Abstract
This chapter explores various facets of language learning within Multi-User Virtual Environments (MUVEs). As context, we present a recent endeavour to investigate the use of the MUVE Second Life to connect two groups of university students in the United States and China. We provide theoretical supports, the context of our work, and some considerations for creating and facilitating similar environments.

Introduction
Scholars and practitioners alike believe that technological advancement together with fast-growing international ventures, increasing business outsourcing, and expanding distance education opportunities have dramatically changed training and learning landscapes (Rosenburg, 2001; Welsh, Wanberg, Brown, & Simmering, 2003). Successful technologies afford us the ability to accomplish certain tasks that we could not do without them (Norman, 1988), or at least could not do as well in terms of effectiveness, efficiency, and productivity. A good example might be how the recent rapid expansion of distance education is in part related to the affordances that Web-based technologies provide. One set of affordances we find particularly interesting involves multiple modes (e.g., text, audio, graphics) of synchronous and asynchronous communication over great distances, and at any time.
Recently, educational researchers have paid considerable attention to immersive, multi-modal technologies. One of these foci has been on the use of multi-user virtual environments (MUVEs) to support learning across curricula: “educational MUVEs have emerged in recent years as a form of socio-constructivist and situated cognition-based educational software” (Nelson & Ketelhut, 2007, p. 269). There has also been an emerging discussion about MUVEs as tools for second- and foreign-language instruction (e.g., Cooke-Plagwitz, 2008). This phenomenon has likely emerged from a combination of research on Computer Assisted Language Learning (CALL) and Computer Mediated Communication (CMC). Digitally mediated literacy practices (e.g., list-servs, blogs, online chatting, e-mail correspondence, online postings) and social networking practices mediated by such tools as Facebook, MySpace, and Xanga can provide language learners with meaningful opportunities to engage in multiple literacy practices and to construct learner identities through interactive activities in virtual communities (Black, 2005; Lam, 2000; Yi, 2008). Our work is informed by social constructivist principles as applied to foreign-language learning. Our efforts to this point have been to explore how the affordances of Multi-User Virtual Environments (MUVEs) might mediate the learning of English as a Foreign Language (EFL) at a distance.

A primary focus of CALL and CMC research (especially language-learning at a distance) has been on the use of technologies for the development of literacy in a second or foreign language (Lam, 2000; Shei, 2005). Yet, little is known about how emerging technologies, and MUVEs in particular, influence the ways in which language learners improve their oral proficiency. In addition, despite the great potential of this emerging technology to augment language instruction, very little research has been conducted on the use of any form of MUVE in the context of learning English as a Foreign Language (EFL) — where English is not spoken in everyday life, but is often limited to the classroom (e.g., learning English in China).

We chose to explore one of the largest and most well-known MUVEs, Second Life (available at http://secondlife.com). Second Life
Technical, Pedagogical, and Cultural Considerations for Language Learning in MUVEs

(often abbreviated as SL) can provide a potentially vast array of rich environments within which users can interact. SL offers friendly, appealing, and contextually relevant spaces, such as offices, shops, athletic events, business meetings, and classrooms for language learners to interact with native speakers of a target language. SL can also offer access to up-to-date online instructional resources in a variety of media formats (e.g., video, photographs, documents, interactive lessons, simulated gaming). In SL, learners can communicate through text messages, audio conversations, and non-verbal gestures (e.g., waving, clapping hands). These types of gestures are performed by their virtual personas or “avatars.” An avatar is the 3-D graphic representation through which one interacts in a MUVE. Second Life also offers capabilities to record events taking place within the MUVE. This provides language learners with the opportunity to review and reflect on their virtual experiences. The recording can also provide instructors and researchers with a second chance to analyze their students’ performance.

In early 2007, SL introduced Voice over Internet Protocol (VoIP) into its architecture. Prior to the introduction of VoIP, most conversations in SL were conducted through text chat (Au, 2008). VoIP capability has allowed users to communicate verbally in real time, adding a layer of authenticity to the more common text-based interactions. Equally important is the fact that text-based interactions online (i.e., written forms of discourse) have been shown to have significant relationships or overlaps with oral discourse (Belcher & Hirvela, 2008). Moreover, one form of discourse could help language learners improve their skills in the other form. In other words, second-language learners’ text-based interactions within MUVEs are likely to help them improve their spoken discourse. Given the features of MUVEs noted above (i.e., realistic, authentic, and relevant settings; VoIP; and the relationship between oral and written discourse), MUVEs present a unique opportunity to practise speaking in a target language with native speakers in authentic contexts. This is particularly valuable for learners who have a very limited opportunity to hear, use, and practise English in real-world and/or offline contexts.
Context

Chinese educators are gradually adopting constructivist perspectives on learning and instruction (Yu, Wang, & Che, 2005), as they are simultaneously seeking emerging technologies that can effectively improve learning and instruction in authentic and meaningful ways. Given this paradigm shift and the potential affordance SL can lend to language learning, we collaborated with a Chinese university to pilot the integration of SL into a speaking course for first-year Chinese EFL students.

YT University (pseudonym) is a major university founded in 1984 in eastern China. The comprehensive university has twenty colleges. YT University’s College of Foreign Studies has five departments. The participants in our SL pilot program were first-year EFL students in the English department at YT University. We implemented the pilot in a two-hour weekly speaking class during the spring semester of 2008. The instructor of the course designed activities centred on topics such as globalization with the intent of improving students’ English-speaking skills through reading and discussion. We then designed a set of related SL learning activities that would allow the Chinese students to practice what they had learned with native speakers.

This pilot program was implemented online in SL with participants in the language labs both at YT University and at the American university. Thirty-one Chinese EFL students from the YT University English department participated in the SL pilot program. A group of five American graduate students from a large southeastern university also participated as native English-speaking counterparts. Three of the American participants were doctoral students of Instructional Design and Technology, and the other two were graduate students of Applied Linguistics. The American students were all proficient in SL and were asked to read a text on globalization before interacting with their Chinese counterparts. The Chinese participants first completed a survey designed to gauge their technology proficiency. Immediately afterwards, they all participated in a one-hour workshop that familiarized them with basic navigational and communication functions of SL. Each participant was then provided with names and passwords for pre-built avatars in a given SL location. After the workshop, the
Chinese participants interacted with their Chinese peers in SL to both familiarize themselves with the environment and prepare a list of questions about globalization they wanted to ask the American participants.

We next divided the Chinese participants into two groups. Sixteen participants in the first group interacted one-on-one with an American participant to complete the given tasks in SL (four American participants each interacted one-on-one with four different Chinese participants). Fifteen Chinese participants in the second group formed three sub-groups of five to interact with an American participant. All of the participants (both the American and the Chinese) logged into SL using pre-configured avatars. Their avatars had been placed in pre-set locations within SL. Chinese participants and their American counterparts were next given two language tasks. The first task for Chinese participants was to interview an American student about his/her perspectives on globalization in order to write an article for their university newsletter. The second task was for the American participants to interview the Chinese participants about student life in China. The first task was designed to help Chinese students practise oral skills such as questioning and clarification (or information seeking). The second task was designed to help Chinese participants practice listening to and answering questions in the target language.

Before implementation, we collected data on the Chinese students’ technology competencies and perceived readiness for the activities. Participants’ interactions with one another were observed in real time and were video-recorded using both the recording function embedded in Second Life and Camtasia Studio™. Recording was done from both the Chinese and American sites. Immediately after the completion of the two language-learning tasks, the Chinese participants completed a post-task survey designed to glean participant perspectives on aspects of the learning experiences in SL, including content, activity format, and the SL learning environment. Once the Chinese participants finished the survey, a researcher from the same southeastern American university conducted debriefing interviews with each of the two Chinese groups in English. This data led us to a few important insights into the pilot program, including recommendations for redesign.
Considerations for Integrating Second Life into Language Learning

Task-centered program design

First, we found it was important that the program employ a task-centred approach (Merrill, Barclay, & Schaak, 2008). According to Merrill, Barclay, and Schaak, learning is promoted when learners are engaged in meaningful “task-based” speaking or writing activities (Chapelle, 1998; Ellis, 2003). We would encourage designers to engage learners in meaningful tasks using the target language, thus promoting the use of “authentic language,” as opposed to more traditional, de-contextualized grammar instruction or repetitive drills. We also recommend designing a wide array of tasks that can elicit structured interactions (e.g., interviewing native speakers) as well as semi-structured or improvised interactions. Hence, in the future, we would like to add tasks that can lead students to experience impromptu interactions, such as virtual field trips to historically significant places, visits to virtual museums, organizing and participating in virtual conferences, designing and constructing cultural centres, and creating virtual art shows. Activities that involve both EFL students and native-English speaking students in SL could engage all participants in varied meaningful interactions, which would not only equip the EFL students with knowledge about English-speaking cultures, but also provide them with appropriate ways of expressing themselves under certain social circumstances.

In addition to employing both structured and semi-structured task-based activities, we suggest that courses take an “integrative approach” through which students practise both speaking and writing while emphasizing the importance of the relationship between writing and speaking (Belcher & Hirvela, 2008; Weissberg, 2006). Weissberg (2006) argues for the importance of using dialogue (speaking) for second-language (L2) writing, based on his belief in the inextricable link between written and oral modalities. Writing prior to speaking can prepare EFL students with accuracy and fluency of language use in oral interactions while providing them with a purpose for engaging in their oral interactions, and vice versa. It is likely that students may be able to draw upon one relatively stronger skill (e.g., speaking
or writing) to support the other weaker skills. Given this potential, it is critical to design a program that can integrate the practice of several language skills in a single experience.

**Considering the enabling technology**

Another consideration for integrating SL into language learning is the role of an enabling technology (SL in this case) and the significance of interaction that can be mediated by such a technology. According to Vygotsky (1978), social interactions promote learning. Interactions in a 3-D virtual environment, however, require special traits (Jensen, 1999). A language learner in SL interacts through an avatar with other avatars that represent other human beings at the same time, but not within the same physical proximity. In terms of communication and interaction, the interactions undertaken in SL are related to real-life interactions but mediated by SL virtual environments through the Internet and computer applications. Anderson (chapter 2) described the several types of interactions that exist between learners, instructors, learning materials, and environments, while Jensen (1999) has noted several types of interactions that exist specifically in 3-D learning environments. Based in part on these observations and our own, we propose three levels of interaction to consider when engaging students in language learning in SL.

**Level 1: Interactions between students and their avatars.** Interaction at this level consists of participants controlling and manipulating their avatars in SL. To successfully engage in interactions at this level, participants need to have basic technological competencies, such as controlling a computer keyboard and mouse, and understanding basic navigational functions of the SL virtual environment.

**Level 2: Interactions between students and virtual environments.** This type of interaction involves participants interacting with various virtual objects in SL. Interactions at this level require students to understand virtual objects in order to communicate within the virtual environment. Searching and saving information, following instructions in a
virtual lab, playing a virtual language game, reading virtual books, and using virtual tools for teaching and learning are examples of this type of interaction. In addition to the competencies required in Level 1, to successfully engage in interactions at this level requires participants to understand the navigational systems and the technological functionalities and limits of SL.

**Level 3: Interactions between students and other avatars.** This type of interaction occurs when students interact and communicate with other avatars in SL through controlling their own avatars. This type of interaction happens in the form of written texts such as chats and instant messages, voice chats, body language (e.g., gestures), and the exchanging of virtual objects including electronic files, html addresses, video clips, and so forth. Chatting with another avatar in a public event, participating in a special-interest group discussion, collaborating with others to build a virtual house, and taking a virtual tour are examples of this type of interaction. This type of interaction is interpersonal and more complex than the interactions at Level 1 and Level 2. To successfully engage in interactions at this level requires students to know how to control their avatars, how to interact with the environment, and how to use the target language in different formats (written, oral, and gestures); to be acquainted with cultural factors such as social rules (e.g., being polite and respectful); and to have personal knowledge of their avatar’s identity. We feel that an awareness of these different levels of interactions will help us inform future designs.

**Preparing participants**

Students need to be well prepared in order to take full advantage of SL. Lim, Nonis, and Hedberg (2006) explored ways in which a MUVE known as “Quest Atlantis” (QA) was used in science lessons to support eight elementary students’ learning in Singapore. From pre- and post-tests, interviews, and observations, they observed a low level of engagement in related virtual inquiry activities. This finding was attributed partly to participants’ difficulties with the language used in question and answer sessions, and their lack of computer competency.
Data from both the post-program survey and interviews from our project indicated that the participants found their speaking tasks in SL to be relevant and engaging because they had been prepared through preliminary readings and discussions with their Chinese instructors. Although some of the Chinese participants expressed certain anxieties at the beginning of learning tasks in SL, the anxieties appeared to diminish once they were able to work with the familiar content, especially when they found themselves able to interview and discuss globalization with a native-speaking American graduate student. This preparation, as reported in the focus interview after our pilot program implementation, increased participants’ confidence in task completion and hence made better use of SL for language practice.

Prensky (2001) uses the term “digital natives” to describe today’s students who are “native speakers of technology, fluent in the digital language of computers, video games, and the Internet” (Prensky, 2005, p. 9). Many of the EFL students described in this chapter grew up with computers and the Internet. In addition, they had all taken a required general computer competency course during their first year of study. Although their computer competencies seemed to be high, extra time was needed for them to explore SL. The one-hour training we provided on SL was helpful to get participants started, but more time was needed to prepare them to become comfortable with their avatars and the virtual environment before they engaged in their language activities. For example, when completing learning tasks in SL, the Chinese participants were observed using gestures and text chats in addition to their audio chats. Chinese participants reported in the interviews that their language performance was facilitated by the combination of different modes of communication. These multiple modes of communication should be modelled for students during their MUVE orientation. Two of the Chinese participants in our pilot showed strong dislikes of their avatars and spent a considerable part of their activity time modifying their avatars’ appearances. Meadows (2008) found that avatar appearances are important to students partly because “the avatar is a self-portrait” (p. 106). That is, avatar appearances can be important to students either because students feel the need
to represent themselves authentically or because students desire the anonymity that comes through avatar representation. We will also provide participants time to design or customize their avatars before they engage in language-learning tasks in future iterations of our project.

Preparing the SL learning environment

First, we suggest that environmental elements both physical and virtual need to be considered. Physical-world constraints, such as Web access and students’ physical surroundings, affect students’ online experience. For example, we found that computer stations needed to be equipped with large amounts of RAM, high-end graphic cards, and fast processors as the activities in SL using text, audio, and video communications required extensive hardware resources. The computer labs also need to be designed to maximize both collaborative and immersive online experiences. For example, we found that it was helpful for students to be able to record their experiences in SL and reflect on them. This type of video recording usually takes a large amount of hard-drive space. Many language labs in China do not even allow students to save their files on the computer. This leads us to believe that administrative policies need to be more flexible to adjust to pedagogical demands.

Figure 15.1 Students at YT University completing their language tasks in SL
Equally, virtual environments need to be carefully considered. There are many objects in SL that could interfere with and disrupt students when attempting to complete given tasks. Learning experiences should be designed to help avoid unnecessary distractions. For example, it may not be appropriate to select crowded or busy areas for students to meet and perform demanding language tasks. Virtual spaces must also be distinct enough and with enough virtual “distance” between one group of students and the other that voices do not carry from one virtual space to another. While learning spaces were clearly defined and worked adequately during design and testing, when multiple users were logged in and speaking within those spaces, echoes of voices and phantom voices could be heard through the virtual walls of the space. Precisely in the same way that noise management in a physical learning space must be controlled or accounted for during group activities, noise management immediately became a critical issue during our SL experience. In the future, a specific environment designed for the purpose of the study would not only need to include virtual structures and noise barriers where appropriate, but pre-project testing would need to adequately account for the numbers of students speaking simultaneously within a close virtual proximity.

**Preparing learning tasks**

First, we suggest that clear details on task procedure and desired outcomes need to be provided to the students. Depending on the nature of the tasks that students are required to complete, task procedures and task outcomes may vary, but clear instructions not only provide students with a clear picture of desired outcomes, but they can also provide some motivation for interacting with others in SL.

Our SL activities required the participants to be present in the MUVE simultaneously. Scholars have long recognized time as an important factor in student-language performance (Ellis, 2003; Lee, 2000). To help students be more efficient in their task completion, we strongly recommend that teachers set a time limit for any given tasks in SL, especially when it involves participants across continents.
Facilitators need to be present during their students’ initial experiences in SL. Facilitators’ presence, as reported in our student interviews, reminded the Chinese students of the importance of the language tasks. Unexpected distractions and interruptions, such as uninvited avatars flying around or falling down right in front of the student avatars, may also have been easier to overcome with the help of an experienced facilitator. We also noted that students found it to be beneficial to use the “Instant Message/Call” communication tool in SL to ask for help during their task completion.

Figure 15.2 SL environment

Ellis (2003) found that post-task reflection is an important part of the task-based learning process. Post-reflection can be done in different formats. Some common post-reflection activities include: (a) individual student reports on task completion (oral or written), (b) a group discussion on task completion, and (c) watching student SL video clips in class and then having students comment on their language performance. The focus of post-task reflection can vary. For example, participants could focus on language-learning targets, such as language accuracy, language fluency, or a particular language use under a certain situated context. We believe that having students watch their own language performance recorded in SL helps with their reflection and can be beneficial to their language-learning experience.

According to Mory (1996), feedback can include a wide array of information, from answer correctness and language uses to motivation
messages. The Chinese EFL students in our SL pilot program clearly expressed that they wanted feedback on their language performance from both their Chinese facilitators and their American counterparts. In their own words, “We need to know how well we did it.” We strongly recommend providing feedback both during and after task completion. Feedback should include both encouragement and error correction. Thanks to the affordance provided by SL, it is not difficult for teachers to video-record student language performance in SL, even though it might be time-consuming to replay it. This function can help teachers provide accurate feedback on their students’ language performance by pinpointing and discussing issues while reviewing events as they (re) occur on the video clips.

Conclusion
In this chapter we discussed our rationale for integrating Second Life into an EFL speaking course in China. Our work was grounded on constructivist learning perspectives and attempted to draw upon the affordance that SL could offer to this context. Finally, we briefly introduced our pilot program and a set of recommendations for future iterations. The rapid evolution of digital media has given us the opportunity to assimilate new technologies while exploring new pedagogies in distance education and language learning. We believe that the work described in this chapter has barely touched upon this potential and we are excited about what the future may bring.

REFERENCES


