Conti-Ramsden et al. (2010) point out, is related to an increasing dependence on the use of computers and, by implication, for the purposes of this study, electronic writing resource contexts (p. 138). *Computer anxiety* can be defined as "negative emotions and cognitions evoked in actual or imaginary interaction with computer-based technology" (Bozionelos, 2001, p. 213). According to Matsumura and Hann (2004), computer anxiety is a "situation-specific trait" (p. 404). Conti-Ramsden et al. (2010) add that "language is a key factor in computer system interfaces" (p. 137), and language becomes, therefore, an important variable when the selection of electronic writing resources is concerned, especially in multilingual contexts, such as in the case of this research.

Efficacy is described by Bandura (1977) as "the conviction that one can successfully execute the behaviour required to produce the outcomes" (p. 79), while Bandura (1997) defines *self-efficacy* as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy has been extensively researched, with studies focusing on using the internet (Barbeite & Weiss, 2004; Durndell & Haag, 2002; Eastin & LaRose, 2000), computer-supported education (Celik & Yesilyurt, 2013), different rating scales and even qualitative sources of data. According to Celik and Yesilyurt (2013), "perceived computer self-efficacy among teachers and students plays an important part in applying computer supported education and achieving its goal" (p. 148).

Eastin and LaRose (2000) explored internet self-efficacy and the psychology of the digital divide and proposed an internet self-efficacy scale to measure this phenomenon. They concluded that prior internet experi-

ences, certain outcome expectancies and internet use were found to be correlated significantly and positively with judgments about internet self-efficacy (Eastin & LaRose, 2000). Similarly, Barbeite and Weiss (2004) found that computer anxiety "was a significant predictor of self-efficacy for advanced activities and was significantly correlated with several indicators of computer and internet use" (p. 13). As for a confluence of the two variables, Wilfong (2006) found that a significant relationship connects computer self-efficacy to computer anxiety as well as anger (cf. Khorrami-Arani, 2001).

Objectives

Clearly, the concepts of computer anxiety and self-efficacy are linked, making them relevant factors to be investigated within the context of electronic resource selection. Thus, the purpose of this research can be summarized with the following questions:

1. How are electronic writing resources and the selection thereof viewed by first-year South African university students in an EAP classroom?
2. What are some of the specific attitudes these students have toward using computers to accomplish writing activities?

In order to research the above, a qualitative study was undertaken with a group of selected university students.

Methodology

This research took place in the form of a cross-sectional qualitative study executed within an interpretivist paradigm—a snapshot is presented of the perceptions and intentions of students (Cohen, Manion, & Morrison, 2007, pp. 21, 213). Concerning students' acceptance of particular technologies, the use of the technology acceptance model is noted among several sources (cf. Conti-Ramsden et al., 2010). However, as the chapter refers to a more generic and dynamic concept of electronic writing

resources, a more explorative qualitative approach was followed here. In the following sections the sampling method, participants and ethical considerations are discussed.

Sampling and Participants

Purposive sampling was used (Cohen et al., 2007, p. 114) as a form of non-probability sampling—in other words, a specific and convenient population was chosen for the sake of an exploratory investigation, so any broad generalizations of the findings must be viewed with great caution. The population ($N = 279$) consisted of first-year students at a South African university. Furthermore, inclusion criteria included that all participants were enrolled for an EAP course for academic literacy. From this group, a total of 181 narratives (64.9%) were received, and a follow-up focus group interview with eight students was conducted.

All of the students were studying in English despite the institution being officially trilingual, with English, Afrikaans and Setswana as official languages. It is important to note that, despite widespread multilingualism and successful multi-initiatives and biliteracy initiatives in South Africa (Van der Walt & Dornbrack, 2011), the most common language in higher education is English, with limited usage of Afrikaans and some African languages (Van der Walt, 2004). In line with a South African context, and specifically the demographical profile of the geographical area, the language distribution of the sample was as follows (Fig. 16.1):

The sample also represented groups from the following disciplines or combination of disciplines (Fig. 16.2):

In the recruitment of this research population, ethical considerations were considered, which are briefly presented in the next section.

Ethical Considerations

Participation in this research was completely voluntary, and an independent source obtained informed consent from participants. The participants were allowed to withdraw from the research at any point in time. The researcher was not a lecturer for these students and an assistant

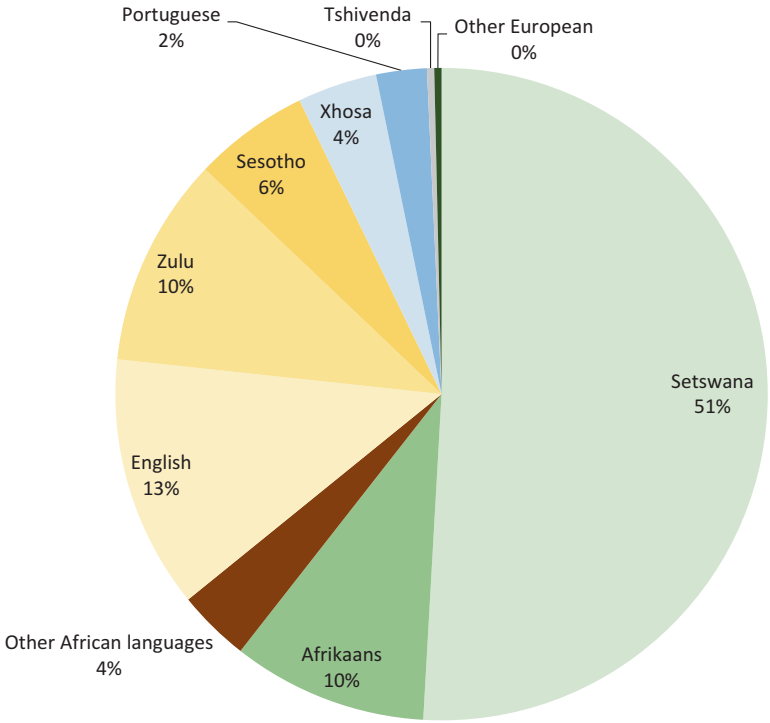


Fig. 16.1 Language distribution of the research participants

handled the data collection outside of formal classes. Research ethics approval for this research was granted by the Research Ethics Committee of the institution where this research was conducted.

Data Collection and Analysis

The data were collected by means of narrative reflections and a focus group interview. The research participants were requested to reflect on their electronic writing resource selection habits and experiences through narrative reflections in the form of short written essays. To complement these reflections, a focus group interview (Cohen et al., 2007) was conducted to confirm the findings that emerged from the narratives.

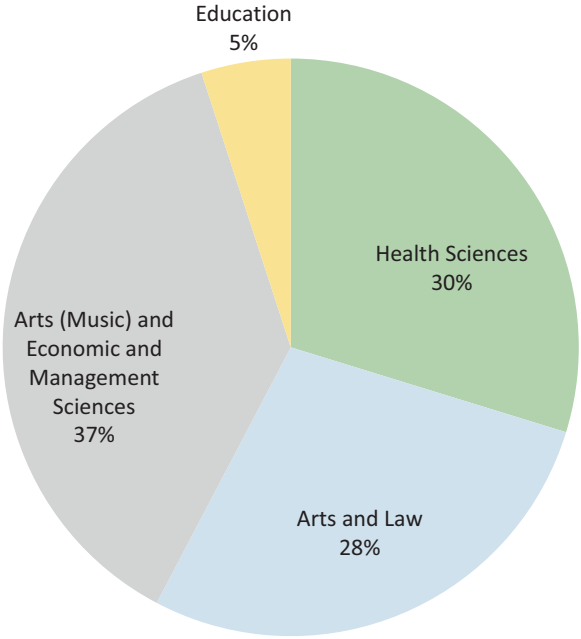


Fig. 16.2 Discipline distribution of the research participants

Inductive data analysis involved coding of texts by "generating categories from the text material" (Cohen et al., 2007, p. 480). Trustworthiness of the analysis was ensured through triangulation (Guba, 1981), using both narratives and a transcription of the focus group interview as well as thick descriptive data (Guba, 1981). Coding was completed with the assistance of an additional coder (Turner & Daniel, 2010).

Results

The results are presented in the form of identified themes, subcategories and codes. In the case of data obtained from written narrative reflections, the texts are presented in descriptive fashion—in other words, *verbatim*. The unique number assigned to a specific participant's response appears

in square brackets. In cases where an 'F' appears in square brackets, content from the focus group interview has been used.

Figure 16.3 provides a summary of the themes and subcategories that emerged from the qualitative analysis of the written narrative reflections and the focus group interview. The responses obtained relate broadly to the context, the handling of electronic writing resources and solving problems with electronic writing resources.

The broad themes and subcategories, as identified in Fig. 16.3, are discussed in the following sections. Quotations from the written narrative reflections and focus group interview are provided for further clarification. Emphasis (in bold typeface) and clarifications (in curly brackets) were added by the author when warranted.

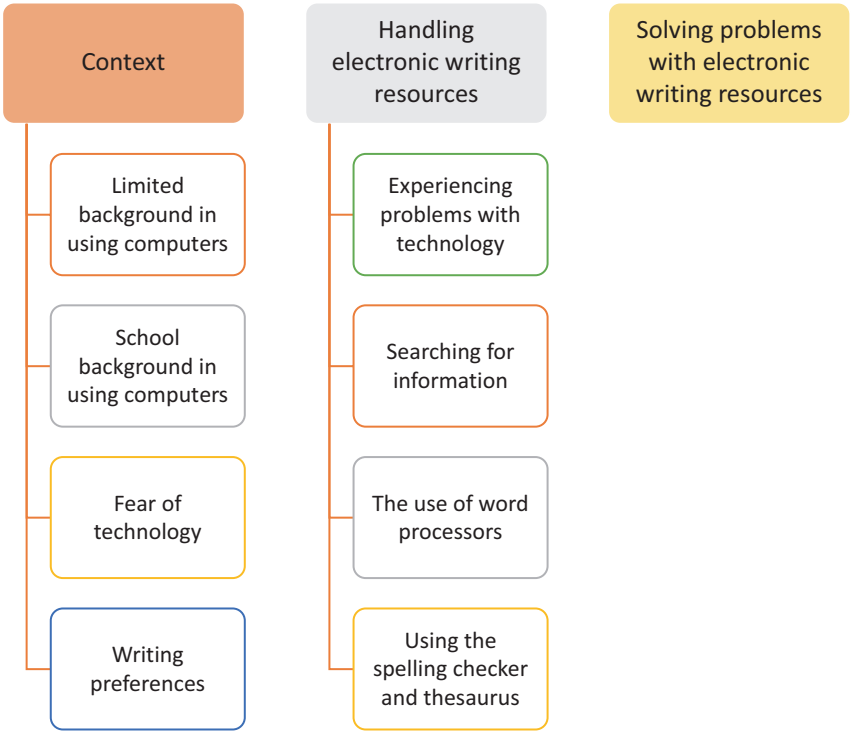


Fig. 16.3 Identified themes and subcategories of the qualitative analysis

Context

The first theme relates to the wider context of writing and electronic writing resources, as perceived by the research participants. Under this theme, the following subcategories were identified: limited background in using computers; school background in using computers; fear of technology; and writing preferences.

Limited Background in Using Computers

Background or exposure to computers is linked to computer anxiety. Bozionelos (2001) notes the following in this regard, "The most consistent correlate of computer anxiety is computer experience" (p. 214). However, he also states that providing computer exposure does not necessarily lead to a decrease in computer anxiety (p. 215).

Access to Computers Before University

- *There is no problem that I have encountered using electronic devices when typing an essay. When growing up I used to* ***practice everyday*** *on how to type words and sentences up until now.* [29]
- *Since I was a child, I have been* ***exposed*** *to computers. I have been writing electronically since I was about 9 years old.* [F2]

No Access to Computers at Home

- *Problem with writing on a computer is you do not always have* ***access*** *to a computer or internet. Having to leave your house to go to an internet cafe or a school labritory is time consuming, time you could have used to complete your task.* [32]

No Previous Experience in Writing on Computer

- *I have never writen tasks or essays on a computer before I don't know* ***which programs*** *to use and now that becomes a huge challenge for me.* [55]

- *Ever since I started schooling I've **never used** a computer in my life, because we were never fortunate enough to afford one at home and we never had computers at school.* [26]
- *I've never written something electronically so this is **something new** to me.* [63]

From these descriptive texts, it is evident that there are students with varying degrees of experience in using computers, both in general terms and as a writing tool. Similar experiences were also noted in their school background.

School Background in Using Computers

No Writing on Computers at School

- *I havn't really ever had to write an essay on a computer because at school we were never a loud to write an essay on a computer. I think using a computer would make writing a essays a lot **easier** than not.* [178]

Adequate Background at School

- *I'm fortunate enough because I have some background when it comes to essay writing and using electronic writing resources because firstly I had **IT** as one of my high school subjects and **history** (this subject includes a lot of essay writing).* [52]
- *I got a chance to do **Computer Application Technology** at high school, so i am familiar on what to use electronically for different tasks.* [56]
- *When I was in high school, we had **typing** as a class so I do know how to use the internet, word, excel and all of those accesories.* [84]
- *I write essays and tasks on word on my laptop. I have done it before many times. I do not find it difficult, before I have done it and it's simpler than writting it physically. I have done computre classes in **primary school** thats why I can make powerpoints use excel, insert emoticons, pictures tables, graphs ect.* [115]

- *In **primary** school, I learned quite a bit about computers, like how to compose a letter, attach documents and making a brochure or an advertisement.* [F2]

The data illustrate that students' school experiences range from basic exposure to computers to having computer-related subjects (in a South African context, these subjects refer to either *Information Technology [IT]*, which involves the study of wider information technologies and programming, and *Computer Applications Technology*, with the focus on end-user applications in the Further Education and Training [FET] phase at the high school level). In addition to a background in these subjects, some of the participants even reported working on computers in school on a primary school level. At least one of the participants mentioned not accessing computers at school at all.

Apart from access to information, the participants also provided insight into their attitude toward technology. In consideration of computer anxiety, Conti-Ramsden et al. (2010) noted the importance of the attitude of users toward computers. Fear of computers and technology was evident in the data.

Fear of Technology

- *The problem that I face when using electronic gadgets is **fear**. I have that fear to say I dont know how to use thise thing. **What if something wrong happens?** What am I going to do?* [3]
- *Technology **scares** me because the method am used to its writing on papers not on computers. Writing tasks and essays on papers are so easy for me because its the only way I know.* [18]
- *Computer based on spelling checkers gives me a huge problem and when I use it I dont use any of the mentioned I just write and submit my work because of **the computer is a nightmare of my life**.* [18]
- *I am **scared** to use electronical resource. Because I am from the typical township schools with no or limited technology the little one we had was only for learners who took computer as a subject.* [19]

- *I don't know how to use electronic writing resources, I haven't try to write it.* ***I am scared****.* [21]
- *My experience on using computers is very* ***scare*** *because the last time I wrote something was back in grade 7, 2009, and even then I had my teacher besides me always. I now have a huge problem because I dont know how to open a writing page and even the shortcuts confuse me.* [38]
- ***Am scared in fact am dead scared*** *because I don't have any knowledge on what to do and how to do electronic writing. Plus* ***eish*** {South African informal interjection acting as emotional marker} ***computer is not really my thing am scared after writing everything what if I erase everthing or something happens*** *and have deleted all my writing after spending all the hours on the computer.* [66]
- *If I had to switch off something, I would definitely switch off the electronic media because I am* ***dead scared*** *of it.* [F5]

These vivid descriptive texts magnify what Bozionelos (2001) calls "manifestations of computer anxiety." This fear of or anxiety over computers can escalate from a temporary form of computer anxiety about the ease of use and exposure to computers (Celik & Yesilyurt, 2013; Conti-Ramsden et al., 2010) to a more serious psychological problem linked to a broader anxiety disorder (Beckers, Wicherts, & Schmidt, 2007).

The participants also provided valuable information on their preferences when it comes to writing.

Writing Preferences

Prefer Writing on Paper

- *I write my rough drafts on paper first and edit them on* ***paper*** *before typing them.* [106]
- ***I need to write to think****.* [F1]
- *I've always found it better an more confortable to use a* ***simple pen and paper to writing long text*** *but it has come to my realisation technology is slowly creeping in making life much faster and easier.* [55]

Prefer Writing on Computer

- *When writing essays on my computer **it feels much better** then actually writing the essay on paper because with the computer I am able to check for any spelling erros and use the synonm option to actually check other word I can use to replace some words which are not in context to what I want to say.* [49]

There does not seem to be a dominant preference for either writing only (or initially) on paper or using a computer. The preferred medium naturally leads to presenting data in the manner in which electronic writing resources are used.

Handling Electronic Writing Resources

The participants divulged three core problems they encountered in the handling of electronic resources: (1) how they conducted searches for information, (2) how word processors were used and (3) the way in which spelling checkers and a thesaurus were used.

Experiencing Problems with Technology

General Statements

- *Sometimes I experience problems such as to **login** on the computer app and strugling to find some information on efundi* {online content management system used by the specific university} *app also strugling to type on Microsoft Office since it is very easly to adapt I will catch up.* [9]
- *So **I can't write essays and tasks on a computer** even though I would love to learn and know how.* [26]
- *I don't have any idea of writing an essay or tasks on the computure, but I once tried but I didn't get to do it well.* [34]
- *I didn't know where to start and I was **confused**. I felt like I'm failing and this too much for me.* [58]

- *I do not have a computer background so in that case I do not know how to approach the computer or make researches.* [88]
- *I just get confused with everything* ***I have not idea*** *on where to start with what or what to press to start up a laptop.* [127]
- *I am a first-year student and I* ***struggle*** *a lot when it comes to using the computer or having to type my work. I have never written any task, test or essay with a computer.* [F7]

The data reveal students' lack of experience in using computers. The problems they experienced ranged from basic logins to doing research and even included using a keyboard. It is poignant that, despite some of the students' willingness to learn, they felt confused, they struggled and they expressed feelings of failure.

The following codes were also identified under the subcategory of *Experiencing problems with technology*:

Using Computers Is Difficult

- *Writing an essay or task in a computer is* ***not easy****. It require lot of knowlage and certain backround about computers. However it can be simple if only you willing to know how to use a computer. Patience it's key.* [13]
- *I find it more* ***difficult*** *and* ***stressing*** *when I have to open the Word document but I enjoy it while I'm busy.* [62]

Unable to Use the Internet Effectively

- ***I don't know much about the internet****. All I do when I get internet access is go to facebook and read other peoples feedback. I'm technologically disabled. Technology confuses my brain because there is always something new. I cannot do any which technology and I have encounter alot of problem with efundi* {online content management system used by the specific university}. [60]

Technology Terminology

- *I get confused most of the time because people who are used to using computer **don't use the same words**; they use this computer language and, for me, it is very hard to understand.* [F7]
- *I use **google chrome** and **firefox** when search for information electronically.* [154]

Typing Ability

- *In the type of typing I'm not looking at the screen **I'm looking at the keyboard** and look on the screen, when I made mistake am carying on typing I will correct my mistakes after I'm done typing like spellings, when they are wrong I see by underline by a colour red.* [33]
- *The problems also I in counter was using was **using the keyboard** which even now I find so difficult to use but one thing I have realized is that it is like the phone cause it also qwery key. But much bigger. And also I had a problem with the caps on and off which is use for capital letters.* [103]

The participants indicated that they found the use of computers and the internet, in particular, difficult and a source of stress. It is also evident that participants are not necessarily comfortable with technology-related terminology, and this was made clear by one of the participants confusing the browsers with online search engines. Finally, some of the participants even indicated that they encountered problems with the physical act of typing.

Similar to these concerns, the next subcategory deals specifically with practices of searching for information by means of technology.

Searching for Information

Electronic Resources Used for Information Searches

- *I usually go to **google** whenever I need information about something and I have been doing that for years.* [23]

- *I use **google** by typing in whatever information I need on the search enginge and by visiting different sources for the information.* [25]
- ***Google is always the right answer**. Lol, that how I get all my information. **Google is my one true friend**.* [60]
- *When search for information, I usually type it into the search bar and visit a few websites. However, now being in university, I use **Google Scholar**.* [109]
- *I have always depended on **wiklopidia** but was informed that its **not a good source of information**. Now Im google all my information scholar but have to admit that I go back to my old habits of using normal google.* [111]
- *I also use **YouTube** videos to get a clearer meaning or information about the topic. If by all means I try and refrain from sites such as **Wikipedia**.* [164]

Unsure Where to Find Information

- *Problems that I often experience when using computer is to find **approperite side** for information.* [13]
- *Problems that I normally experience are that I don't always get the **actual information** that **I need** when I do research.* [F3]

The research participants were clearly aware of the functionality and purpose of search engines online. Google was specifically mentioned by these participants. In addition, it is also noteworthy that Google Scholar, of particular relevance to an academic context, was pointed out as being useful. One of the participants mentioned that YouTube is used for clarification purposes but that Wikipedia should be avoided. However, it is disconcerting that some of the participants indicated that they were not sure where to find information. Hence, additional support to students may be required.

A further relevant tool in a university writing context is word processors. The data in the subsequent section reflect students' sentiments on the matter.

The Use of Word Processors

Only Word Processing Software Is Used

- ***Microsoft Word*** *is usually my first and more often than not my only stop when I need an electronic tool for my writing.* [173]

Word Processors Make Writing Easier

- *When using the electronic devices to write an essay it becomes much easier for me as it detects my* ***spelling errors*** *and how I construct my paragraphs. With an application called Word 2016 it does all the work such as word counts and the type of font I use.* [29]
- *The advantage about writing on a computer is that you have* ***various programs*** *that help you get a better sense of writing and the use of good english language by using programs such as spell check; electronical dictionery and grammer to find better words.* [32]
- *Writing on a piece of paper, you can make unnecessary spelling mistakes. On the computer, you will* ***immediately see*** *your* ***mistake*** *and will be automatically fix.* [77]

Typical Problems in Word Processors

- *Most of the problems I experience is when I have to draw the table and circles, sometimes I don't know here to get the add-ons.* [145]
- *I often find problems in underlining my key words and printing out the work that I have written.* [F3]
- *The only issue I have is spacing. I forgot how to do it,* e.g. *the document should have double spacing.* [172]

The participants seemed to be positive about word processors, and they were of the opinion that word processors make writing easier. Literature on the use of word processors provides a variety of views (Kellogg, 1999). However, some of the participants indicated that they

had experienced specific problems with the use of word processors, namely drawing shapes, underlining, printing and even spacing. This indicates that individualized support with regard to the use of word processors may be necessary. In this regard, peer collaboration or tutors may prove to be helpful.

The participants also provided views on the use of spelling checkers and a thesaurus as part of the services rendered by word processors.

Using Spelling Checkers and a Thesaurus

No Knowledge of Spelling Checkers

- ***I just hear people talking*** *about spelling checkers, thesauri and electronic language. I never came across them and that is the realities and we should face it.* [2]

Spelling Checker Used

- *The kind of problems that I experinced as a first-time student, at first I was not computer literate, but as time went by I enjoyed it I have used* ***spelling checks*** *because my spellings are so terreble.* [35]
- *This machine also lower the chance of having gramatically incorrect sentences and bad spelling (something I struggle with).* [40]

Online Spelling Checkers Used

- *The internet (****google****) it checks all the spelling it helps me when I did not write the word correctly* [12]

Language Variety and Spelling Checkers

- *Ive often experience problems when Microsoft Word spell-checks in* ***American English*** *because then it changes the words and I have to change them back.* [42]

Thesaurus

- *Oh Ja* ('Yes' in Afrikaans)*, also when I am really professional, I would use my* ***thesaurus*** *dictionary. (I think that is what its' called.)* [41]

There is clearly evidence of some participants using spelling checkers despite some minor issues. The final theme relates to the way in which problems with electronic writing resources are solved.

Solving Problems with Electronic Writing Resources

When undertaking any writing task, problem-solving is part of the process (Berkenkotter, 1982). The codes identified under this theme (as no additional subcategories were evident) include the role of peer support, a preference for figuring out how to do something individually and support provided by means of a learning management system.

Peer Support

- *How do we write essays and tasks on computer honestly I dont know but I am working on* ***killing that fear****. I have a friend who is very good with electronic diverses so now* ***I am taking the advantgae to kill the monster****. I am very slow with computers and other phones.* [44]

Prefer Figuring Out How to Do Something Themselves

- *Sometimes I do become a little frustrated when I dont know how to do something on a computer because I dont always want to ask someone to help.* ***At times I want to figure something out all by my self****.* [27]

A Learning Management System Helped Conquer a Fear of Computers

- *And I've always been afraid to use a computer but coming to varsity that all actually changed because we have this thing called efundi* {online con-

tent management system used by the specific university} *where we check if a lecturer placed any announcements* etc. ***Efundi*** *made me become used to using a computer and feel comfortable using it. Whenver I had to look up information I would use my phone and google up info.* [26]

- *Being a student at* {university name omitted}*, their* ***Efundi*** *site has made it convinient and essay access to educational resources, which is very much appriciated.* [35]

The use of peers or human resources in this context (cf. Knowles, 1975) is an important insight expressed by the participants. It is alarming that one of the participants described the writing of an essay as a 'monster.' Another participant preferred figuring out things without help, and there was clear evidence of autonomography. Finally, a learning management system was considered to be a valuable source to support writing by still another student. As such, the use of such a platform can, therefore, be extended to aid electronic resource selection and support self-directed writing practice.

Discussion

It is evident from this research population—in agreement with the conclusions of Hargittai (2002)—that access to technologies alone is not sufficient, as students need to be trained and supported in the use of technologies as well. As is inevitably the case with research into the psychology of language learning, there are differences between learners (Dörnyei, 2005). Students who are confident because of their experience can be excellent resources, acting as peer support to those who have less experience. Working together can be effectively used in class to promote constructive electronic resource selection.

Generally speaking, when reflecting on self-directed language learning (cf. Victori & Lockhart, 1995), as electronic sources are being selected, it is important that immediate but practical applications are evident. From the descriptive analysis in this study, despite fear and reservations, the students seemed to see the purpose of using these resources, and this purpose should be explicitly emphasized in the teaching context. In

regard to potential anxieties related to language learning, computer anxiety should also be considered (cf. Kellogg, 1999). According to Foroutan and Noordin (2012), "many language learners enter their university dealing with language learning anxiety" (p. 15), and this can hinder language performance and can potentially have an effect on writing practice. Celik and Yesilyurt (2013) add that "attitudes to technology positively and significantly affects perceived computer self-efficacy" (p. 155). Consequently, planning by lecturers is necessary in order to change current attitudes toward technology. In addition, a more individualized approach should be followed in order to address specific problems and fears.

It was also found that individual feedback preferences should be considered in writing and computer-mediated instruction (Matsumura & Hann, 2004). Addressing fears of computer anxiety is critical as "it bears great importance for technology attitudes of both teachers and students to be positive," so they are able to "overcome computer anxiety" (Celik & Yesilyurt, 2013, p. 156).

An incidental discovery uncovered in this study revealed that the participants had a limited view of electronic writing resources, especially of word processors; built-in spelling checkers of word processors; internet sources (Google, Wikipedia, Google Scholar)—sometimes incorrectly referred to as browser software; and, to a limited extent, also a learning management system. However, none of the research participants referred to writing-specific resources or corpora, or even what Kellogg (1999) calls "computer-based writing aids" (p. 160) that support the writing process. All of these aforementioned trouble spots present sensible points of departure for further classroom interventions. In this regard, the differentiation of assessments and tasks should be considered in computer-based writing assignments under these circumstances. In situations where the digital divide is wide, lack of knowledge and its realization could also contribute to additional anxiety.

It is evident from the data analysis and the demographic profile of the sample that language proficiency should also be explored in terms of computer anxiety—this reasoning ties in with the work done by Conti-Ramsden et al. (2010) on language impairment. Conti-Ramsden et al. (2010) found in their study that "those young people with poorer language skills experience greater computer anxiety than those with better language skills" (p. 143). However, this issue did not feature prominently

in the responses from the students but does warrant further empirical investigations.

Limitations

There are some limitations to this study, especially the limited number of research participants selected from one institution. Durndell and Haag (2002) determined that there was a distinct difference in self-efficacy based on gender in their East European sample. However, due to the small sample size, the instruments used and the dynamic nature of gender identity, this variable was not explored in this study. The findings of this research may not be generalizable to particular contexts due to the sampling techniques and the South African setting, but they do present some impressions and considerations that can be explored empirically with other populations. With this said, it is highly probable that findings such as these are not restricted to the South African context, and further research in other settings where the digital divide is great would be applauded and is certainly warranted.

Conclusions

In conclusion, this chapter shows how the selection of writing resources can be regarded as essential to a self-directed learning practice and ultimately supports autonomography. A clear digital divide is evident from the different responses obtained. Eastin and LaRose (2000) suggest that the digital divide gap in internet self-efficacy can be narrowed by means of a reflection on performances, vicarious experience obtained by the observation of others, verbal feedback and by conceptualizing a digital divide, not in terms of stereotypes but in terms of the experience of all new internet users. This suggestion ties in with the way in which beliefs about self-efficacy are developed, according to Barbeite and Weiss (2004): "previous experiences, observation of other's experiences, verbal persuasion, and affective arousal" (p. 3).

Computer anxiety and even fear of using computers were expressed by the participants. Earlier exposure to the use of computers for writing together with peer and lecturer support seems to alleviate anxieties. With regard to peer support, collaborative writing opportunities by means of wikis (cf. Li & Zhu, 2013) can also be considered. The use of spelling checkers seems to be an important feature in reducing stress, according to the participants. However, more computer literacy support is needed, even at school level. In addition, opportunities for collaborative writing by means of technology need to be structured. In this regard, Gina Paschalidou's chapter (Chap. 14) in this volume on the usage of blogs could provide many possible avenues. Differentiation needs to be taken into account for computer-based writing assignments within a South African context. In reaching effective electronic resource selection toward self-directed writing practice, students need to be able to set their own goals for writing, and they need to be informed about the availability of more electronic writing resources. Similarly, Hsin-chou Huang's chapter (Chap. 8) in this volume on the self-directedness of a flipped classroom is a prescient idea.

This chapter highlights how reflections on electronic resource selection toward a self-directed writing practice portray not only successes but also fears that emanate from the embedding of technology in education and that lecturers in South African university classrooms should consider a nuanced approach to writing throughout the teaching process to cope with the digital divide. Students' fears are rooted in a confluence of an actual lack of technological know-how and perceived and predicted problems they may have—all under the umbrella of managing these problems in their second language.

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17

Artificial Intelligence Technology for EAP Speaking Skills: Student Perceptions of Opportunities and Challenges

Bin Zou, Sara Liviero, Mengyuan Hao and Chaoyang Wei

Introduction

This study aims to contribute to international research on integrating technology to English for academic purposes (EAP) curriculum design by documenting Years 1 and 2 (Y1 and Y2) EAP students' perceptions of how artificial intelligence (AI) mobile applications (apps) currently available support their preparation for engaging in EAP speaking tasks and assessment at an English-speaking university in China, which is increasingly providing for international students (Park & Slater, 2014). Specifically, student attitude is explored in the AI context because if students become

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interested in and would like to spend more time working on language learning activities, they tend to have higher motivation towards the learning process in which they are engaged (Gardner & Lambert, 1972). Thus, it is vital to examine student attitude and interest in the computer-assisted language learning (CALL) context especially related to AI. Many studies have investigated student attitude in the CALL environment and found learners' positive attitudes towards using technology in language learning, for example, Kessler, Bikowski and Boggs (2012); Zhang, Song and Huang (2014); Zou, Wang and Xing (2016); Xu and Peng (2017); and Zou, Li and Li (2018). However, there has been scant research investigating students' attitudes about applications designed for mobile devices that are available to them (see Glossary).

China intends to invest significantly in the development of AI tools for educational purposes, aiming to take a leading role in this field (Knight, 2017). Private companies as well as the most prominent Chinese universities have created AI laboratories for the development of educational programmes that aim to provide for the needs of national and international university students. Kim, Soyata and Behnagh (2018, p. 5308) predict that by 2024, 'smart classrooms' will be characterized by a digital-system environment providing teachers with real-time presentation feedback on the effectiveness of their communicative skills. Meanwhile, research studies have noted how the teaching of EAP speaking skills still largely relies on teacher input, marking and feedback, and it is mainly limited to the teaching of suprasegmental EAP speaking skills. This often involves instructions to deliver presentations and spoken texts as well as requiring self-study tasks (Gilakjani, 2011; Gilakjani & Sabouri, 2016) on their computers and/or mobile devices (Reinders & Darasawang, 2012). Although these devices are favoured by students because of their affordances of time and space (Al-Fahad, 2009; Demouy & Kukulska-Hulme, 2010), they provide neither detailed, reliable feedback on speaking performance related to EAP speaking exam descriptors (Wang & Young, 2014) nor real-time, authentic interaction typical of face-to-face communication (Bordonaro, 2003).

In the Chinese university where this study was based, EAP provision consists of a course covered in the first two years—four semesters comprehensively—of undergraduate studies. Mainly, the undergraduate student population consists of speakers of Chinese as a first language

(CL1); however, the university aspires to consolidate its international status and is endeavouring to attract an increasing number of students from various linguistic backgrounds, benchmarking their English proficiency on levels of the International English Language Testing System (IELTS, 2018). EAP courses are content-based and do not focus on isolated linguistic skills; EAP summative assessment components, such as discrete speaking and writing skills are focused on instead, which are complemented by an integrated exam assessing listening, reading and writing skills. The typical tasks of Years 1 and 2 EAP formative and summative assessments of speaking skills are as follows:

- Academic presentation of a generic topic covered during the course
- Academic presentation from the students' subject area
- Small-group discussion on a generic course topic
- Answering direct subject-specific and generic course topic questions

Performance on the above tasks is judged on specific EAP speaking descriptors, inspired by those outlined by the Common European Framework of References for Languages (CEFR) (Council of Europe, 2018; de Jong & Benigno, 2018) for language learning, teaching and assessment, and the BALEAP (2018) framework for EAP syllabus design and assessment. These include:

- Clarity of pronunciation, effective stress and intonation, maintained fluency (rhythm and pace)
- Subject-specific vocabulary and grammatical accuracy
- Development of relevant, logically organized ideas including details and examples
- A good range of discourse markers and functional language
- Demonstration of the ability to interact with other speakers

Increasingly, there has been an acknowledgement that EAP curricula have come under the influence of the internationalization agenda essentially supporting the notion of English as a lingua franca (ELF) (Jenkins, 2014, 2017); however, this idea is still characterized by non-native-like English pronunciation (Kang, Thomson, & Moran, 2018; Kim, 2006) making it widely unrecognized and unappreciated by most English

Language Learning (ELL) computer application developers, (Chiu, Liou, & Yeh, 2007; McCrocklin, 2016), thus increasing EAP student dependence on face-to-face interaction when practising English-speaking skills (Bordonaro, 2003; McCrocklin, 2016).

This project wishes to document research and practical gaps resulting from AI-assisted EAP speaking skills, an underdeveloped and underresearched line of inquiry when considering both linguistic and technological perspectives.

Literature Review

Current Approaches to EAP Speaking Skills

Students acquire speaking skills to address specific tasks if they are systematically taught to rehearse and put into practice tasks such as EAP presentations (Bruce, 2011). However, without feedback, students struggle to identify either strengths or weaknesses in their speaking skills, often due to their lack of subject knowledge and/or the pedagogical content knowledge required to conduct an expert analysis (Celce-Murcia, Brinton, Goodwin, & Griner, 2010; Dlaska & Krekeler, 2008; McCrocklin, 2016). Gilakjani (2011) identified the need for software that assists generic English language learning to adopt a scaffolded approach with the aim of helping students develop speaking skills autonomously but within parameters that offer activities and feedback related to EAP linguistic and performance goals. Essential segmental and suprasegmental features of speech should be planned, drafted and rehearsed to improve their EAP presentations (Bruce, 2011), pronunciation and consequently the quality of intelligibility, that is, the quality of pronunciation that ensures intelligibility for academic presentations (Setter & Jenkins, 2005; Wang & Young, 2014). However, it is crucially important to progressively integrate non-native EAP models of pronunciation into EAP teaching and assessment material, in order not to alienate students' perceptions of self and of the prestige and knowledge typical of international university research and teaching staff (Murphy, 2014).

Recently, researchers have been contemplating the possibilities to train technology to recognize non-native accents (NNAs), thus elevating the functionality of computer applications to accurately represent international academic students and staff from non-native English speaking backgrounds (Beaven & Neuhoff, 2012; Mauranen, 2012).

The available AI-ELL applications (from this point forwards simply 'apps') mainly templates human-computer interaction of 'native English' phonetic representations (Hincks, 2005), and as such, a reasonable question to ask is whether this affects the degree of accuracy AI-ELL app feedback achieves to score EAP student performances, which may be accurately structured in spoken EAP texts but which are not closely reflected in the range of native English-speaking pronunciation that is predominantly featured in high-stakes test materials (TOEFL-iBT, IELTS, TOEIC). In essence, this promotes deficit models of non-native English accents (Kang et al., 2018, p. 3; Murphy, 2014).

In light of this, areas that AI-EAP should be concerned with when developing applications that are useful for assisting EAP speaking skills are (a) training AI-EAP to recognize accurate, intelligible EAP pronunciation; (b) afford assessment-related task practice and feedback; (c) train teachers to incorporate AI-EAP tools in syllabus design according to the scaffolded approaches identified; and (d) train students to use AI-EAP autonomously.

AI and VRT: Potential and Limitations

The progress of voice recognition technology (VRT) in CALL has given great impulse to the creation of apps assisting the learning of speaking skills, in addition to the prevalent attention for listening, reading and writing (Kim, 2006). There are various mobile applications and computer programmes featuring VRT, such as *Nuance Dragon Dictation* (2018), *Praat* (Boersma & Weenink, 2018) and *Duolinguo* (2018), available for free, easily downloadable on most platforms and that can be used both online and offline (Meisam & Tavakoli, 2015).

The positive effects of VRT introduction in the teaching of English pronunciation were reported by Derwing, Munro and Carbonaro (2012), who also included a review of VRT limitations in recognizing NNA

(Non-Native Accents) (also see Liakin, Cardoso & Liakina, 2015). In addition, Deng and Training (2015) reviewed apps focused on both intentional and accidental vocabulary learning strategies. Poignant to the present study, real-time feedback of student speaking assessment performance has long been a research and practical concern (Bernstein, Cohen, Murveit, Rtischev, & Weintraub, 1990), despite reports that such feedback may prove inhibiting to Chinese learners of English (Jia, 2009). Existing applications currently used by students are reportedly offering limited performance feedback and evaluation due to limited prosodic system features that result in generic guidelines on student pronunciation that would not fit the purposes of EAP speaking skills in higher education.

To investigate how apps could be integrated into EAP courses, Zou, Li and Li (2018) selected 84 students from four classes of majors in economics and marketing subjects at a university in China, taking EAP courses with English CEFR levels of proficiency between B1 and B2 (Council of Europe, 2018). The majority of participants held positive attitudes towards mobile learning in class because of the convenience of access to course-relevant materials and stimulating student-teacher interaction. Kan and Tang (2018) also found students' positive attitudes towards using apps for speaking practice. Negative perceptions of CALL encompassed discomfort caused by reading from electronic screens, and by limited Wi-Fi access, especially when the apps required good network connections (Al-Fahad, 2009; Liakin et al., 2015). Negative perceptions of VRT are focused on practical and technical aspects, such as the associated high costs of CALL digital technology, of its maintenance and apps' limited accessibility when needing complicated instructions (Chen, 2011; Meisam & Tavakoli, 2015).

A priority for research (Chavan & Gawande, 2015) has been to focus on enhancing the quality of VRT when speakers engage in a conversation or give presentations. As Douma, Anderson, Akahane and Mizikovsky (1996) identified, current voice recognition is capable of attaining accuracy at 90% when recognizing native accents; however, it performs less well with non-native accents (Neri, Cucchiarini, & Strik, 2003). An increasing number of students in Chinese universities have been reported to be using mobile apps to improve English language skills during lessons and independently (Zou, Li, & Li, 2018).

As learning a foreign language for academic purposes requires a higher degree of proficiency, CALL software should be designed with the specific purpose of enabling students' independent access to feedback on their performance (Köse & Arslan, 2014). These perspectives highlight the important role that AI might play in assisting EAP teaching and learning.

Mainstream VRT-Assisted AI-ELLs Apps

There are some VRT products in the market; for example, Siri (Apple Inc., 2018) was created in 2011 as a virtual user assistance for users of Apple devices such as iPad and iPhone. Moreover, Google Cloud Speech-to-Text (Google Cloud, 2018) transforms audio to text by means of an application programme interface (API) that can recognize a number of languages. Functions include voice command and control, voice to text transcription and live streaming.

In China, three main AI-ELL apps have been developed for the Chinese markets; they are *Chivox, Ltd*. (2018a), *iFlytek* and *Liulishuo*. For each product, the following descriptions and evaluations of their English language learning-assisting features will be discussed.

First, Chivox technology (Chivox, Ltd., 2018b) claims to assist the English language learning abilities regarding (a) pronunciation, (b) task-based conversation and (c) presentation. Chivox provides exercises reinforcing and assessing clear pronunciation, fluency, stress and intonation of morphemes; words and sentences; and paragraph as well as text formation. It can be used by students as an independent learning tool. A feature of Chivox is 'Kami English,' a resource for oral English practice that claims to use intelligent speech analysis technology to cater to K12 curricula (Chivox, Ltd., 2018a; K12 Inc., 2018).

iFlytek (2018) developed AI products focused on English language learning for generic as well as other purposes, such as medical English. In the research field of intelligent VRT, iFlytek claims to be committed to developing technology for artificial understanding and evaluation of natural language and handwriting. iFlytek uses voice recognition to identify users' identity through the recognition of speech signals. Among its various app products, the RealSkill app was developed for the evaluation of

TOEFL and IELTS speaking and writing. For a given topic of TOEFL, it records no more than 45 seconds of voice input and offers a numeric score according to topic development, delivery and language use.

Liulishuo (2017) is another tool applying AI technology for Chinese students to practise English speaking. Specifically, there is a version of Liulishuo designed completely for IELTS tests, and this IELTS version will be discussed in detail in this section. First, it provides free model tests with virtual scenes and examiners to recreate the real speaking exam. The whole test procedure is similar to the real test, lasting around 15 minutes, and all voice responses are recorded. Subsequently, it takes 30 minutes to evaluate the performance and release detailed feedback. The feedback mainly covers fluency, vocabulary, grammar and pronunciation making it quite similar to RealSkill; however, Liulishuo for IELTS might offer a more detailed assessment by comparison. First, the speaker's willingness to communicate and an answer's relevance is commented on in the fluency evaluation. Second, overused words in the responses are listed and substitute words are suggested in the meantime, which tends to help users broaden their lexical range. Subsequently, quantifier mistakes are detected in the grammar evaluation. Overall, the feedback of Liulishuo for IELTS is considered helpful. Most importantly, Liulishuo can record up to two minutes of voice input, while the maximum for RealSkill is 45 seconds. Although its advantages are many, it has some of the same problems as RealSkill. First, it is also difficult for the system to distinguish every utterance perfectly. In other words, it cannot recognize every word with 100% accuracy. Second, although it intends to recreate the authentic exam environment, the app cannot replace a real examiner's vivid interaction with students.

AI applications such as those mentioned here are only as good as their perceived usefulness by students. This study, then, looks at students' attitudes towards using such applications outside of the language classroom.

Methodology

A mixed methods approach was adopted, making use of a student questionnaire and semi-structured interviews, whereby qualitative results assisted in explaining and interpreting the findings of the questionnaire

(Dörnyei, 2007). The adopted sequential explanatory mixed methods design consisted of a survey of student perceptions of current use and efficacy of AI-ELL apps for speaking skills, followed by qualitative interview data collection and analysis (Creswell, 2013) to explain and interpret the questionnaire's findings, thus gathering rich data on students' perceptions of the use and efficacy of AI-ELL apps (Dörnyei, 2007). To gain an understanding of students' perceptions while using the applications, the study was guided by the following research questions:

1. What are the opportunities that AI offers in the development of tools for speaking skills in English language learning as based upon students' attitudes ?
2. What are the challenges in developing AI tools for speaking skills in English language learning as based upon students' attitudes ?

Quantitative Data Collection

This small-scale research project aimed to map trends (Oppenheim, 1992, pp. 12–13) of knowledge levels and of attitudes towards AI-ELL apps commonly used by Y1 and Y2 students of EAP courses from several Chinese international universities. Data were collected through the distribution of a questionnaire specifically designed to elicit appropriate responses with respect to the study's aims, further described below.

A non-probability, convenience sample was drawn from Year 1 (Y1) and Year 2 (Y2) EAP students. Completed questionnaires were returned by 113 respondents; however, only 16 were from participants of other Chinese universities. Respondents comprised 34 Y1 and 79 Y2 students. A process of random sampling would not have been possible within the limited time scale of this study (Sapsford, 1999).

The questionnaire used for the quantitative aspect of the study was specifically designed for the purposes of this study, though informed by the research reviewed in terms of relevant instruments previously used; their theoretical and logical guidelines were employed to evince student attitudes and knowledge of AI-ELL apps (Cargill & O'Connor, 2011;

Glasman-Deal, 2010). The questionnaire comprised 23 items and consisted of the following sections:

- Section A: Background information: year of attendance, EAP course level and nationality.
- Section B: Attitudes towards AI-ELL apps/EAP apps.
- Section C: Currently used AI-ELL apps/EAP apps.
- Section D: Students' perceived needs when revising for Y1 and Y2 EAP speaking exams.
- Section E: Students' perceived limitations of AI-ELL apps/EAP apps compared to EAP exam requirements.
- Section F: Consent to be considered for individual interview.

Participant perceptions were scored on a five-point Likert scale (Pallant, 2013) ranging from 'strongly agree' to 'strongly disagree' and 'true or false' type questions. Reliability and validity of the knowledge and attitude test instruments were investigated by utilizing the same data set used to explore the key hypotheses.

Validity and Reliability Report

The reliability and validity of the knowledge and attitude test instruments were investigated by utilizing the same data set used to explore the key hypotheses. A Cronbach $\alpha = 0.750$, $0.7 \leq$ Cronbach $\alpha < 0.9$ indicated adequate reliability (Pallant, 2013). However, a Kaiser-Meyer-Olkin (KMO) value equal to 0.489 (less than 0.5), indicated a potential instrument's poor factor analysis. Future research should ensure that more consistent scales are used for each questionnaire section; that this be piloted again in order to improve its consistency.

Procedure

The questionnaire was first pilot tested with a small number of people of a similar background to the actual research sample, in order for the

Table 17.1 Assessing the normality of data

One-Sample Kolmogorov–Smirnov Test									
		1. Please indicate your grade	[AI-ELL app activities to improve speaking skills] 15. About following features of AI tools for EAP Speaking practice, indicate how important you think they are	10. If you use any, how often do you use AI Tools to practise EAP speaking skills?	11. practising English with AI Tools for EAP Speaking Skills will improve my English skills overall	3. Please indicate your EAP Stream	2. Please indicate your university	22. Do you think AI Tools for EAP speaking skills can replace face-to-face teaching?	[Price (if not affordable or acceptable)] 21. What limitations do you think speaking technology might present? Please rank each possibility
N		113	113	109	113	113	113	112	113
Normal Parameters[a,b]	Mean	1.70	2.71	3.00	3.01	1.51	1.14	1.81	2.78
	Std. deviation	0.461	1.075	0.782	0.940	0.721	0.350	0.392	1.140
Most extreme differences	Absolute	0.442	0.181	0.289	0.248	0.381	0.515	0.496	0.188
	Positive	0.257	0.181	0.243	0.247	0.381	0.515	0.316	0.166
	Negative	−0.442	−0.173	−0.289	−0.248	−0.238	−0.343	−0.496	−0.188
Test statistic		0.442	0.181	0.289	0.248	0.381	0.515	0.496	0.188

(*continued*)

Table 17.1 (continued)

One-Sample Kolmogorov–Smirnov Test								
	1. Please indicate your grade	[AI-ELL app activities to improve speaking skills] 15. About following features of AI tools for EAP Speaking practice, indicate how important you think they are	10. If you use any, how often do you use AI Tools to practise EAP speaking skills?	11. practising English with AI Tools for EAP Speaking Skills will improve my English skills overall	3. Please indicate your EAP Stream	2. Please indicate your university	22. Do you think AI Tools for EAP speaking skills can replace face-to-face teaching?	[Price (if not affordable or acceptable)] 21. What limitations do you think speaking technology might present? Please rank each possibility
Asymp. Sig. (2-tailed)	0.000[c]	0.000[c]	0.000[c]	0.000[c]	0.000[c]	0.000[c]	0.000[c]	0.000[c]

[a]Test distribution is normal
[b]Calculated from data
[c]Lilliefors significance correction

appropriate changes to be made (Oppenheim, 1992, pp. 128–30). The final questionnaire was submitted online and returned completed by 113 Y1 and Y2 students. Subsequently, six participant students were selected for semi-structured interviews on their perceived needs in using AI-ELL apps for the development of their EAP speaking skills.

The items on the questionnaire focused on exploring student perceptions of their experience when using AI for speaking practice. Survey data analysis informed the formulation of the semi-structured interview, aimed to gather in-depth perspectives on concepts that emerged from the questionnaire analysis.

The hypotheses were tested by using parametric and non-parametric statistical tests carefully selected for each of them in relation to individual tests' requirements using the Statistical Package for the Social Sciences (IBM SPSS, 2018).

Background and Characteristics of the Sample

The majority of respondents, 69.9%, were Y2; the remaining 30.1% were Y1. While 85.8% of respondents were students studying at the project university, only 14.2% were from other Chinese universities, and only one was attending a university outside China. Most respondents were EAP main stream course students and only 24.8% reported to attend high-level courses; and 13.3% of respondents, corresponding to the percentage of students from external universities, indicated not to know what EAP meant. The survey revealed that 3.5% of respondents were Indonesian and 96.5% of respondents were Chinese.

Assessing the Normality of Data

The normality of data was assessed by the Kolmogorov-Smirnov statistical test (Pallant, 2013). Table 17.1 illustrates that the result obtained was $p = 0.000$ for all variables. A result of $p < 0.05$ indicated significance, probably due to the need to further adjust measuring scales to each questionnaire item. Results therefore should be considered cautiously;

nevertheless, while highlighting the time and resource constraints of its procedures, the study is also aware of the attention it brought to this under-researched field and the potential it offers in the refining of its tools for further research.

Qualitative Data Collection: Sample Selection Criteria

Six questionnaire participant students were selected for the semi-structured interview on their perceptions of the opportunities and limitations in using AI tools for the development of their EAP speaking skills. Although survey data analysis informed the formulation of the semi-structured interview along themes outlined in 3.1 (paragraph 2), the semi-structured nature of the interview tool allowed new themes to emerge from individual participants and thus gather in-depth perspectives on concepts that emerged from the questionnaire analysis (Charmaz, 2003).

Data Analysis

Semi-structured interviews aimed to probe the questionnaire results and were analysed inductively (Thomas, 2006). In particular, interviews further investigated the following:

1. Students' knowledge of current AI-ELL app tools
2. Frequency of AI-ELL app use
3. Students' perceived difficulties in EAP speaking and learning
4. Students' perceived advantages of AI-ELL apps /AI-EAP apps
5. Students' perceived limitations of AI-ELL apps /AI-EAP apps

Interviews were transcribed and the analysis proceeded by applying initial coding to all participant answers in the same order as the interview questions. A second phase of coding identified relevant emerging topics, in turn, compared with data emerging from the questionnaire, and a third phase of selective coding yielded the themes illustrated in the following sections. Student interviewees were coded as S1 (student 1, 2, etc.) and gender was indicated as M/F (male/female).

Findings

Quantitative Data Analysis: H1: Year of Attendance and Attitudes About AI-ELL Apps for Speaking Skills

In testing attitudes, participants, using a five-point Likert scale ranging from 'very important' to 'not important,' gave scores as a way to indicate what attitudes they held concerning AI-ELL app activities and exercises aimed to improve speaking skills. Figure 17.1 shows that the mean for the attitude test was M = 2.71(SD = 1.075 N = 113). While 43.4% of participants believed AI-ELL app activities contributed to the development of speaking skills, 21.2% of participants thought that such app activities did not.

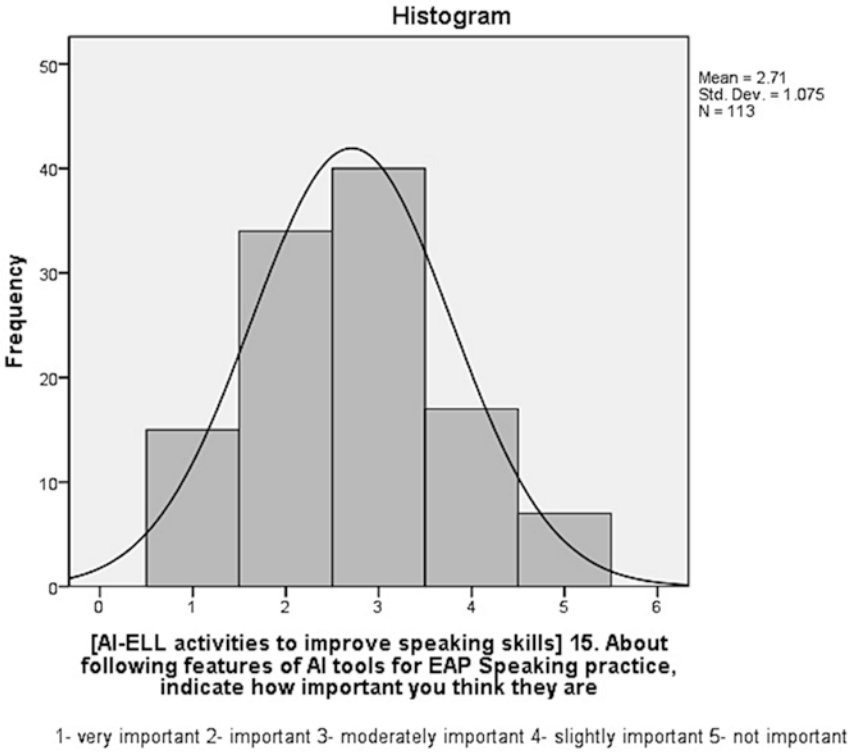


Fig. 17.1 Attitudes and knowledge: AI-ELL apps for speaking skills

Table 17.2 H1 and students' attitudes towards AI-ELL's potential to improve their speaking skills

Independent samples test										
		Levene's test for equality of variances		*t*-Test for equality of means						
									95% confidence interval of the difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean difference	Std. error difference	Lower	Upper
AI-ELL activities to improve speaking skills	Equal variances assumed	0.007	0.932	−2.764	111	0.007	−0.592	0.214	−1.016	−0.168
Survey Question 15. About following features of AI tools for EAP speaking practice, indicate how important you think they are	Equal variances not assumed			−2.879	68.887	0.005	−0.592	0.206	−1.002	−0.182

Table 17.2 shows $F = 0.007 < 0.05$, whereby the assumption of equal variance and the assumption of normality were violated. However, these data still have marginal significance in virtue of Levene's test (Pallant, 2013) being at $0.932 > 0.05$, considering the first line where $p = 0.007$ (2-tailed). In this tailed independent sample *t*-test, the Sig (1-tailed) should be calculated by Sig (2-tailed) divided by 2. The $p = 0.0035$ (1-tailed) results as <0.05, which reveals how Y1 seemed to hold stronger attitudes towards AI-ELL app efficiency to improve their speaking skills than did Y2.

H2: Frequency of AI-ELL Apps' Use and Attitudes About AI-ELL Apps' Efficiency

Participants rated their attitudes from 1 to 6 on a Likert scale to express agreement on whether AI-ELL apps' use improved their English-speaking skills. The mean for the attitude test was $M = 3.01$(SD = 0.94 $N = 113$), suggesting that while 24.8% of the sample believed this statement, 6.2% of the sample did not. This suggests that students using AI-ELLs apps more frequently hold stronger beliefs in their efficiency to improve student speaking skills.

H3: Non-parametric Statistics Comparing University Attendance and Attitudes About AI Tools Related to Replacing Face-to-Face Teaching

Participants were asked to rate on a scale of 1–3 whether they thought that AI-ELL apps could replace face-to-face teaching. Number 1 represented participant belief that AI-ELL apps could replace face-to-face teaching, 2 that they could not, and 3 gave participants the opportunity to enter another opinion.

Figure 17.2 illustrates the mean for the attitude test that was $M = 1.81$(SD = 0.392 $N = 112$). While 18.6% of the sample thought that AI tools could replace face-to-face teaching, 80.5% thought they could not. The results from the Chi Square (Pallant, 2013) interestingly seemed also to suggest that a relationship between a lack of university attendance and positive attitudes that AI-ELL apps could replace face-to-face teaching existed. These results nevertheless did not represent the student

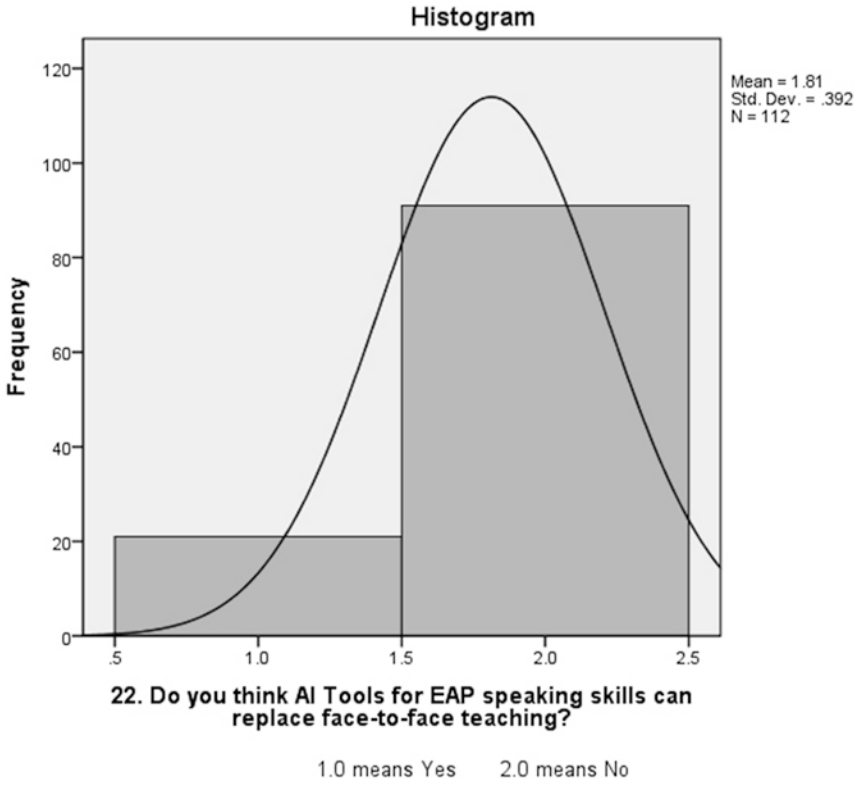


Fig. 17.2 H3: Student attitudes towards the possibility of AI-ELL apps to replace face-to-face teaching

population as a whole, which held a strong opinion that English language teachers were indispensible.

H4: Non-parametric Statistics Comparing Year of Attendance and Attitudes About AI-ELL App Costs Limiting Student Access

Participants were asked to rate from 1 to 5 the impact that price had on limiting student access to AI-ELL apps (1-definitely; 2-very probably; 3-probably; 4-possibly; 5-probably not). The mean for the attitude test was M = 2.78(SD = 1.14 N = 113). While 38.9% of the sample thought

Table 17.3 H4: Mann-Whitney between year of attendance and attitudes towards AI-ELLs price

Hypothesis test summary			
Null hypothesis	Test	Sig.	Decision
1 The distribution based on Price (if not affordable or acceptable) Survey Question 21: Do you think price is a limiting factor for AI-ELL speaking skill apps? (Likert scale applied) Please rank each possibility. Please indicate your year in university	Independent-samples Mann–Whitney *U* test	0.836	Q 21 retains the null hypothesis

Asymptotic significances are displayed. The significance level is 0.05

that price was limiting students' ability to rely on AI-ELL apps to improve their speaking skills, 7.01% of the sample thought that price was not discouraging. Moreover, the output of Mann-Whitney U test in Table 17.3 reports 0.836 > 0.05, confirming no significant difference between a student's year at the university and attitude towards price limitation to access AI-ELL apps, as observed in Chen (2011).

Qualitative Data Analysis

Participant interview excerpts are faithfully reported here without any alterations. Consequently, some inaccuracies may occur in student interview responses. Although interviews were mainly in English, Chinese translation was amply available to participants thanks to the assistance offered by project-linked students. Moreover, responses are faithfully reproduced here as copied from the coded interview transcription; the highlighted text appears where nodes were identified and coding applied (Thomas, 2006).

Students' Knowledge of Current AI-ELL Apps' Availability

One of the popular AI-ELL apps for English-speaking practice among participants was Liulishuo. Although other AI-ELLs apps for English-speaking practice were mentioned, such as Shanbay (no citation avail-

able; transcribed literally), Duolingo (2018) and Baicizhan (2018), these apps do not offer AI-supported interaction. Overall, participants reported limited knowledge of AI-ELL apps currently in the market and were unaware of any currently available apps for English for academic purposes (AI-EAP). As three students said below:

- **S1(M)**: I don't know much about the AI tools for English speaking practice.
- **S2(M)**: I just know Liulishuo, I can't think of any other product for the moment.
- **S3(F)**: Maybe know some. I cannot remember the names.

Reasons for Using AI-ELL Apps

Although one student (S5 (M)) reported that the English-speaking environment at the project university provided sufficient exposure to English, most reported not using AI-ELL apps, preferring face-to-face practice with EAP tutors. However, participants reported this was very limited in class, leading to very limited progress. Hence, most participants would prefer to practice EAP speaking skills individually by means of reading and memorizing from texts (S1 (M)). Limited progress was also reportedly achieved by practising with other students, who would not be able to identify mistakes or inappropriate use of vocabulary, or to translate from Chinese into English (Sun, Branum-Martin, Peng, & Tao, 2018).

- **S5(M)**: The main reason for not using it is because there are not many products, and finding them is troublesome. The second point is that in campus, it's more efficient to find someone to practice English face-to-face without wasting time on looking for AI products.
- **S1(M)**: I was mainly improving myself by reading, memorising some written articles or short essays … I feel objectively that the help given by the teacher is not as fast as doing something by myself.

Students' Perceived Difficulties in Making Progress with EAP Speaking Skills

Participants reported concerns about understanding the grading criteria used for EAP speaking exams. Although grading descriptors were provided, students described feeling unsure that examiners used them consistently and were consequently confused when preparing for EAP speaking exams (S2(M)). Moreover, participants felt they lacked model examples—from teachers or applications—of speech performance considered as high-scoring marks in the EAP speaking assessment.

- **S2(M)**: I think it's because the examiner, so I don't know his grading criteria, so I don't have a target when I practice this.

Students' Perceived Advantages of AI-ELL and AI-EAP Apps

The main reported advantage was AI-ELL apps' portability, followed by help with fluency and vocabulary learning—although not subject-specific—but that no single app afforded all EAP assessment-relevant skills. Participants who were familiar with AI-ELLs apps reported being satisfied with the feedback on vocabulary, grammar, speaking pace and intonation, but only in the absence of tutor feedback in class. As S2 (M) noted:

- **S2(M)**: The first thing is that if you talk to a real person, he may not always correct your pronunciation or accent, unless he's a teacher. But AI can give feedback on that. Though you may speak in a weird accent, AI can at least tell you what you pronounce wrongly. But if you talk to a real person in a face-to-face manner, you can actually improve your English skills only if the speaker's oral English level is higher than you.

An unanticipated finding was participants' concern with their inhibition to speak. Students felt too timid to speak to tutors or in public and reported that using AI-ELL apps lessened their self-consciousness, as reported below:

- **S3(F)**: But if you are really shy, you may think it's easier to talk with AI.
- **S4(M)**: Some people have psychological barriers, I think AI should be helpful.

Students' Perceived Limitations of AI-ELL and AI-EAP Apps

Many participants reported a problem with poor voice recognition, in line with evidence from Kim (2006), and Young and Mihailidis (2010). Consequently, AI-ELL apps could not provide reliable feedback on speech performance, often because despite accuracy, non-native accents were not recognized. For example, S5(M) reported:

- **S5(M)**: [I am] satisfied: the AI apps will give you more information and more detailed feedback to improve your spoken language. Dissatisfied: it may not be very intelligent, and sometimes the voice recognition is not very accurate: you said this word, but it may be recognized as another word.

Students felt that voice recognition accuracy needed particular attention as this was regarded as a decisive feature for AI-ELL/AI-EAP app efficiency. The availability of accurate, EAP-specific feedback was as desired by participants as it was perceived as not being properly addressed by AI-ELL apps. Moreover, pronunciation, accent, fluency, vocabulary, delivery and content were not observed to be comprehensively evaluated by a single app, compounded by the poor voice recognition impairing the

quality of feedback. Additionally, logical, coherent speech organization was observed as an important feature not provided by any currently available AI-ELL app.

Discussion

Starting with a general assessement of the participants, it is apparent that Y1 students rely on AI-ELL apps for speaking skills more than Y2 students do, a finding that can be explained by the newer students not wanting to feel so exposed as when speaking in public in English. Liulishuo turned out to be the most-used AI-ELL app in the Chinese market, as its features allow users to do exercises and receive feedback on vocabulary learning and fluency. Students found it difficult to conciliate their need to practise speaking skills, feeling self-conscious when speaking in a foreign language. Although preferred, access to face-to-face practice with EAP tutors was limited, as was the feedback available during classroom activities. Students also considered practising with peers as the English-speaking campus might afford more opportunities of interacting with speakers of English; however, participants reported concern that peer feedback might be deficient as a means to evaluate appropriate use of vocabulary, identify inaccurate structures or offer proper guidance to meet EAP speaking assessment requirements. Nevertheless, what the apps had to offer students was not much better. Participants reported the lack of model examples that could provide them with accurate feedback of how to successfully meet EAP exam requirements.

Students generally disagreed with the possibility that AI-ELL apps might replace face-to-face teaching, especially given their current limitations regarding their ability to recognize non-native English speakers' pronunciation properly, thus penalizing accurate performance on account of poor voice recognition. AI-ELLs apps' portability and their affordance to practice outside class were seen as potentially compensating for the limited access to tutor feedback and the limited experience peers might have in giving accurate, EAP-tuned feedback. Participants indicated AI-EAP apps would be worth the expense, provided that they could comprehend activities reinforcing grammatical accuracy, speech organization

for presentation tasks, communicative skills needed to participate in group discussions and academic vocabulary: features and skills necessary to match EAP speaking assessment tasks. Importantly, AI-EAP apps should be available offline and be able to recognize non-native English speakers' pronuniation.

Despite the limitations of time and resources, the questionnaire findings originated lines of qualitative enquiry that were further supported by the evidence found in the literature reviewed, which suggested that there is a need for more committed deployment of resources aimed at studying how AI-EAP apps can help students improve their speaking skills by matching their assessment needs, their largely non-native speaking status and financial constraints.

Conclusions

This study has explored students' attitudes towards using AI for language learning, specifically, EAP for speaking. The findings indicate that, overall, participants had positive comments on the AI technology for speaking development, although there are some limitations. The present study is to be considered a preliminary step towards further investigation into strategies for the development of AI-EAP for speaking skills. It is hoped that this research will boost interdisciplinary studies of AI technology for EAP, contributing to scholarship at local and international levels, as research into the recognition of non-native accents has gained momentum in English-speaking academia globally, featuring English accents such as Mexican, South African and Chinese (Kim et al., 2018; Liakin et al., 2015; Murphy, 2014). Furthermore, the collection of student perspectives on specific language learning skills has the potential to inform teacher training that wishes to integrate a focused approach to relevant technology for EAP teaching and learning.

It is recommended that further research maintains an interdisciplinary perspective to uncover further knowledge gaps, in order to explore and reinforce the relevance of its results in a field so far marginally explored in HE in local, Chinese and international contexts.

Limitations

The plan to run comparisons between Chinese and foreign students was impeded by sample limitations of other nationalities' pronunciation abilities. Moreover, an even distribution of the sample might have improved both the validity and reliability of the report, and consequently the impact of its findings. This will be paramount should the tool be refined in future studies. Equally, time constraints and limited resources meant that gender background data were not collected; however, this would have yielded further descriptive data on student AI-ELL apps. In the future, a clearer distinction between AI-ELL apps and AI-EAP apps in questionnaire items would yield more focused data on student preferences and perceptions. However, the study's results are relevant if considered within the limited available data on this field, backgrounding experiments that test AI-EAP apps to be released in Chinese higher education. With these considerations in mind, we believe that the present research represents a very positive step forward in understanding the benefits and limitations of AI applications aimed at language learners. It is hoped that these findings are considered a road map to AI app developers as well as a reminder that at the heart of any good language learning app is the heart of the language learners themselves.

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Glossary

Acronyms and abbreviations	Transcription and explanations
AI	Artificial Intelligence.
AI-EAP	Computer or mobile phone applications using artificial intelligence to support the learning of English for academic purposes.
AI-ELL	Computer or mobile phone applications using artificial intelligence to support the learning of English for generic purposes, as opposed to specific ones, such as academic, or aimed to prepare for high-stake exams like TOEFL iBT, and similar exams releasing certification.
CALL	Computer-assisted language learning.
EAP	English for academic purposes. University courses offered typically to non-native speaking students to ensure their familiarity with genre and text requirements of academic work designed and communicated through the medium of English.
ELF	English as a lingua franca; the dialect typically used for academic purposes by international universities.
IELTS	International English language testing system.
NNA	Non-native accents; emerging varieties of English for academic purposes such as Chinese, Mexican and Nigerian English.
NS	Native students/speakers of the target languages.
NNS	Non-native students/speakers of the target language.
TOEFL iBT	Test of English as a Foreign Language, Internet-Based Test.
TOEIC	Test of English for International Communication.
VRT	Voice recognition technology and software.

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Part VI

Motivation and Willingness to Communicate



18

A Need to Communicate: An Intercultural Story of Motivation Generated in Disrupted Text-Based Electronic Chat

Thi Ha Do and Mark R. Freiermuth

Introduction

The dizzying pace of technological change over the past two decades in computer-mediated communication (CMC) has reshaped the globe as a flat grid connecting people of almost all ethnic groups, who come from all walks of life through the internet broadband. Without physical presence, users can still interact with each other synchronously (during real-time networking communication) or asynchronously (in deferred time). This positions CMC as a powerful tool for language learning since it

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encompasses a wide range of potential activities for learner interaction such as virtual worlds, chat, social networking, blogs and internet forums (Golonka, Bowles, Frank, Richardson, & Freynik, 2012).

The Interaction Hypothesis as proposed by Long and Robinson (1998) stated that second language (L2) learners need to be involved in communicative tasks in which they negotiate meaning and give corrective feedback. A great number of studies have acknowledged the interactivity of text-based online chat, comparing chat with other forms of classroom discussion (C. Blake, 2009; Freiermuth & Jarrell, 2006; Lin, Huang, & Liou, 2013; Sauro & Smith, 2010) as well as considering interaction from the three angles of sociology, psychology and linguistics (Gong & Ooi, 2008). However, much of the psychological research that addresses motivational issues has lacked a quantitative aspect, comprising theoretical positions based solely on learners' comments. This chapter focuses on the use of text chat in L2 learning via triangulation, uncovering the basis of motivation among students from Japan and Vietnam as they chatted with each other in across-the-ocean communication using English as a Foreign Language (EFL).

Background

Synchronous Text-Based Computer-Mediated Communication (SCMC)

Besides immediate responses, similar types of interactional modifications found in face-to-face and synchronous text-based computer-mediated communication (SCMC) make the latter a facilitative tool in second and foreign language teaching and learning (Sotillo, 2000). A number of researchers, through their examination of the usefulness of text-based chat for proficiency development, concluded that online interlocutors produce a higher quantity and quality of language output when compared to traditional conversations (Kern, 1995; Payne & Whitney, 2002; Warschauer, 1996a). One possible advantage of text chat lies in the attributes of reviewability and revisability. Using SCMC gives learners additional processing time, thus allowing them to respond at a more reasonable pace, the net result

being more careful planning and more complex language (Sauro & Smith, 2010). In voice-based chat, it is difficult for L2 users to correct their own ungrammatical output, but text users have the advantage of being able to review the language used in their previous utterances, examine their errors and contemplate any corrective feedback that might have been provided by their partners. Concerning grammatical issues in SCMC, L. Lee (2004) indicated that native speakers (NSs) of Spanish helped foreign learners with idea formulation and the use of grammar.

Negotiation is one of the central aims for communicative activities in SCMC; thus, it is important to the present research as well. Studies looking at aspects of negotiation in SCMC have found that non-native speakers (NNSs) negotiated more with their peers from different first language (L1) backgrounds and at different L2 levels (R. Blake, 2000; Kawaguchi & Ma, 2012; Pellettieri, 2000). Furthermore, negotiation of meaning is enhanced when interactions are goal-oriented and task-based (Pellettieri, 2000). It has been demonstrated that two-way tasks, which require information exchange by both or all parties, can contribute to the effectiveness of students' conversations (Doughty & Pica, 1986; Pica, Holliday, Lewis, & Morgenthaler, 1989). Such information gap activities, often integrated in SCMC, position it as a useful device to enhance interaction and negotiation in the L2 classroom.

In addition, research on SCMC has emphasized that textual chat can provide more equality of participation in consideration of the advantages it provides to hesitant students, who have consistently demonstrated more engagement in online discussions when using chat (Beauvois, 1992; Kern, 1995; Warschauer, 1996a). Rather than exposing their appearances and voices, cyberspace users have built-in controls over their cyber self-images in the way of nicknames they have chosen and in the manner of the exchange of the typographical messages. The affordances of anonymity and lack of eye contact may alleviate some second language anxiety, especially for users from high-context cultures such as those in Asia (Wang, Fussell, & Setlock, 2009), fostering an improved willingness to communicate (Freiermuth & Huang, 2012, 2018; Freiermuth & Jarrell, 2006).

Moreover, due to a minimization of the teacher's role and presence in electronic chat, students have more autonomy over the discourse directions of their discussions, making the floor a vibrant and egalitarian

place of opportunities for the group members (Chun, 1994; Kern, 1995; Ortega, 1997). As an authentic means of communication, together with collaborative tasks assigned for purposeful communication, we believe SCMC facilitates a favorable backdrop for students' motivation to thrive.

L2 Students' Motivation in SCMC

Motivation is said to be responsible for "why people decide to do something, how long they are willing to sustain the activity, and how hard they are going to pursue it" (Dörnyei & Skehan, 2003, p. 614). From Deci and Ryan's (2008) perspective, motivation can be seen as being *intrinsic*, the motivation to learn something driven primarily by desire, or *extrinsic*, which is the motivation to learn something for some sort of definable reward. Hence, autonomous learning environments are naturally positioned to foster intrinsic motivation (Deci & Ryan, 2008; Harun, Yusof, Jamaludin, & Hassan, 2012). As the teacher's role becomes lessened during chat activities, students actively take charge of their learning. This falls in line with the tenets of the constructivist theory, which argues that when students learn in an active learning environment, deeper learning is attained (Nie & Lau, 2010).

In order to distinguish language learning motivation from that in other domains, Gardner and Lambert (1972) put forward the concepts of *integrativeness* (which ranges from an openness toward other cultures and communities to a desire to become a part of such communities) and *instrumentality* (in which the learner learns the target language for functional and practical reasons). Together with his associates, Gardner determined that the integrative orientation is positively correlated with L2 achievement, and that internally motivated learners tend to be more engaged in learning activities and achieve more success than externally (instrumentally) motivated ones (Gardner, 1988; Gardner & Lambert, 1972; Gardner & Smythe, 1975).

Gardner's socio-educational model (2005) points to the important role of motivation in positive L2 learning outcomes with the nature of the specific learning situation being a critical influencing factor. Krashen's monitor model (1985), on the other hand, views motivation as one

affective variable that filters incoming input. In order to take in and produce language, learners need to be free from the 'mental block' of low motivation, low self-esteem and debilitating anxiety. Crookes and Schmidt (1991) adopted a cognitive approach to motivation, suggesting that L2 learners play an active role in their learning process. The principles found in such arguments on motivation are harmonious with flow theory, which argues that the more engaged students are in a task, the more likely they will acquire the target language (C. D. Lee, 2007).

Another important factor attached to motivational drive is task attractiveness, which is characterized by tasks which are intrinsically motivating to students and that provide opportunities to acquire the target language from start to finish (Crookes & Schmidt, 1991; Deci & Ryan, 1985). In the case of SCMC, task attractiveness has been a central player as collaborative relationships among online counterparts seem to cultivate a sense of community whereby students can master communication skills and learn about different people and cultures (Freiermuth & Huang, 2012; Kern, 2006; Warschauer, 1996b). As frequent intercultural contacts have been shown to increase self-confidence in the use of foreign languages (Clèment, Noels, & Deneault, 2001), such positive and pleasant experiences help to mitigate student hesitancy and boost their willingness to communicate.

Whereas much of SCMC research has highlighted learner output, less attention has been paid to their online behavior. A study by Jarrell and Freiermuth (2005) examined the interaction of 26 first-year and 43 second-year Japanese students with low English language capabilities. They were placed in small groups for online chat and face-to-face discussions over a three-week period. Observation and data revealed that students were generally more motivated to communicate in English via SCMC, and they showed a preference for chat over the face-to-face mode because chat fostered an increase in the confidence that they could communicate with one another in English. Freiermuth and Huang (2018) also implemented an intercultural SCMC task to investigate L2 learners' willingness to communicate in English. In small groups, 16 Taiwanese marine science students (lower level) chatted electronically with 27 Japanese university students (higher level). Participant comments indicated that the students were positively engaged in the activity; even the lower-level group found the task meaningful and enjoyed the opportunity to chat and learn from

their peers. However, these results were based solely upon qualitative comments, and without consideration of culture- and gender-related issues. The addition of quantitative analysis of online chat data can provide further insights and strengthen such findings.

With a view to obtaining more comprehensive and generalizable findings, the current study opted for a statistically sound, triangulated review of L2 learners' motivation within a computer-mediated environment.

Objectives

The purpose of this study, then, was to investigate EFL students' motivation when participating in a chat session. More specifically, the following two research questions were addressed:

1. Does text-based online chat with non-native peers influence student motivation positively?
2. Are there any significant differences in the level of motivation concerning group divisions?

Methodology

At the outset of this mini project, a chat session was discussed and a time was agreed upon as to when the interactive chat would take place. The participants were 14 female Japanese students who majored in International Communication and 22 Vietnamese (13 females, 9 males) English major students. Their ages ranged between 19 and 22, and their level of proficiency in English was estimated to be approximately at the B1–B2 level, according to the descriptors of the Common European Framework. They were placed into nine groups of four so that each group had at least one Japanese member. The following table illustrates the group compositions (Table 18.1).

Due primarily to the unbalanced number of students from each country, the composition of the groups was as follows: four groups with the odd number of Vietnamese and Japanese students (groups 1–4) and five groups with the even number of each nationality (groups 5–9). Regarding

Table 18.1 Group division

Group number	Vietnamese males	Vietnamese females	Japanese females
1	1	2	1
2	1	2	1
3	1	2	1
4	2	1	1
5		2	2
6		2	2
7	2		2
8	2		2
9		2	2
Total	9	13	14

gender, groups 1–3 had more females than males, while groups 4, 7 and 8 were equal. Only groups 5, 6 and 9 consisted of all females. Since participation in the chat session was voluntary, it was unclear how many participants would actually attend the activity. As a result, the groups had to be arranged after all of the students had arrived and were seated in their respective computer labs (the Vietnamese students arrived earlier than the Japanese, so the task could only be started once the Japanese students had arrived). The web-based chat application used for this chat session was the Language Educational Chat System (LECs—an application developed for language teachers by Taoka Harada and Tomohiro Yasuda). It is freely available on the internet (http://home.kanto-gakuin.ac.jp/~taoka/lecs/) and is considered to be a very simple password-protected application that allows for grouping students quickly and easily.

Once the groups had been decided, the groups started chatting. At the start of the task, students were told to introduce themselves, which was limited to about five minutes due to significant delays in getting started. As R. Blake (2000) documented, well-designed jigsaw tasks tend to elicit robust negotiation. The first task required students to solve a jigsaw activity together; each student in a specific group had one of four sketched drawings from a story. The four sketches told a simple story. The students were asked to find the story line by describing their scene to the other group members. Additional delays occurred because the researchers needed to be sure that no group member at either end of the chat group had the same sketch as any other member. The groups were allowed about

40 minutes to resolve the task, which meant that a few groups could not finish. They were then asked to make a summary statement of the story.

The next task required the students to start a joint venture company and locate it in either Japan or Vietnam. Such a decision-making task was recommended by Smith (2003) to evoke negotiated interaction. The task prompt was designed to accommodate both groups of students and decisions could be based on their background knowledge. After the students had chatted for about ten minutes, the internet connection was lost and the remainder of the chat session had to be canceled. In all, students chatted for about 70 minutes.

One week prior to the chat session, the students had been asked to complete a pretest 20-item questionnaire focusing on their self-perception toward learning English and using CMC. A posttest questionnaire, including 25 more items on motivational aspects and a number of open-ended questions, was distributed immediately following the activities. The first part of both surveys used Likert scales, and the participants gave their answers by choosing numbers from 1 (strongly disagree) to 5 (strongly agree).

Problems for Consideration

Prior to discussing any findings, it is important to understand that problems can transpire when depending on internet connections. In the case of this study, the researchers were physically separated by thousands of kilometers, so they were dependent on Facebook messaging as means of immediate communication during the chat session. Although this achieved the goal of instant communication, it was still very difficult to form the small groups, which resulted in delaying the start of the first activity. Consequently, this also increased the already long wait time experienced by the Vietnamese students. (Due to the discrepancy in class schedules, Vietnamese students had waited for almost three hours prior to the chat session beginning.)

The second problem was providing learners with an appropriate sketch for the jigsaw activity. Considering that each story consisted of four sketches, each member of the group needed to have a different sketch for

the story to be complete and understandable. Properly assigning the sketches required back and forth communication by the researchers via Facebook messaging, which resulted in a delay in implementing the jigsaw task.

The final problem was the most serious. Despite all of the advances in technology, internet problems still do occur. For this study, the problems were present in two ways. The first sign of trouble was the long lag times. The second was more disruptive, in that the network crashed shortly after the second task had begun. The network was, unfortunately, restored only after the researchers had decided to end the activity because of the time constraints (Freiermuth & Do, 2018).

With so many problems, it would be easy to imagine that the chat session project had few if any positive outcomes. However, the results from the student questionnaires told a different story.

Data Analysis

Both pre- and posttests inquired about students' perceptions of their English skills which are represented in the following descriptive statistics.

Table 18.2 provides information about students' self-evaluation of their English skills before and after the treatment. As can be observed from the posttest results (the bold values signify the higher ratings), Vietnamese students rated themselves higher than Japanese students in terms of language ability; however, they seemed less confident about listening abilities. This dovetails nicely with the actual situation in Vietnam where listening has long been considered the most challenging and difficult skill by both foreign language teachers and students (Nguyen, 2007).

Since our aim was to see if text chat affected students' motivation significantly, the differences between pre- and posttest scores may mislead the inference about the changes (Dugard & Todman, 1995; Hennig, Müllensiefen, & Bargmann, 2003). To examine whether SCMC had any distinctive effects on the participants, an analysis of covariance (ANCOVA) was conducted for each question. The results for Questions 2 and 4 suggest that the interventions were statistically significantly different regarding speaking ($F_{1,33} = 5.655$, $p = 0.023$) and reading abilities

Table 18.2 English language perception

	Pretest				Posttest			
	Japanese		Vietnamese		Japanese		Vietnamese	
Question item	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1. My English is good	3.00	0.877	3.32	0.646	3.00	0.877	**3.45**	0.596
2. I have good English-speaking proficiency	2.86	0.949	3.05	0.575	2.71	0.914	**3.27**	0.631
3. I have good English-listening proficiency	3.21	1.051	3.00	0.873	**3.50**	0.941	3.00	0.775
4. I have good English-reading proficiency	2.71	0.611	3.45	0.739	2.79	0.426	**3.68**	0.646
5. I have good English-writing proficiency	3.07	0.730	2.91	0.610	3.29	0.994	**3.32**	0.716
6. I like to learn English very much	4.21	0.802	4.45	0.510	4.21	0.699	**4.50**	0.740
7. I think learning English is difficult	3.43	0.852	2.95	0.653	**3.50**	0.941	3.09	0.811

($F_{1,33} = 9.802$, $p = 0.004$) for each nationality. Japanese students indicated a lower confidence level in speaking and reading than their Vietnamese peers. As pointed out in previous studies (Matsuoka, 2009; Yashima, 2002), Japanese social norms overshadow language classroom interaction requiring appropriate communication manners, and thus may inhibit students' willingness to speak up in English. In addition, it can be inferred from research findings advanced by Aebersold and Field (1997) that Japanese students' different L1 background, as it relates to logography, may pose a challenge in reading English as they are less familiar with alphabetic symbols when compared to the Vietnamese students. Buchweitz, Mason, Hasegawa and Just (2009) also assert that Japanese readers need more effort when processing the English writing system.

Regarding students' interest in learning English (Question 6), the figures are a bit more prominent for the Vietnamese students, who also think that English is not as difficult when compared to the Japanese (Question 7). This, again, makes sense as the level of challenge should be within reasonable limits for students to be motivated (Locke & Latham, 1990). In other words, if the gap between the target language and learners' perception of their own ability is perceived to be beyond reach, their motivational level will be affected. In particular, the analysis of variance

(ANOVA) for the posttest reveals a statistical discrepancy between odd (with one Japanese) and even (with two Japanese) groups in Question 7 ($F_{1,33}$ = 8.778, p = 0.006), supporting the belief that group division may contribute to the attitudinal change. In this case, after the treatment, the even group (Mean = 2.95) had a tendency to hold a more positive view toward English than the odd (Mean = 3.60).

The subsequent responses (Questions 8–20; see Appendix) likely reflect the general habit of using computers for e-mail, academic purposes and leisure activities. However, in relation to chatting and/or blogging (Question 15), ANCOVA reveals a clear distinction across nations with $F_{1,33}$ = 20.665 and p = 0.000. Japanese students admitted to not spending much time chatting and/or blogging (Mean = 1.93) when compared with the Vietnamese students (Mean = 3.77), although they are all confident using SCMC. When asked about opportunities to communicate in English with outsiders (Question 20), both Japanese and Vietnamese students expressed high levels of willingness to get involved (Mean = 4.36 and Mean = 4.00, respectively).

After the chat session, the participants were required to rate their attitudes toward cultural knowledge, language skill improvement, collaboration, the chat room activity and assessment of the activity (stated in the additional 25 Likert scale items). Overall, Vietnamese students gave more favorable ratings for all variables. An analysis of variance (ANOVA) was then utilized for any substantial differences in their responses. The outcomes indicate that there is a considerable disparity between the two countries, which provides evidence that nationality or cultural background may play an influential role regarding motivational issues.

To be specific, when cultural issues are considered, there was a significant difference between Vietnamese and Japanese students regarding the claim that the chat activities increased their cultural knowledge ($F_{1,33}$ = 13.208, p = 0.001). Regarding improvements in their language skills of vocabulary, speaking, reading and writing, the answers of Vietnamese students yield a clear distinction from those of the Japanese students concerning speaking skill ($F_{1,33}$ = 4.585, p = 0.040). Interestingly, further examination using ANOVA demonstrates a statistically significant interaction effect of group and nation on writing skill ($F_{1,33}$ = 4.223,

p = 0.048). This means that group division and nationality have some influence over attitudes toward productive competence.

Students of the two nations tend to differ considerably when asked about the collaborative aspect of text chat. Vietnamese students reported to be more active ($F_{1,33}$ = 5.606, p = 0.024), more engaged ($F_{1,33}$ = 4.208, p = 0.049) and feeling as being part of the community ($F_{1,33}$ = 4.962, p = 0.033). Concerning chat room activity, the attitudes of Vietnamese students are, again, predominantly positive if they believe the activity represents a good way to learn English ($F_{1,33}$ = 5.122, p = 0.031), is a meaningful activity ($F_{1,33}$ = 9.605, p = 0.004) and consequently were willing to recommend the activity for future classes ($F_{1,33}$ = 5.586, p = 0.024). Finally, when making an assessment of the entire chat session, Vietnamese students' positive replies are significantly stronger ($F_{1,33}$ = 4.645, p = 0.039), when making the claim that they are more motivated by the chat activities.

With ANCOVA, gender differences have been found to wield no considerable influence on students' skill perception and attitudes toward some SCMC aspects when four group types were taken into consideration:

- 1 male (M), 3 females (F) (1 Japanese (J) + 2 Vietnamese (V) females): Groups 1, 2 and 3
- 4F (2J + 2V females): Groups 5, 6 and 9
- 2M, 2F (1J + 1V females): Group 4
- 2M, 2F (2J females): Groups 7 and 8

Nonetheless, ANCOVA reveals significant gender-related differences in students' information technology (IT) practice with $F_{3,27}$ = 3.431, p = 0.031 (Question 11), $F_{3,27}$ = 3.3111, p = 0.035 (Question 13) and $F_{3,27}$ = 6.562, p = 0.002 (Question 15). Especially, the results for Questions 13 and 15 posit that the gender affects their purposes for using the internet (i.e., for leisure or communication) and varies according to nationality. For further details, the pairwise comparison was applied. The results of Question 15 indicate that the considerable distinction comes from the groups of 1M, 3F and 2M, 2F (2J) (p = 0.045). The single-male group turns out

to be under the most influence of gender issues in this case. Regarding their confidence during English interaction, both offline (classroom) and online settings stimulate gender effects as clearly presented in $F_{3,27} = 3.886$, $p = 0.020$ (Question 16), $F_{3,27} = 3.263$, $p = 0.037$ (Question 18) and $F_{3,27} = 3.706$, $p = 0.024$ (Question 19). The pairwise comparison, again, showcases a significant discrepancy between the 4F groups and groups with equal share of males and females (2M, 2F [2J]) with $p = 0.017$, $p = 0.028$ and $p = 0.027$ (Questions 16, 18 and 19, respectively). Regardless of nationality, the highest figures from the all-female groups have shown that women are more confident when communicating in same-gender groups, which resonates with previous research by Savicki, Kelley and Lingenfelter (1996).

Discussion and Implications

The quantitative analysis provides us with a vivid view of EFL students' motivation and willingness to communicate. In general, they all appreciated the opportunity to interact with other non-native speakers of English, which was represented in their higher-than-average ratings. Their engagement in the activities and the feeling of being part of the community provide some hints about intrinsic orientation, a beneficial factor for their successful achievement of the target language (Gardner, 1988; Gardner & Lambert, 1972; Gardner & Smythe, 1975).

A closer insight into motivational issues indicates that there are considerable differences between the two countries, and even between two kinds of grouping when looking at particular aspects. Consistent with this argument, recent research does, in fact, suggest that people's cultural background affects CMC (Setlock, Fussell, & Neuwirth, 2004; Setlock, Quinones, & Fussell, 2007). Nevertheless, most previous findings focused on the discrepancy between high- and low-context cultures while ignoring that of more similar cultures like those of Vietnam and Japan.

In this study, the students chatted in a gender-anonymous condition. Any gender guess could only be based on the chat names (more often pseudonyms) as no gender-related cues were noted in the chat scripts.

Such circumstances raise questions about the influence of gender differences on computer-mediated communication. While text chat users were suggested to experience gender-free equality due to visual anonymity (Graddol & Swan, 1989; Matheson & Zanna, 1990), subsequent studies reported male dominance in online interaction (Barrett & Lally, 1999; Sussman & Tyson, 2000), much in the same way as social stereotypes influence face-to-face communication. The results of this chapter, on the other hand, help us gain a clearer understanding of the gender effects on SCMC motivation which most researches have failed to acknowledge. Unlike the tendency for male control concerning SCMC participation, student motivation in electronic communication seems to be gender-equitable. This implies benefits for female interlocutors who engage in online discussions.

Taking into consideration the qualitative comments students made concerning their personal assessment of the chat session, almost all the students expressed their enjoyment of the whole experience. Below are some of their comments as written in English or translated to English from the native language if in italics (coded as J for Japanese and V for Vietnamese):

- J1: Solving the problems with people from other countries is fun.
- J2: I enjoyed chatting. Talking with others in English is fun. That was my first time to chat with students of abroad. That was good experience for me.
- J3: My motivation has increased. It was exciting to chat with foreigners.
- J5: It was refreshing to communicate with foreign students.
- J6: We cannot chat with other countries student except this class.
- J7: It was great opportunity to chat with them in English which are not our first language. And it was inspiring that we tried to communicate to solve a question together.
- J8: I enjoyed a lot. It was so interesting to and meaningful to talk with people from other country.
- J9: Vietnamese were kind and supportive. I'd love to see them.
- J10: Through our course, we've gained communication skills, so it was a good opportunity to talk with different people.
- J11: This kind of activity make students be interested in English.

- J12: In society, being able to communicate with non-native English speaker is useful and required. So chatting made me notice that. Actually it was new for me, and I had fun!
- J14: It was very important experience in my college life. Because I can't go to study abroad.
- V1: It's very interesting to see the point of view from friends in Japan. There is no image or audio, we just use words to draw picture and it is the reason words have their beauty.
- V3: I think I am an extrovert person and I enjoy talking with strangers cause it pushes my motivation in sharing my ideas and showing up.
- V4: After interacting with your Japanese partners, I had more motivation to learn English to talk with more friends.
- V5: Student in Japan are very nice, they talk and give ideas politely.
- V6: Because after chatting with Japanese partners, I want to learn English well to communicate with other students in different country.
- V7: I'm very interested in this chat activity. It can make a good relationship between Vietnam and Japan.
- V8: English is the key which helps us to communicate with foreigners.
- V9: *I would always like to interact with foreigners when possible.*
- V10: Because this activity is exciting and interesting.
- V11: *I really like this activity. I feel comfortable and interested. Thanks to it, I have a chance to work with foreigners and express my ideas most naturally.*
- V12: Cultural differences play an interesting role in learning.
- V13: We had more chances to use English in real life.
- V14: I feel motivated to learn English. I feel that I should learn hard to make my communication be increased.
- V15: *I really like this activity because it is not test-oriented and does not insist on correct answers. We mainly talk in a friendly atmosphere.*
- V16: Chatting with other people from a different country in the same language is interesting. Also, I am able to learn about the culture and lifestyles of them.
- V18: We have the ability to talk and discuss with other student in Japan and it was amazing.

- V19: It gave me an opportunity to chat and make new friends, especially friends from another country.
- V20: It is really amazing because it is colorful with many new friend as well as great source of knowledge.
- V21: We have chance to communicate with friends from the other country.
- V22: *We could enhance our skills in discussing, cooperating and even debating, which is very good for finding the best solution. We have a change to make new friends, broaden more knowledge about Japan.*

The data show that even a relatively small amount of positive authentic interaction in the target language allowed students to feel more comfortable in applying their skills, more confident in what they learned and more inspired to learn English and make global, cross-cultural connections. Thus, the study lends support to Freiermuth and Huang's (2012, 2018) claim that when cooperating with overseas peers, students feel a greater need to use the target language and become more eager to get out of their own shells. J5 and J10 conceded that they were not usually confident, but this kind of activity made them more active than in normal classes. Text chat also helped them notice spelling mistakes (J4), grammar mistakes (J8) as well as learn new vocabulary (J3, J7, V3, V4, V11 and V16). Most students found the activities motivating and meaningful, and they learned a lot about teamwork and communication skills. Some comments acknowledged the need to have more time for cultural exchange, which could have been achieved in the decision-making task save for the internet's disconnection.

Students were certainly cognizant of the problems (mentioned in numerous comments); however, these did not dissuade them. It should be mentioned that there were a few dissenters, and we would be remiss if we skipped over their comments. J4 and V2 seemed to be somewhat indifferent to the activity. J13 stated that, "It is better to talk with native speakers." J13 had very recently returned from studying in the US, which might have affected her opinion negatively. Another negative opinion came from V17; he stated, "it's just a text chat and we do not receive much experience also motivation. I think a voice chat may be a good solution for

this problem." He also seemed to be irritated that he had to wait for the messages of the Japanese students to appear on screen, which was probably a combination of the speed of Japanese respondents and the inherent lag time (Freiermuth & Do, 2018).

Other motivational variables which may influence online learners' performance and satisfaction should be kept in mind. These include learner characteristics, previous work experiences computer experiences and previous online learning experiences (Lim & Kim, 2003). In order to accommodate such issues, "the key to successful use of technology in language teaching lies not in hardware or software but in humanware—our human capacity as teachers to plan, design, and implement effective educational activity" (Warschauer & Meskill, 2000, p. 316).

With that said, although students acknowledged the technical problems, the majority of them also mentioned their positive experiences while chatting. We suggest here that because students became cognizant of their need to use English, English became their only source for communicating, or as one student mentioned, "Even though we can't understand their native language, we talked with Vietnamese students. That was so amazing."

As CMC has been considered an easily accessible learning tool, this research might provide useful insights for language teachers and other stakeholders. Especially for EFL students who have few opportunities to use the target language outside of the class, these kinds of chat activities can create an authentic learning environment, in which learners interact with each other for meaningful purposes regardless of temporal and physical constraints. From the psychological point of view, the textual features of online chat will always be appreciated because they retain a sense of anonymity for students, which makes many fascinating experiences possible (Gong & Ooi, 2008).

Furthermore, intercultural exchanges integrated into the chat session were claimed by Kern (2006) to "have the potential to enhance learners' communication skills and to enrich their knowledge of another culture, as well as to provide a context for viewing one's own culture from another group's perspective" (p. 198). Access to international interaction in SCMC activities also brings the need for cross-cultural

understanding (O'Dowd, 2001). Through this chat experience with other non-native speakers of English, students learned to tolerate the cultural differences (e.g., Japanese's slow responses) and show respect for diversity.

Conclusions

Certainly in a study such as this, there are obvious limitations as well as the less obvious ones. Most importantly, the disrupted network might have affected learners' attitudes. Another limitation was its relatively small scale including one group—the Japanese—which was solely comprised of female students. Further research should be conducted in larger and more heterogeneous groups over longer periods of time to gain more generalizability. It is also recommended that investigations be expanded from primarily text-based chat to other technology-mediated modes such as videoconferencing or voice chat.

In this study, we wanted to see if, and to what extent, EFL students from universities in Japan and Vietnam would find a text-based chat project motivating. Despite the problems that arose, students, on the whole, found the activity to be motivating and meaningful. Such chatting experiences promoted their interest in online language learning, this being statistically stronger among Vietnamese students than among their Japanese counterparts. Some statistical differences found in group division and nationality help to inform researchers that cultural backgrounds may act as an influential variable in such studies and thus warrant deeper investigation.

In conclusion, the chance for students to engage in 'real' communication was an impetus for increased motivation despite the problems that occurred online. It is hoped that this research has added to the existing knowledge base of motivation in SCMC and will act as a springboard for more research activities aimed at synchronous communicative activities that span the globe.

Appendix: Survey Description

5 (Strongly agree) 4 (Agree) 3 (Neutral) 2 (Disagree) 1 (Strongly disagree)
Background information: (for pre- and posttests)

Descriptor	Rating				
1. My English is good	5	4	3	2	1
2. I have good English-speaking proficiency	5	4	3	2	1
3. I have good English-listening proficiency	5	4	3	2	1
4. I have good English-reading proficiency	5	4	3	2	1
5. I have good English-writing proficiency	5	4	3	2	1
6. I like to learn English very much	5	4	3	2	1
7. I think learning English is difficult	5	4	3	2	1
8. I'm confident using the computer	5	4	3	2	1
9. I'm confident using the World Wide Web	5	4	3	2	1
10. I use computers for fun, such as playing games	5	4	3	2	1
11. I use computers to send e-mail	5	4	3	2	1
12. I use computers for academic purposes, such as writing papers	5	4	3	2	1
13. I use computers for leisure, such as watching fashion news or listening to songs	5	4	3	2	1
14. I use computers for social networking (Facebook, Twitter, Viber, Line, etc.)	5	4	3	2	1
15. I use computers for chatting and/or blogging	5	4	3	2	1
16. I feel confident when I communicate in English in my classroom	5	4	3	2	1
17. I feel confident when I communicate in English outside of the classroom	5	4	3	2	1
18. I feel confident when I send a message by e-mail or when using a social networking site in English	5	4	3	2	1
19. I feel confident when I chat online in English	5	4	3	2	1
20. I have desire to use English to communicate with others outside of my peer group (friends/classmates)	5	4	3	2	1

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19

A Motivational Story in Hong Kong: Generating Goals for Language Learners and Blended Learning Designers from a Mixed-Method Learning Analytics Approach in English for Academic Purposes

Julia Chen and Dennis Foung

Introduction and Background

Blended learning is the mix of "e-learning and classroom learning" (Masie, 2006). This means that, with the emergence of technologies, learning can take place anywhere and at any time. Past studies show an array of positive influences of blended learning, such as those reported in Larson and Sung (2009), and López-Pérez, Pérez-López and Rodríguez-Ariza (2011). However, a question arises: how does the design of these online course materials and assessments influence the behavior and affect the mindset of second language (L2) learners?

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A university in Hong Kong, at which over 97% of students declare Chinese as their mother tongue, took the opportunity of a city-wide transformation of the education system to introduce a hybrid learning mode in their main academic English (EAP) subject. Since 2012, universities in Hong Kong have offered a four-year rather than a three-year curriculum to students who have completed six years of secondary school instead of seven. In other words, these students are a year younger when they enter university and have one less year of prior English study.

At the university in question, the new institutional infrastructure developed to cope with the four-year curriculum includes (1) the adoption of a learning management system (LMS) for the whole university community and (2) a curriculum plan in which a three-credit language subject involves only one classroom lesson each week that lasts no more than three hours and an expectation of an additional six hours per week of 'other student study effort' via self-study.

In response to these changes and regulations, a substantial online language learning component IndiWork was added to the syllabus of core freshmen language subjects. The online component, offered via the new LMS, is aligned with the teaching and learning schedule as well as each subject's intended learning outcomes, and includes learning activities such as viewing videos that explain the language learning focus. These activities can be done pre- or post-lesson to prepare for, or follow up, in-class learning; in order to encourage students to relearn and reflect on their learning, the LMS accepts multiple submissions for each activity.

Considering that instructors have a heavy teaching load and cannot afford the time to go through students' online work in detail, students' participation in IndiWork is graded by a computer. After a pilot study of the online component (Chen, 2013), it was decided at an all-staff meeting that students would be required to complete a minimum percentage of IndiWork, and that they would have the autonomy to choose, according to their learning needs and preferences, which activities to do. The decision to stipulate a completion requirement was made in response to a comparative study (Chen, 2016) that showed that (1) a majority of students did more online learning activities than the minimum requirement when there was a requirement and (2) the completion rate dropped drastically when no requirement was stipulated.

Each summer a small team of teachers examines the feedback received from staff and students on the course and makes corresponding revisions to the course materials, including IndiWork. For example, the release and closing dates of online activities changed over the years. At first, there was one deadline for online activities related to units 1 and 2 of the course materials and another deadline related to unit 3. In response to student and staff requests for more time for students to complete the online component, the interim deadlines were removed, retaining only the final deadline. This chapter explores whether these changes in the online component induced consequential changes in students' online behavior and motivation for online language learning.

Literature Review

This section provides a review of relevant literature aiming to justify the need for a data-driven study to understand the online behaviors of students from a motivational perspective. The review begins by defining the dynamic nature of motivation, which is followed by a review of prevalent language learning motivation theories. Such a review suggests the need to further explore generic theories of motivation to explain online behaviors. With a review of empirical work on the psychology of online learning, the authors argue that more can be done to explore the online psychology of students using a data-driven approach.

Nature of Motivation

Motivation, generally speaking, explains "why human beings behave as they do" (Dörnyei, 1998, p. 117). In other words, it is a force that drives human beings to behave in a particular way. In education, motivation may provide students with the driving force to work hard in a subject. This force may be derived from a promised gift from the parents if the student manages to obtain a good grade in a subject, or, in a language learning context, it could originate from a love of the language, a desire to learn it well, or an understanding that the language will be an important

tool in the future. In an online setting, this force may refer to "the students' movement toward and engagement in [online] learning activities" (Artino & Stephens, 2009, p. 146).

In the early decades of the twenty-first century, when the study of motivation (and even the field of psychology more broadly) was based in behaviorism theories, motivation seemed to be a timeless concept, for example, the motivation of a dog to jump due to the fact that a rod is present indicates the dog believes it might be beaten if it does not jump due to past experiences. However, motivation came to be understood as a "process" construct (Dörnyei, 1998, p. 118) as more theorists grew interested in the cognition of motivation. These theorists suggest that motivation is a temporal process and may change over time (Ushioda & Dörnyei, 2012). In other words, a change in motivation may not necessarily be the result of some immediate, direct and external force. For example, a student's motivation to learn a language may not be due to an immediate need to communicate with another person in a second language or for fear of being punished if failing to do so; instead, the student may be motivated because of the inner beliefs and values that drive learning. The process concept is important because education, language learning and the online behaviors of students all depend on the temporal nature of motivation.

Theoretical Foundation in Language Learning Motivation

Past influential motivation theories of language learning have placed emphasis on factors that affect the process of language learning as a whole instead of individual task behaviors. For instance, the socio-educational model (Gardner & Lambert, 1959) has been an influential second language (L2) learning motivational theory for years (Mori & Gobel, 2006; Woodrow, 2010); however, it describes the relationship between cultural factors and L2 motivation and is not about specific language learning tasks. Similar to the socio-educational model, Dörnyei's (2001) process model of L2 motivation is well-designed to describe the language learning process in a classroom and its impact upon motivation. Even though

this model describes the classroom processes, it is not focused on individual task behaviors. Recently, Dörnyei and Ushioda (2009) have proposed a self-system that focuses mainly on L2 learners. This self-system assumes that each learner has an ideal-self and an ought-to self, and the two selves are mediated by the learner's L2 experience. Generally, these models identify factors at the macrolevel, such as the general attitudes of a person toward the target language, and those at the microlevel, for example, the values and expectations of oneself. While the authors believe that these theories have an impact on describing L2 learning and may play a role in affecting the task-based behaviors of students, more dedicated theories on task-level behaviors are needed in the current study.

Theoretical Foundation in Online Learning

In contrast to the theories of language learning motivation, generic motivational theories aim to describe and explain the process of motivation in any human behavior, not only in language learning. Self-determination theory (Ryan & Deci, 2000) is one of the most prevalent theories of motivation, and it posits four levels of motivation as ways to classify the forces of internal motivation: external regulation, introjected regulation, identified regulation and integrated regulation. This, as a person-based theory, is highly compatible with other task-based theories. As this theory is an attempt to classify the internal forces of a person, any types of factors, in practice, can be classified into any of these levels. With this knowledge as background, it is easy to see why much research (e.g., Vanslambrouck, Zhu, Lombaerts, Philipsen, & Tondeur, 2018) has attempted to explain behaviors from both a task perspective and a personal perspective.

Other than self-determination theory, a number of generic motivational theories have been proposed to explain how task features affect human behaviors. The expectancy-value theory (Wigfield, 1994; Wigfield, Tonks, & Klauda, 2009) is one of these examples. Expectancy-value theory hypothesizes that the motivation for doing a task is determined by two factors: the expectancy of success and the value of that success. A person will be motivated to complete a task if both factors are

present. If either factor is absent, it is unlikely that an individual will be motivated to complete the task. Goal-setting theory is another commonly described task-related theory that can explain human behavior in tasks (Ames, 1992; Locke & Latham, 1994). It focuses on how an individual achieves a goal set for a task. This goal may be a fairly general one, such as 'to improve my English proficiency,' or a more specific sub-goal, for example, 'to get a mark of 100 on the test tomorrow.' Such goal setting is facilitated by four processes; the goal setter will (Wigfield et al., 2009):

1. *Make an effort (mental or physical) to achieve the goal.*
2. *Assess the level of difficulty of the task and adjust the effort accordingly.*
3. *Maintain the effort until the goal is achieved.*
4. *And, most importantly, adopt appropriate strategies to achieve the goal.*

These task-related theories have made a significant contribution to recent blended learning research, and as such, a limited number of studies were conducted adopting these theories to explain the online behaviors of students. Lazowski and Hulleman (2016) point out that motivational constructs have a clear connection with educational outcomes. Also, Vanslambrouck et al. (2018), in their study of a teacher training program, conclude that students always attempt to strike a balance between cost and values when making decisions in online environments. In other words, the time that students need to invest is the cost to them, and the qualifications (i.e., the teacher training program) are the value to them. This study illustrated the struggle of expectancy-value theory well.

In contrast, Johnson, Stewart and Bachman (2015) explained students' motivation toward online learning with reference to the intrinsic and extrinsic motivations discussed in self-determination theory. In their study, a more personal-based approach was adopted; questionnaires were distributed to students to explore their motivational orientation; and factor models were established to explain the motivation of students. Foung and Lughmani (2018) also made use of interviews to understand the nature of motivation in an online setting. While yielding interesting results, only certain aspects of motivation were discussed

in these studies; thereby, they present less than a panoramic picture of the process of motivation.

The Research Gap and the Emergence of Learning Analytics

The studies cited to this point have employed student self-reported data to explore the motivation of students; however, few have analyzed actual student data to understand student motivation more deeply. A study conducted by Chen and Jang (2010) represents a rare case where performance in online activities was employed to understand the motivation of students; however, a larger dataset would have helped to present a more comprehensive picture of motivation. In this respect, Foung and Chen (2019) attempted to explore the online behaviors of students to help predict student outcomes, but the focus lacked a motivational assessment of the students. This emphasizes the need to conduct a larger-scale study that analyzes students' data directly as it relates to motivational constructs.

Advances in technology and more powerful computer servers have given rise to a new field of interest, that is, learning analytics. Learning analytics are the measurement, collection, analysis and reporting of data about learners and their contexts for the purpose of understanding and optimizing learning as well as the environments in which it occurs (Learning Analytics and Knowledge, 2011). This data-driven approach can provide a great range of aspects (from the computer servers) that can be used to understand the motivation of students. For example, the timestamp of student logs can be retrieved and analyzed, and these can reveal much about student behavior and the features of motivation. Hence, a learning analytics approach helps to mitigate the limitations of the aforementioned studies on motivation and inspires the current study, which explores the following research questions:

1. How does the design of the online language learning component affect language learner psychology?
2. Do any of the theories of motivation presented in the literature review account for the observed learner behavior?

Methodology

Research Design

This study adopted a mixed-method design, and so both quantitative and qualitative data were collected. The quantitative data comprised analytics data, which consisted of large datasets from the LMS, while the qualitative data came from individual semi-structured interviews with students.

The study attempted to creatively mix these data in two ways. Ivankova and Greer (2015) proposed that data can be mixed at different stages of a study. In this study, the quantitative data were mixed with qualitative data during the analysis stage to achieve the purpose of triangulation. Subsequently, and unlike traditional studies, the self-reported data were mixed with analytics data. The data collection processes were completed separately, and the collected data were then triangulated for analysis.

Participants

For the quantitative data, the logs from four cohorts were retrieved, totaling 9662 students who took the basic academic English course over a four-academic-year span. Their overall online activity performance can be found in Table 19.1. Six individual interviews were conducted with one female and five male students who took the course during the final two years of the study. Their pseudonyms are Arthur, Billy, Cathy, David, Ethan and Floyd. All five passed the course and the online activity requirements.

Table 19.1 IndiWork total score (*n* = 9662)

	%	Cumulative %
Below requirement (BR)	4.2	4.2
BR–10% above BR	44.27	48.47
10% above BR–20% above BR	18.61	67.08
20% above BR–30% above BR	16.41	83.49
31% above BR	16.51	100

Procedures

The quantitative data and qualitative data were collected separately. The quantitative data were collected by retrieving the user tracking logs and other related timestamps from the LMS, such as date and time for completing the online activities and scores awarded in each attempt or assessment. Before making the dataset available to the researchers, the university's IT team removed all identifying information (e.g., student IDs) from the dataset.

Following the release of all assessment results, subject teachers of the course sent an e-mail to their students and invited them to participate in the research. The students expressed their interest to the subject teacher who passed their contact information to the researcher. The researcher then contacted the students directly and conducted the interviews with individual students. The interviews were recorded and transcribed for analysis.

Online Activity Requirement

Each cohort of students needed to complete a minimum number of activities. For the first academic year, the requirement was 60% completion, while that for later cohorts was reduced to 50%. Online work included around 14–18 activities during the first three academic years, which was later reduced to 13 for the final year so that there would be one activity per week for a 13-week semester. The completion requirement of first 60% and later 50% meant it was not compulsory for students to complete all online activities, and the students also had the freedom to choose the activities they wanted to complete in order to meet the minimum requirement.

It is important to emphasize that not meeting the minimum completion requirement did not lead to a fail grade in the course directly. Students might only receive a half-grade (i.e., C+ to C) or full-grade (C to D) penalty.

Instrument

An interview guide with three parts was developed for the semi-structured interviews. The first part of the guide focused on basic information about the interviewee, such as the final course grade and the

overall IndiWork completion rate. The second part focused on the actual processes involved in completing the online task, for example, when they started the online language component, how they started it, how much work was done, how many rounds were completed and when they stopped (for each activity and in each round). The last part of the interview provided an opportunity for the interviewer and interviewee to supplement Part 2 or further explain any factors that may have affected the answers in the previous part. In other words, Part 2 was more of a dynamic session and was different, dependent on each interviewee. The questions posed to interviewees were based upon their responses. For example, the interviewer might ask the interviewee if his peers may have affected his choice of online activities if other information sparked this topic. The entire interview was conducted in English, L2.

Data Analysis

The analysis stage started with the cleaning of the quantitative dataset, which was then analyzed visually by producing graphs and charts. The researchers mainly removed students who did not complete the whole course. Since only descriptive statistical analyses (and visualization) were conducted, no further cleaning procedures were necessary. The dataset was then visualized to partially answer the research questions. For example, graphs and charts were produced to vividly demonstrate when students complete the online activities (i.e., which week in the semester, which day in the week, or/and what other course activities occur in the previously mentioned timeframe). To triangulate the patterns identified in the visualization, the qualitative data were consulted. The qualitative data were analyzed using a thematic analysis. A deductive thematic analysis was adopted, which attempted to identify themes and patterns based on the research questions in this study (Braun & Clarke, 2006). The results of this triangulation helped to answer the research questions in a comprehensive manner.

Research Ethics

The study obtained the approval of the Human Ethics Committee (Reference Number: HSEARS20160812002) of the research site. Strict data protection measures were applied to the script-based data. All interviewees were interviewed after they had completed the course; additionally, their informed consent was obtained and only their pseudonyms were used throughout the research process.

Results and Discussion

General Overview

In general, students completed the online tasks on time and in a satisfactory manner. Students were divided into two groups based on the minimum completion requirement. Table 19.1 shows the completion rate of students in the first year (one cohort; minimum completion requirement: 60%) as well as for the subsequent three years that followed (three cohorts; minimum completion requirement: 50%). Relatively few students failed to meet the requirement: less than 5% among all cohorts. This was not entirely expected because students who completed the course could have failed to meet the minimum requirement by accepting the penalty (i.e., a half-grade or full-grade reduction) while still passing the class. The vast majority of students met the completion requirement, but a substantial percentage stopped doing the online activities after meeting this minimum requirement (35.9% in the first year and 57.1% in later cohorts). However, a significant number of students continued to work on the activities after they had met the requirements: 60.2% in the first year and 48.6% in the remaining three years.

Our qualitative findings provide further hints to explain the quantitative findings. In interviews, the students revealed that they all viewed meeting the requirement as a clear goal; some also found the exercises to be useful for their learning in the subject.

Score as a Primary Goal

Learning analytics results show that students considered the attainment of the minimum required score to be their primary goal. Each cohort of students needed to complete a minimum number of activities (i.e., 60% at the start and 50% for later cohorts). Table 19.2 shows four aspects of results of online activities: (1) the mean score (0–1) of the activity refers to the average score of students who actually attempted this activity; (2) "Cumulative IndiWork %" shows the overall percentage students received if they attained the mean score of that activity (i.e., the score given in the previous column). Information in the final few rows were not included to avoid information overloading. For example, in the first year, students who attempted the pre-unit 1 task achieved a high average score of 0.93; students who achieved 0.93 for the pre-unit 1 task gained 2.15% toward the total requirement (for that cohort, 60%). The next column, (3) attempt rate, reflects the percentage of students who attempted the task. (4) Change of attempt rate is the simple mathematical difference between the attempt rate of the current activity and that of the previous. For example, during the first year, the change in attempt rate for the very last activity, 4b, was −6.7%, reflecting the decline from a 56.8% attempt rate for Activity 4a to an attempt rate of 50.1% for Activity 4b. This decrease illustrates the goal-oriented behaviors of students.

Table 19.2 shows a cut-off effect in the completion of online activities. This effect occurred when students had attained the minimum requirement and the attempt rate of subsequent activities dropped significantly. In the first year, for example, after the students completed Activity 3e, and if they had achieved at least the mean score for each activity, they would have met the minimum requirement of 60%. Our analytics results show a significant drop in the attempt rate of the next activity, Activity 4a. The cut-off effect was obvious across all cohorts, as evidenced by a marked drop (highlighted in red in Table 19.2) in the student attempt rate that ranged from around 8% to 16% across cohorts: many students stopped attempting activities after they had met the requirement. The cut-off point depended on when students could attain the minimum; for example, Activity 3e in the second year and Activity 3d in the third. The

Table 19.2 Completion details of online activities across cohorts

12/13				
Activity	**Mean**	**Cumulative IndiWork % attained**	**Attempt rate**	**Change in attempt rate**
Pre-course activity	0.93	2.15%	86.0%	---
Activity 1a	0.88	9.44%	97.3%	+11.3%
Activity 1b	0.89	13.19%	92.6%	-4.7%
Activity 2a	0.9	20.15%	96.5%	+3.9%
Activity 2b	0.9	24.07%	91.2%	-5.3%
Activity 2c	0.9	27.98%	82.9%	-8.2%
Activity 2d	0.96	31.89%	89.7%	+6.7%
Activity 3a	0.94	37.12%	97.2%	+7.6%
Activity 3b	0.93	43.44%	94.6%	-2.7%
Activity 3c	0.98	49.43%	92.3%	-2.3%
Activity 3d	0.92	55.80%	84.4%	-7.9%
Activity 3e	**0.89**	**60.88%**	72.9%	-11.5%
Activity 4a			56.8%	**-16.1%**
Activity 4b			50.1%	-6.7%
13/14				
Pre-course activity	0.93	2.17%	82.35%	---
Activity 1a	0.95	6.09%	96.88%	+14.54%
Activity 1b	0.89	9.88%	95.62%	-1.27%
Activity 2a	0.95	13.15%	94.04%	-1.58%
Activity 2b	0.90	17.11%	92.85%	-1.19%
Activity 2c	0.93	23.75%	90.62%	-2.23%
Activity 2d	0.91	27.76%	89.77%	-0.85%
Activity 2e	0.97	31.76%	85.92%	-3.85%
Activity 3a	0.91	36.89%	92.42%	+6.50%
Activity 3b	0.93	39.44%	86.85%	-5.58%
Activity 3c	0.9	43.15%	82.85%	-4.00%
Activity 3d	0.91	48.78%	75.19%	-7.65%
Activity 3e	**0.89**	**55.02%**	64.42%	-10.77%
Activity 3f			52.46%	**-11.96%**
Activity 4a			49.23%	-3.23%
Activity 4b			43.00%	-6.23%
Activity 4c			36.46%	-6.54%
Activity 4d			33.23%	-3.23%

(*continued*)

Table 19.2 (continued)

14/15				
Pre-course activity	0.92	2.21%	72.83%	---
Activity 1a	0.95	6.25%	93.87%	+21.04%
Activity 1b	0.88	10.11%	92.22%	-1.64%
Activity 2a	0.95	13.48%	88.25%	-3.97%
Activity 2b	0.89	17.51%	86.00%	-2.25%
Activity 2c	0.93	24.36%	82.94%	-3.07%
Activity 2d	0.90	28.43%	81.30%	-1.64%
Activity 2e	0.96	32.51%	80.22%	-1.08%
Activity 3a	0.90	37.74%	91.10%	+10.89%
Activity 3b	0.92	40.34%	84.49%	-6.61%
Activity 3c	0.89	44.12%	81.12%	-3.37%
Activity 3d	**0.92**	**49.98%**	75.72%	-5.40%
Activity 3e			63.50%	**-12.22%**
Activity 3f			54.64%	-8.86%
Activity 4a			49.37%	-5.27%
Activity 4b			44.58%	-4.79%
Activity 4c			37.49%	-7.08%
Activity 4d			31.92%	-5.57%
15/16				
Activity 1a	0.78	6.00%	100.00%	---
Activity 2a	0.91	12.98%	86.22%	-13.78%
Activity 2b	0.74	18.68%	83.79%	-2.43%
Activity 2c	0.76	24.49%	97.83%	14.04%
Activity 2d	0.82	30.79%	95.26%	-2.56%
Activity 3a	0.76	36.63%	96.22%	0.96%
Activity 3b	0.66	41.72%	91.05%	-5.17%
Activity 3c	**0.77**	**47.66%**	94.22%	3.17%
Activity 3d			86.14%	**-8.08%**
Activity 4a			86.48%	0.35%
Activity 4b			79.53%	-6.95%
Activity 4c			70.19%	-9.34%
Activity 4d			63.10%	-7.08%

cut-off point did not depend on the content of the online activity and will be further explored in later paragraphs.

After this first significant drop, the attempt rate continued to fall in most cohorts as more and more students met the requirement. The attempt rates of the final few activities in third and fourth years dropped to around 30%, which means only one-third of students completed the final few online activities. The attempt rate did not drop as much during the first year; this can be explained by the fact that students had to achieve a higher minimum requirement (60%) and there were fewer activities (14 in total). These factors kept the attempt rate at 50% for the final few activities.

The cut-off effect was equally obvious in student interview data. The students explicitly discussed how they made this cut-off effect 'happen' in the interview: all interviewees took 50%, the minimum requirement, as their goal for completing the online component of the course. Once they reached the goal, they changed their behavior in specific ways. Some simply stopped:

- I thought that the minimum was 50%, so I made sure that I attained 50% in each activity. Then, I realized that I had met the requirement and could stop at a certain point without completing all the activities (**Ethan**).
- I basically stopped doing the activities once I reached the minimum requirement. I immediately logged out from the learning management system after I saw myself meeting the minimum requirement (**Floyd**).

Others simply reduced their effort:

- *After I had met the requirement, I just took a look at the remaining questions and the activities. The videos were useful for revision, and I watched most of them after meeting the requirement* (**Cathy**).
- *I [tried] to complete 70% of scores for each activity. I would re-attempt the quiz if I could not meet my 70% requirement for each individual activity. Once I noticed that I had reached the overall minimum, I just continued but I did not care what scores I got* (**Arthur**).

Deadline as a Goal

As noted above, in the first three years of online activities, there were one or two dates for the launching of activities and staggered deadlines for completion. In the final year, there were a number of launching dates for activities but only one closing date or deadline for these activities. This change between cohorts makes it very clear that meeting the deadline is indeed one of students' primary goals in the course.

Staggered Deadlines

Figure 19.1 shows students' timing for completing their online activities. The vertical axis shows the percentage of students who completed at least one online learning activity during a certain period of time (percentages are used to allow comparison across cohorts of varying numbers of students). The horizontal axis represents different periods in the semester. There were 14 weeks in the first two years and 13 weeks in the third. Monday and Tuesday were classified as the "start" of the week, Wednesday and Thursday as "mid" week and Friday to Sunday as "late" in the week. The horizontal axis therefore goes from *Week 1 Start* to *Week 14 Late*. In the chart, there are six lines representing student behavior from the first year: *T1* (i.e., Term/Semester 1) to the third year *T2*. The peaks of each semester have been labeled for analysis, and Table 19.3 summarizes the details of these highlighted peaks. To help interpret the significance of the peaks, those listed in Table 19.3 are mapped with the corresponding course deadlines and assessments listed in Table 19.4. In Table 19.4, if a peak did occur, when the peak was is noted.

As seen in Fig. 19.1, in the first two cohorts, there are only two major peaks in each semester, while there are more peaks in year three. In the first two years, among the two peaks in each semester, at least one met the 10% mark, while some reached almost 20% of students working during the same period of time. This means that many students did their work within the same period of time. These peak days are close to the deadlines for several units. For example, in semester 2 of year one, 12% of students worked during the last few days (Friday–Sunday; late) of

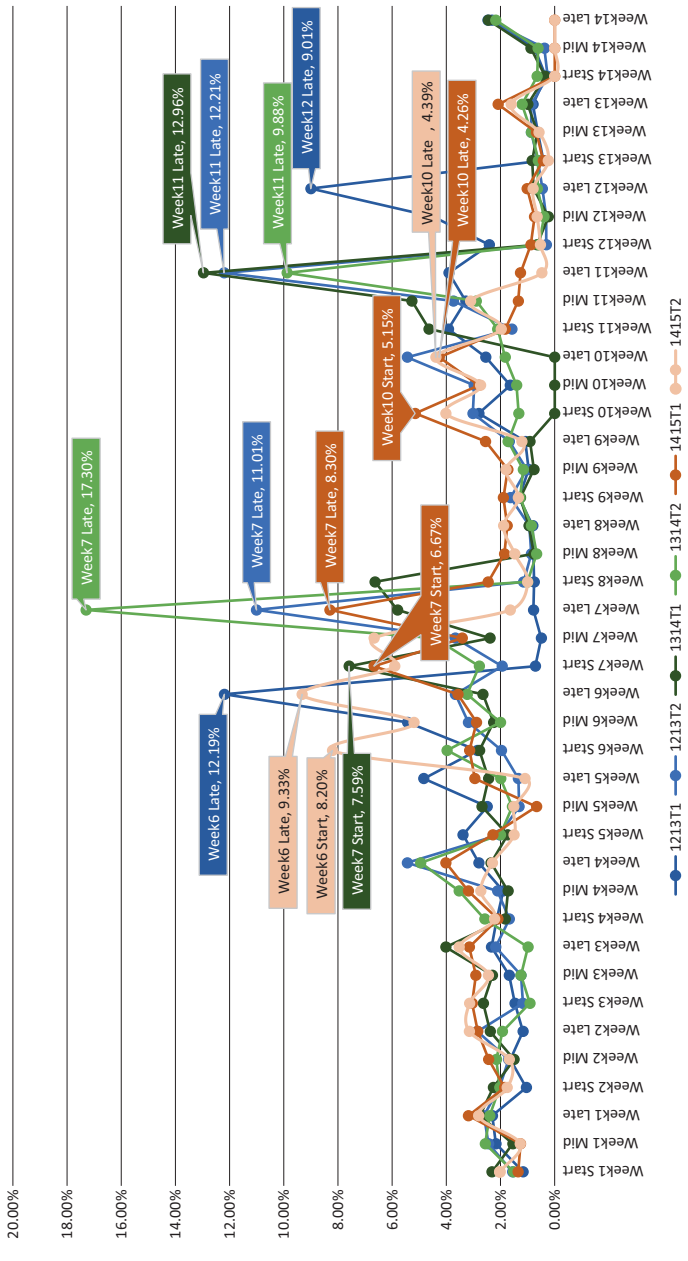


Fig. 19.1 Percentage of students working online across cohorts (years 1, 2 and 3)

Table 19.3 Summary of peaks across cohorts

	No. of obvious peaks	Peak 1	Peak 2	Peak 3	Peak 4
Year 1 Sem 1	2	Week 6 late (12.19%)	Week 12 late (9.01%)		
Year 1 Sem 2	2	Week 7 late (11.01%)	Week 11 late (12.21%)		
Year 2 Sem 1	2	Week 7 start (7.59%)	Week 11 late (12.96%)		
Year 2 Sem 2	2	Week 7 late (17.30%)	Week 11 late (9.88%)		
Year 3 Sem 1	4	Week 7 start (6.67%)	Week 7 late (8.30%)	Week 10 start (5.15%)	Week 10 late (4.26%)
Year 3 Sem 2	3	Week 6 start (8.20%)	Week 6 late (9.33%)	Week 10 late (4.39%)	

Table 19.4 Mapping of peaks with course events

	Public holiday	U1 deadline	Before A1	U2 deadline	U3 deadline	A2 deadline
Year 1 Sem 1		W6L		W6L	W12L	W12L
Year 1 Sem 2				W7L	W11L	W11L
Year 2 Sem 1	W7S		W7		W11L	W11L
Year 2 Sem 2		W7L		W7L	W11L	W11L
Year 3 Sem 1		W7L	W7S	W7L	W10L	W10L
Year 3 Sem 2		W6L	W6S	W6L	W10L (deadline in W11S)	W10L
No. of occurrence	1	4	3	5	6	6

U1, U2 and U3 deadlines refer to the deadline of the online activities
A1 and A2 refer to the assessments

Week 11, a period of time that happened to include the deadlines for the unit 3 online activity and the second course assessment. All peaks in the first two years can be explained by the course events that happened concurrently, such as online activity deadlines for units 2 and 3 and assessment 2 deadline. Semester 1 of the third year contains four peaks in student activity. However, these peaks are lower than those of other cohorts and none exceed 10% of students. In other words, the students completed the tasks on different time schedules during the third year. This can perhaps be explained by the large-scale class boycott due to the Occupy Central Movement in Hong Kong during that particular semester. The phenomenon more clearly seen in the other cohorts is believed to be related to the goal-setting behaviors of students and will be explored in later paragraphs.

Student interviews corroborate the results observed in the learning analytics. The students revealed that they completed the online language activities close to the deadline:

- *When I knew that the deadline for a group of activities was approaching, I would go online that weekend and complete that group of activities* (**David, with staggered deadlines**).
- *When the teacher reminded us of the close of the activity in the coming week, I would start work on those activities* (**Billy, with staggered deadlines**).

Final Deadline

In the final year of the study, most online activities closed at the end of the term. In other words, students had the freedom to complete an online activity at any time after it had been released; they could attempt it immediately, finish it later or wait until the end-of-term deadline before completing it. Figure 19.2 shows the behavioral pattern of those students. The horizontal and vertical axes are the same as those in Fig. 19.1. The lines, however, represent the access rate for the 13 online activities, that is, rate for individual activities. The pattern looks different, but the behavior is quite similar: when an activity was

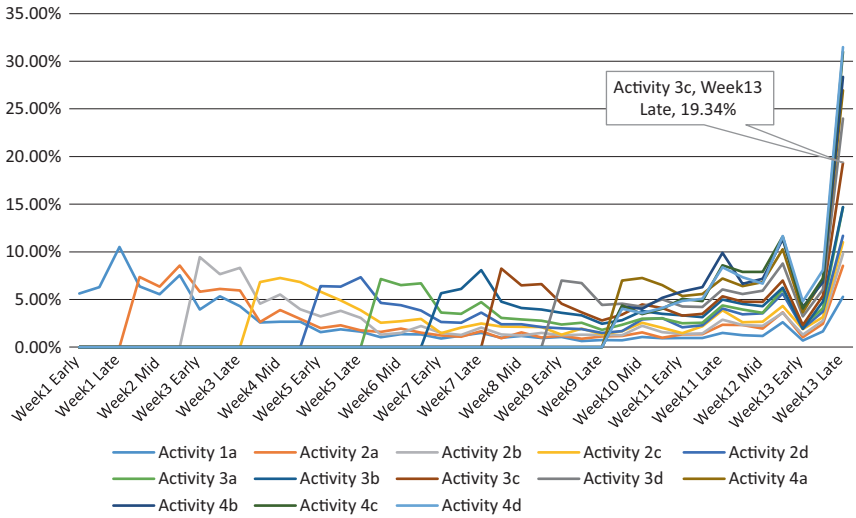


Fig. 19.2 Percentage of students working online across activities (year 4)

launched, around 10% of the students worked on it. Then, the access rate reduced gradually before rising dramatically at the end of the semester (Week 13). The access rate for some activities went as high as 20–30%, much higher than the peaks presented in Fig. 19.1 for the staggered deadlines.

To illustrate this better, an example is provided: 19.34% of students had completed Activity 3c and only Activity 3c (highlighted in Fig. 19.2 for easy reference) at least once during the last few days of Week 13 (Week 13 Late), but there were only 2% of students who had completed any one activity during Week 13/14 in the previous cohort. In other words, a substantial group of students, almost one-third, fulfilled their online activity requirement in the final week, and in fact in the final few days, just before the deadline. This pattern is significantly different from that in the previous cohorts.

To more clearly illustrate this behavior, the final week patterns of all cohorts are presented in Fig. 19.3 for easy comparison. Unsurprisingly, few students in the cohorts with staggered deadlines worked on online language activities in the last week of the term—only around 1%. However, a considerably larger percentage of students in the third year

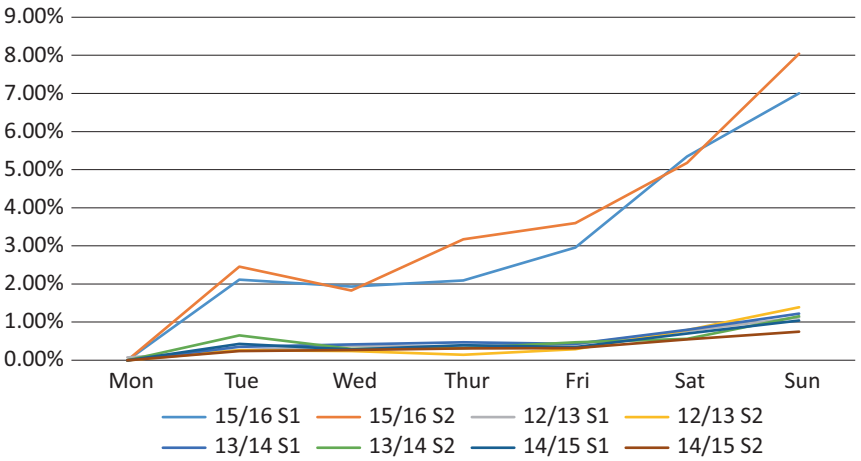


Fig. 19.3 Percentage of Ss working in the final week

cohort worked in the final week, with that number growing as the week progressed. The fraction of students working on their online activities reached a peak of 7–8% on the final day before the deadline, which is up to eight times more active than that recorded in previous cohorts. This shows how students tried to meet the deadline at the last minute.

In the interviews, respondents explained why they completed their work only when the deadline approached:

- *Some students may somehow [have found] the IndiWork useless and [failed] to complete them every week. However, before the deadline, they may [have noticed] that the subject grade would be deducted without completing the tasks. In order to avoid mark deduction, they [chose] to complete them shortly before the deadline* (**Arthur with a final deadline**).

The same respondent also revealed why there was a small peak on the task release day:

- *I normally [completed] the tasks when the tasks [were] released. I [did] that until I [had] met the requirement* (**Arthur with a final deadline**).

Goal-Setting Behaviors

The goal-setting behavior of students is fairly obvious in the current study, and the four steps involved in achieving a goal are evident in the data. Goal theorists (such as Ames, 1992; Locke & Latham, 1994) believe that, after setting a goal, a person will (1) attempt to (mentally or physically) attain the goal, (2) check the level of difficulty of the task and adjust herself as needed, (3) sustain the effort until the goal is reached and, most importantly, (4) adopt proper strategies. Students in the current study perhaps displayed similar behaviors: (1) the required completion rate may be perceived as a primary goal. As the interview results suggest, after doing a few activities, students (2) assessed the level of difficulty of the task and realized it would not be hard to achieve the goal of meeting the minimum completion rate; (3) & (4) they decided to put in minimal effort to achieve the goal. For example, they knew they could achieve the goal without having to obtain 100% in any one activity, so during the interviews, some interviewees mentioned that they made only one attempt at the online activities although the system allowed them to repeat tasks to score a higher mark. Being cognizant that they would not achieve a perfect score, this was still deemed as acceptable, as this strategy would not prevent them from attaining their goal.

Besides setting the fulfillment of the minimum completion requirement as a goal, students viewed meeting deadlines as another goal. Our analytics results show that many students pursued the deadline goal at the last minute, whether they were given a staggered deadline or one final deadline at the end of semester. When they realized they had met the deadline goal, their involvement in online language learning activities showed a drastic reduction.

Conclusions

This study, using a mixed-method approach to investigate students' motivation in online language learning, has yielded interesting results. Learning analytics reveal that a substantial percentage of students stopped

engaging in the academic English subject's online language component after they attained the minimum completion requirement. Further qualitative analysis suggests that goal-setting behavior of students is evident. Students viewed this minimum requirement as their goal, and once they achieved this goal, their online learning mission was completed. Our figures show an obvious cut-off effect of engagement in online language learning. This cut-off did not depend on the content or difficulty level of the online language activity but on two major considerations by students: (1) whether they had gained a high enough score to pass the minimum requirement and (2) when the deadlines or course assessments occurred. For example, in semesters with multiple deadlines, our tables show peaks of engagement immediately prior to the deadlines. If the online activity deadline coincided with an assessment deadline, the peak of engagement was very noticeable. When there was only one deadline for online activities at the end of a semester, as in the final year, there were small bursts of online engagement when the activities were released but no obvious peaks of engagement until the mid-to-late part of the very last week of the semester. This illustrates that the goal of students had then changed. Students rushed to meet the one and only deadline (as a goal) just before the semester ended rather than spreading their online work throughout the semester as the language course covered topics relevant to the online learning tasks. The obvious differences in the data between the final academic year and the first three years attest to the importance of deadlines as goals for students. In view of this, the authors recommend that online activities should align with the other parts of a language course in three aspects: learning outcomes, assessment foci and timeline, that is, the closing dates of online activities should be staggered to mirror the learning and assessment schedules instead of having a single major deadline for all online activities at the end of the semester. This can help students to set a goal that is more aligned with the expected learning outcomes of the course.

Although this study is longitudinal and quite large, it also has certain limitations. The setting is Hong Kong and the learners are mainly Chinese who have studied English for many years prior to entering the university. Hong Kong is a unique setting where English is a foreign language but one that is used extensively unlike many other English as a foreign

language (EFL) locales where English is used primarily in the classroom. It should also be mentioned that this study is looking at students who are taking academic English classes, most of whom are not majoring in English language or in linguistics. In other words, the majority of students may see the online activities as simply hurdles that need to be jumped, which the interview data seem to indicate. As Freiermuth et al. (2003) mention, students can lose interest studying English when they cannot see a clear rationale for learning.

Although only a small number of students agreed to participate in our individual in-depth interviews, the qualitative results corroborated the quantitative results and extended our knowledge of students' behavior and mentality. While our learning analytics results revealed interesting patterns in students' online actions, the interview findings enriched our understanding of the thinking behind the patterns, the reasons and the motivation. It testifies to the potential of employing a data-driven approach to study motivation in computer-assisted language learning (CALL).

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20

The Impact of Digital Storytelling on the Motivation and Engagement of Young Foreign Language Learners

Lizzie Abderrahim and David Navarro González

Introduction

Motivation in the Language Classroom

"To be motivated means to be moved to do something" (Ryan & Deci, 2000, p. 54). It refers "to the magnitude and direction of behavior; it refers to the choices people make as to what experiences or goals they will approach or avoid and the degree of effort they will exert in that respect. In relation to education, motivation refers to a student's willingness, need, desire and compulsion to participate in, and be successful in, the learning process; it seeks to increase the factors that move a student toward becoming more involved in the class and the subject matter" (Bomia et al., 1997, p. 3). It is evident that motivation and the degree to which an individual is motivated is a critical factor in the learning process

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and, as such, motivation has generated a great deal of discussion. Within the context of such an extensive body of existing research, this research reports the findings of a longitudinal group study which examined how the use of digital storytelling as a pedagogical tool influenced the level of engagement and the development of intrinsic motivation among young learners of English as a second language. The research was predicated on the theory of motivation set out by Deci and Ryan (1985) known as self-determination theory.

According to Ryan and Deci (2000), the orientation of an individual's motivation is informed by their underlying attitudes and goals—it is the 'why' the individual does something. Regarding motivational constructs, focusing on the 'why' forms the basis of self-determination theory, a key principle being that an individual is more likely to continually engage in behaviors for which they feel autonomously motivated (Ryan & Deci, 2000). From this key principle, Ryan and Deci draw the distinction between extrinsic and intrinsic motivation. This distinction is encapsulated in the question: Why does an individual do something? For the extrinsically motivated individual, the answer to that question is because this 'something' should lead to an identifiable objective, whereas for the intrinsically motivated, it is because the individual finds this 'something' inherently interesting or enjoyable. These responses might be said to represent an answer to the question of why an individual does something, but they do little to explain how extrinsic motivation differs from intrinsic motivation. To understand this, we must explore the functional differences between extrinsic and intrinsic motivation.

Ryan and Deci (2000) describe the "taxonomy of human motivation" as a classification of the different motivational factors that underlie human behavior as shown in Fig. 20.1.

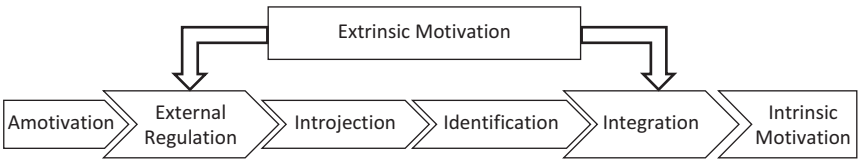


Fig. 20.1 The taxonomy of human motivation (based on: Ryan & Deci, 2000, p. 61)

This classification system recognizes a spectrum of motivational factors reflecting the extent to which the motivation for an individual's behavior stems from themselves (Deci & Ryan, 1985a; Vallerand et al., 1992). At one extreme on this spectrum sits amotivation, a state in which the individual has no autonomy, and self-determination is wholly lacking. Amotivation might therefore be defined as "a lack of motivation caused by the realization that 'there is no point' or 'it's beyond me'" (Dörnyei, 2005, p. 78). Sitting in the middle of the spectrum lays extrinsic motivation, of which there are four types: external regulation, introjection, identification and integration.

These four types of extrinsic motivation describe the degree to which an activity might be said to be self-determined with external regulation being the least self-determined form of extrinsic motivation, described as motivational behavior of what "is expected of me" (Dörnyei, 2005, p. 78).

Introjection describes behavior which is internally driven, that is, pressure is exerted from within the individual that controls their behavior. That internal pressure, stemming from a sense of pride or the need to avoid anxiety or a sense of guilt, acts as an internal regulator on the individual's behavior. This, in the language learning context, is behavior appropriated on the notion that "I would feel guilty if I didn't know a second language" (Dörnyei, 2005, p. 78).

Identification introduces some autonomy into behavior and we begin to see the start of a more self-determined form of motivation with the individual attaching some personal importance to a particular behavior by virtue of which the individual might be said to 'own' the regulation of their behavior. In the language classroom, identification describes the behavior of an individual who is learning a language "because I think it is good for my personal development" (Dörnyei, 2005, p. 78).

The fourth type of extrinsic motivation on the spectrum is integration, the point on the spectrum where, in the context of extrinsic motivation, there is the greatest degree of self-determination. Integration occurs through a process of self-examination during which the individual internalizes the reasons for a particular behavior and in so doing assimilates those reasons as a part of the 'self.' Such integrated behaviors can be said to be autonomous and, in this sense, it might be argued that integration shares some similarity with intrinsic motivation, the final point on the spectrum. However, integrated behaviors still fall within the scope of extrinsic

motivation because while such behavior is completely voluntary, there also is a presumed instrumental value that relates to an outcome unconnected to the behavior itself.

The final point on Ryan and Deci's spectrum is intrinsic motivation. In discussing intrinsic motivation, Ryan and Deci (2000) recognize the natural motivational tendency that exists within humans from birth and which is carried forward into adult life where the behavior influences performance, persistence and well-being (Ryan & La Guardia, 2000). This natural motivational tendency can be seen as a form of intrinsic motivation. What then is intrinsic motivation? Vallerand et al. (1992), writing about the academic motivation scale first developed in Canada as the Echelle de Motivation en Education, discuss three types of intrinsic motivation: motivation to know, motivation to accomplish something and motivation to experience stimulation. These are defined (p. 1005) as follows:

- The motivation to know something describes "The fact of performing an activity for the pleasure and satisfaction that one experiences while learning, exploring or trying to understand something new."
- The motivation to accomplish something describes "The fact of engaging in an activity for the pleasure and satisfaction experienced when one attempts to accomplish or create something."
- The motivation to experience something stimulating describes the fact of engaging "in an activity in order to experience stimulating sensations derived from one's engagement in the activity."

Much interest has been shown in intrinsic motivation in the field of foreign language teaching. According to Rost (2006), a foreign language learner needs extraordinary motivation in order to succeed, something which he attributes to what he terms the adverse conditions to which the learner is exposed. These adverse conditions result from being in an environment where there is not enough exposure to the target language, where there are too few strong role models promoting it and a lack of opportunities to interact with native speakers. Since exposure to the target language, strong role models and interaction with native speakers are all known to contribute to successful second

language acquisition, their absence makes the task of learning a foreign language that much more challenging, hence the need for extraordinary motivation.

For Rost (2006, p. 1), student motivation is critical in the language classroom, without it, "there is no pulse, there is no life in the class," and in this regard self-determination theory, in particular the recognition of intrinsic motivation, has assumed great significance in the second language classroom. Dörnyei (2005, p. 76) concurs, referring to Douglas Brown (1994) who was the first to advocate for the role that intrinsic motivation had in the language learning classroom and who distinguished between the traditional classroom with its focus on the material rewards of education cultivating primarily extrinsic motivation and the language classroom where there is a need to "instill an appreciation for creativity and for satisfying some of the more basic drives for knowledge and exploration" (Douglas Brown, 1994, p. 40). It is intrinsic motivation, which according to Ryan and Deci (2000) refers to "doing something because it is inherently interesting or enjoyable" and "the doing of an activity for its inherent satisfactions rather than for some separable consequence," which is said to be capable of instilling that appreciation and satisfying those basic drives. This then is the theory upon which this study was predicated.

Digital Storytelling in the Language Classroom

Researchers have demonstrated a number of benefits associated with the use of digital storytelling as a pedagogical tool. Included among these benefits are, according to Di Blas, Garzotto, Paolini and Sabiescu (2009), Yuksel, Robin and McNeil (2010) and Lisenbee and Ford (2018):

- the acquisition and consolidation of knowledge and skills
- heightened engagement and motivation toward learning activities
- the acquisition of digital literacy skills
- improvements in overall academic performance
- the development of writing, technical, presentation and research skills
- advancements in higher order thinking, social, language, reflection and artistic skills

- the opportunity for students to make authentic connections between their own experiences and the academic content of their lessons.

The Center for Digital Storytelling, now known as StoryCenter (https://www.storycenter.org/), established by Joe Lambert and Dana Atchley in California during the early 1990s is recognized as the birthplace of the genre. Digital storytelling as conceived by Lambert and Atchley has been utilized in a variety of ways. We have seen it used as a tool to give a voice to people to tell stories about identity, family, relationships, community, health, healing, place, the environment, about work, social justice and human rights. Much work has been done subsequently regarding the educational uses of digital storytelling with a website maintained by the University of Houston (http://digitalstorytelling.coe.uh.edu/) proving to be an extensive resource.

Increasingly recognized as a powerful pedagogical tool in education, digital storytelling has been described by Robin (2006) as an effective instructional tool for teachers and an effective learning tool for students. It is also said to support the development of "twenty-first century literacy," that is, digital literacy, global literacy, technology literacy, visual literacy and information literacy (Brown, Bryan, & Brown, 2005). In addition to these twenty-first-century literacy skills, digital storytelling has been used in educational settings to engage and motivate students (Al Khayat, 2010; Campbell, 2012) as well as to support teaching and learning in both skills-based and knowledge-based subjects including critical thinking (Yang & Wu, 2012), digital literacy (Pardo, 2014), physics (Kotluk & Kocakaya, 2017) and math (Istenic Starčič, Cotic, Solomonides, & Volk, 2016). Researchers have also demonstrated its effectiveness in the language classroom (see Kim, 2014; Shelby-Caffey, Úbéda, & Jenkins, 2014; Thang, Mahmud, & Tng, 2015; Nishioka, 2016; Leshchenko, Ruban, & Tymchuk, 2017).

The process of creating a digital story is discussed by Joe Lambert in his *Digital Storytelling Cookbook* (Lambert, 2010), where he reduces the digital story to a recipe that could be followed. Originally, Lambert and Atchley identified seven elements as the starting point. These elements, which became the fundamentals of digital storytelling, have been refined

and described as a series of steps by Robin (2016) in order to reflect circumstances created in educational environments:

1. Choose a topic and think about the purpose of the story.
2. Research the topic using a variety of sources, online and hard copy.
3. Write a first draft of a script to serve as the audio narration for the story. Make the writing focused and personal and ensure there is a beginning, middle and end.
4. Get feedback on the draft by sharing your script and asking for suggestions on how to make it clearer or more useful.
5. Revise the script in light of the feedback received. Writing is an iterative process and it can take several attempts to get the script right.
6. Find or create images to add to the script.
7. Make sure that, when using images, there is no breach of copyright.
8. Visualize the story by creating a storyboard.
9. Record the audio narration.
10. Add background music to enhance the narration.
11. Select the software tool to be used to create the digital story.
12. Publish the digital story online.

These steps allow us to see the digital storytelling process as a series of phases. In phase 1, analysis: Instructional goals are identified, and the teacher helps the students to develop their understanding of the topic and to consider the content of the digital story. In phase 2, design: The teacher helps the students to develop a storyboard and assists in the collection and organization of digital images, audio and video and the students work on developing a detailed script. In phase 3, development: The teacher supports the students in using the selected digital storytelling software to create their story. In these design and development phases, the teacher provides constructive feedback and encourages and facilitates constructive feedback between the students. During phase 4, implementation: The students, along with the teacher, plan how the digital story will be used and develop any necessary supplementary materials. Finally, in phase 5, evaluation: Students evaluate their digital story.

Table 20.1 Digital storytelling tools

Microsoft photo story 3	A free desktop/laptop product that is user-friendly, requiring basic computer skills
Pow Toon	A user-friendly Web 2.0 tool allowing users to create animated videos
StoryJumper	A Web 2.0 tool allowing users to add text, illustrations, voice and music to create and publish stories
VoiceThread	A Web 2.0 tool allowing users to upload still images or video clips and to add audio comments
Vocaroo	A simple easy-to-use online voice recording service allowing users to record and play back their voice
Vyond (previously GoAnimate)	A Web 2.0 animated video creation platform allowing users with no background in animation to create animated videos
Toontastic	A free iPad application allowing users to create animated cartoon stories

For an educator considering using digital storytelling in the classroom, there are numerous tools available to them, some of these are described in Table 20.1:

The technical and pedagogical merits of these tools are an important consideration for educators and several evaluation models have been developed. The majority of these focus on technological issues (Mateas, 2000; Murray, 1997; Schäfer, 2004; Spierling, Grasbon, BraunIdo, & Iurgel, 2002), but a model focusing on pedagogical issues has been developed by Psomos and Kordaki (2012). Other factors such as cost as well as the level of knowledge and experience required of users are also of concern, but with the vast array of products available, these concerns are clearly capable of being addressed.

There are then a "wide variety of digital storytelling forms that range from the personal to the educational, touching on professional and interactive entertainment. Digital stories consisting of varying lengths, can be video-based, based on photos or even based on cartoons. Some are written; others are spoken, while some incorporate multiple media formats" (Ribeiro, 2015, p. 44). Robin (2016) characterizes digital storytelling as a blend of text, pictures, recorded audio narration, music and video in order to tell a story that is relatively short—between two and ten minutes—saved in a digital format and typically uploaded to the internet.

Methodology

A literature review of the use of digital storytelling in the language classroom was undertaken using a four-step systematic review approach. At Step 1, Web of Science was used to identify research published between 2007 and 2017 using 'Digital Storytelling,' 'Language' and 'Teaching' as the criteria with the search conducted in the categories of education, language and linguistics. At Step 2, a Mendeley Library was created to store publications identified in Step 1 and suggestions generated by Mendeley were added. Sixty-five publications were identified at the end of Step 2. These publications were reviewed at Step 3 according to whether the research had been peer reviewed, had its research questions sufficiently defined and whether certain factors were sufficiently clear. A final list of 18 publications was identified at the end of Step 3. These publications were then analyzed at Step 4 and six studies that had considered either engagement or motivation or both were identified. These included Yang and Wu (2012), Papadimitriou, Kapaniaris, Zisiadis and Kalogirou (2013), Kim (2014), Yıldırım and Pınar Torun (2014), Tahriri, Tous and Movahedfar (2015) and Leshchenko, Ruban and Tymchuk (2017). While it is true that these studies did focus on issues relating to motivation and engagement, none addressed the specific issues raised in this study which explored the association between the use of digital storytelling as a pedagogical tool and the development of intrinsic motivation.

The research was conducted in a private language academy offering extracurricular English language tuition in Tarragona, Spain. Offered as part of the general teaching provision at the academy, the study took place throughout a full academic year with 22 participants, 17 females and 5 males, aged between 5 and 13 years old. Although the level of the learners was not formally assessed, it was evident from observations that proficiency levels ranged from beginner to pre-intermediate, with the majority having an elementary level. The age profile and proficiency levels are illustrated in Tables 20.2 and 20.3.

Participants were organized into eight groups, and while some attempt was made to allocate them to groups according to proficiency levels and

Table 20.2 Age profile

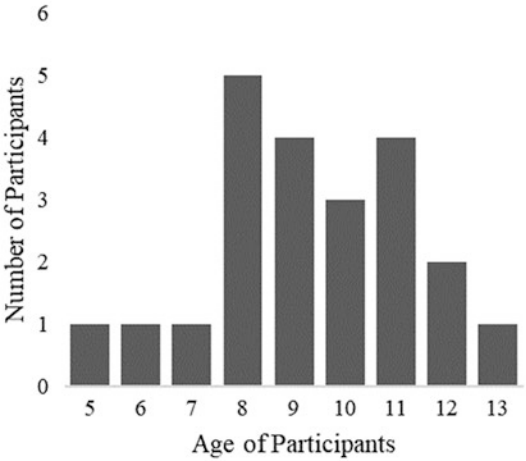
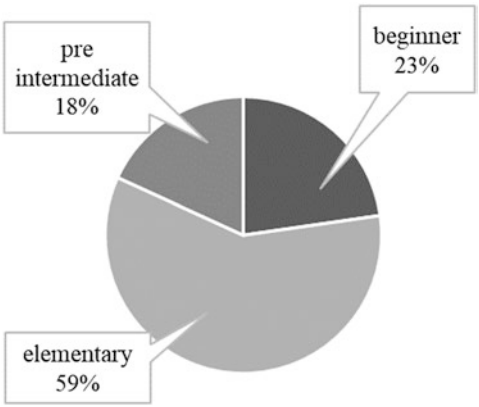


Table 20.3 Proficiency levels



age, a significant determining factor was the parental decision regarding their child's availability for extracurricular lessons. As a result, there was some degree of variability within groups as illustrated in Table 20.4.

With the exception of the one participant in Group H, who had two one-hour lessons per week, all participants attended a single one-hour lesson each week. Lesson content was categorized as follows:

Table 20.4 Profile of groups

Group	No. of participants	Gender	Age range	Proficiency range
A	4	Mixed	10–11	Beginner–pre-intermediate
B	2	Mixed	7–9	Beginner–elementary
C	2	Female	8–9	Elementary
D	4	Mixed	8–11	Beginner–elementary
E	3	Female	11–12	Beginner–pre-intermediate
F	2	Mixed	5–6	Beginner–elementary
G	4	Female	8–9	Elementary
H	1	Male	13	Elementary

- Traditional games: Traditional games were used to support the development of the key language and structures participants needed in order to create a digital story. Typically, cards were used to support games that encouraged the development of key language while board and dice games supported the acquisition of key structures.
- Story-Building activities: Having used traditional games to support the development of key language and structures, story-building activities were used to introduce a storyline. These story-building activities were based on established stories, dramas and videos and involved the use of pictures, text and animation to introduce a storyline. Using these storylines, participants either developed a storyboard that directly linked to the storyline or used the idea behind a storyline to develop their own narrative.
- Digital Storytelling: Participants used a number of digital storytelling tools that reflected their needs and abilities, the requirements of their stories and those tools which took into account classroom constraints. These tools included:

  – VideoScribe (https://www.videoscribe.co/en/): Downloadable software which allowed participants to create a digital story as an animated whiteboard using text, pictures and photos and a soundtrack or voice recording.
  – Storyboard That (https://www.storyboardthat.com/): A web-based tool that allowed participants to draw on an extensive library of images and to create their own storyboards using text and audio.

- Microsoft PowerPoint: Participants created slides using text, pictures as well as animation and recorded audio. The screen record function also allowed participants to record their own dialogue onto silent YouTube animations.
- Mobile Phones: Audio and video functions allowed participants to record themselves performing their own digital stories and the camera function was used to take photos to create photo montage storyboards which were documented in VideoScribe or PowerPoint.

Quantitative data were collected using a lesson content log maintained by the researcher throughout the research period which recorded the distribution of activities within and between lessons, two versions of a motivational survey and reflective diaries completed by participants at the end of each lesson.

The Motivational Surveys

Two versions of a motivational survey, developed specifically for this study, were used. Version 1, administered once in early summer, was a simpler version used with younger participants whose proficiency levels were at beginner level or who were functioning in the lower range of the elementary level. In this version, using the same statements as those in version 2, participants were asked to identify what they considered to be the most important and the least important reason for them to learn English. Ten participants completed version 1. For older participants whose proficiency was at pre-intermediate level and others who were seen to be functioning in the upper range of the elementary level, version 2 of the motivational survey was used. This version of the survey, conducted on two occasions in early fall and in early summer of the following year, asked the participants to rank their responses to a series of statements on a scale of 1–6, using 1 for the statement they most agreed with and 6 for the statement they least agreed with. Twelve participants completed version 2.

To assess whether there was a shift from extrinsic toward intrinsic motivation, the survey statements were designed to address the following aspects of motivation as shown in Table 20.5:

Table 20.5 Motivational survey statements

Statements reflecting intrinsic motivation	
Knowledge	Extracurricular English lessons are interesting
Accomplishment	Extracurricular English lessons make me feel good
Stimulation	Extracurricular English lessons are fun
Statements reflecting extrinsic motivation	
External	My parents want me to have extracurricular English lessons
Introjected	I want to improve my English, so I have extracurricular English lessons
Identified	It's important for me to learn English so I have extracurricular English lessons

The Reflective Diaries

All participants maintained a reflective diary during the research period. Completing the diary was built into each lesson plan and participants used a template diary designed by the researcher to support the provision of relevant information. The template provided for the collection of quantitative data regarding lessons designed to address motivational factors associated with knowledge and stimulation, as well as participant mood, which addressed accomplishment as an indicator of intrinsic motivation. To give lesson feedback, participants ticked a box to indicate whether they felt the lesson was interesting, fun, boring or bad, and for mood feedback, participants ticked a box indicating how they were feeling at the end of the lesson (good, sad or OK). It became apparent that the category 'fun' in the lesson feedback needed to be qualified and a second version of the template was introduced after the Christmas holiday. This second version gave participants the opportunity to distinguish between 'fun with friends,' that is, fun in relation to their interaction with other participants, and 'fun activities,' that is, fun in relation to the activities.

Results from the Motivational Surveys

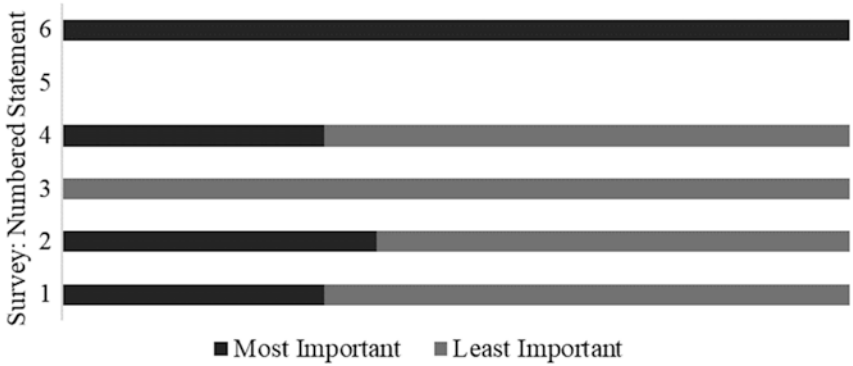
Motivational Survey: Version 1

Version 1 of the motivational survey, as shown in Table 20.6, was completed by ten participants (three males and seven females) on one occasion in early summer:

Table 20.6 Motivational survey: version 1

1	Extracurricular English lessons are interesting.	INTRINSIC
2	Extracurricular English lessons are fun.	
3	Extracurricular English lessons make me feel good.	
4	My parents want me to have extracurricular English lessons.	EXTRINSIC
5	I want to improve my English, so I have extracurricular English lessons.	
6	It is important for me to learn English, so I have extracurricular English lessons.	

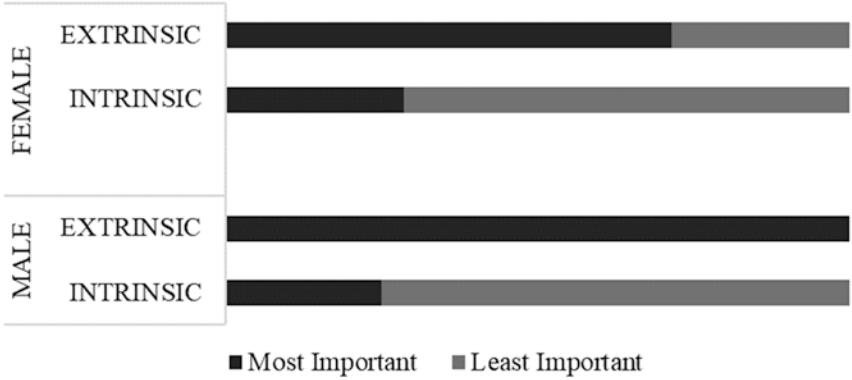
Table 20.7 Motivational survey (version 1 results)



Participants were asked to identify the statement they thought was the most important and the one that was the least important and their responses were analyzed using the chart function in Excel and are illustrated in Table 20.7.

It is evident from these data that participants had a bias toward extrinsic motivation (statements 1, 2 and 3 relating to intrinsic motivation being seen as least important) and that factors external to the participant, parents and societal expectation were the most significant (statements 4 and 6). When gender is taken into account, the responses, as illustrated in Table 20.8, demonstrate a marginal difference with female participants attaching less importance to extrinsic motivators than male participants.

Table 20.8 Motivational survey (version 1 gender difference)



Motivational Survey: Version 2

Twelve participants (two males and ten females) completed version 2 of the motivational survey on two occasions, the first at the outset of the study in early fall and the second at the end of the study in early summer of the following year. An independent *t*-test was conducted, using IBM SPSS 25 software, in order to draw a comparison between the two sets of survey results based on gender. The descriptive results of this testing are set out in Table 20.9.

Put simply, this indicates that there was a decrease in levels of intrinsic motivation among male participants (−.8333) and an increase in levels of extrinsic motivation (2.000), whereas for female participants, the results were opposite, with increased levels of intrinsic motivation (.6667) and decreased levels of extrinsic motivation (−.6667).

The results of the *t*-test are set out in Table 20.10.

These results are indicative of a difference in motivation between males and females with the results from version 2 of the motivational survey demonstrating a significant difference in both intrinsic and extrinsic motivation between male and female participants. While it is true that these results should be looked at with some degree of caution due to the fairly low number of participants in the study, it would not be unreasonable to conclude from the findings that gender plays an important role in relation to increasing or decreasing intrinsic and extrinsic motivation.

Table 20.9 Motivational survey (version 2: independent *t*-test gender difference)

	Gender	N	Mean	Standard deviation
Increase of intrinsic motivation	Male	2	−0.8333	0.2357
	Female	10	0.6667	0.9026
Increase of extrinsic motivation	Male	2	2.000	1.411
	Female	10	−0.6667	1.143

Table 20.10 Motivational survey (version 2: independent *t*-test results)

	t[a]	Sig. (bilateral)[b]	Difference between means
Increase of intrinsic motivation	−2.253	0.048	−1.500
Increase of extrinsic motivation	2.933	0.015	2.667

The following points should be noted: [a]*t*: The statistic value on the *t* distribution by itself has no interpretation, but usually, values that differ from 0 are more likely to lead to significant differences. [b]Sig.: A signification value lower than .05 implies that there are some significant differences between the means of the two groups, with a certain level of 95%.

Results from the Reflective Diaries

Further evidence indicative of intrinsic motivation and its relationship to the use of digital storytelling as a pedagogical tool was gathered from quantitative data obtained from the reflective diaries completed by the participants at the end of each lesson. Mood data were also gathered to investigate rates of accomplishment as an indicator of intrinsic motivation data, while lesson data were gathered to investigate motivational factors associated with knowledge and stimulation. Data obtained from these diaries are illustrated in Figs. 20.2 and 20.3.

Looking at Fig. 20.2, we can see that of the 540 responses only one participant, on one occasion, described their mood as sad; the overwhelming response was 'good.' It should be noted that the participant using the descriptor 'sad' also used the descriptor 'boring' to describe the lesson to which this feedback refers. Closer examination of the lesson content and the researcher's observation of this participant over the course of the year suggests that this participant had a need to control collaborative activities and, as such, her feedback appears to relate to the extent to which she was able to do so.

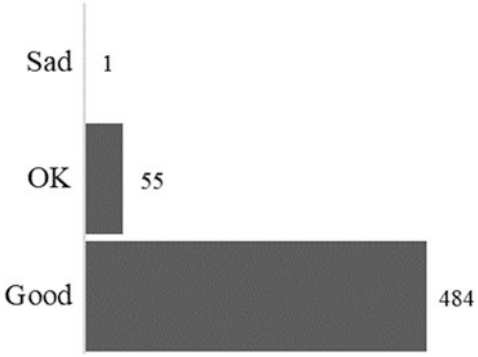


Fig. 20.2 Mood feedback

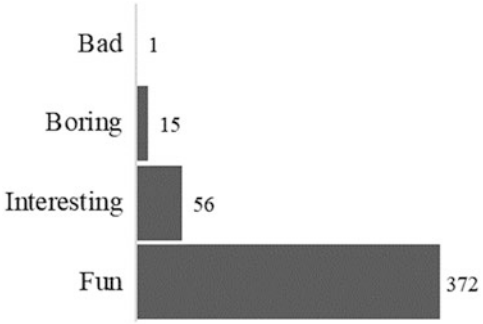


Fig. 20.3 Lesson feedback

Figure 20.3 shows us that participants overwhelmingly described their lessons as either fun or interesting rather than bad or boring. This feedback is discussed in more detail in the following sections.

Use of the Descriptor 'Bad'

Closer examination of the lesson feedback in which one participant used the descriptor 'bad' reveals that this participant, who was a reluctant and tearful starter, had used this descriptor in relation to the first lesson of the year; for all other lessons, the feedback from this participant was that the lessons were fun.

Table 20.11 Use of the descriptor 'boring'

Group	Participants	Lessons	Context of Feedback
A	3	9	This group had a disparity in proficiency levels ranging from pre-intermediate level to beginner level. The context for feedback describing a lesson as boring appeared to be that the lesson content was aimed at either too far above or too far below their proficiency level to engage them.
B	2	3	A review of the lesson content showed that lessons described as boring related to the introduction and use of the VideoScribe software.
H	1	1	This participant received the greatest amount of digital storytelling content and this feedback relates to a lesson in which the focus, rather than being on digital storytelling, was on using developing story-building skills by using picture cards. The feedback for all other lessons was either fun or interesting.

Use of the Descriptor 'Boring'

Regarding the feedback that described 15 lessons as boring, this was provided by six participants in three groups: A, B and H. The context in which that feedback was provided is discussed in Table 20.11, in which the column 'participants' describes the number of participants in that group who used the descriptor and the column 'lessons' describes the number of lessons to which the feedback refers.

Use of the Descriptor 'Fun'

A deeper look at the feedback asserting that 372 lessons were fun, reveals that it can be divided further into three descriptors, fun friends, fun activities and fun interesting, and it is apparent from the chart below that participants overwhelmingly used the descriptor 'fun with friends' to describe the lesson as shown in Fig. 20.4.

Given the highly collaborative nature of the digital storytelling approach used during this research, the high response rate relating to the descriptor 'fun with friends' is probably not surprising.

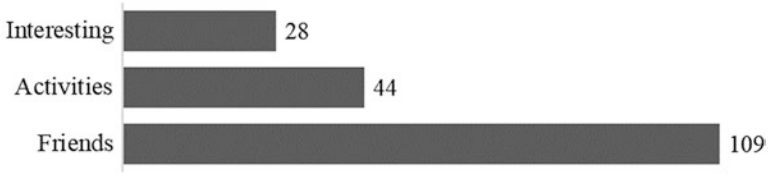


Fig. 20.4 Fun feedback

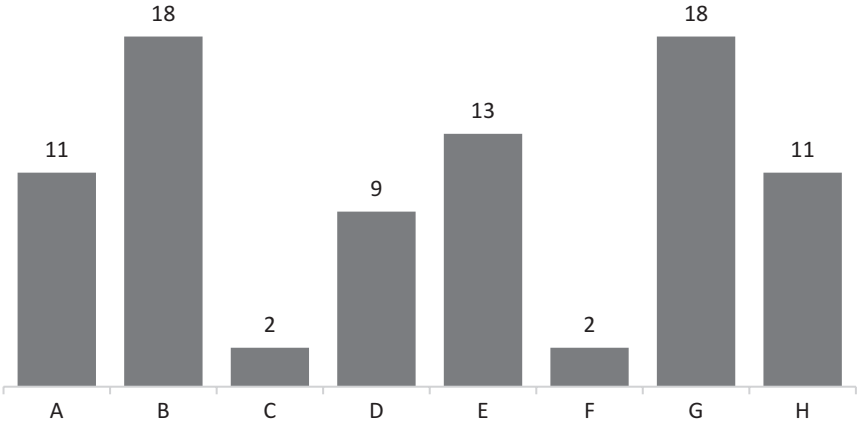


Fig. 20.5 Lesson feedback: interesting by group

Use of the Descriptor 'Interesting'

Specific data, collated by group and relating to those lessons described as interesting are illustrated in Fig. 20.5, which include data relating to both the 'interesting' and 'fun interesting' descriptors:

Excel was used to calculate Pearson's correlation coefficient (r) in order to examine the relationship between the use of the descriptor 'interesting' to describe lessons and the % of digital storytelling lessons experienced by each group. The result, 0.193165, is indicative of a very weak positive correlation which is illustrated in Fig. 20.6.

Figure 20.6 would suggest that, although weak, a relationship between the percentage of digital storytelling and the number of lessons described as interesting is most apparent in the data relating to Groups B and D. A

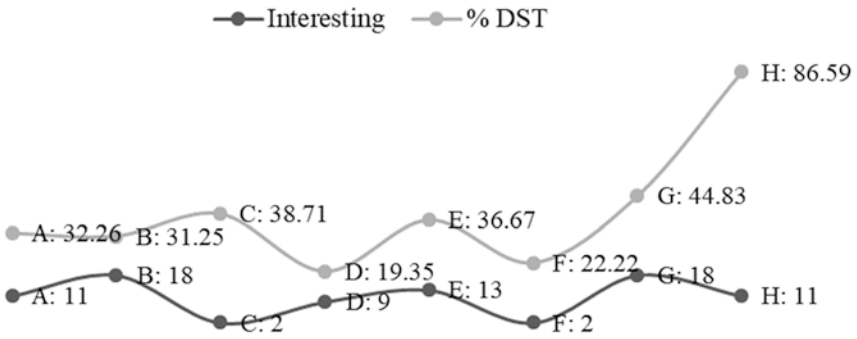


Fig. 20.6 Relationship between percentage of digital storytelling and lesson feedback: interesting

reasonable inference to draw from this would be that, in those groups where participants experienced less percentage of digital storytelling, they appear to be more likely to describe those lessons where they did experience digital storytelling as being interesting rather than fun, in contrast with those participants whose experience was more frequent (the more experience they had in digital storytelling, the less interesting and more fun it became). This inference is strengthened by the data from Group H where we see the greatest disparity between the percentage of digital storytelling and the number of lessons described as interesting (the frequency of this participant's digital storytelling experience reducing the degree to which the participant thought it was interesting).

Strengths and Limitations

There are undoubted strengths and limitations to research such as this. In terms of its strengths, most apparent is the fact that the study was conducted in a natural setting over the course of one academic year and as such reflects the real-life experiences of the researcher, the teacher and the students as participants. Such real-life experiences engender credibility among practitioners and can be appropriately generalized more broadly.

Regarding the limitations, the most apparent limitation is the size of the study, in particular the number of male students. From a practical

teaching perspective, 22 students is not an insubstantial number; in research terms, a small number of participants such as in this study can have implications when analyzing data. One of the more obvious limitations is the number of male participants, so a certain degree of caution should be exercised when considering the extent to which gender plays a role in relation to motivation. In addition, it is also possible to see the absence of a control group as a limitation. In this study, based as it was in an academy providing extracurricular English, the nature of enrollment and student availability made it impossible to create a control group; however, it is also the case that creation of a control group with the intent of simply excluding students from an activity may be inappropriate in consideration of the circumstances at hand. Bearing in mind these strengths and limitations, we now turn to a conclusion and a recommendation for further research.

Conclusions

It is clear from the results of this study that, in general terms, the use of digital storytelling as a pedagogical tool does improve learner engagement and motivation. While this reflects the findings of existing research examining issues of motivation and engagement in relation to the use of digital storytelling, what is of particular interest and worthy of note from the results of this study is evidence suggesting that learners who are extrinsically motivated are more likely to be motivated intrinsically through the use of digital storytelling and that females are more likely to experience this kind of motivation than males. While proceeding with some caution, given these findings, it is reasonable to conclude that gender is a factor in the development of such motivation; nevertheless, because of the demonstrated gender differences concerning motivation, additional research is certainly warranted to see if the tenets of this study are supportable. Such research would be pertinent for two reasons. First, it would be advantageous to conduct a study with a greater number of participants (in particular a greater number of male participants) in order to see if the conclusions drawn here might be strengthened. Second, the results of this study appear to contradict the findings of a few earlier studies that have

addressed this issue. A review of research published between 1975 and 2013 found only three studies that looked explicitly at motivational issues and gender differences, with each study finding female students to be more instrumentally and extrinsically motivated than males (Bacon & Finnemann, 1992; Ozuturk, 2012; Wikeley & Stables, 1999). Given that these findings do not correspond with the findings of this study and, moreover, were not concerned with the use of digital storytelling as a pedagogical tool, there would be obvious merit in conducting further research into the relationship between gender, the development of intrinsic motivation and the use of digital storytelling.

In this study, we examined the effect of digital storytelling on intrinsic and extrinsic motivation. We suggest here that if teachers carefully incorporate digital storytelling into their curriculum, they will likely observe a demonstrated increase in intrinsic motivation over time just as the data from this study have indicated.

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21

The Impact of Online Lower-Level Courses on World Language Learners' Self-Perceptions, Mindset and Willingness to Communicate

Rebecca L. Chism and Carine Graff

Introduction

The proliferation of online classes attests to their popularity, prominence and potential; namely, the opportunity to transcend time and space in order to provide continuous and immediate access to information and global communication (Nguyen, 2015). Today's college student has grown up with the internet. They readily employ it to answer questions, solve problems and learn how to do things, among other possibilities. Millennials are more apt to interact with their peers using social media where they can showcase every thought, feeling and milestone of their daily lives (Drago, 2015).

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To this end, computers, tablets and smartphones have become commonplace, resulting in an enormous push by colleges and universities to use them to recruit potential enrollees, widen curricular options and promote academic programs (Bartley & Golek, 2004; Simpson, 2010). By all appearances, the approachability offered by electronic learning (e-learning) points toward a cost-effective scenario with benefits for students, teachers, professors and administrators. Not surprisingly, most scholarly disciplines, world languages included, have adopted ways to integrate e-learning into their curricula. Given this trend, it is worth investigating the social and psychological impact of online classes on lower-level world language students. Of particular interest is the impact they have on students' willingness to communicate (WTC) in the second language (L2) as well as whether they affect students' perceptions of themselves as language learners. The present study explores students' descriptions of and reactions to their experiences with learning a world language online and its effects on their WTC and growth mindset. With this in mind, the following research questions are asked:

1. How do students describe their experiences in an online lower-level world language class?
2. How do these experiences influence their willingness to communicate in the target language?
3. How do these experiences shape students' growth mindset or self-perception as world language learners?
4. How do these students perceive their overall experience in this format?

Answers to these questions will provide researchers with additional information as to the effect online classes have on the students who are enrolled and participating in such classes.

Literature Review

Distance education in and of itself is nothing new; written correspondence was used for this purpose as far back as the eighteenth century. In the 1960s, television enabled audiences to watch classes presenting a

variety of academic subjects and personal enhancement pursuits. In the 1980s, asynchronous modules became available on computers, and in the 1990s, the internet made its appearance with all the possibilities we know of today (Fullerton, Taylor, & Watson, 2009). E-learning as a phenomenon refers to the various ways that courses can be offered electronically; that is, exclusively online or as a hybrid, as well as the platforms used to host content and the tools used to scaffold knowledge. Currently, there are many different purposes and types of remote course offerings. In academia, universities use management systems, such as *Blackboard*, to house their instructional materials and technological enhancements. Textbook companies are now transitioning to electronic versions of their own books for ease and convenience.

The worldwide web has made higher education available to everyone with an internet connection by providing unprecedented access to websites and databases via rapid transit on the superhighway; hence, online classes are able to reach more interested parties than ever before (Barrett, 2010; Caruth & Caruth, 2013). In today's university, students are no longer required to be physically present on campuses, making advanced coursework possible for those who may never have considered academic study previously (Clothey, 2016; van Doorn & van Doorn, 2014). Nontraditional students such as older scholars, persons with disabilities, adults with limited resources and groups in isolated areas have taken advantage of the degree programs, personalized explorations and open learning communities now available to them (Skopek & Schuhmann, 2008). World languages, too, are now within reach of those who wish to learn them.

The American Council on the Teaching of Foreign Languages (ACTFL) encourages the integration of technology to aid in the development and progression of target language proficiency in the three modes of communication: interpretive, presentational and interpersonal.

The interpretive mode is defined as the "interpretation of what the author, speaker, or producer wants the receiver of the message to understand" (ACTFL, 2012, p. 7). Students can practice this particular mode through listening, watching or reading contemporary materials and media in the target language available on the internet. The presentational mode is described as "the creation of messages" where they can practice these skills with a multitude of software applications

designed to showcase their speaking, signing or writing abilities (p. 7). The third mode of communication, interpersonal, describes the "active negotiation of meaning among individuals" (p. 7). Computer-mediated communication (CMC), whether in asynchronous or synchronous formats, is considered the primary way to facilitate this.

The twenty-first-century foreign language learner has direct access to a number of contemporary domains as represented by the products, practices and perspectives of a given community (Shrum & Glisan, 2016, p. 151). The options available to these learners promise more authenticity in linguistic and cultural exposure. Even with access to a rich supply of materials, it is important to remember that language and culture in and of themselves are not static but rather dynamically and socially orchestrated, and consequently constantly emerging and evolving.

According to sociocultural theory (Vygotsky, 1978), each community event, whether online or face-to-face, is constructed by its contributors as it occurs. Each event is also influenced by a host of variables that may have a positive or negative effect on its participants' experiences. As such, an exploration of the ways that beginning-level world language learners perceive the online environment may reveal more about the influence of these variables.

As previously mentioned, online or hybrid courses offer many options for language learners to increase their proficiency in the three modes of communication within an authentic cultural context. Software, applications and social media have been adapted to world language courses as a means to reach students using channels through which they already communicate with their peers. Synchronous communication, through live video conferencing and electronic chat, has made real-time spoken-like conversation possible. In addition, blogs, discussion threads and message boards serve as a means to enable asynchronous communication to take place (Chism, 2003, 2004; Golonka, Bowles, Frank, Richardson, & Freynik, 2014; Rockinson-Szapkiw & Wendt, 2015; Semones & Chism, 2001).

Other research suggests that learning a world language through e-learning may serve as an effective way to accentuate and operationalize established pedagogical practices for language acquisition (Chun, Kern, & Smith, 2016) as well as to lower anxiety, resulting in an optimal

environment (Bosmans & Hurd, 2016; Martin & Alvarez-Valdivia, 2017). It appears that technology serves as a viable means to improve world language proficiency and performance in ways that can facilitate use and motivate students. However, upon further investigation, an online learning environment may not always be ideal (Arkorful & Abaidoo, 2015; Fullerton et al., 2009; Nguyen, 2015). For example, it is widely assumed that students do not need introductions to technology or guidance in its employment since it is so embedded in their daily lives. While they primarily use mobile texting or social media to communicate with their friends, they do not necessarily use these devices to communicate with their remote classmates unless otherwise prompted. In spite of the comfort, ease and apparent preference for technology that college students display, these habits may not necessarily translate to e-learning. Students who lack self-regulation may not have the patience or persistence to manage the time, stress and complex concepts that are often encountered in distance learning scenarios (Cho & Shen, 2013). And, without sufficient instructor presence and social guidance, students may find themselves isolated or frustrated (Tu & McIsaac, 2002).

Numerous comparisons between remote and traditional classes indicate that, while some similarities exist, there are marked differences in terms of best practices and overall usage (Neuhauser, 2002; Paechter & Maier, 2010; Tutty & Klein, 2008; Xu & Jaggars, 2014). An online class is not simply another version of a face-to-face classroom. Researchers have subsequently explored the positive and negative viewpoints of online educational environments from both the teacher and student perspectives (Borstorff & Lowe, 2007; Sun, 2014; Tichavsky, Hunt, Driscoll, & Jicha, 2015). These can be informed by many factors, including one's comfort level with technology as well as one's stance toward class interaction and engagement.

While many faculty members are eager and willing to utilize various technological management systems and their corresponding tools, they too may lack the necessary skills to efficiently and effectively navigate an online class. Instructors with little training or experience have a tendency to front-load materials such as readings, videos, exercises, questions and other assignments into a repository with little or no opportunity for deeper student involvement (Cook, Ley, Crawford, & Warner, 2009;

DePew & Lettner-Rust, 2009). Faculty may also find that their online class enrollments increase exponentially without additional administrative or other support, limiting their ability to efficiently monitor student progress and provide feedback (Tomei, 2006).

The learning context can have a tremendous influence over participants' experiences in the online class not only in terms of what and how they learn from a cognitive perspective but how it informs their social identity and psychological development as a world language learner. Part of this social identity includes the mindset of the student; that is, whether they see themselves as a person who has the potential and ability to grow and improve in their foreign language or not. Students who believe they are 'good' at languages tend to be successful while those who believe the opposite can suffer from anxiety and low performance (Lou & Noels, 2016).

Explorations into the term 'mindset' have gained momentum in recent years, namely due to the popularity of the book *Mindset* by Carol Dweck (2016). She distinguishes the differences between a fixed mindset versus a growth mindset:

> In a fixed mindset, people believe their basic qualities, like their intelligence or talent, are simply fixed traits. They spend their time documenting their intelligence or talent instead of developing them. They also believe that talent alone creates success—without effort…
>
> In a growth mindset, people believe that their most basic abilities can be developed through dedication and hard work—brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment. (Dweck, 2006–2010, p. 1)

Of particular consideration is the notion of identity as constructed by the language learner in both traditional (Gao, Zhao, Cheng, & Zhou, 2007; Peirce, 1995) and online (Harrison & Thomas, 2009; Warschauer, 1996) settings.

The mindset of the lower-level world language student can also influence his or her willingness to communicate (WTC) in the target language. MacIntyre, Clément, Dörnyei and Noels (1998) define WTC as "a readiness to enter into discourse at a particular time with a specific

person or persons, using [a second/foreign language]" (p. 547). This phenomenon can be modified by the person's desire to communicate with a specific person as well as their overall self-confidence in their abilities. A person's WTC can be determined by many factors, including motivational, affective and situational circumstances (Freiermuth & Jarrell, 2006; Yu, 2011).

Although the majority of university students in lower-level world language courses are there to fulfill a requirement (Price & Gascoigne, 2006), their engagement and subsequent experience can alter their mindset in either a positive or negative way, as well as to enhance or hinder their willingness to communicate with fluent speakers. The present study will explore the impact of online classes on lower-level world language students. For convenience, we will revisit the research questions.

1. How do students describe their experiences in an online lower-level world language class?
2. How do these experiences influence their willingness to communicate in the target language?
3. How do these experiences shape students' growth mindset or self-perception as world language learners?
4. How do these students perceive their overall experience in this format?

This study is exploratory and qualitative in its approach and hopes to provide further insight into the psychological and social ramifications of online courses for lower-level world language students.

Methods

The researchers created a 40-item questionnaire (Appendix) in order to ascertain the students' overall population profile, prior study and experience with online classes—both in general and in world language classes. The majority of the items were multiple choice; however, several allowed for short answer responses. Our rationale was to elicit more information from the participants, particularly about their likes, dislikes and suggestions for improvement for online language learning classes.

In addition, participants were asked to describe their overall experiences, including any effect on their WTC in the target language and their mindset as lower-level world language learners. Once the survey had been developed, the researchers put out a call via various foreign language and educational technology listservs to those instructors teaching online lower-level world language classes who were willing to distribute the survey to their students. The five instructors who responded were from various universities and were sent a link to the survey, which had been uploaded to *Qualtrics*, an online survey distribution center, which allows for anonymous tracking, response aggregation and report generation. The instructors then circulated the link to their students.

In order to recruit additional participants, the researchers re-posted the message four weeks later on the same listservs, only this time providing a direct link to the survey embedded in the message itself. Additionally, the researchers recruited an instructor of an online lower-level Spanish course to distribute the survey to his students. After the survey deadline passed, the researchers began their overview of the data, exploring the major themes that developed from the results.

Results

Forty-four (n = 44) participants responded via the anonymous *Qualtrics* link; however, only half completed the survey in its entirety. The researchers decided to review all of the responses and mined them for information relevant to the study. The researchers found that the greater number of respondents were female (73%) and almost half identified themselves as Caucasian/non-Hispanic (42%), followed by African-American, Hispanic and Other. The majority (52%) of the respondents were over the age of 30. Thirty-eight percent were between the ages of 18 and 23 and 10% were between the ages of 24 and 30. There were a variety of American institutions represented, including a large southern state university, three large midwestern state universities, and one east coast university. Responses from two independent online open learning sites were also included.

The level of the participants was equally spread among university freshman, sophomore and seniors. Fifty-five percent indicated that they were mainly taking the class to fulfill a requirement with Spanish emerging as the main language of study (73%). Almost all listed English as their first language and, although they (78%) had prior language study in high school, most had no significant travel experience (77%). Overall, they considered themselves beginners in their current course of lower-level world language study. Only 15% had previous experience with an exclusively online language course; however, 70% had taken previous language classes in more traditional face-to-face settings.

The researchers noted certain characteristics that emerged from this background profile. First, the population represented by the survey was older than that of typical college-age students, with half over the age of 30. Most were taking the course to fulfill a university requirement. Their previous language experience tended to be face-to-face in a traditional high school setting, indicating a lack of experience with exclusively online world language courses.

In order to understand more about the students' perceptions of their current online class, the researchers asked them to expand upon what they enjoyed or did not enjoy about their current online class. Their preferences are outlined in Table 21.1.

When considering the first research question, "How do students describe their experience in an online lower-level world language class,"

Table 21.1 What do you enjoy/not enjoy about your current online class?

Enjoy	Not enjoy
Online is convenient	Struggle with amount of work and other responsibilities
Online is easier than face-to-face	Online goes too fast
Vocabulary is easy	Struggle with grammar, spelling
Discover other cultures	Don't enjoy; just need the credit
The instructor is enthusiastic	Dry grammar activities
Active learning; building off one another	The teacher is not around
	A foreign language cannot be learned online; it needs to be social

results were mixed. When asked what they enjoy, students found their online class easier and more convenient. They commented on the importance of interaction (active learning) and teacher presence.

- "I enjoyed the learning on my own, however I struggled with understanding certain material and my teacher was not around to properly help me understand."

They also saw the online class as supportive of their exposure to cultural content. However, other students did not consider their online class as easier or more convenient, noting that the workload interfered with other responsibilities and that the pace was too fast. They also commented on the importance of social interaction and teacher presence.

- "You cannot learn a foreign language online! I need social interaction and engagement."

They did not see the grammar exercises as interesting; they found that they spent more time on their online class compared to other regular classes.

Whether or not students enjoy an online class can affect their motivation and determine whether they continue to take online classes (Sun, 2014). A little over half of the respondents said they would like to continue studying a foreign language in this format, while 42% prefer the traditional face-to-face version.

The acquisition of a world language depends on its use in meaningful ways as expressed through the three modes of communication within a social environment (Duff, 2007). The structure and environment of the online class has the potential to determine proficiency as well as willingness to communicate in the target language (Freiermuth & Jarrell, 2006). The researchers found that the majority interacted exclusively with their instructor or with the instructor and classmates; only 27% interacted exclusively with their classmates. They indicated their means of interaction was mainly through learning platforms, chat and text. When asked how they would like to interact, the learning platform was their first choice followed by text messaging.

Table 21.2 Do you think the opportunity to interact with your classmates online would increase/increases your willingness to communicate in the foreign language?

Answer	%
Yes	35.00%
No	15.00%
Maybe	35.00%
I don't know	15.00%
Total	**100%**

It is worth noting that the survey revealed that more people (41%) preferred working alone compared to working with others. When asked if they would like more opportunities to interact with their peers, more said 'no' than 'yes' although the majority (70%) said 'yes/maybe' when asked if interaction with classmates would improve their willingness to communicate (see Table 21.2). Forty-three percent indicated that interacting with classmates would improve their foreign language.

When considering the second research question "How does this experience influence students' WTC in the target language?" it appears that while they believe working with others would improve their WTC, nearly half would prefer working alone and were mostly unsure if interacting with their classmates would improve their language.

Due to the fact that the survey was distributed to beginners, the researchers were interested in asking if their experience shaped their growth mindset as world language learners. Sixty-four percent think they could improve their foreign language skills under the right circumstances while 36% neither agreed nor disagreed that foreign languages are easy.

To address the final research question, the researchers wanted to investigate how these students perceived their overall experience. Table 21.3 shows the best and worst aspects of taking an online class.

Here, as before, students like the flexibility and scheduling options of an online class as well as the lack of potential embarrassment. Others noted that the worst aspects centered around the lack of social interaction and teacher presence, particularly when it came to feedback and correction.

Table 21.3 What are the best/worst aspects of learning a foreign language 100% online?

Best aspects	Worst aspects
Flexibility	No face-to-face contact with the instructor
Learn at your own pace	Cannot communicate with other students
Seeing the work ahead of time	Help from the teacher is not available on the spot
	No instant feedback when you have questions
Class stays on schedule	Teacher or classmates are not online when you are
No embarrassment	Confusion about what is graded and how to improve it
	High amount of cheating
	No one there to correct you when you say something wrong
	Not being able to understand the native speakers on the learning platform

Discussion

The research indicates that the students were evenly split in the following areas: perception of online classes, WTC and mindset. When considering the first and fourth research questions (where participants describe their experiences), many enjoyed their online language class because of its convenience and flexibility. However, many students indicated that they became frustrated when their peers were not available, or the instructor was not able to immediately answer their questions.

What was most striking about the results is that, although respondents believe more interaction would improve their WTC, many prefer to work alone. Several factors may have predicted this result. Most of the participants are over 30 and have other responsibilities that affect their learning such as a job, family and outside activities determining their desire and available time to interact with their classmates. They also put more hours into the online class than other classes, which may be attributable to the higher learning curve needed to become familiar with the format, considering that most of the learners had only taken face-to-face language courses in the past. It appears that students may need more modeling and/or training when taking an online class as well as some kind of assistance and/or orientation to help them understand how to use the

associated ancillary tools. This is likely to be particularly true for older students who have had limited experiences in this format. It may also be worth exploring other venues besides the learning platforms (such as apps) as a way to incentivize students to interact.

In addition, the participants' need for more immediate feedback from the instructor may indicate anxiety about their proficiency and performance. In response to the second research question, while they believe more interaction would increase their WTC, they would prefer to work alone. It is conceivable that they may not wish to coordinate times with their peers, or they may only trust the instructor as the expert in this scenario. The fact that they prefer to work alone also leads us to question the nature, role and efficacy of these interactions.

Active learning and cooperative group models may promote more interpersonal communication development on the part of the students. Real-life, authentic, task-based instruction may give more purpose and meaning to how and why students communicate with each other. A mutual and meaningful purpose where all contribute equally can help promote a sense of community, particularly with remote learners. Accountability is crucial for this to be successful and could be promoted through group roles, information gap and jigsaw activities. The delayed availability of the instructor and classmates was also mentioned by participants as being a drawback of the online foreign language class. Most online classes are asynchronous, which, in fact, is what makes them so attractive, as it gives students more flexibility in their schedule. Nonetheless, one can wonder if a synchronous or hybrid class would be better, as participants seem to be missing real-time interaction.

Whether students see an online lower-level world language class as a means to positively influence their mindset, the third research question, is difficult to determine. That is, it appears that they are again split down the middle in terms of the impact of the online class on their confidence as a language learner. In our opinion, it seems that only those students who have positive communicative interactions with their instructor and peers would perceive themselves as 'good' language learners. This is why they especially need the instructor to acknowledge their progress. Implementing a proficiency-based online portfolio, such as a *LinguaFolio*, for evaluative purposes may help to facilitate this process.

Limitations of the Study

The researchers had some difficulty finding participants and many of them did not answer all of the questions in the survey. Due to the anonymous nature of the survey, we were unable to ascertain the background and training of the instructors. Neither were we able to determine their approach to the class nor its overall setup. Neither was it clear as to the quality of the online class materials nor how they were adapted to the medium itself. In addition, the researchers were not able to follow-up with the students to uncover the rationale behind their answers. The high dropout rate might be due to the length of the survey. Also, the small sample size obtained prevented us from generalizing the findings broadly.

The survey itself could have been modified to more directly address the second and third research questions addressing WTC and growth mindset. Using standardized surveys on these topics could have enabled the researchers to address these items more thoroughly, which would also have helped elucidate deeper insight into such psychological issues. In addition, it would have been interesting to have had access to their online interactions in order to better understand the nature of their communications. Undoubtedly, such issues have influence on WTC and working with others. For future research, a longitudinal study with pre- and post-surveys focusing on any change in their WTC, mindset or anxiety levels could reveal more understanding of their experiences. A comparison of the participants' self-assessment versus an actual assessment could give more clarity on these aspects. Also, information, implementation and analysis dealing with the modification of a negative mindset to a positive one may also be valuable to the field.

Conclusions

As was highlighted by this study, an increasingly greater number of older students are attracted to e-learning as being a convenient and flexible option; however, the importance of teacher presence and social interaction cannot be overstated. It is a fundamental need for online students to have social

contact with other students as well as the teacher, and so should be considered when designing a course and when thinking about how tools, materials and activities are to be employed. The course should be presented in a manner that is user-friendly—not burdensome to either the teacher or the student. The ways we encourage interaction in the foreign language must be evident and meaningful to students as well as provide sufficient opportunities to facilitate a WTC in the target language. Because this population tends to rely on their instructor, to help to provide fertile ground for developing a mindset aimed at improving language learning, feedback and correction are of utmost importance. Attention to such issues is critical in determining whether or not students continue language study and, ultimately, if they will have their psychological needs satisfied.

The psychological and social perceptions and experiences of the learners may play a larger role in e-learning than previously thought. There is potential to set the stage for continuous language study by providing a positive and supportive environment as well as constructive guidance and affirmation (Hernandez, 2006). Hence, it is fundamental that researchers continue to explore how to pedagogically enhance instruction online, especially when considering how these online courses with their various tools and activities affect the psychological needs of learners; as we have shown here, this is particularly the case for older, lower-level world language learners. One of the students commented that, "A foreign language cannot be learned online; it needs social interaction." It is vital, therefore, for teachers and administrators to consider what changes can be made to online courses to improve students' perceptions and experiences so that students can begin to see themselves as becoming 'good' language learners. As such, the design focus of online curricula and courses should not be aimed at simply fulfilling cognitive goals; there also needs to be a deep understanding of the importance in facilitating social interaction and increasing teacher presence as well; in other words, the psychological state of learners needs to be front and center during all development phases.

Appendix

Please answer all of the questions to the best of your ability.

1. What is your gender?

   Male
   Female
   Other

2. Ethnicity

   Caucasian, non-Hispanic
   Hispanic
   African-American
   Asian-Pacific
   Other
   Prefer not to say

3. Age

   Between 18 and 23
   Between 24 and 30
   Over 30

4. Through which institution are you taking your current language course?

5. What year are you in college? Give details if 'Other.'

   Freshman
   Sophomore
   Junior
   Senior
   Graduate student
   Other
   Prefer not to say

6. Which language course are you currently taking? Give details if 'Other.'

   Spanish
   French
   German
   Russian
   Japanese
   Chinese
   Other

7. Which level of the language are you currently taking?

8. Have you studied a foreign language previously?

   Yes
   No
   If yes, in what format? Check all that apply
   Traditional face-to-face class
   Hybrid of face-to-face and online
   Online only

9. Where did you study a foreign language previously? Give details if 'Other.'

   In elementary school or prior
   Elementary/middle school
   High school
   Another university
   Other
   Not applicable

10. Are you a native or heritage speaker of another language other than English?

    Yes
    No
    If yes, check all that apply. Give details if 'Other.'
    Spanish
    French
    Other

11. Have you traveled to or spent significant time in a foreign country? If yes, where?

    Yes
    No

12. Why did you choose to take your current language course at your current institution? Check all that apply. Give details if 'Other.'

    Prior experience
    Meeting a requirement
    Career/job opportunities
    Self-interest
    Other

13. Briefly describe your experience with your foreign language course at your institution. What do you enjoy? Not enjoy? Struggle with? Find easy?

14. On average, how much time do you devote to your current language course each week compared to other classes?

    Much less time
    Less time
    About the same amount of time
    More time
    Much more time

15. Do you have any other responsibilities that affect how much time you are able to devote to your current language course?

    Yes
    No
    If yes, check all that apply. Give details if 'Other.'
    Family responsibilities
    Medical condition
    Heavy course load
    Outside activities
    Other
    Prefer not to say
    Not applicable

16. Do you plan to continue studying the foreign language you are currently studying after completing this language course?

    Yes
    No
    Maybe

17. If yes, or maybe, which format would you prefer? Check all that apply.

    Traditional face-to-face
    Hybrid of face-to-face and online
    Online only

18. Have you taken other classes at your current institution besides foreign language that were 100% online?

    Yes
    No

19. On average, do you like classes that are 100% online?

    Strongly dislike
    Dislike
    Neither like nor dislike
    Like
    Strongly like

20. Would you take another 100% online class again?

    Yes
    No
    Maybe
    Prefer not to say

21. Briefly describe your overall experience with online classes at your current institution. What do you like? Dislike? Struggle with?

22. Rank in order from 1 to 7 your preferred learning style:

    Verbal linguistic
    Mathematical/logical
    Physical/kinesthetic

Musical/rhythmic
Visual/spatial
Interpersonal/group
Intrapersonal/alone

23. Of the following two, which do you prefer?

    Interpersonal (working with others)
    Intrapersonal (working alone)
    I don't know

24. On average, how much do you agree with the statement: foreign languages are easy for me.

    Strongly disagree
    Disagree
    Neither agree nor disagree
    Agree
    Strongly agree

25. Check the statement that most describes you

    Under the right circumstances, I can improve my foreign language skills
    No matter what, I just can't seem to improve my foreign language skills
    Somewhere between the two
    Neither of the two

26. On average, how much do you agree with the statement: I am willing to communicate in the foreign language I am learning.

    Strongly disagree
    Disagree
    Neither agree nor disagree
    Agree
    Strongly agree

27. On average, how much do you agree with the statement: I am more willing to communicate in the foreign language I am learning if it occurs online.

    Strongly disagree
    Disagree
    Neither agree nor disagree
    Agree
    Strongly agree

28. Do you interact with your instructor only (nobody else) in your current online class?

    Yes
    No

29. If yes, in what format do you and your instructor interact?

    Chat (written messages)
    Audio call
    Video chat
    Via textbook site
    Via learning platform (e.g., Blackboard Learn)
    Skype
    Other

30. Do you interact with your classmates only (not with the instructor) in your current online class?

    Yes
    No

31. If yes, in what format do you and your classmates interact?

    Chat (written messages)
    Audio call
    Video chat
    Via textbook site
    Via learning platform (e.g., Blackboard Learn)
    Skype
    Other

32. Do you interact with your instructor and classmates (both) in your current online class?

    Yes
    No

33. In what format do you, your classmates and your instructor interact in your current online class?

    Chat (written messages)
    Audio call
    Video chat
    Via textbook site
    Via learning platform (e.g., Blackboard Learn)
    Skype
    Other

34. Would you like more opportunities to interact with your classmates online?

    Yes
    No

35. If yes, what are your preferred ways to interact? Check all that apply. Give details if 'Other.'

    Chat (written messages)
    Audio call
    Video chat
    Via textbook site
    Via learning platform (e.g., Blackboard Learn)
    Skype
    Other

36. Do you think the opportunity to interact with your classmates online would increase/increases your willingness to communicate in the foreign language?

    Yes
    No

Maybe
I don't know

37. Do you think the opportunity to interact with your classmates online would improve/improves your foreign language?

    Yes
    No
    Maybe
    I don't know

38. What are the best aspects of taking a foreign language 100% online?

39. What are the worst aspects of taking a foreign language 100% online?

40. What would you like to see in an online foreign language course?

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22

Criteria for Motivational Technology-Enhanced Language Learning Activities

Pinelopi Krystalli, Panagiotis Panagiotidis and Panagiotis Arvanitis

Introduction

The widespread adoption and use of Web 2.0 services and its applications in the foreign language classroom create opportunities to use technology in a more collaborative and participatory way to promote information access and the sharing of ideas, as well as developing information and knowledge exchange and content production (McLoughlin & Lee, 2008a).

The key benefits for which technology is used in language learning and teaching are: (1) the ability to access authentic language, (2) authentic communication situations and information sources and (3) the possibility to communicate with the outside world. The use of technology also offers important side benefits such as providing tools that can facilitate a learner-centered approach and the development of learners' autonomy. Furthermore, as Weinberg (2017) suggests, technology-enhanced lan-

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guage learning (TELL) can lead to the development of twenty-first-century skills (4Cs: Collaboration, Communication, Critical thinking and Creativity). Due to their relationship with the daily lives of users, developing such skills helps increase learners' autonomy, which should lead to an increase in engagement and motivation.

However, the use of technology in the foreign language classroom is not an end in itself but aims to achieve higher level language skills. To this end, Yu-Lin (2015) analyzed several studies that were conducted to investigate motivation and language learning. The analysis suggests that students' experiences of learning English with technology along with their learning motivation are directly connected to their final grade, indicating that their learning experience while using technology and their motivation to learn English are in some manner tied to their final performance. Freiermuth (2002) concurs, suggesting that when technologies are applied without proper consideration of the students' understanding or the need to use the technology, it would oftentimes be simpler and easier to deliver the task without employing the latest technologies.

It is almost a foregone conclusion to say that motivation is considered a key factor that determines success in second language (L2) learning. According to Bruner (1960), successful language learning would not occur without high motivation. Motivation plays an essential role in language learning because it shows why language learners decide to participate in the learning process, how hard they are willing to try to pursue the goal and how long they are willing to sustain their efforts in the learning process (Dörnyei, 2001).

Since the early years of introducing technology into foreign language teaching, many studies have been undertaken (Alamer, 2015; Ushida, 2005). Nowadays, it is seemingly the default position that applying technology in the classroom can increase student motivation (Alamer, 2015; Chang & Lehman, 2002; King, 2002; Torii-Williams, 2004; Ushida, 2005). With that said, language learning employing information and communications technologies (ICT) encompasses a range of tools, strategies and activities. ICT is used in foreign language classrooms for presentation, practice, assessment, testing, reference, publishing, communication and simulations (Arvanitis, 2011).

Golonka, Bowles, Frank, Richardson and Freynik (2014), summarizing several studies concerning the effectiveness of technology use in FL learning and teaching, draw the conclusion that activities supported by technology undoubtedly offer enjoyment to students and, consequently, increase student motivation. Huang, Yang, Chiang and Su (2016) also stated that technology can promote motivation by engaging students in TELL activities that are enjoyable and fulfilling. Golonka et al. (2014) also note, however, that it is unclear whether TELL-based activities actually increase student learning. As this is the crucial issue and one of the primary goals of teaching, it should be made clear that technology in the classroom is useful when it is integrated into well-designed and prepared activities with clear objectives that generate student interest and increase students' willingness to participate (Yang & Wu, 2012). As Adams-Becker et al. (2017) claim, students need to be able to easily identify the connection between their coursework with the real world and understand how the new knowledge and skills will impact them. Furthermore, Ushioda (2011) asserts that defining and monitoring language targets can help learners conform to the wider requirements of a task, develop self-determined behavior and, consequently, foster student motivation. Under these circumstances, the use of ICT has shown great potential to engender the motivation of both teachers and learners, which logically leads to improved performance and better learning results (Atkinson, 2000).

As is evident from the aforementioned studies, deploying ICT in the foreign language classroom can undoubtedly have a positive effect on increasing the motivation of students. The same seems to be true for learning outside the classroom. Lai and Gu (2011) conducted a study on the contribution of technology to self-regulated learning (SRL) in order to observe students' use of technology for language learning. The research revealed a significant increase in participants' motivation when they used technology to achieve their learning goals. The same conclusion has been reached by Lucas and Moreira (2009), as well as Song and Bonk (2016) who believed that ICT can increase student motivation in self-directed learning aspects of informal learning when the students are engaged in using online learning resources. As digital technology has become more sophisticated, its tools and applications can be used both in and outside the classroom effectively—both

formally and informally, in order to increase student motivation, which should naturally lead to improved learning outcomes (Woodrow, 2017).

This chapter is structured as follows: the concept of motivation is defined; the motivational models underpinning the proposal are presented; and the key criteria are presented and described, followed by the methodological procedures, the data analysis and conclusions.

Motivation and Language Learning Activities

In this section, we will attempt to define the concept of motivation and to briefly present the motivational models we relied as a basis to construct the framework for the instructional design of online activities intended for language learning.

Clearly, motivation plays a vital role in the field of language learning and appears to positively influence the learning process of the foreign language. However, generally, teachers are able to recognize both the difficulty of attracting and maintaining learner interest, which consequently reinforces motivation as a key element of learning, as well as the importance played by motivation in the quality of learning and the learning progress being made by the students. This difficulty, according to Bourgeois and Galand (2006), is due to the fact that learning requires the mobilization of important cognitive and emotional personal resources, a mobilization that is directly dependent on the degree of participation of the subject in his or her learning. Therefore, in order to succeed in using the new technologies to attract learners' interest and to involve them in the educational process, activities must be proposed that are designed according to specific criteria.

In addition, Nevid (2013, p. 302) claims, "Motivation refers to factors that activate, direct and sustain goal-directed behaviour." The factors, as underlined by Bourgeois and Galand (2006), are determined by the interaction between the individual characteristics of the learner and the characteristics relevant to the context of learning. Motivation is a complex phenomenon that is affected by a variety of external and internal factors associated with the learners' perceptions of their abilities and environment.

Considering that in our research, we will discuss online learning activities for formal or informal language learning as a source of motivation and engagement; we adopt the definition of Viau (2009, p. 12) for the motivation for learning: "A phenomenon that originates from the learner's perceptions of himself and his environment and involves an engagement to complete the learning activity that is proposed to him and a choice of persistence in his completion for learning." Following the same line of research, Leontiev (1998) argues that the relationship between motivation and learning activity is influenced by three factors: the sources for the motivation (personal needs and values), the decision leading to the choice of the activity (the actual source of motivation) and the factors that regulate the progress of the activity. Hence, the characteristics of an activity play an important role in both the learners' choices for a specific activity and their engagement and persistence to complete it. Therefore, this study proposes a framework of instructional design on which teachers can rely so as to base their choices for the appropriate tool or application as well as which variables need to be considered when designing online activities for students. The framework we propose in this chapter will contain criteria for designing online activities with Web 2.0 tools and applications that could enhance and maintain motivation but also foster increased engagement with the educational learning process.

The framework is based on a combination of gamification and three motivational models: Ryan and Déci's (2000) self-determination theory (SDT), Keller's ARCS model (Keller, 2010; Keller & Suzuki, 2004) and Malone's framework for a theory of intrinsically motivating instruction (Malone, 1980).

Regarding the employment of gamification as an activity design aide, there is substantial evidence that gamification can trigger more efficient and engaging learning behaviors. Furthermore, it has been shown that digital games can facilitate increased motivation (Garris, Ahlers, & Driskell, 2002; Gee, 2007; Malone, 1980; Prensky, 2007) and contribute to the development of linguistic communication skills (Krystalli, 2015) when they are based on the right instructional design. Barbot and Camatarri (1999, p. 68) share this insight, "students must have fun when they learn and technologies, as 'cognitive machines,' adapted to human needs should offer learning as much pleasure, as much curiosity as digital games which

stimulate thought and present problem-based learning." One of the primary reasons that gamification enhances motivation and raises engagement is that it combines the driving forces of both intrinsic and extrinsic motivation.

As for the motivational models used in the framework, according to SDT (Ryan & Deci, 2000), the satisfaction of three psychological needs, namely competence, autonomy and social relatedness, increases intrinsic motivation. Keller (2010) argues that attention, relevance, confidence and satisfaction are key elements in the learning process to enhance and sustain learners' motivation. Finally, in his framework for a theory of intrinsically motivating instruction, Malone (1980) claims that challenge, imagination and curiosity strengthen intrinsic motivation. Based on the above models, we propose criteria aimed at increasing learner autonomy, offering self-assessment through immediate and informative feedback and, lastly, strengthening self-esteem and confidence in students' own abilities through rewards and reinforcements in similar fashion to those presented in games.

Criteria for Motivational and Engaging E-Learning Activities

Learner Autonomy Criteria

The process of learning a foreign language is a personal responsibility and affair of each learner as it draws on both the goals learners have set and the linguistic needs they have. Consequently, it is not only their involvement that is fundamental but also the responsibility to use the pedagogical tools that are provided (Porcher, 2004). A prerequisite for taking initiative and participating actively in the learning process is that the learner has developed learning strategies and the ability to learn autonomously.

Researchers argue that the relationship between autonomy and motivation is two way and that autonomy makes a critical contribution to boosting motivation (Benson, 2007; Gagné & Deci, 2005; Ryan & Deci,

2000; Tardif, 1992). Barbot and Camatarri argue that (1999, p. 67) "autonomy is a component of motivation and focuses both on the interest in the act (intrinsic motivation) and the means of its realization (extrinsic motivation)." Autonomy is a psychological need that is satisfied with the free choice of activity, the voluntary engagement in it and its relevance to personal aspirations. Experiments conducted in classrooms have demonstrated that autonomy strengthened by the teacher is 'catalytic' toward increased intrinsic motivation, curiosity and the desire to be challenged, while overcontrol by the teacher toward students conveys a message of initiative avoidance and results in reduced performance, which is especially troubling when the aims and goals require creative processing (Ryan & Deci, 2000, p. 59). The autonomous learners develop thinking and behavioral mechanisms that help them overcome temporary obstacles to motivation.

New technologies have become the cutting-edge tools as well as the flexible means to enable foreign language learners to improve their communicative language competence, activated in the performance of the various language activities set before them, involving visual and audiovisual reception, written and oral production, oral and written interaction or mediation and lexical, phonological, syntactical knowledge and skills. Furthermore, new technologies also facilitate more interconnected language learning elements such as collaboration, networking and scaffolding. Indeed, as Lamb (2004) has asserted, new technologies contribute to autonomy because they make learning pleasant, increase student imagination, enable collaboration and extend learning beyond classroom limits. By providing access to learning materials available on the internet, new technologies can satisfy the individual needs of students.

In other words, we want to design and construct engaging e-learning activities aimed at learner autonomy, which is also considered in the criteria we propose here.

Regardless of the tool or application used by the language teacher when constructing an online activity, both the level of linguistic proficiency and the linguistic communicative objective for which that activity was designed must be clearly defined. Language communication objectives are considered the components of communicative competence, that is, communicative language skills. The definition of the level of language

proficiency in each activity is important because, as Cuq and Gruca (2005) argue, we cannot structure a learning or evaluating process without referring to a level of language proficiency according to a precise scale of levels. The six levels of language proficiency (A1–C2) and the appropriate descriptors of each level are defined in the *Common European Framework of Reference for Languages: Learning, Teaching, Assessment* (*CEFRL*) (2001). In language teaching, the definition of the levels up until the publication of the *CEFRL* was based on a triadic categorization: basic or elementary level, intermediate and advanced. The *CEFRL,* following the same logic, redefined the levels of language proficiency in terms of competences and skills as follows:

- A1, A2: Basic User
- B1, B2: Independent User
- C1, C2: Proficient User

The aim of the *CEFRL* is to define levels of proficiency which allow learners' "progress to be measured at each stage of learning and on a lifelong basis" (2001, p. 1). However, knowledge of the communicative aim or level of language proficiency for which the activity was designed cannot enhance motivation on its own. Students should feel that there is an internal consistency between the objectives and the content of the activity (Keller, 2010). Aligning the language objective with the content of the activity allows the students to know what specific language needs can be covered if they invest time and effort in the activity.

Moreover, an important role in autonomous learning is also played by the clarity and relevance of the instructions. Clearly, instructions that explain to the learner how exactly an activity will be carried out, and how to successfully navigate the activity environment, allow him or her to learn autonomously. Lafaye (2009) argued that the quality of the task and the activity depend on the quality of the instruction because the instruction triggers mechanisms of comprehension and interpretation that enable the individual to create a representation of the activity and the goal to be achieved. According to Ryan and Deci (2000), learners try to achieve a goal when they understand it and when they know they have the skills to succeed.

In summary, we recommend the following key criteria:

- Definition of the communicative language learning objective (lexical, grammatical, semantic, orthographic and phonological competence)
- Definition of the level of language proficiency (A1–-C2)
- Alignment between the defined communicative language learning objectives and the content of the activity
- Alignment between the defined level of language proficiency and the content of the activity
- Relevance between learner's linguistic needs and the content of the activity
- Clearly defined navigation and performance instructions

Self-Assessment and Gamification Criteria

The relationship between autonomy and motivation is a continuum, as previously mentioned, due to self-evaluation, which is carried out thanks to feedback. Feedback provides the learner with information that involves changes in goals, strategies and effort sharing. In order to be able to check the outcome of their actions and to find out what real goals they have achieved, learners must have the possibility to control the outcome of their actions (Zimmerman, Bonner, & Kovach, 2000). Feedback is an important criterion for enhanced performance and motivation. According to Garris et al. (2002, p. 454), feedback is an important factor in the decision-behavior-effect cycle. Personal decisions and behavior are determined by the comparison between feedback and goals. For example, if the feedback shows that a learner is easily reaching his or her target, then the activity is too easy and the incentive is reduced. Feedback provides an assessment of progress toward the end goal and individual goals, which encourages learners who have incentive to invest more effort and show more attention and concentration attending to the activity. Feedback is more effective when linked to well-defined learning objectives when it is not limited to updating performance but directs learners to develop effective learning strategies to achieve the objectives of the activity at hand (Gikandi, Morrow, & Davis, 2011).

According to Malone and Lepper (1987), performance feedback provides a constant challenge and helps maintain motivation when it is clear, frequent, constructive and encouraging. For feedback to be constructive, the system should not simply inform learners that their knowledge is incomplete and inconsistent, and neither should the knowledge measurement be absolute when the aim is to offer an informative assessment (Krystalli & Arvanitis, 2018). The learner should be given the opportunity to understand the cause of the error by being provided not simply the corrected answer but also an explanation, referring to a rule or to a representative example, or to an electronic source such as a grammar book or a dictionary. Explanations are considered necessary so learners may be able to identify the source of the error. Feedback, then, contributes to complete knowledge.

In order for feedback to be encouraging, it must be possible for the learners to be rewarded by the system when they achieve their goal or when they perform well. As Ryan, Rigby and Przybylski (2006, p. 3) claim, "the use of rewards as informational feedback (rather than to control behavior), and non-controlling instructions have all been shown to enhance autonomy and, in turn, intrinsic motivation." Viau also argued that comments and encouragements concerning the successful completion of a pedagogical activity and sincere congratulations for a job well done are often sufficient to cause real dedication and persistence to learn (2009). Rewards and reinforcements can be either given by teachers in the form of some kind of praise or displayed numerically in the form of points, either of which represents encouragement to students.

Points are considered important because they represent the learner's progress numerically, reward the learner for the successful completion of one or more activities and serve as direct feedback. Points must appear after each activity according to the items involved but also be counted as a percentage. Reducing the score on a percentage scale helps the learner become familiar with the type of assessment that most of the language certification systems have adopted.

As mentioned above, encouraging comments play an important role in stimulating motivation and completing an activity. Encouraging comments may be a word or sentence that appears on the screen after a goal

has been achieved, such as a good answer or the successful completion of an activity or set of activities. With the completion of a digital activity, a positive feedback comment can be displayed on the screen such as 'goodbye, congratulations, good work, good effort' or something similar.

In addition, comparative feedback plays a significant role in stimulating the incentive. Comparative feedback is both the ability of the system to compare the learner's performance with his or her own previous performance and the ability to compare the performance with that of his classmates.

In order to achieve all of the aforementioned tenets, the software that the teacher chooses to use to create an online activity must be able to store scores, include progress bars and have an individual or class scoreboard. Scoreboards designed as classroom screens encourage competition but also promote cooperation through the achievement of common goals. In addition, when results are communicated to a scoreboard, competition can create social pressure that will contribute to increasing the level of learner participation in the learning process and hence in learning (Sailer, Hense, Mayr, & Heinz, 2017). Scores, rewards and high rankings in a scoreboard meet the learners' needs to confirm their ability and increase their self-esteem, and this, according to SDT theory and the ARSC model, contributes to increased motivation. Here, it should also be noted that the assessment provided online by the system has the ability and the freedom for the learner to repeat an online activity without the fear of making errors so that the learner can avoid the fear of receiving negative criticism from peers.

One additional variable that we need to keep in mind to sustain motivation is the level of difficulty that can be added by the time variable, the time the learner has at his or her disposal to complete an activity or respond to a question. (It must be noted that some software allows learners to adjust the time limits, and this acts as a challenge for some learners.) The challenge, according to Malone (1980), is a variable that helps increase motivation. The motivation produced must last throughout the process of completing the activity. Maintaining executive motivation is a critically important variable for success as Dörnyei (2002) states, and both the elements of challenge and rewards can contribute to it.

In summary, we recommend the following key criteria:

- Immediate and formative feedback/correct answer/explanation in case of error
- Ability to measure the final score in points
- Ability to measure the final score in a percentage scale
- Ability to save the scores
- Individual and class scoreboard
- Verbal rewards and reinforcements
- Reward sound effects
- Performance graphs
- Time counter

Methodology

As our final goal was to rank the criteria proposed in the previous section according to their significance, we carried out a study in the School of French Language and Literature of the Aristotle University of Thessaloniki. The participation in the survey was voluntary and was offered to students who had already attended optional courses related to the use of technology in language teaching.

The Participants

For the purpose of our study, we conducted an online questionnaire survey involving 72 students who were in their third and fourth year of studies from the School of French (8 males and 64 females aged 20–23). However, variables such as age and gender were not considered important in this research. As for the level of language proficiency in French, we can assume that the participants were approximately at the same level of French, corresponding to B2–C1 in the scale of CEFRL, since they followed the same compulsory language courses. As for their ICT skills, participants had already followed the compulsory course 'Digital Literacy,' as well as

two or more optional courses such as 'Interactive applications and authoring tools,' 'Multimedia and network technologies' and 'Multimedia databases and development of electronic dictionaries' concerning the use of ICT in language learning. It can therefore be assumed that their computer skills surpassed the European Computer Driving License (ECDL) core and, in some cases, the ECDL advanced specifications.

The Data Collection Instrument and the Procedure

Following the establishment of the criteria, we asked participants to classify the tenets according to their perceptions. For this purpose, an online questionnaire was designed consisting of two questions: the first question, an array-type question, was intended to investigate which of the criteria proposed to develop learner autonomy was most important for the students in choosing an online activity. The second question, a multiple-choice type question, was aimed at uncovering which of the criteria proposed as self-assessment/gamification were important for the students while completing an online activity. The questionnaire was created using the online survey tool LimeSurvey 3.1, and was hosted on a dedicated web server of the School of French. The online questionnaire was given to four groups of 24 students, or a total of 96 students, 72 of whom responded.

Results and Discussion

As mentioned above, the first question included the criteria that the authors consider as contributing to the development of learner's autonomy. As shown in Table 22.1, participants consider the definition of the communicative language objective for which the activity was designed (aver = 4.10) (to be) the most important criterion. The clarity and relevance of the instructions (aver = 4.00) are considered to be the second most important criterion in the series (by the students). Next in order of importance is the definition of the level of language proficiency for which

Table 22.1 Criteria for learner's autonomy: students' rating

Question 1: Which of the following criteria is important to choose an online activity? Grade each of them on a scale of 1–5 (5 = most important, 1 = least important).							
	5	4	3	2	1	N	AVER
1 It is important for me to know the level of language proficiency for which the activity was designed.	32 44.44%	22 30.56%	8 11.11%	6 8.33	4 5.56%	72 100%	**4.00**
2 It is important for me to know the communicative language objective for which the activity was designed (lexical, grammatical, semantic, orthographic and phonological competence).	34 47.22%	20 27.78%	6 8.33%	6 8.33%	6 8.33%	72 100%	**3.97**
3 Relevance between learner's linguistic needs and the content of the activity is a very important criterion for me.	30 41.67%	20 27.78%	10 13.89%	9 12.50%	3 4.17%	72 100%	**3.90**
4 The alignment between the defined level of language proficiency and the content of the activity is a very important criterion for me.	28 38.89%	24 33.33%	5 6.94%	8 11.11%	7 9.72	72 100%	**3.81**

(*continued*)

Table 22.1 (continued)

Question 1: Which of the following criteria is important to choose an online activity? Grade each of them on a scale of 1–5 (5 = most important, 1 = least important).							
	5	4	3	2	1	N	AVER
5 Clearly defined navigation and performance instructions are very important for me.	37 51.39%	19 26.39%	6 8.33%	6 8.33%	4 5.56%	72 100%	**4.10**
6 The alignment between the defined communicative linguistic learning objectives and the content of the activity.	32 44.44%	20 27.78%	8 11.11%	6 8.33%	6 8.33%	72 100%	**3.92**

the activity was designed (A1 = C2) (aver = 3.97), followed by the criterion referring to the content of the activity (aver = 3.92). There is a small difference concerning the criterion referring to relevance between learner's linguistic needs and the content of the activity. Students consider the criterion of alignment between the defined level of language proficiency and the content of activity (aver = 3.81) as being somewhat less important. It should be noted, of course, that the average differences between the criteria are very small, which allows us to conclude that all six proposed criteria are considered very important by the students if they were to choose or develop an interactive online learning activity. This also means that the criteria developed from the research accurately represent important elements to be considered.

The aim of the multiple-choice type question was to establish why students might abandon an activity without completing it and thus uncover what criteria are considered to be important for maintaining their motivation. This question included criteria that help learners self-assess and contribute to meeting the need for competence and self-esteem. As we see in Table 22.2, all students consider the absence of score display in

Table 22.2 Criteria for self-assessment: students' rating

Question 2: Which of the following criteria are important for you in order to complete an online interactive activity? You can choose more than one.		
	N	**%**
Immediate and formative feedback/correct answer/explanation in case of error	68	**94.4**
Final score measured in points	72	**100**
Ability to measure the final score on a percentile scale	24	**33.3**
Ability to save the score	60	**83.3**
Scoreboard (individual and of the class)	36	**50**
Verbal rewards and reinforcements	44	**61.11**
Reward sound effects	32	**44.4**
Performance graphs	40	**55.5**
Absence of time counter	36	**50**

the form of points as the most important reason for not completing an activity. It is equally important to have informative and immediate feedback (94.4%), and the ability to store their score is also considered important. Over half of the students (n = 44) want to receive verbal rewards and reinforcements and have performance graphs (n = 40). For 50% of students, it is important to have a scoreboard and time counter. Less significant are reward sound effects (n = 32) and score on a percentile scale (n = 24)

Students' perceptions are consistent with the findings of previous research on the significance of the score and immediate and formative feedback (Garris et al., 2002; Gikandi et al., 2011; Malone & Lepper, 1987). It turns out that it is important for students to be able to save the scoring so that they can compare their performance and monitor their progress.

In Table 22.3, criteria are classified from the most important to the least important according to the students' perceptions. Although the authors consider all of the criteria important, the students' opinions can nevertheless help teachers select the software to create motivational and engaging online interactive activities. It is very important to know what criteria are considered significant by students when considering the implementation of technological tools such as software or an application. Furthermore, the list of these criteria can be used by software designers as a framework for a motivational instructional design.

Table 22.3 Ranking of the proposed criteria according to students' perceptions

Criteria for motivational and engaging online interactive activities for language learning	
Autonomy	
1	Definition of communicative linguistic learning objectives (lexical, grammatical, semantic, orthographic and phonological competence)
2	Clearly defined navigation and performance instructions
3	Definition of the level of language proficiency (A1–C2)
4	Alignment between the defined communicative linguistic learning objectives and the content of the activity
5	Relevance between learner's linguistic needs and the content of the activity
6	Alignment between the defined level of language proficiency and the content of the activity
Self-assessment	
1	Ability to measure the final score in points
2	Immediate and formative feedback/correct answer/explanation in case of error
3	Ability to save the score
4	Verbal rewards and reinforcements
5	Performance graphs
6	Individual and class scoreboard
7	Time counter
8	Reward sound effects
9	Ability to measure the final score in a percentage scale

Conclusions

Motivation contributes to perseverance and stability in the learning process, components that are associated with high performance. As demonstrated by the literature review, new technologies contribute to increasing motivation (Burston, 2013; Freiermuth & Huang, 2012; McLoughlin & Lee, 2008b; Wehner, Gump, & Downey, 2011). Researchers and teachers have invested in mobile learning as well as digital game-based learning to attract the interest of the net generation (Burston, 2013; Karsenti & Fievez, 2013; Prensky, 2007).

According to Viau (2009), the three most important sources of motivation which influence each other are: the perception of the learner regarding the value of the activity, the perception of the learner regarding his or her competence in order to accomplish it and the perception of the

learner regarding the level of controllability over the progress of the activity. Consequently, the type of the activity proposed to language learners is very important, both in enhancing motivation and in maintaining it during the educational process. For this reason, we proposed criteria for the educational design of engaging and motivational online interactive activities.

The proposed criteria are based on a combination of gamification and the three motivational models previously mentioned (Ryan's and Déci's, Keller's and Malone's models). Actually, these are the criteria which aim at learner autonomy and self-assessment through immediate, informative, encouraging and constructive feedback elements that, according to the above theories, contribute to motivation by helping to redefine goals and change learning strategies.

The most important criteria for students are to know which learning objective is served by each activity, knowing the score and having immediate feedback concerning their performance. In order not to deter learners, there must be relevance and an alignment between the level of language proficiency, the learning objective and the level of difficulty of the online activity. These criteria can be used by software and application designers to develop effective applications for mobile devices. The scientific literature has shown that mobile-learning enables students to create their own learning context in terms of time, place and the way they will use internet information and learning materials to train themselves as independent, self-directed and autonomous learners (Burston, 2013). The criteria are also useful for teachers in choosing the right software that considers parameters and/or variables that align themselves well with students' needs, so teachers can create effective online activities. Although created-activities are not the only factors that have an effect on motivation, it is undoubtedly the step in the teaching/learning process where teachers can most easily intervene. Therefore, future research should investigate whether the creation of online activities according to the proposed criteria and their integration in the learning process actually do help to improve the performance of foreign language learners and help them become autonomous speakers of the target language.

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Part VII

Concluding Remarks

23

Future Considerations Concerning Technology and the Psychology of Second Language Learners and Users

Nourollah Zarrinabadi and Mark R. Freiermuth

Introduction

Although this volume is divided into various parts, readers have encountered a number of overlapping themes that bleed across the artificial boundaries we have created. Each part has a focal point but even these are somewhat arbitrary, such is ever the case when dealing with psychological constructs. Still these elements have a way of tying the volume together more tightly as connections are made throughout the volume. At the start, Freiermuth (Chap. 1) mentioned that understanding the minds of language learners essentially means understanding the differences between them. In the very same 'classroom,' the technology that motivates one student may cause immense anxiety in another; of course these

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'feelings' are not set in stone and can change over time. A student who is highly motivated using a mobile application today may become frustrated or bored a month later, and a student who is fearful today may become excited to see what she can learn once he or she discovers advantages to using the technology in question. Such themes as motivation, anxiety, autonomy, attitudes and identity formation spill across the pages of the volume and consequently give the text a purposeful sense.

With these ideas in mind, we reflect on the tripartite melding of the elements in this volume. Of course the principal element is the language learners themselves. Within the pages herein, readers have encountered a wide cross-section of learners spanning the globe, including learners in both English as a second language (ESL) and English as a foreign language (EFL) settings, but also including learners of other languages as well. And within those environs, readers have met learners who are enrolled not only in basic language learning classes but also in English for specific purposes (ESP) and English for academic purposes (EAP) courses; however, this tome also takes readers beyond the classroom, looking at learners using language in all sorts of natural settings. Besides the kinds of learners, we also considered them in relation to scale. In this extensive volume, we have seen the outcomes of large-scale research projects consisting of some 9500 students as well as looking at a true case study consisting of only one student. To sum up, this volume represents many different kinds of language learners and language users looked at from multiple angles.

The second tenet of this text focuses on the psychological side of the learners. The temptation by researchers who employ technology is to focus on only the positive aspects, but that is truly shortsighted. Nevertheless, we can see many positive sides to how technology affected the participants discussed herein. We have looked at how students processing their second language benefit from technological applications both in acquisition and in pragmatic ways. In addition, technology has opened exciting doors to learners, facilitating more autonomous behaviors and encouraging these learners to accept more responsibility for their own learning by way of their own actions. Technology also afforded language learners and users a platform whereby their online identities could be positively developed through interaction with others. In addition, technology can facilitate favorable impressions and attitudes toward using the technologies, which can act as an encouragement to the learners. And finally, the volume considers the

positive effect technology seems to have on learners' motivation and their willingness to communicate in the second language, which has been documented over the years and which this volume supports in a number of ways. Nonetheless, these positives need to be balanced by the negative outcomes that learners have experienced. Technology is never a guarantee of positive psychological effects (Freiermuth, 2002), and some of the elements readers discovered herein include frustration, isolation, anxiety, fearfulness, lack of affiliation, irritation and boredom. Hence, perhaps we would be wise to consider criteria offered in this volume by Krystalli, Arvanitis and Panagiotis (Chap. 22) or set their suggested criteria as a baseline to develop criteria geared toward the needs of our own language-learning students.

The third aspect of this book is the technology under consideration. It is an ever-expanding and ever-changing entity. It has taken language learning outside of designated rectangular rooms (where language learning is supposed to happen) between the hours of 8:30 and 17:00 and sent it out into the highways and byways, on buses and in trains, at apartments and in parks on a 24-hour-a-day basis. When one considers the viability of technology, there are countless questions related to innovativeness, accessibility and, for lack of a better word, 'coolness' of the technology being considered. Nevertheless, as technological wonders really do seem to never cease, the question really always boils down to one question, 'Does the technology offer the learners a satisfying way to learn and use language?'

Keeping that thought in the back of our minds, we will now look at technology, psychology and second language from three distinct angles:

1. How does technology influence language learner psychology?
2. How does language learner psychology influence the technologies being used?
3. How does technology help us understand language learner psychology?

Technology's Influences on Language Learner Psychology

As has been our objective throughout, this volume aims to provide readers with practical knowledge of key research examining how employing

computer-assisted language learning (CALL), technology-assisted language learning (TALL), mobile applications, social networks and internet-based teaching interventions affect various psychological characteristics of language learners and users. Although this has been and continues to be a most prevalent line of research among scholars, this volume represents a rare compilation of how technology affects the various strands of the psychology-related constructs mentioned herein.

Our first goal was to examine how technological interventions can better the psychological states of those learning or using a second language. The aim of these studies was to purposefully create positive experiences for language learners. An example of this is the study by Do and Freiermuth (Chap. 18), who investigated how student-generated electronic text-based chat dialogue, which was employed to construct an organized storyline using a jigsaw activity and to discuss the starting of a joint business together, positively influenced language learners' motivation and willingness to communicate throughout the task despite a number of problems with the technology being used. The second objective of these studies was to uncover how technology influences characteristics of language users when they use second language (L2) for communication or meaning making. In Chap. 11, for example, Liudmila Klimanova used a phenomenological approach to study the meaning-making process of participating in virtual environments. She found that hegemonic social relationships online between native speakers and non-native speakers could lead to various linguistic and emotional insecurities as well as virtual ostracism. Looking forward, we heed the reverberating sound of Ushioda's call (2013, p. 4), "in the end it is the pedagogical need to attend to and nurture students' underlying personal motivations and perspectives that remains of paramount importance as it does for all learning environments."

Psychology's Influences on Language Learning via Technology

This second arm of research deals with the learners' emotions, feelings, attitudes and tendencies that influence their use of technology for language learning. Studies in this domain might deal with the learners'

attitudes about CALL or TALL or examine their stress and anxiety about using computers or technology during language-learning activities. Besides some positive outcomes, this line of research also revealed some of the less desirable sides of technological applications, so it is quite useful in that it provides language educators with considerations as to how to go about implementing computers and technology into language programs more effectively. In this volume, Jako Olivier (Chap. 16) examined the level of computer anxiety of EAP students in South Africa in terms of electronic resource selection with the aim of fostering self-directed writing practice. He reported that the learners were fearful when they needed to use electronic resources. He also noted that the fear of technology had originated from limited knowledge of electronic resources and struggles with computer literacy. In contrast, Vazquez-Calvo, Elf and Gewerc's (Chap. 10) group of second language users demonstrated a positive attitude toward using technology, and this influenced their drive to develop their online identities. The findings in these chapters offer parallels to a study looking at directed motivational currents (DMCs) that was conducted by Zarrinabadi, Ketabi and Tavakoli (2019), who found that learners' intense motivation momentum pushed them to use mobile applications and computer software to improve their oral production ability (Dörnyei, Henry, & Muir, 2016). Thus we feel it is important to not only consider how the technology affects the mindset of language learners and users, but how the mindset of these users affects how they use technology and in what ways. It is our belief that more studies with this focus are needed if the goal is to maximize the potential of CALL, TALL or mobile-assisted language learning (MALL). Future research in this field can examine other psychological factors that have an effect on learners' willingness to use new technologies for learning L2s.

Technology's Help in Understanding Language Learner Psychology

With the recent developments in the field of computer science, particularly artificial intelligence (AI), it might be possible to model and under-

stand language learners' psychological behavior more efficiently. Educational data mining (EDM)—a form of AI—has increasingly gained importance in different fields of inquiry, including psychology and education (Aldowah, Al-Samarraie, & Fauzy, in press). EDM, as an area of study, aims to develop various tools and techniques to gather data from a wide range of educational settings for beneficial applications. Hence, data mining plays a central role within EDM. Furst, Raicu and Jason (2019, p. 183) note that 'data mining' can uncover patterns and relationships within large samples of people, organizations or communities that would not otherwise be evident because of the size and complexity of the data. EDM is concerned with the application of data mining, machine learning and statistics to create models and generate information from educational settings (Bakhshinategh, Zaiane, ElAtia, & Ipperciel, 2018). As EDM is able to identify patterns by users, it is unquestionably useful to identify language learners' patterns, but questions still remain about learners' feelings. It is often the case with technological innovation that applications are developed full speed ahead without much consideration for the intended users. In this volume, Zou, Liviero, Hao and Wei (Chap. 17) were able to see how AI applications affected students directly. Overall their results were quite positive, as the AI-based applications were able to help students with their speaking skills by focusing on which skills needed more work. More importantly, using the applications facilitated positive attitudes toward learning with the applications. With that said, the authors also noted that students complained that there were too few examples.

Another important aspect of the potential of AI in the form of EDM includes the use of data mining systems such as intelligent tutoring systems (ITS), learning management systems (LMS) and massive open online courses (MOOCs) in the learning environments. Educational data mining employs different methods, including regression, outlier detection, discovery with model, clustering and association rule mining for its various applications. Past research has shown that EDM techniques might be used to model learners' behavior (Geigle & Zhai, 2017) and understand emotions (Liu & Koedinger, 2017). If such developed profile models can be effectively applied to language learners, EDM techniques can be used to understand stress and anxiety related to learning or using L2s. Moreover, EDM can be used to analyze learners' speech and turn-taking in the classroom to gain insights on their willingness to communicate.

All in all, it is abundantly evident that technology has remarkable associations with the psychological characteristics of language learners and users, and these associations grow increasingly more important given the changes in preferences toward using mobiles, computers and the internet for improving one's language learning ability.

Concluding Remarks

In this volume, we have explored various groups of second language learners and users. We have explored various psychological constructs of language learners and users, and of course, we have explored various technologies that are being used by language learners and users. These three 'entities' intersect and influence one another; this has been shown in both positive and negative lights throughout the pages of this book. Nevertheless, lest we put all of our eggs in those three baskets, let us not forget the fourth dimension. Behind the lives of all of these learners are the language teachers who teach them and direct them. As technologies rise and fall, it is the teachers who will examine which technologies will have the most positive psychological benefits for learners. Beyond that, it is also incredibly important how teachers decide to use chosen technologies to maximize learning opportunities. All of the researchers who contributed to this volume are aware of the importance of second language teachers. Many of them are teaching language themselves and they are all language learners in their own rights. In light of this, when we think about the future of technology and the psychology of language learning, we should also be mindful that 'good' technology is often the result of second language teachers who care enough about their students to incorporate technologies that will maximize the benefits for their students. There are no magic spells that technologies can offer to replace teachers—even using AI applications (see Zou, Liviero, Hao & Wei, Chap. 17). With that thought in mind, we close this chapter with a reminder that technologies are simply tools—the number of which may be either severely restricted or virtually unlimited dependent upon the context. This volume has provided sufficient evidence that technologies can affect language learners and users in both positive and negative ways. In the

end, users will either relish the opportunities to learn and use a second language or dislike them; that is really the bottom line. Thus, it behooves teachers, administrators and other language professionals who are interested in including technologies in their curricula to consider carefully how the tools they are about to use will affect their students. With good teachers on the frontlines choosing the appropriate technologies, the chances are much better that the ultimate result will be satisfied language learners, and after all, that should be the endgame for all second language professionals.

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