ABSTRACT

Title of Dissertation: LANGUAGE USE AND PERCEPTIONS OF ENGLISH AS A FOREIGN LANGUAGE (EFL) LEARNERS IN A TASK-BASED CLASS IN "SECOND LIFE"

ChengChiang (Julian) Chen, Doctor of Philosophy, 2012

Dissertation Directed by: Dr. Roberta Z. Lavine
Department of Curriculum and Instruction
University of Maryland, College Park

Situated in cognitive interactionist theory and driven by task-based language teaching (TBLT), this study employed a multiple methods design to better address research questions regarding EFL learners' language use and perceptions about their language practices during task-based interaction in Second Life (SL). Findings showed that students perceived SL as a viable platform for language learning. Nine adult EFL learners worldwide were recruited to participate in this virtual course and used avatars to interact with peers via voice chat in simulated real-life tasks.

Quantitative results revealed that confirmation checks, clarification requests and comprehension checks were the three most frequently used strategies. Two strategies that had not been documented in previous SL research were found—metacognitive strategy and "spell out the word." Negotiation patterns were also identified: single-layered and

multi-layered trigger-resolution sequences. Additionally, the interrelationship among task types, negotiation and strategies was established—jigsaw task prompted the most instances of negotiation and strategy use whereas opinion-exchange task triggered the least. Results also indicated that EFL students had a statistically significant improvement on syntactic complexity and variety as well as on linguistic accuracy across all measured levels.

Three core themes emerged from qualitative data: 1) *perceptions about factors that impact virtual learning experience in SL*, 2) *attitudes toward learning English via avatars in SL*, and 3) *beliefs about the effects of task-based instruction on learning outcomes in SL*. SL was endorsed as a promising learning environment owing to its conspicuous features, simulated immersion, augmented reality, tele/copresence and masked identities via avatars.

This study demonstrated that implementation of task-based instruction can be maximized by 3-D, simulated features in SL, as evidenced in that 1) convergent tasks with single-outcome conditions stimulate more cognitive and linguistic processes; 2) 3-D multimodal resources in SL provide additional visual and linguistic support; 3) pre-task planning can optimize the quality of learners' linguistic performance; 4) real-life tasks that capitalize on SL features, accommodate learners' cultural/world knowledge, and simulate real-life tasks can make a difference in their virtual learning experiences; and 5) avatar identities boost learners' sense of self-image and confidence.

LANGUAGE USE AND PERCEPTIONS OF ENGLISH AS A FOREIGN

LANGUAGE (EFL) LEARNERS IN A TASK-BASED CLASS IN

"SECOND LIFE"

By

ChengChiang (Julian) Chen

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Advisory Committee:
Dr. Roberta Lavine, Chair
Dr. Melinda Martin-Beltran
Dr. Linda Valli
Dr. June Ahn
Dr. Patricia Alexander

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Chapter 1: Introduction

Background Information

The 21st century is an era associated with computer-enhanced and internet-based technologies in a fast-paced fashion. Social networking tools, such as instant messengers (IMs), blogs, Facebook, and virtual online games, have marked our day-to-day activities. As far as English language education is concerned, the phenomenon of digital mania has also restructured how English is taught and learned in traditional class settings and has sparked multimodal ways of delivering curricula. The new millennium has blurred the conventional boundaries of English language instruction in that English lessons are no longer taught solely by means of print books and chalk and blackboard, but via electronic learning management systems (ELMS) (e.g., Blackboard, Moodle) or other Web 2.0 tools, such as blogs or wikis that extend learning beyond class. The plurality and diversity of English learning and teaching in the digital age, nevertheless, are challenging both English language teachers and learners. That is, the former may feel intimidated by the overwhelming technological revolution that shakes up teachers' comfort zone in *old-school* teaching, whereas the latter finds that their learning styles[1] and interests mirrored by their day-to-day applications of digital technologies are not accommodated (Dede, 2005). The digital divide (Prensky, 2005a, 2005b; Warschauer, 2002), in this sense, divorces what we generally regard as the best way for language teaching and learning from what our students perceive really works for them.

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[1] The term learning styles are used here to equate to learning preferences. "Styles" is the preferred term of researchers in the field of digital learning.

A red flag, therefore, is raised for English teachers and educators: the current English language learners (ELLs), be they in K-12 setting or at the college level, are not passively receptive to conventional teaching anymore. Born in the Net Generation (Carlson, 2005), they are the Millennials (McGlynn, 2005) or digital natives (Prensky, 2001a, 2001b), characterized by their multitasking, impatience, varied learning styles and driven by multiple digital gadgets and online activities (Dede, 2005; Frand, 2000; McGlynn, 2005; Oblinger, 2005). A case in point is that they would rather spend a considerable amount of time playing online games, or using IMs to interact with peers, than devote even half the time spent on those online activities on English language learning. Regrettably, the situation is even worse in English as a Foreign Language (EFL) contexts where EFL learners are sparingly exposed to the target language, given the fact that English is not the official language commonly used outside the classroom.

The substantial time digital natives spend on online games and the reasons why they are so immersed in the multi-user virtual environment (MUVE) are worth noting. For instance, World of Warcraft, a popular 3-D animated online game or Massively Multiplayer Online Role-Playing Game (MMORPG), has attracted a huge amount of attention by digital natives worldwide (Gee, 2005a, 2005b, 2007). Another recently emerging MUVE to which a growing number of digital natives have been attracted is Second Life (SL) (http://www.secondlife.com) (Linden Lab, n.d.). The promising potential of taking MUVEs as a learning environment also attracts educators and institutions to build virtual campuses in SL (Dede, Clarke, Ketelhut, Nelson, & Bowman, 2005; Hobbs, E. Brown, & Gordon, 2006; Kemp & Livingstone, 2006; Kluge & Riley, 2008; Trinder & Moffat, 2009; Vernon, Lewis, & Lynch, 2009; Vogel, Guo, Zhou, Tian,

& Zhang, 2008). For example, Waseda University in Japan has already started to collaborate with Princeton University in their 3D virtual campuses for ongoing cross-cultural research projects (Second Life Wiki, 2008).

The stereotypical connotation of "game and play" with "unlearning" may need to be redefined in the new millennium (Gee, 2001, 2003, 2007; Prensky, 2003, 2005a, 2005b). Those 3-D MUVEs may hold pedagogical implications for teaching and learning, evidenced by the fact that a growing number of educators and institutions are eager to participate in the new paradigm of virtual learning (Coffman & Klinger, 2007; Johnson, 2006; Lamb, 2006). As promising as SL may sound for education, challenges faced by English teachers in the digital age are: 1) How do teachers tailor their teaching styles to digital natives' learning styles and interests?; 2) How do the affordances in SL realize and augment EFL learners' real-life task learning experience?; 3) Do learners perceive that their language practices in the 3-D virtual world are more engaging and effective than in a traditional class or other Web 2.0 environments?; and 4) Will learners' interaction with other avatars in SL enhance their sense of belonging that further benefits their language production? These pressing but also intriguing questions propelled my desire to conduct in-depth research on EFL learners' language practices and perceptions in this dynamic 3-D virtual space.

Statement of the Problem

The current English learning phenomenon where digital natives' learning styles and interests are not aligned with teachers' assumptions about how English should be taught creates an inherent divide (Dede, 2005; Frand, 2000; Warschauer, 2002). To illustrate, the Net Generation spends more time IMing with friends, updating their

Facebook or MySpace 24/7, and playing online games than on schoolwork (Oblinger, 2005; Prensky, 2001a, 2001b). We may blame students for being more immersed in the virtual world than dedicating time, effort and commitment to our regular English courses. However, the fault we find with them unfortunately doesn't resolve the issue, but exasperates the demotivation and disengagement of our Net Generation. That is, they cannot see the point of learning English that is not fun and meaningful, but scripted and distant from their real lives (Jones-Kavalir & Flannigan, 2006). Marc Prensky (2004) argued that "if we are smart, the mobile phones and games that our students are so comfortable with soon become their learning tools" (p. 1). Indeed, the time has come for teachers and educators to ask ourselves if what and how we teach is really what our students care to learn. If both parties are not on the same page due to the mismatch between our teaching styles and student learning styles, concurrent *style wars* are inevitable (Oxford, Ehrman, & Lavine, 1991).

My research motivation is triggered by the two lines of observation exemplified above. Pedagogy-wise, the case scenario where EFL learners, the Net Generation, tend to be "reticent" in class and "demotivated" by pre-set textbooks and conventional teaching, is prevalent in most EFL contexts (Cheng, 2000). Despite years of formal English schooling since elementary school (Su, 2006), "their language proficiency, especially their oral communicative skills, is far from what is required for their intended academic studies" and interpersonal communication tasks in most English-speaking countries (Cheng, 2000, p. 444). To illustrate, these students may have been drilled in substantial grammatical rules and able to mechanically score high in grammar-oriented tests. But sadly, they cannot even accomplish simple real-life tasks for communicative purposes.

Oftentimes they stumble on words when being approached by a foreigner asking for directions, or worse, simply shy away in embarrassment. This case scenario prevalent in EFL contexts also speaks to the fact that the way our EFL students learn English in class today does not prepare them well to use English to tackle real-life tasks tomorrow.

The vicious circle does not end with the aforementioned phenomenon. It also comes from the fact that we fall short of taking into account the discrepancy between our students' learning styles and interests in the digital age and the conventional way by which we think English should be taught and learned. This disconnect exacerbates the language barrier that can further dampen our students' motivation to learn English. However, the fact that today's digital natives are more engaged in the virtual world more than they would have in traditional English learning can not go unnoticed. So why can't English teachers/educators also make English learning *fun* in ways that connect to students' real-life experiences so that students engage in English learning as much as they would in the virtual world? Just because "fun and play" are usually stereotyped as "unlearning" (Gee, 2003, 2005a, 2005b), does that mean learning configured in virtual reality is far-fetched? The intriguing virtual learning phenomenon as to whether MUVEs like SL can bridge the digital divide and enhance second language acquisition (SLA), however, needs further investigation.

The second line of observation that drives my research motivation zeros in on the examination of the current SL literature. If capitalizing on digital learning in virtual reality could suit the real needs and interests of our digital natives and further empower their learning experience (Gee, 2003, 2005a, 2005b), I would hypothesize that research in MUVEs could potentially yield pedagogical implications and contribute to the theoretical

significance of the literature in the field of SLA. Regrettably, prior and current studies

that have been done on SL regarding SLA are still lacking (Peterson, 2010a). It is not

surprising to see the lacunae in the SLA literature focusing on SL since it is still a new

field and did not emerge until 2003 (Second Life Wiki, n.d.). Little is known about how

MUVEs like SL can make a difference on ELLs' language learning acquisition

(Deutschmann & Panichi, 2009), much less ELLs in EFL contexts (cf. Wang, Song,

Stone, & Yan, 2009; Peterson, 2005, 2006, 2010a). Even though a few studies conducted

in SL make their claims about language acquisition, most are either anecdotal reports

lacking a rigorous research design (Cooke-Plagwitz, 2008, 2009; Johnson, 2006; Silva,

2008; Stevens, 2006, 2007; Vickers, 2007a, 2007b), or the results are not fully situated in

SLA theories (Clark, 2009; Wang et al., 2009). The scarcity of research in SL situated in

SLA, though, does cause difficulty in finding researchers who are interested in this

domain. As Peterson (2010a) pointed out, "Research on the use of 3D virtual worlds in

computer-assisted language learning (CALL) is limited, and many areas remain

unexplored" (p. 274). The lack of dialogue in SL literature informed by SLA theories also

confirms that more studies need to be done in order to bridge the research gap (Kraemer,

2008).

Purposes of the Study

Due to the lack of information detailed above, I am interested in examining

whether MUVEs like SL can open up a new pedagogical avenue for language teaching

and learning. Given the fact that learners in traditional EFL classes tend to be

demotivated and *disengaged* (Jones, 1999; Liu & Littlewood, 1997; Savignon & Wang,

2003; Tsui, 1996), coupled with their *underperformance* in real-life communication tasks

as reported in the literature (Chen, 2002; Cheng, 2000; Su, 2006; Zhang, 2004), this study will seek to unravel whether or not a 3-D MUVE like SL can provide an alternative to conventional EFL instruction and empower EFL learners' language learning experiences. Therefore, the foci of this research study are to 1) investigate whether EFL learners will use communication strategies to negotiate meaning in task-based interaction, 2) examine the quality and quantity of their language output in task-based interaction, and 3) explore their perceived attitudes toward their language learning experiences in SL. Considering the unresolved issue of the current English teaching/learning paradigm observed in the literature (Prensky, 2001a, 2001b, 2005a, 2005b; Warschauer, 2002) and the paucity of studies done in SL focusing on SLA (Deutschmann & Panichi, 2009; Kraemer, 2008; Peterson, 2010a; Wang et al., 2009), this research intends to contribute to this body of knowledge and make clear pedagogical implications for language teaching and learning in 3-D MUVEs.

Overview of the Theoretical Frameworks

The current study is framed by two theoretical underpinnings that inform the research questions and guide the research design: *cognitive interactionist theory* and *task-based language teaching (TBLT)*. The delimintaiton A comprehensive review of the theoretical frameworks will be discussed in Chapter 2.

Cognitive Interactionist Theory

The nature of "interactivity" configured in computer-mediated communication (CMC) tools (e.g., text and voice chats) can be conceptualized and operationalized in the *interactionist theory* from the cognitive SLA perspectives. According to Krashen's Input Hypothesis (1985), input is the threshold for language acquisition to take place and

learners' exposure to unselective and incomprehensible input will not be effective unless the input is comprehensible to them (i.e., *comprehensible input*) and a bit beyond their current interlanguage[2] level (i.e., i+1). Long (1981, 1983, 1985), however, proposed the Interaction Hypothesis by arguing that input alone is not sufficient for learners' language acquisition to occur. They need to notice the saliency in the input and attend to the "gap" during their interaction with native speakers, thereby turning input into more useful "intake" that has the opportunity to be incorporated in their current language system (Gass, 1997; Schmidt, 1990).

Another key component in Long's Interaction Hypothesis that is vital for acquisition to occur is *negotiation of meaning* (Gass & Selinker, 2001; Long, 1983; Long & Porter, 1985). It is hypothesized that when learners interact with more advanced learners or native speakers, the communication breakdown will force them to notice the "hot spot" or gap in their language repertoire. Hence, learners will test their hypothesis of their current linguistic system by modifying their output to make it more comprehensible to interlocutors in order to resolve the non-understanding (see Swain's *Output Hypothesis*, 1995). By the same token, the negative feedback of "interactional modifications" provided by their interlocutors (e.g., clarification requests and comprehension checks) will draw their attention to the linguistic features that are not stable in their linguistic system (Pica, 1987). Learners will then fine-tune their output in order to keep the communication flow going. They can further internalize those linguistic

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[2] Interlanguage is the term coined by Selinker (1972) that refers to learner language systems that are not stable and consist of the use of a mixture of linguistic structures drawn from the learner's first language and the target language (Mitchell & Myles, 2004).

elements for better accuracy and strengthen their existing language system. The meaningful input provided by their advanced interlocutors during interaction in negotiation of meaning will also focus their attention on those linguistic forms that they are still not mastering.

Task-based Language Teaching (TBLT)

From the standpoint of the cognitive interactionist theory, *meaningful and real-life communication tasks* are usually employed in task-based language teaching (TBLT) research (Ellis, 2000; Skehan, 2003) to 1) provide optimal opportunities for learners to negotiate meaning and use strategies to resolve communication breakdown (Doughty & Pica, 1986; Willis, 1996); 2) prompt learners to notice linguistic forms that lead to accuracy and complexity in their language output (Swain, & Lapkin, 1995; Yuan & Ellis, 2003); and 3) elicit learners' spontaneous discourse samples during their task-based interaction throughout various communication task types (Peterson, 2006; Pica, Kanagy, & Falodun, 1993; Smith, 2003). Under the theoretically-sound TBLT framework, implementing TBLT in both class and computer-mediated communication (CMC) settings has also shown promising implications for second language acquisition to take place, due to its pedagogically-driven principles, such as learning by doing, rich input, collaborative learning, negotiation of meaning, and communicative needs (Doughty & Long, 2003).

Overview of the Research Design

A multiple methods design was employed to collect both quantitative and qualitative data in this single phase study (Creswell, 2003), following a 10-session task-based syllabus that incorporates real-life communicative tasks (Doughty & Long, 2003;

Nunan, 2006; Skehan, 2003). Aligning with the principles of task-based design (Ellis, 2000; Skehan, 1996, 2003; Willis, 1996), quantitative data were elicited from students' language output in pre-and-post course sessions of *task-based interaction* operated in four task types: *opinion-exchange*, *information gap*, *jigsaw* and *decision-making* (Pica, Kanagy, & Falodun, 1993; see Appendix A). Discourse analysis (Varonis & Gass, 1985) was conducted to identify patterns and tally frequencies associated with learners' communication strategy use and negotiation of meaning. Additionally, the quality and quantity of students' oral output measured by complexity and accuracy were analyzed using Yuan and Ellis's (2003) framework of T-units measures on EFL learners' oral production.

Qualitative data were gathered from students' *reflective journals* (Gass & Mackey, 2007), *public text chat logs*, responses to the *open-ended items* on two questionnaires (Dornyei, 2003), *participant observation* (Bogdan & Biklen, 2006) documented in *research journals* (Dornyei, 2007) and a *focus-group interview* (Mackey & Gass, 2005). Taken together, qualitative data collected from multiple sources were analyzed using the open-and-axial coding technique from the grounded theory approach to unearth the thematic patterns underlying participants' perceptions about their language practices in SL (Corbin & Strauss, 2008). Both types of data were triangulated to cross-validate the findings. A detailed research design that includes the rationale and procedures of data collection and analysis will be explained in detail in Chapter 3.

Research Questions

The big question I intend to ask in this study is: "What evidence can be found in EFL learners' language practices in SL to indicate that SL can be an effective learning

environment that facilitates positive learning outcomes and fosters language learning experiences?" More specifically, what do we know about EFL learners' language use in employing communication strategies to negotiate meaning in task-based interaction that are associated with second language acquisition (SLA) in SL? Following this thread of inquiry, the quality and quantity of learners' language production in response to tasks in SL also need to be examined to provide further evidence of the effect of virtual learning on learners' language outcomes. Consequently, this central research inquiry flows to another question: "How do learners perceive SL as a potential learning environment for English learning after their participation in a task-based virtual class?" Do they feel more motivated to participate in real-life tasks in SL and less intimidated to speak English via their avatars? Drawn from the aforementioned discussion, two major questions that guide this research study are raised:

1a. To what extent do EFL learners employ communication strategies to negotiate meaning during task-based interaction via voice chat in SL?

1b. What are the quality and quantity of EFL learners' oral production during their language practices in a task-based virtual class?

2. What are students' perceptions about using avatars to practice English and participate in a task-based virtual class in SL?

Significance of the Study

The ultimate goal of this research study is to examine whether or not SL, a 3-D virtual environment, can 1) problematize the conventional language teaching/learning paradigm, 2) optimize English language learners' language acquisition, and 3) enhance learners' motivation, engagement, and identity in the virtual community. One of the major

contributions of this study is to shed light on both the theoretical and pedagogical

implications of conducting research in SL with a focus on language acquisition.

Theoretically speaking, the ultimate goal of this research is to bridge the gap in

the SL literature since the absence of evidence (i.e., the lack of research done on situating

SL in SLA) doesn't mean the evidence of absence (i.e., the effect of SL on learners'

language acquisition) as previously pinpointed. If we hypothesize that a 3-D virtual

environment like SL can bring English learning to life and align teaching with EFL

learners' learning styles, we will need more research and empirical studies to test the

hypothesis. Without relevant evidence to support the hypothesis, the acclaimed potential

of SL will remain unproven. Therefore, it is pivotal to enrich the literature to benefit

researchers who are interested in investigating whether SL can make a difference in

language learners' acquisition. It will also contribute to our understanding of whether SL

can make language teaching and learning more engaging, effective and authentic.

Pedagogically speaking, this study intends to endorse the recent trend for blending

language instruction into a virtual social networking environment. Specifically, it is

hoped that this study can unearth the potential of how English instruction in SL can

channel learners' immersive engagement in MUVEs into English language learning in

ways that are in tune with their digital learning styles and interests. EFL learners would

be, hopefully, emancipated from the demotivation and traditional English teaching that

mainly focuses on forms and scripted activities. By so doing, it has the potential to open

up fertile ground for both language teaching and learning and take L2 teaching and

learning to the next level. This study also hopes to debunk the stereotype that typically

associates "games and play" with "unlearning" and explores how learning in MUVEs can boost the immersive engagement for our experiential learners.

Acknowledging that the participants' language practices in SL are developmental, ongoing and complex in nature, a short-term (e.g., two hours total) production-oriented investigation would fall short of capturing the whole dynamic spectrum (Dornyei, 2007). Therefore, a full-blown virtual course that extended over a more intensive and longer time span (one-and-half hour session, two times a week for a total of 18 hours) was conducted in this study to allow learners to have ample opportunities to reflect on their learning experiences over time and shed more light on the virtual learning phenomenon (Peterson, 2005, 2006, 2010a). Additionally, a full-blown virtual course will not only enable students to fully immerse themselves in a compete cycle of the virtual community of practice, but allow researchers to consistently observe and document students' language practices to yield richer data. A task-based syllabus that addresses students' needs, promotes spontaneous interaction and incorporates real-life scenarios into SL was adopted in this virtual course under the principles of task-based language teaching (TBLT) design (Doughty & Long, 2003; Nunan, 2006; Skehen, 2003; also see the instruments section for detail). To my knowledge, a full cycle of a task-based virtual language course carried out in SL has not yet been well documented in the literature. The implementation of the TBLT syllabus that consistently documents lesson planning and how students' language practices play out in each virtual session will further provide practical implications for language teachers who are interested in teaching in 3-D MUVEs.

Since the participants come from all over the world, the diverse demographic makeup of this heterogeneous group may yield more insightful information across gender, race, language backgrounds, proficiency levels, etc., than a homogenous group (Peterson, 2010b). The concurrent triangulation strategy for the mixed methods research design employed in this study will not only cross-validate both quantitative and qualitative findings, test theories, and unearth the "target phenomenon" operated in SL (Dörnyei, 2007), but also contribute to current MUVE research that is either predominantly quantitative or qualitative alone.

Limitations and Scope

This study employs the theoretical perspectives of cognitive interactionist theory. Therefore, the results drawn from this study are demarcated by the scope of the interactionst framework. It is not the intention of this research to equate traditional teaching inside the class walls with "passé" and 3-D web-based virtual environments with "innovation." Classroom-based instruction supplemented with a printed textbook still dominates the current teaching/learning landscape and has its role to play in education (Frand, 2000). Rather, this research study aims to suggest an alternative way of teaching/learning in MUVEs that may be more attuned to digital natives' learning styles and interests and address the unresolved issue of the digital divide. Furthermore, just because today's ELLs are labeled as digital natives, it does not rule out the fact that not all of them are as tech-savvy and comfortable with technology use as their counterparts who have been playing online games on a regular basis (Goertler, 2009; Mchale, 2005; Vaidhyanathan, 2008). The within-group difference will also influence perceptions about learning English in a 3-D virtual environment that might initially overwhelm them.

Due to the pre-administered class arrangement set by the institution from which the participant pool was drawn (see the Participants section for detail), randomization was not feasible. Instead, a combination of convenience and snowball sampling approaches were used (Dornyei, 2007, p. 129). Given the small sample size and convenience sampling procedure, the findings of the study may not be generalized to other target groups (e.g., younger EFL learners) or educational settings (e.g., EFL high school), although most of them share similar EFL learning backgrounds and concerns. Additionally, students were required to keep a journal to reflect on their learning experience after each virtual session. The demand of regularly keeping a journal might have posed a burden on them (Mackey & Gass, 2005, p. 178), even though the insights gained from the participants were valuable to unearthing the virtual learning phenomenon. Furthermore, participants in the study accessed their own computers to attend the virtual course in SL. Therefore, recording the text chat logs of students' interaction with peers was not as easy as in a controlled lab setting as in Peterson's studies (2005, 2006). To tackle the aforementioned constraint, students' voice-based interaction (as opposed to text-based interaction) will demarcate the scope of the current study.

Definitions

1. *Affordances*: The term "affordances" is defined in the context of virtual environments in that "[t]he word 'afford' means 'to make available' and [a]n affordance is a property of an object, animal, or environment that affords, or makes available, certain actions" (Park, Nah, DeWester, Eschenbrenner, & Jeon, 2008). Therefore, a 3-D virtual environment like Second Life affords residents to

create objects, change avatar appearances, walk, run, fly and teleport from place to place.

2. *Computer-assisted language learning (CALL)*: CALL refers to the applications of computer technology, such as computer-aided software or internet-based programs, designed for second or foreign language learning and teaching (Levy, 1997).

3. *Computer-mediated communication (CMC)*: CMC refers to interpersonal communication occurring through the use of networked computers. Hence, language learners can communicate with either native or nonnative speakers via asynchronous CMC tools (e.g., email, blog) or synchronous CMC tools (e.g., IM, chat room) (Ferris, 1997).

4. *Digital divide*: Marc Prensky (2001a) refers to digital natives as the Net Generation or Millennials who are children, teens and young adults currently studying in kindergarten to college. They are growing up with online games, emails, IMs and cell phones and are characterized with being tech-savvy in multiple media, multitasking and split in attention. Their mindset and learning styles are tremendously different from digital foreigners, who are not knowledgeable about or comfortable with digital technologies, or from digital immigrants, who are in between the two generations—not totally ignorant of technological applications, but not yet tech-savvy as digital natives. As such, the digital divide occurs when the mindset and technological skills of digital immigrants/foreigners don't match those of digital natives.

5. *English as a foreign language (EFL)*: EFL refers to English taught in a country where English is not the language of daily communication, business and education. English as a second language (ESL), on the other hand, means English is taught in a country where English is the dominant language that is spoken and heard outside the class walls (Brown, 2001, p. 3).

6. *Massively Multiplayer Online Role-Playing Game (MMORPG)*: MMORPGs refers to internet-based video games that can accommodate thousands of players to do role-playing activities at the same time. Popular game consoles, such as Play Station, Nintendo Wii and Xbox, can also support MMORPGs with internet access. MMORPGs provide a virtual arena in which role-players can collaborate and interact with other players worldwide and break the constraints of time and distance. They also form a particular online community in which participants have commonly shared interests, support each other and capitalize on the expertise and experience of all the members.

7. *Motivation*: Motivation usually means a person is driven to take action to do something because s/he has an intention to reach a desired outcome. When it comes to language learning, motivation means the desire to learn a second or foreign language. According to Ryan and Deci (2000), there are two major components of motivation: extrinsic and intrinsic motivations. For example, L2 learners are extrinsically motivated to learn a language because of the rewards, which are not inwardly related to learning itself. On the contrary, when intrinsically motivated, L2 learners are learning a language for the sake of fun or

sense of achievement when accomplishing a language task, rather than being driven by the external rewards.

8. *Multi-user virtual environment (MUVE)*: MUVE is an online virtual environment that allows multiple players to simultaneously "access virtual contexts, to interact with digital artifacts, to represent themselves through 'avatars,' to communicate with other participants and with computer-based agents, and to enact collaborative learning activities of various types" (Clarke & Dede, 2005, p. 2). Second Life, for example, is one of the three-dimensional MUVEs where all avatars can interact and co-construct knowledge with other avatars through their immersion in various forms of real-life simulations. MUVEs not only simulate real-world tasks but also make impossible possible in the virtual space, which accommodate digital natives' tech-oriented, multitasking, and creative learning styles.

9. *Second Life*: Developed by Linden Lab in 2003, Second Life (SL) is a three dimensional virtual world that allows players (i.e., *residents*) to interact with each other by taking on multiple roles (i.e., *avatars*). They can create and change their avatars anytime to make their identities even more diverse. They can teleport to *in-land* places in SL and participate in simulated real-life activities. Each resident can also socialize with other residents via text or voice chat and can buy and/or trade virtual property with Linden dollars, a currency used in SL, which can be exchangeable for real-world money.

10. *Telepresence*: According to Schroeder (2002), a 3-D virtual environment such as SL is operated as "a computer-generated display that allows or compels the user (or users) to have a *feeling of being present* in an environment" (emphasis added,

p. 2). Being able to see and feel that they are "being there" in SL creates a sense of "telepresence" in the 3-D MUVE. By the same token, "being there together" with other avatars also enhances the sense of "copresence" due to the nature of immersive involvement and collaborative interaction in MUVEs (Schoreder, 2002, p. 4).

Summary

This chapter outlined a blueprint of the research study. First, it delineated the observed issues of digital divide in the 21st century and how the mismatch between digital natives' learning styles and interests and conventional English teaching exacerbates the incongruity. Then a striking phenomenon that many digital natives invest more time and commitment in MUVEs than in class was discussed. As a result, the issue of why English learning cannot be more like the tasks that engage and motivate ELLs in real life was posed. Next, the paucity of literature linking SL to SLA was revealed, calling for more research in order to address this issue. Drawn from the observed issues regarding pedagogy and literature, the purposes of this research were identified, an overview of theoretical frameworks was provided and procedures of the research design were introduced. Three research questions were addressed to investigate the impact SL has on EFL learners' language acquisition, perceived attitudes and virtual identities during their language socialization in the virtual community of practice. Finally, the significance of this research was highlighted, the key terms were defined, the limitations were anticipated, and the scope of this study was demarcated.

Chapter 2: Review of Research and Theory

Introduction

In order to review the literature pertinent to this study, this chapter is organized into three major themes: 1) English language learners in the digital age, 2) Interactionist Theory, and 3) Second Life as a learning environment. To illustrate, the first theme probes the phenomenon of digital natives in the Net Generation and examines the existing clash in learning versus teaching styles due to the digital divide. Another crucial dimension that epitomizes digital game-based learning (DGBL), namely, simulation/gaming, and its impact on digital natives will also be discussed. Next, I will review the applications of emerging technologies for language learning and critically examine their pedagogical implications across research studies done in both ESL/EFL contexts. The second theme is situated in interactionist SLA theory from the cognitive perspective, which serves as the theoretical framework for this study. Informed by cognitive interactionist theory, task-based language teaching (TBLT) will also be reviewed as an operational model for this study. The third theme will discuss what affordances of SL make it a potential educational tool that stands apart from other emerging technologies (Bidarra & Cardoso, 2007; Metz, 2007). Specifically, this chapter will review current research that has been done on SL, especially as it pertains to second/foreign language learning/teaching and examine different dimensions (e.g., motivation, engagement and identity) in the virtual social networking environment. The review of literature concludes by identifying what is missing in current research studies done in SL with an emphasis on SLA.

English Language Learners in the Digital Age

The digital information age has drastically changed our current teaching/learning landscape (Schrum & Levin, 2009a). Today's students are wired up with digital gadgets 24/7 in their real lives, such as I-Pods, PSP, and smart phones, to name a few. IMs, facebook, MySpace, blogs, for instance, are also entwined with their real lives in that these online social networking spaces are the virtual spaces they frequent most often. The question is how many of today's teachers are ready to accommodate their students' digital learning styles in class. The answer to this rhetorical question can probably be exemplified in students' demotivation, disengagement, or in Prensky's (2001a) terms, having to "power down" whenever they are in class (p. 3). Hence, the daunting task today's teachers face is how to teach in ways that can accommodate today's students' learning needs, interests and styles.

In the following section, I will review the learning styles that characterize the Net Generation and discuss how their digital mindset differs from that of their digital immigrant teachers and results in the digital divide in today's education. Then I will examine the underlying learning principles offered by digital game-based learning (DGBL) and address the impact of the digital divide on today's ELLs. In particular, I will review emerging digital technologies that are used for language learning and teaching in virtual social networking environments.

The Millennials' Learning Styles in the Digital Age

Born between 1980 and 1994, today's young generation that populates high schools and colleges are known as the "Millennials" (McGlynn, 2005) or "Neomillennials" (Dede, 2005), "Net Generation" (Carlson, 2005) or "Digital

Generation" (Vaidhyanathan, 2008). They have grown up with the Internet and digital

technologies around them. The images of carrying various electronic gadgets and

networking with friends using IMs while doing homework or text messaging friends

while listening to lectures in class have characterized these tech-savvy Millennials. As

Carlson (2005) noticed, the Net generation prefers "portability" and different kinds of

digital multimedia. They usually have short attention spans, show impatience, prefer

multitasking, and expect quick responses to feedback (Dede, 2005; McGlynn, 2005;

Prensky, 2001a, 2001b, 2003). Frand (2000) also identified the "information-age

mindset" that epitomizes Millennials' learning styles as: "Reality No Longer Real,"

"Doing Rather Than Knowing," "Multitasking Way of Life," "Typing Rather Than

Handwriting," "Staying Connected," and "Zero Tolerance for Delays" (p. 16). A case in

point is that our students prefer to access information quickly through parallel processing.

They express their impatience in class if they are just listening to lectures. As such,

Millennials' mindset in the *information age* has seamlessly changed the way they live,

think, study and communicate, which differs strikingly from the mindset of their parents

and teachers in the Baby Boom generation or Generation X (McGlynn, 2005). The

information explosion in the digital age, therefore, blows up the way we used to teach

and the way the Net Generation prefers to learn.

      Due to the ubiquitous and ever-changing nature of emerging technologies in the

21st century, these digital technologies also reshape our students' learning styles. For

example, they are *experiential learners*, prefer collaborating with peers in simulated

virtual learning environments, think in a nonlinear fashion, and tend to focus on

personalized learning (Dede, 2005, p. 7). Dede (2005) further argued that "one-size-fits-

all courses of fixed length, content and pedagogy," unfortunately, can no longer meet the needs and interests of our Millennials (p. 8). They are dissatisfied and disengaged in the static and conventional interface of delivering courses.

Although the digital learning styles seem to characterize the Net Generation as tech-savvy, multitasking and attention-split, we should be aware that not every Millennial shares those attributes (Goertler, 2009; Kennedy, Judd, Churchward, & Gray, 2008; Vaidhyanathan, 2008). We also have to take into account the within-group variance because Millennials also differ in ethnic, socioecnonmic, gender, and class levels. Not every member (culturally and financially unprivileged in particular) has equal access to internet and their knowledge, skills, and comfort with digital technologies may vary from individual to individual.

The Digital Divide[3]

What is the impact of the Millennials' particular learning styles on today's education? Marc Prensky (2001a, 2001b) cautioned that the digital divide between digital natives and digital foreigners cannot be overlooked in the 21st century since it is "the root of a great many educational problems" (2001b, p. 1). Although digital immigrant teachers try to adopt technology use in class, the "language" they speak is still outdated and accented (Prensky, 2001a, p. 2). That is, "They [students] no longer understand their teachers' outdated language (e.g., 'dial' a telephone, play a 'record') and teachers no longer speak theirs (e.g., 'blog,' 'avatar,' 'MMORPG')" (Prensky, 2003, p. 3). The

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[3] Digital divide is often used to refer to matter of access, depending on socioeconomic factors. More recently, the term has been used more broadly to also signify differences in learning prefereces, styles, and activities, etc., as Prensky (2001a, 2001b) indicated.

digital divide also results in "style wars"—the conflict between digital natives' learning styles and needs and teachers' conventional teaching (Oxford et al., 1991). Even if certain technologies have been widely integrated into curriculum, such as using prepackaged PowerPoint to deliver content and materials, these types of technology still cannot suit the needs of our tech-savvy digital generation. That is why digital natives find that the ways lessons are delivered are disconnected from their real-life digital styles. As Prensky (2005a) vividly illustrated,

> Today's students are different. They are no longer the people that our teachers were trained to teach. So much of the new instruction the Digital Immigrants develop – even if it has a "computer" component to it – is often essentially old, and doesn't work for a great many of our students…[I]t "sucks the fun out."

As much as we would like to attribute Millennails' disengagement in class to their short attention spans and impatience, we cannot ignore the fact that they do engage in extended immersive games and online social networking sites in the 21st century.

Many researchers also see the digital divide as a wakeup call for educators to be aware of the impact it has on the stakeholders (i.e., students, teachers, parents, institutions) (Dede, 2005; Frand, 2000; Oblinger, 2005). They argue that we should seek ways to accommodate students' learning styles and needs in the digital age before the problem deepens. Understanding the learning styles of the Net Generation and the way they prefer to learn will help us address this issue. For example, they like to learn at their own pace and work collaboratively and creatively to construct knowledge through real-life problem-solving tasks that are meaningful to them (McGlynn, 2005). Another case in point is the multi-user virtual environments (MUVEs), one of the emerging technologies

that captivates the Net Generation. MUVEs characterize the "immersive mediated interaction" and "augmented realities" that align with Millennials' learning styles and provide a fertile ground for learning to take place (Dede, 2005, p. 9).

The digital divide also piques the interests of researchers to tackle the issue of how teachers can capitalize on digital game-based learning and emerging digital technologies to make learning fun, engaging and meaningful. This will be discussed in the following section.

Digital Game-Based Learning (DGBL)

How are today's teachers and educators attuned to the digital mindset and ready to align their teaching approaches with the needs and interests of today's students to yield better learning outcomes? In response to this concern, research on digital game-based learning (DGBL) has triggered the discussion of the effects of digital games on digital natives' development of literacy skills and cognitive reasoning in the 21st century. DGBL researchers, such as James Gee (2001, 2005a, 2005b, 2007) and Marc Prensky (2001a, 2001b, 2003, 2005a, 2005b) have advocated the positive pedagogical influence which digital games bring to learners. Gee (2003) justified what *good* games can offer for learning by providing 36 learning principles in his book, *What Video Games Have to Teach Us About Learning and Literacy*. For example, good games are situated in contexts with learning goals for players to achieve, challenging their problem-solving cognitive skills in doable ways, allowing them to actively involve and create rather than passively receive as consumers, sustaining their motivation and engagement, simulating real-life tasks by taking on new identities, and promoting collaborating and sharing knowledge/skills in MMORPGs (Gee, 2005a, 2005b, 2007). He further pointed out that

good games are 'action-and-goal-directed" preparations for, and simulations of,

embodied experience…[T]hey distribute intelligence via the creation of smart tools

[virtual characters]…allow for the creation of "cross functional affiliation"' (Gee,

2005b). In other words, players take on new identities to build up their competence

through immersively trying out the skills and knowledge developed in games, which they

can later apply to real life (e.g., how to be an airplane pilot) and gradually internalize the

"intelligence." The collaborative nature of MMORPGs also allows them to work with

other avatars and learn how to be a good team player in the virtual community with

shared knowledge, goals, interests, and skills.

As "engaging, effective and dynamic" as DGBL may sound, Van Eck (2006)

cautioned that not all digital games are good for all learners nor yield positive learning

results. As such, he called for further research on not only finding out why DGBL is

effective and engaging as most researchers claim, but how digital games can be

implemented into teaching to bring better learning outcomes. In response to his concern,

Prensky (2004) argued the that principles underlying DGBL are that games can hold

Millennials' attention longer and boost their motivation and engagement while they

embark on collaborative and problem-solving tasks. By so doing, their higher-level

thinking skills and decision-making abilities to tackle complex tasks are also fostered.

Dede (2005) further provided implications for teaching in the digital age: co-design

(instruction personalized to students), co-instruction (capitalize on students' know-how

shared among peers), guided learning-by-doing pedagogies (experiential simulation),

assessment beyond tests and papers (student-initiated assessments in nonlinear

representations) (p. 11). Oblinger (2005) also pointed out that incorporating multimedia

projects in class can boost digital natives motivation to engage, develop their critical

thinking and problem-solving skills, and accommodate their multiple intelligences and

learning styles (p. 72). These DGBL proponents have strived to legitimize the effective

role that DGBL plays in learning outcomes as opposed to being perceived only as *play*.

The learning principles underlying DGBL also serve as the backbone for 3-D

MUVEs, such as World of Warcraft or Second Life. Gee (2005b) asserted that "humans

think and understand best when they can imagine (simulate) an experience…in order to

accomplish their goals" (p. 38). In MUVEs, digital natives take on simulated roles and

collaborate with other avatars in order to make sense of various real-life tasks, test

hypotheses of task completion, make decisions, and experience the problem-solving

process. If we look at DGBL through the lens of social constructivism lens, we can see

that "games are effective partly because the learning takes place within a meaningful (to

the game) context" and "play is a primary socialization and learning mechanism common

to all human cultures" (Van Eck, 2006). In other words, online games are by nature

collaborative in that avatars learn from interacting with other avatars, and share the

expertise and knowledge each of them brings to the virtual social milieu.

On the other hand, if we use cognitive learning as a way to explore how the minds

of digital natives work when are playing games, Prensky (2001b) argued that the

Millennials' development of thinking skills, mental representations, inductive discovery

abilities, and quick responses to stimuli can be enhanced by exposure to online games or

multimedia, especially in 3-D environments (p. 4). McGlynn (2005) also suggested that

making materials more attuned to students' real lives can retain their active engagement

and long-term memory (p. 15). By making multiple connections to newly learned

materials from their real-life experiences or background knowledge (i.e., schemata), it will better facilitate retrieving stored information and make learning more meaningful.

Drawing from Jean Piaget's learning theory, Van Eck (2006) argued that the cognitive benefits offered by games are through the process of *assimilation* where players try to fit new information from the games they are playing into their existing knowledge slots, and of *accommodation* where players adjust their existing knowledge framework in order to accommodate the newly learned information. Through game playing, the whole cognitive process intellectually challenges players to form hypotheses about how to tackle challenging tasks, test their hypotheses and revise them until missions are successfully accomplished (pp. 4-5). Under the DGBL paradigm, I will now explore English language learners (ELLs) in the digital age and review emerging technologies associated with their daily lives, learning, and social networking.

ELLs vis-à-vis Emerging Digital Technologies

Thanks to the advancement of technology in the 21st century, there is great potential that today's digital technologies will create learning opportunities for ELLs outside of class walls. Goodwin-Jones (2003) categorized the network-based environment into two sequential spheres: *first generation web* (Web 1.0) and *second generation web* (Web 2.0). *Web 1.0* is composed of two different online tools: asynchronous and synchronous tools. Asynchronous tools, such as email, discussion forum, and Blackboard (electronic learning management system "ELMS"), encourage peer-to-peer networking and contribute to student engagement in and outside of class. Synchronous tools, such as chat rooms and IMs, promote L2 learners' spontaneous communication in real time. Different from Web 1.0, *Web 2.0* is much more interactive, allowing learners to

manipulate content more easily and affording more flexibility for collaborating and

communicating to share and distribute new information (Schrum & Levin, 2009a). Blogs,

wikis, Google Docs, Google Wave, VoiceThread, educational bookmarking and Nings

(social networking) are all good examples that share the collaborative, communicative

and distributive features of Web 2.0 tools. Another key feature that distinguishes between

the two generations of the Internet is that Web 2.0 affords "multiple users" to add or

change the same document simultaneously and the content is usually open source that can

be shared with members in the virtual community (Schrum & Levin, 2009b). Web 2.0

tools strengthen co-construction of knowledge, promote interaction and creativity and

hold the key to authentic and meaningful learning.

As Oblinger (2005) pointed out, "[s]uccessful learning also hinges on interaction

and engagement" (p. 70). However, in a traditional and fixed language class setting, the

time given to each individual ELLs to practice their L2 is unfortunately insufficient

(Savignon & Wang, 2003). The situation is even worse in an EFL class. The big class

size and conventional way of following a scripted textbook usually deprives EFL learners

opportunity of actually practicing English through interaction with teachers and peers

(Nazari, 2007). Since most EFL learners are members of the Net Generation, they need to

grapple with not only the target language barrier, but also the conventional delivery of

content that is disconnected from their real-life behaviors. That said, emerging digital

technologies, such as blogs, wikis, skype, and simulation gaming, make interaction more

accessible to them within and outside the class walls. These digital gadgets also match

their Millennial mindset, characterized by their preference for collaboration, engagement

and incidental learning in both online and face-to-face social networking modes (Oblinger, 2005).

Many digital immigrant English teachers may also feel uncomfortable or even intimidated by applying those "fancy and sophisticated" digital technologies in their language classes. Prensky (2005b) argued that teachers do not need to know all technologies to incorporate them in class since digital natives are far better than their teachers in "communicating (instant messaging), sharing (blogs), buying and selling (eBay), exchanging (peer-to-peer technology), creating (Flash), meeting (3D worlds), collecting (downloads), coordinating (wikis), evaluating (reputation systems), searching (Google), analyzing (SETI), reporting (camera phones), programming (modding), socializing (chat rooms), and even learning (Web surfing)" (p. 9). Teachers can try to accommodate digital learning styles by incorporating the students' tech skills into the classroom and turn them into learning tools that connect to their real lives and "turn on the lights" for them (Prensky, 2008).

Gee (2005a) also suggested that learners can retain the newly learned information and knowledge longer and more effectively when they acquire them through engaging in (or playing) goal-oriented learning activities (or games) that are situated in meaningful contexts (pp. 19-20). This principle also applies to English learning in that second language acquisition can take place more effectively if ELLs can be immersed in environments that are meaningful and engaging to them. As such, they do not feel that learning English is only "drill and kill," or something appropriate only to the classroom, but can be used in challenging and motivating ways. Since most of this generation's ELLs were also "born digital," they acquired technical skills and knowledge in much the

same way that they learned their first language that is, "without realizing they [were] learning it" (Jones-Kavalir & Flannigan, 2006, p. 8).

Unfortunately, the current English learning/teaching status quo does not afford "learning-through-playing-in-digital-ways" opportunities for our students because most digital immigrant English teachers are not very comfortable with such toots. Many current methods do not acknowledge the digital literacy our ELLs bring to the class (i.e., the ability to search, read, create and manipulate information in forms of text, sound, image and to evaluate them by applying new information digitally) (Jones-Kavalir & Flannigan, 2006). Without changing the mindset of our digital immigrant teachers, our digital natives' disengagement and demotivation will not vanish and the style wars due to the digital divide will persist.

Summary

This section illustrated the current style-war phenomenon in teaching and learning exacerbated in today's education. The first point revealed the learning styles that most of Millennials share as having short attention spans, multitasking, parallel processing, and preferences for collaborative social networking. The next theme discussed how our digital immigrant teachers' mindsets are different from that of their digital native students, which results in the digital divide. Next, the theory of DGBL and its underlying learning principles were reviewed. The examination of both cognitive and social perspectives revealed that DGBL has the capacity to foster longer attention spans, encourage knowledge retention, boost motivation and engagement, optimize higher-order thinking and problem-solving skills, and promote collaboration. 3-D MUVEs that implement DGBL principles were then exemplified. That is, MUVEs can serve as an

alternative instructional approach that align with the learning needs, interests and styles that digital natives bring to the classroom. The focus was then shifted to ELLs and revealed that they also share digital learning styles, which unfortunately have not yet been accommodated by today's conventional teaching. Current emerging technologies associated with today's ELLs were then discussed. In the next section, cognitive interactionist theory and task-based language teaching (TBLT) will be reviewed and serve as the theoretical frameworks for this research study.

Interactionist Learning Theory of SLA

In this section, cognitive interactionist theory related to research on digital technologies applied in the field of SLA will be reviewed. I will first discuss why and how the Interaction Hypothesis (Long, 1981, 1985) contributes to the understanding of L2 learners' cognitive processes through their interaction with native/nonnative speakers and its pedagogical implications for SLA using CMC tools. Then I will illustrate how task-based language teaching (TBLT)—informed by cognitive and interactionist SLA theory—can serve as an operational framework that incorporates real-life communication tasks to elicit learners' spontaneous discourse samples and promote learning by doing (Doughty & Long, 2003).

Cognitive Interactionst Theory: Interaction Hypothesis

Insofar as language is involved in constructing the meaning in information exchanges, interactionist theory would predict that they have greater potential for language development than activities in which interaction does not take place (Chapelle, 2005, p. 54)**.** The nature of the interactive interface of today's digital technologies, such as CMC tools (e.g., blog, wiki, IMs, etc.) manifests itself in the significance of interaction hypothesis (Gass, 2007; Long, 1981, 1983, 1985; Pica, 1987). From the cognitive interactionist perspective, the constructs of *comprehensible input* (Gass, 1997; Krashen, 1985; M. Long, 1981; Pica & Doughty, 1985), *negotiation of meaning* (Gass & Selinker, 2001; Long, 1983; Long & Porter, 1985), and *comprehensible output* (Swain, 1995; Swain & Lapkin, 1995) closely theorize language learners' cognitive processes in online interactivity mediated by CMC tools. The process of learner interactivity in computer-mediated environments is that learners receive input from the interlocutors they

communicate with, negotiate for meaning when a breakdown in communication occurs,

and reformulate and modify their language production to make their output more

comprehensible. As Kraemer (2008) stated, "For language learning, [interactivity] is an

important facet because languages can be learned best through active participation and

engagement" (p. 22). It is crucial to operationalize those constructs in the Interaction

Hypothesis and to examine how they are associated with internet-based interactivity and

to explore the potential they have for language acquisition.

      Comprehensible input. According to Krashen's (1985) Input Hypothesis,

comprehensible input is defined as input that the learner hears or reads just a bit beyond

the learner's current level of second language competence in terms of his/her

grammatical knowledge. In other words, input received by the learner will only be

comprehensible to learners and effective for language acquisition to take place if it is

appropriately beyond their current level (i+1), as opposed to input, which is too simple

(already acquired in learners' linguistic system) or too complex (+2, 3 or more) (Gass &

Selinker, 2001). When applied to classroom practice, it implies that 1) "speaking is a

result of acquisition and not its cause," and 2) "if input is understood, and there is enough

of it, the necessary grammar is automatically provided" (Krashen, 1985, p. 2). Put

simply, language acquisition will occur as long as the learner receives sufficient input

that is comprehensible to him/her, and the teacher's job is to create the environment and

to make the learning opportunity available to students.

      Even though Krashen's Input Hypothesis has spawned a new SLA perspective to

construct how language acquisition is processed, it is usually criticized for being too

vague to measure (e.g., see Larsen-Freeman & Long, 1991, pp. 245-248). Long (1985;

1996) argued that input alone is not sufficient for learners' second language acquisition to take effect. If learners can comprehend input by "noticing" the gap in their language production during interaction with native speakers, they can turn input into "intake," meaning that the new language information may be processed and incorporated into their current interlanguage repertoire (Gass, 1997). In other words, intake "holds the potential for developing the learners' linguistic system" (Chapelle, 1998, p. 22) and noticing the "troubled areas" by raising learners' interlanguage awareness facilitates their language acquisition (Schmidt, 1990).

Negotiation of meaning. Another integral part of the Interaction Hypothesis is the process of negotiation of meaning. Long (1981, 1983, 1985) asserted that only one-way directional input received by the learner cannot capture the complex interactional process in which the learner engages. Only when the learner engages in the interactive activity can the input be more comprehensible and useful. Put another way, "the more the input was queried, recycled and paraphrased, to increase its comprehensibility, the greater its potential usefulness as input" (Mitchell & Myles, 2004, p. 160). The end product of the whole process of interaction, namely, output, will determine how the learner processes, modifies and produces the input he/she receives from the negotiation for meaning with his/her interlocutor. Learners' produced output pushed by negotiation of meaning will also draw their attention to the trouble spots in their current interlanguage system that need to be "fine tuned" in order to repair communication breakdowns (Swain, 1995; Swain & Lapkin, 1995). The notion of negotiation for meaning— how information is exchanged and processed between learners and interlocutors— sheds light on SLA:

[N]egotiation for meaning, and especially negotiation work that triggers interactional adjustments by the NS or more competent interlocutor, facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways. (Long, 1996, pp. 451-452)

During interaction with either native or nonnative speakers using CMC tools (e.g., text or voice chat), students also negotiate meaning with their interlocutors and try to modify their language output during communication breakdown. The online social networking environments via CMC tools enable us to test out the concept of negotiation of meaning and examine how digital natives' language acquisition is taking place during the interactional process.

Comprehensible output. Language output is usually the way to examine learners' mastery of their competence in formulating and producing language elements from their linguistic repertoire. Output also indicates the quality of learners' language *outcome* or *product* that demonstrates the level of their current language development. Arguing that Krashen's (1985) comprehensible input alone does not suffice to produce language acquisition, Swain (1985) proposed the *Output Hypothesis* that further illustrates how learning takes place during the interactional process of speaking or writing, often referred to as productive skills. As she claimed,

[N]egotiating meaning" needs to be extended beyond the usual sense of simply "getting one's message across." Simply getting one's message across can and does occur with grammatically deviant forms and sociolinguistically inappropriate language. Negotiating meaning needs to incorporate the notion of being pushed toward the delivery of a message that is not only conveyed, but that is conveyed

precisely, coherently, and appropriately. Being "pushed" in output…is a concept

parallel to that of the i+1 of comprehensible input." (Swain, 1985, pp. 248-249)

Three functions of output in second language learning were proposed by Swain (1995):

1) the noticing/triggering function, 2) the hypothesis-testing function, and 3) the

metalinguistic (reflective) function. She argued that the process of negotiation of meaning

during L2 learners' interaction with native/nonnative interlocutors will "push" them or

raise their awareness of the gaps (errors) occurring in their current L2 developmental

system due to communication breakdown (function 1). Noticing the gap also enables

them to reflect on their L2 repertoire and attend to the variations between their

interlanguage output (production) and the correct forms that native/nonnative

interlocutors utter (function 3). Throughout the trial-and-error process, they also have the

chance to "try out" the new language structures and fine-tune their production if a non-

understanding occurs (function 2).

Pica (1987) further argued that the link between "interactional modifications" and

"negotiation of meaning" that optimize learners' acquisition should be created. In order

to solve the communication breakdown that occurs during the process of negotiation for

meaning between learners and nonnative peers or native speakers, the "conversational

strategies" used, such as repetition, confirmation checks, comprehension checks and

clarification requests, are vital for learners' language acquisition to occur (Pica, 1987, p.

74). To illustrate, the interactional modifications of the input signaled by the interlocutor

and received by the learner not only help the latter repair his/her "troubled spots" at

his/her current interlanguage level, but more effectively promote the quality of

intelligibility of the output.

Task-based Language Teaching (TBLT)

With its burgeoning popularity among task-based researchers and language teachers, task-based language teaching (TBLT) has been increasingly adopted in both ESL/EFL contexts due to its pedagogical potential to prepare learners to use English for meaningful and authentic purposes through communicative, meaning-focused tasks that are associated with real-life tasks (Skehan, 2003). Aligning with cognitive and interactionist SLA theory (Long, 1981, 1983, 1985; Pica, 1987; Pica & Doughty, 1985; Swain, 1995), Doughty and Long (2003) offered 10 methodological principles that guide the design of TBLT, particularly in the distance-learning environment (p. 52):

1. Use tasks, not texts, as the unit of analysis.

2. Promote learning by doing.

3. Elaborate input (do not simplify; do not rely solely on "authentic" texts).

4. Provide rich (not impoverished) input.

5. Encourage inductive ("chunk") learning.

6. Focus on form.

7. Provide negative feedback.

8. Respect "learner syllabuses"/develop-mental processes.

9. Promote cooperative/ collaborative learning.

10. Individualize instruction (according to communicative needs and psycholinguistically).

These guidelines pinpoint that the TBLT design of instructional materials and tasks is based on a theoretically-grounded framework that taps into interactive and real-world tasks that can stimulate spontaneous language use, and realize language acquisition

in authentic discourses, rather than on proven fact. This is particularly crucial if viewed in EFL contexts where opportunities for two-way negotiated interaction and using English for communicative and meaningful purposes are still constrained by the grammar-oriented instruction that usually drives English education in most EFL contexts (Chen, 2002; Silver, Hu, & Iino, 2002). A well-planned TBLT design that is driven by key elements of cognitive interactionist theory (e.g., negotiated instruction, comprehensible input and output) and grounded in methodological principles (e.g., task-oriented, communicative and real-world materials) can nevertheless enhance the cognitive and interactional processes of EFL learners that lead to optimal L2 language acquisition.

It has also been documented in CMC research that both asynchronous (e.g., discussion board, blog) and synchronous (e.g. IM, chat room) CMC environments can facilitate the implementation of TBLT and promote spontaneous language use that transcends the physical limitations set by a traditional language class and offer students more opportunities to carry out real-life tasks for communicative purposes (Jarvis, 2005; Warschauer, Turbee, & Roberts, 1996). As much as TBLT operationalized in CMC environments seems a potential pedagogical model that can extend EFL learners' language practices outside the class walls, a well-planned task design that incorporates viable communication tasks under the framework of cognitive interactionist theory is the key to effective implementation of TBLT. Hence, two core elements of TBLT—*communication tasks* and *task-based design*—are sketched out below, with a focus on how they are grounded in cognitive interactionist theory and serve as a vehicle to promote learners' language use.

Communication tasks. From the standpoint of cognitive interactionist theory, it has been evidenced that language learners' cognitive and linguistic processes will be optimized if learners engage in *interactive tasks* in which they can negotiate meaning with their interlocutors when a communication breakdown occurs (Pica, 1987; Pica & Doughty, 1985). The feedback they receive from peers or native speakers will serve as a mechanism to *reformulate* input and *modify* output (Doughty & Pica, 1986), bearing on the attention paid to those "hot spots" of their current interlanguage system (Swain, 1985; Swain, & Lapkin, 1995). Hence, tasks serve as a vehicle to elicit authentic discourse samples of EFL learners' language production. From the pedagogical perspective, communication tasks also provide learners with opportunities to use the target language spontaneously for meaningful and communicative purposes in non-scripted interactional settings (Ellis, 2000).

To ensure that the interactional element is effectively built into communication tasks to elicit negotiation of meaning that involves modification strategy use, Long (1980, 1990) argued that two-way information exchange tasks that are "close-oriented" will trigger more negotiation and strategy use than one-way or "open-oriented" tasks. Put another way, closed, interactional tasks require that each dyad member works cooperatively and contributes equal pieces of information held by him/her in order to reach one single solution required to accomplish the task (e.g., jigsaw or two-way information gap task). On the contrary, open, one-way tasks (e.g., opinion exchange) allow each dyad member to "freely" exchange information based on his/her own opinions without necessarily reaching the same, "predetermined" solution.

Duff (1986) also found in her study that convergent (closed) or shared-goal tasks prompt not only more instances of negotiation in each dyad task interaction, but also the use of communication strategies in order to resolve the non-understanding triggered in each negotiation episode. In other words, tasks that are convergent on "reach[ing] a mutually acceptable solution" will provide more opportunities for negotiation of meaning—an integral factor that optimizes the development of learners' language skills (Duff, 1986, p. 150). On the contrary, divergent (open) or independent-goal tasks promote fewer occurrences in negotiation, which leads to less use of modification strategies since the catalyst for negotiation (i.e., mis- or non-understandings) does not activate owing to the tasks' "implicitly opposite or independent goals" (p. 150).

Pica, Kanagy, and Falodun (1993) further asserted that optimal task conditions must be that 1) each dyad member holds a portion of information that must be exchanged to reach the same task outcome; 2) each dyad must take turns to request and give information; 3) both members share the same goals; and 4) only one single outcome is acceptable to reach the goal (p. 17). To illustrate, Pica and colleagues argued that two-way information-exchange tasks, such as jigsaw or information gap, are more restrictive in that they require each dyad interactant equally contribute their own pieces of information in order to reach the shared goal (convergent). The obligatory nature triggers more cognitive and linguistic processes by pushing learners to negotiate meaning, reformulate input and refine output—in order to make meaning more comprehensible for the sake of task completion (Doughty & Pica, 1986). On the contrary, one-way or divergent tasks, such as opinion exchange, are not restrictive and allow for open-ended

discussion without reaching the same goal, which generate fewer occurrences of negotiation and strategy use (Pica, Holliday, Lewis, & Morgenthaler, 1989).

Taken together, the positive effects that communication tasks can have on learners' L2 acquisition through task-based interaction have been reported by interactionist SLA researchers as reviewed above. Therefore, it is suggested that tasks should share the restrictive conditions of two-way exchange, obligatory interaction and a single outcome to maximize the cognitive and linguistic processes of learners.

Task-based design. To provide a more theoretically-grounded and pedagogically- driven task design, Skehan (1996) stressed that a task should be "an activity in which *meaning* is primary, there is some sort of relationship to the *real world*, *task completion* has some priority, the assessment of task performance is in terms of *task outcome*" and "requires personal information to be *exchanged*, or a *problem* to be solved, or a *collective judgement* to be made" (emphasis added, p. 38). The criteria (i.e., meaning-focused, goal-oriented, outcome-evaluated, real-world-related, problem-solving) (Ellis, 2000; Skehan, 2003) and principles (i.e., spontaneous interaction, negotiation of meaning, cooperative interaction, trying out communication strategies) (Willis, 1996) should be anchored in a rigorous task-based design. Tasks that are meaningful, authentic, communicative, challenging and engaging will stimulate learners' cognitive and linguistic processing (Duff, 1986).

Nunan (2006) also suggested that a TBLT syllabus design should take into account the following "principles and practices:

- A needs-based approach to content selection.
- An emphasis on learning to communicate through interaction in the target

language.

- The introduction of authentic texts into the learning situation.

- The provision of opportunities for learners to focus, not only on language, but also on the learning process itself.

- An enhancement of the learner's own personal experiences as important contributing elements to classroom learning.

- The linking of classroom language learning with language use outside the classroom" (p. 14).

As such, the syllabus design that embodies the TBLT principles in the classroom practices aims to: 1) promote participants' use of communication strategies generated by negotiation of meaning from the cognitive interactionist perspective, and 2) allow learners to co-construct meaning and mutually scaffold peers through engaging in task-based interaction from the sociocultural perspective (Skehen, 2003). Implementing TBLT in a 3-D virtual environment also seems theoretically-sound and pedagogically-feasible because its unique affordances (e.g., immersion, augmented reality, simulation, etc.) provide a fertile ground to operationalize the TBLT methodological principles—such as learning by doing, rich input, collaborative learning, negotiation of meaning, and communicative needs as laid out by Doughty and Long (2003).

Summary

This section outlined two pivotal lines of interactionist SLA theory that serve as the theoretical frameworks for this research: Interaction Hypothesis and TBLT. From the cognitive interactionist perspective, three integral components in the "input-interaction-output" model that lead to L2 learners' language acquisition were discussed:

comprehensible input, negotiation of meaning and comprehensible output. Learners will be pushed to notice the gap in their current linguistic system when they negotiate meaning with proficient peers or native speakers. The errors made in their output and the feedback provided by their interlocutors due to communication breakdown will focus their attention on those areas, help modify their output to be more comprehensible, and facilitate language development. The examination of how the Interaction Hypothesis can be conceptualized in CMC environments was then discussed.

Aligned with cognitive interactionist theory, TBLT was introduced as a theoretically-sound and pedagogically-feasible model in this study. It has been reported in previous task-based research that communication tasks that are restrictive and obligatory in nature with two-way information exchange and one shared goal will stimulate more language use in negotiation of meaning and modification strategies. Conversely, tasks that are open and divergent in nature with multiple task outcomes will generate fewer instances of negotiated interaction. In order to effectively implement TBLT in classroom-based settings (real or virtual), it is also suggested that task-based syllabus design should take into consideration the following methodological principles: meaning-focused, learning by doing, real-world tasks, rich input, negotiated interaction and collaboration.

Drawing from the cognitive interactionist framework in SLA, I will now investigate digital natives' dynamic interaction with other avatars in a three-dimensional multi-user virtual environment (MUVEs). Whether their immersive participation in MUVEs makes a difference in their language acquisition will also be examined in the

next section. Second Life, a 3-D MUVE, will be closely reviewed and its pedagogical

implications for SLA will be critically assessed.

Second Life for English Language Learners

This section will lead us to explore whether or not 3-D MUVEs like SL can bring about positive language learning outcomes and reignite/enhance ELLs' motivation and engagement in language learning. I will first review key features of SL and discuss related notions of virtual communities of practice and virtual identities. Next, I will make an argument for why SL has the potential to resolve the digital divide and then review pedagogical benefits that SL can contribute to both educational and SLA fields. In particular, I will critically examine research studies that have been conducted in SL with a focus on second/foreign language learning. I will further scrutinize whether those studies are grounded in interactionist learning theories to indicate the need for more theoretically-driven research in SLA.

What is Second Life?

Second Life (SL), a 3-D multi-user virtual environment, was developed by Linden Lab (a research company founded by Philip Rosedale) and initially launched in 2003 (Linden Lab, n.d.). To date, SL has attracted over 21.3 million registered users worldwide and still continues to grow in popularity (Linden Lab, n.d.). Members can choose to register for a free *basic account*, an *additional basic account* at US$ 9.95 (one-time fee) or a *premium account* starting at US$9.95 (monthly). Although SL is a free open virtual environment, only users over 18 years old in real life are allowed to join SL[4] (Linden Lab, n.d.). In SL, every user is called a *resident*, who can create his/her own 3-D *avatar*

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[4] For teenagers aged between 13-17, SL used to provide an age-appropriate version where mature content is prohibited, called Teen Second Life (http://teen.secondlife.com/). However, on August 14, 2010, Linden Lab decided to close the Teen Grid due to the issue of handling improvement of both adult and teen versions of Second Life.

to represent his/her virtual identity. In the imagined virtual world, the choice of customizing one's avatar does not have to be confined to his/her fixed persona as in the real world. A male user can switch his gender to female or choose to become an animal or even a cartoon character. SL offers the flexibility for residents to take on different digital personae. Avatars can meet with millions of other residents from all walks of life in the real world and communicate via either *text* or *voice chat* using a headset and microphone. They can either send public text chats, or use "IM" to privately text their avatar friends without the message being seen by others. Another animated feature in SL is that avatars can also demonstrate non-verbal gestures as in real life, such as laughing, making faces, shrugging, crossing legs and clapping. However, those non-verbal cues are not automatically signaled as in a real-life face-to-face context and need to be manually configured by the avatar user. Additionally, Avatars can walk, run, fly, teleport (i.e., instantly arriving in a new *in-land* location) and participate in a variety of virtual social events held by in-land residents. They can also use a built-in camera to take visual snapshots of an instantaneous moment of activity in which he/she/it is involved (Linden Lab, n.d.).

Even though SL is a free virtual space, residents in SL need to buy Linden dollars (L$)—virtual dollars that can be literally exchanged for real-world dollars—for recreational or business purposes. The currency exchange rate for one US Dollar is approximately equal to 250 Linden Dollars (see official Linden Dollar exchange on Second Life). Residents can buy L$ to pay for products and services of their interests as they normally do in the real world. They can purchase clothing, jewelry and accessories to customize their avatar appearances, or pay for a cover charge to dance in a club. They

can also buy or rent a land or an "island" on which they can build their virtual reality

world and create their own primitive objects ("prims"). Only premium account members

are allowed to own land whereas basic account members can rent land by paying

different fees, depending on the size of the land[5].

The reason why the virtual world has become so popular with digital natives is

that SL provides a 3-D social platform not only for players to simulate the day-to-day

routines and activities, but to take advantage of users' imagination and creativity. In SL,

residents can go window shopping in a mall, attend a conference, chitchat with other

avatars over coffee as we do in real world, but they can also fly or teleport to any location

or change their appearances instantly. Anything can happen in this 3-D virtual simulation

world and avatars do not die in SL (e.g., avatars can breathe under the water for as long

as they wish).

Despite the fact that SL also shares similar features of MMORPGs, they also

differ in many ways. SL allows residents to manipulate the virtual environment for

"action scripting, object construction and an economy that supports the creation of virtual

business" (Hobbs, Gordon, & E. Brown, 2006). That is why SL is also called

"metaverse," a MUVE that "mirror[s] the real world" and is "imagined and created" by

residents (Kluge & Riley, 2008, p. 128). It also makes SL resemble the real world (RL) in

a sense that residents can continue their various real-life activities in SL, such as holding

a virtual class or business meeting. Furthermore, residents in SL do not need to follow a

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[5] SL used to offer a one-semester free trial for teacher educators to experiment with SL, as well as a discount and in-world support for institutions or nonprofit organizations to purchase lands for educational purposes (Johnson, 2006). However, Linden Lab decided to end the educational discount starting January 1, 2011.

storyline or plot preprogrammed by MMORPGs in order to successfully accomplish a task (e.g., the step-by-step procedure to fight a dragon) (Kemp & Livingstone, 2006). Residents have total flexibility to create their own plots and virtual activities, depending on their preferences and creativity (Lamb, 2006). Additionally, residents in SL do not have to pay a monthly fee as they do in most MMORPGs except when they want to build and own their own land (Linden Lab, n.d.).

Virtual communities of practice. The characteristics of augmented reality, immersive participation and simultaneous interaction manifested in MUVEs, such as SL, have captivated thousands of today's digital natives (Dede, 2005). 3-D MUVEs like SL promote collaboration in that experienced residents contribute their knowledge and demonstrate their expertise to novice avatars in the virtual community. Through participating in a virtual social networking venue, players can "take in information from many sources and make decisions quickly; to deduce a game's rules from playing rather than by being told; to create strategies for overcoming obstacles; to understand complex systems through experimentation. And, increasingly, they learn to collaborate with others" (Prensky, 2003, p. 2). As such, residents' social practices in SL are virtual communities of practice encompassing complex social dynamics that shape and are shaped by the interaction and participation of all community members (Wenger, 1998, 2000).

According to Wenger and Snyder (2000), "communities of practice" means "groups of people informally bound together by shared expertise and passion for a joint enterprise…people in communities of practice share their experiences and knowledge in free-flowing, creative ways that foster new approaches to problems" (pp. 139-140).

Although communities of practice are everywhere and realized in different contexts (e.g., home, school, work), Wenger (2006) further asserted that "not everything called a community is a community of practice"—which need to encompass three key characteristics:

1. "The domain: A community of practice is not merely a club of friends or a network of connections between people. It has an identity defined by a shared domain of interest. Membership therefore implies a commitment to the domain, and therefore a shared competence that distinguishes members from other people.

2. The community: In pursuing their interest in their domain, members engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other.

3. The practice: Members of a community of practice are practitioners. They develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems—in short a shared practice. This takes time and sustained interaction" (Wenger, 2006).

Since members of the community are drawn together by their shared "passion, commitment and identification with the group's expertise," they are more willing to exchange knowledge in order to more effectively and efficiently solve problems, transfer their know-how and cultivate their capabilities (Wenger & Snyder, 2000, p. 142). Members of a particular community, in this case, are functioning within the *three dimensions* of community of practice (Wenger, 1998, 2000): 1*) joint enterprise* that is acknowledged and negotiated by members to make their commitment to a common goal; 2) *mutual engagement* that ties all members together; and 3) *shared repertoire of*

communal resources (e.g., ideas, language, tools, artifacts, etc.) that is developed and accessed by all members. Members' participation within a particular community of practice, as a consequence, fulfills the functions of creating, accumulating and diffusing knowledge (Wenger, 1998), which hold the key to social learning (Wenger, 2000).

Digital natives' virtual practice in SL can also be conceptualized by the notion of communities of practice. For example, each resident brings his/her own expertise to interact with and help other avatars with a task (e.g., how to build objects) that needs to be accomplished (*joint enterprise*). Through sharing and exchanging knowledge with other avatars (e.g., tools, artifacts, resources), their potential and capabilities to achieve the goal are expanded in their practices in the virtual community (*shared repertoire of communal resources)*. Their commitment to participating in the community is fostered by the shared and common interest of the members that maintain the involvement of the whole community members (*mutual engagement*). This is an important concept because each participant in the virtual community has a role to play, shares the jointly constructed experience, knowledge and expertise and learns how to solve problems by learning from and collaborating with other residents in SL. The social practices in the virtual community, in this sense, are realized in residents' problem solving, seeking information, sharing experience, recycling assets, discussing developments, documenting projects, visiting case sites, mapping knowledge and identifying gaps (Wenger, 2006). The level of their commitment, engagement and motivation is also heightened by the common interest and goal shared by others.

The notion of communities of practice also yields a rich pedagogical implication for SLA. If we can keep the Net Generation as engaged, goal-oriented and committed as

they are in virtual communities of practice, their learning outcomes in language progress should be hypothesized to be positive. Certainly, this hypothesis needs to be verified and the effect of communities of practice for language learning also needs to be tested. As such, it serves as a springboard for the current study.

Virtual identity. The hit movie, "Avatar" (Cameron, 2009), probably has imprinted this English word on all moviegoers around the world. Avatar, in SL terms, is defined as "a digital persona that you can create and customize…that resembles your real life or creates an alternate identity" (Linden Lab, n.d.). As previously discussed, residents in SL can create their avatars in forms of humans, animals, vampires, robots, to name a few, and change their genders and appearances as far as their imagination can take them. As Dede (2005) stressed, "Rather than having core identities defined through a primarily local set of roles and relationships, people would express varied aspects of their multifaceted identities through alternate extended experiences in distributed virtual environments and augmented realities" (p. 8).

Dede (1995) also argued that the "fluidity" of multiple identities that residents in SL are free to create also enables them to interact with other avatars "behind the mask" of their virtual images without revealing their real-life identities (p. 1). Their virtual personas also convey their sentimental connections with the self-images they would like to convey vis-à-vis other avatars, which may or may not be realized in their real lives. By taking on a "masking" virtual identity and using text or voice chat to communicate, residents who tend to be shy and prefer an "emotional distance" in the real world are more willing to participate and share their real-life knowledge in this virtual community. Being able to personalize one's self-image, create one's desired environment and attain

communal recognition from other avatars in this MUVE also makes SL appealing to our digital natives (Dede, 1995, pp. 3-5).

From the standpoint of communities of practice, Wenger (2000) defined identity as "a lived experience of belonging (or not belonging)" and "[a] strong identity involves deep connections with others through shared histories and experiences, reciprocity, affection, and mutual commitments" (p. 239). The sense of belonging, in this case, is operated in identities each community member takes on and determined by the level of their participation in a social community. The trajectories of participation also manifest themselves in complex social dynamics. That is, newcomers' initial participation is still at the *peripheral* circle of community of practices since they do not have the "full membership" of being fully competent and committed as old-timers who reside at the inner circle of a community (Lave & Wenger, 1991; Wenger, 2000). However, newcomers may move toward the inner circle and eventually gain full membership through the trajectory of observing and learning from old-timers and strengthening their identities to be more competent (Lave & Wenger, 1991).

Taking an educational lens, we can see that learners have autonomy to create their own identities to interact with other avatars and to take risks in a safe and anonymous MUVE that "empowers" their learning (Dede, 1995; Prensky, 2005a, 2005b). Their masked avatars allow them to make mistakes in a learning-by-doing and trial-and-error process without feeling embarrassed by being "watched" in real life. In Clarke and Dede's (2005) study, for example, they explored how MUVEs can empower middle school students learning science. They found that not only the augmented realities and immersive participation in MUVEs are well suited to these Neomillennials' learning

styles, the virtual identities they take on (e.g., as a scientist to investigate why people got sick in a city) also endow them with a new self-image as a savvy professional as opposed to a student in real life. Through immersive simulations and collaborative interactions with peers using their virtual personas, students behaved as scientists to identify problems, observe sites, infer and test hypotheses, and reach conclusions based on their tested results (p. 3). Taking on a new virtual identity in the whole simulated learning process can therefore boost learners' self-image, motivation and empower their real-life identities which may lack confidence.

Why Second Life?

The "so-what" question we may pose is, "Why bother with Second Life in today's education?" According to the *Horizon Report: 2009 K-12 Edition*[6] (Johnson, Levine, Smith, & Smythe, 2009), MUVEs, such as SL, have been envisioned as one of those emerging technologies in the 21st century in which "[s]tudents often find these spaces very engaging" through "collaboration within 3D virtual worlds and multiplayer gaming environments" (p. 9). The 2009 report also documented several productive collaborative projects between teachers in K-12 settings and university game design programs. For instance, in *Global Kids* project (http://www.globalkids.org), a simulated MUVE was created to intellectually challenge 5th – 8th graders to develop skills across subject matters. The International Virtual Collaboration Space project also used SL for students both in Finland and Connecticut to collaborate in the 3-D virtual space (p. 10). DeMers

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[6] The *Horizon Report series,* released annually by the New Media Consortium and the EDUCAUSE Learning Initiative, is a longitudinal research publication that tries to identify emerging technologies that have the potential to transform learning, teaching and research in education worldwide.

(2010), an instructor in the Sloan-C Online Workshop on *Intermediate to Second Life for Educators*, seconded the annual *Horizon Report* results:

> Second life is a prime opportunity for educators to explore the idea that learning is inherently social, and happens most effectively in a student-centered, social environment where students can share their knowledge with one another…We are disappointed in the proliferation of tools to show PowerPoint-like presentations to students, and the large number of learning spaces that put the teacher front-and-center…The sound learning theories and best practices that formulate our philosophy of teaching and learning have the potential to transform learning, not only in Second Life, but in real life as well.

The evidence could also be seen in Dede and his colleagues' research project, *River City*, on whether using a MUVE as an instructional approach can foster motivation and higher-order thinking skills of middle school students in learning science (Dede, Clarke, Ketelhut, Nelson, & Bowman, 2005). These students were mostly ESL learners with low socioeconomic status. Their results revealed that those underperforming students, who originally were struggling with science and showed low self-efficacy in real life, not only thought more critically through various problem-solving tasks while collaborating with other avatars, but reignited their interest and motivation in studying science. By being able to time travel back to the real site and to interview local residents in order to solve challenging tasks as a scientist made them feel that they were "really there." They also regained a sense of autonomy and were able to "apply abstract knowledge by situating education in authentic, virtual contexts similar to the environments in which [their] skills will be used" (Dede, 1995, p. 1). By collaborating with peers in MUVEs, students also

deepened their learning experience of the subject matter and got a sense of achievement through helping and "teaching" their peers (Trinder & Moffat, 2009). This encouraging evidence points to the fact that SL can transcend the conventional teaching beyond class walls and has the potential to make learning more fun, creative, and life-like.

What if we ask the same "so-what" question in the context of language learning? Some scholars may argue that other asynchronous and synchronous Web 1.0 or Web 2.0 tools can also prompt language learners to interact with either native or nonnative English speakers in a CMC environment. For example, ELLs can use Skype or IMs (Web 1.0) to communicate with other interlocutors and practice English via text or voice chat or co-construct English texts using blog or wiki (Web 2.0), given the fact that *interaction* is the key to language acquisition as previously discussed. Nevertheless, when it comes to simulating the authentic scenarios in which learners are required to use English in real life (e.g., dining in a restaurant, traveling to foreign countries, etc.), those CMC tools are usually operated in a two-dimensional CMC environment (e.g., texts and images commonly used in blog or wiki) and are still a step behind the threshold to simulated real-world scenarios. As Trinder and Moffat (2009) argued, "3D environments such as SL provide a richer sense of immersion, providing a stronger sense of belonging to the learning community" and "provide a tool set that extends much of the functionality of Web 2.0" (p. 1). SL, hence, could be one of the instructional alternatives to today's conventional language education.

Drawing from the aforementioned arguments as to why SL has the potential for learning, I will now review studies investigating the effect of SL on digital natives' learning outcomes in the fields of education and language learning. Some caveats of

implementing SL in instruction will be discussed as well. Additionally, I will examine whether or not studies done on SL for language learning have rigorous methodology and are informed by SLA theories with a focus on interactionist learning theory.

Second Life in Education

The new challenge that educators and teachers are facing in the 21st century is how to engage and motivate the Net Generation in ways that make sense to them. As Prensky (2008) illustrated,

> Long before they ever get to school, kids have seen a tremendous amount of the world…They've simulated racing, flying, and running businesses. Many have taught themselves to read through the electronic games they play…Kids are not intellectually empty…[T]hey arrive at school full of knowledge, thoughts, ideas, and opinions about their world and their universe. (p. 41)

Unfortunately, conventional teaching in a traditional class setting doesn't go hand in hand with the learning styles and interests of today's digital natives. For example, learners don't find that materials and lessons delivered in class coincide with the tasks they actually encounter in the real world. As a result, they can't transfer the skills and knowledge they learn in class to real-life problem-solving tasks because both sides are not married. The question raised by stakeholders in education would be, "How can we bring real-world tasks to class that give our students the opportunity to learn by doing?" Predicted by most educators as "the next best revolution" in the 21st century (Coffman & Klinger, 2007; Hobbs, E. Brown, & Gordon, 2006; Kemp & Livingstone, 2006; Kluge & Riley, 2008; Trinder & Moffat, 2009; Vernon, Lewis, & Lynch, 2009; Vogel, Guo, Zhou, Tian, & Zhang, 2008), a 3-D virtual simulation/gaming environment like SL seems to

offer promising educational implications. As previously noted, SL is an open platform that allows residents to create their own desired simulated virtual environments. As Vernon et al. (2009) pointed out, "This lack of a specific agenda makes using Second Life a more flexible tool for distributed education programs" (p. 177).

Following the trend of virtual learning, many universities have embarked on this journey by holding virtual classes in SL, such as Harvard University's first law school course (Johnson, 2006), Ball State University's English composition course and University of Tennessee's medical course (Lamb, 2006). The fact that a lot of universities are jumping onto the SL bandwagon has revealed the beneficial potential that higher education perceives in this 3-D virtual environment. In Coffman and Klinger's (2007) research on exploring the benefits of utilizing MUVEs as instructional strategies, they asserted that students' immersion in SL can actually foster their learning experiences and afford them to "discover content and create meaningful connections with the content through creativity and imagination" (p. 29). The avatars that students take on also give them "the first and the third person" voices (p. 30) to approach tasks from different angles. The flexibility for learners to present their creative work in SL through building objects also gives them the sense of ownership. Being able to collaborate with their peers also promotes a supportive community grounded in the mentor-novice apprenticeship (ZPD), which also lends itself to virtual communities of practice.

From a constructivist standpoint, Coffman and Klinger (2007) further claimed that the new skills students learn in SL through simulating real-world tasks can also be *transferred* to their real lives, thereby making learning more meaningful and abstract concepts more concrete (p. 31). Kluge and Riley (2008) seconded that SL provides the

opportunity to promote "immersive, deep, authentic, active, and constructivist learning"
so that students are no longer passively waiting for information delivered to them but
taking initiatives to "construct meaning from their experiences" (pp. 130-133). Therefore,
the socioconstructive notion of experiential learning in SL further deepens learners'
understanding of abstract concepts since they are discovering and creating knowledge
that is intriguing and meaningful to them. Kluge and Riley (2008) also asserted that
collaboration in SL has a more authentic face-to-face "feel" in various virtual social
networking venues than its CMC counterparts, such as email, blogs, and even Skype. The
key feature of SL that allows residents to create and manipulate 3-D objects also makes
problem-solving tasks that are too costly and dangerous to accomplish in RL (e.g.,
performing surgery or entering a nuclear plant) possible in SL (p. 130).

  Being able to transfer skills learned in SL is also echoed by Hobbs and his
colleagues' research on examining the effect of implementing SL for group work and
learning outcomes (Hobbs, Brown, & Gordon, 2006; Hobbs, Gordon, & Brown, 2006).
Hobbs et al. (2006) suggested that students' collaboration with peers in SL can transform
their learning by affording them opportunities to *observe, explore, reflect* and *integrate*
their existing prior knowledge into new concepts learned through real-life problem
solving that is meaningful to them. These learning skills developed in SL through
"autonomous learning, collaboration and self-motivated problem solving" can therefore
be transferable to different lifelong learning contexts that require these skills (e.g., school
or workplace) (Hobbs et al., 2006). Students' immersive participation in the virtual
socialization (i.e., communities of practice) also reinforces the "mentorship" that further

fosters their learning experience in the sense of engagement, motivation, belonging, trust
and knowledge co-construction.

Although SL was not originally designed for educational purposes, Kemp and
Livingstone (2006) proposed a new hybrid system called SLOODLE (www.sloodle.org)
that integrates SL and Moodle, a learning management system, for instruction to
capitalize on the strengths of both systems. For example, all the instructional features in
Moodle, such as forums, chat rooms, assignment drop-box, gradebook, etc., can be
synchronized with SL. Students can access SL from the links inside Moodle, see
announcements sent from Moodle to SL, and access assignments from both SL and
Moodle. Teachers can also keep a track of students' chat logs sent from SL to Moodle
and grade student homework in Moodle that is submitted in the SL dropbox. Teachers
can still use Moodle to manage the class as they normally do in electronic learning
management system (ELMS) without sacrificing authenticity, interactivity, collaboration
and experiential learning that SL offers since both systems are integrated (pp. 13-15).
Hence, merging ELMS into SL to suit the needs of both faculty and students has become
a breakthrough in incorporating MUVEs in instruction.

While SL has the potential to extend learning outside classroom walls, researchers
also caution us not to overlook certain aspects of SL that may turn good intentions into
negative outcomes when implementing SL for educational purposes. For example, Vogel
et al.'s (2008) study examining both Cantonese and Dutch graduate students' attitudes in
comparing SL and other group support technologies (i.e., MSN, email, forums, and video
conferencing) has different pedagogical implications. Vogel and his colleagues found that
students' acceptance and use of SL was not as positive as other CMC tools. This negative

result was also due to certain factors in SL, such as high hardware demands of broad

bandwidth and graphic cards, technical instability and unintuitive interface.

In addition to the issue of high demands of advanced hardware and technical

stability mentioned above, Kluge and Riley (2008) also raised certain challenges of

implementing SL for instruction. For example, learners may get so "immersed" in the

exciting virtual world that they "get distracted from course goals" (p. 131). While some

digital natives feel comfortable in MUVEs, others may find the 3-D virtual world

overwhelming. Not many teachers are tech-savvy enough to create their virtual classes in

SL. Virtual violence, assault, and sexual harassment still exist in SL (also see Johnson,

2006). Additionally, Kemp and Livingstone (2006) also warned that some "griefers" (i.e.,

avatars who harass other residents) can mischievously interrupt classes, impacting both

teaching and learning experiences in SL (p. 15). On that note, Trinder and Moffat (2009)

suggested that limiting access to a particular group can mitigate the disruptive issue in

SL, though not totally eliminating it (p. 5). It is also vital to provide newcomers with

guidelines regarding how to participate in SL and netiquette for avoiding disruption in

each online session. In addition to those concerns mentioned above, Vernon et al.'s

(2009) study on using SL for social work education also raised issues such as a steep

learning curve (i.e., the required time needed for students to master skills) and resource

stability (i.e., original locations may disappear or change landmarks that cause difficulty

to locate them) (p. 188).

Another case in point is Trinder and Moffat's (2009) project on exploring whether

it is feasible and effective to use SL as a visualization tool to teach complex Artificial

Intelligence (AI) computing techniques to British tertiary students majoring in computer

science and gaming. Although their pilot study revealed that SL does have the potential

to 1) foster students' understanding of abstract concepts through simulating AI

computing techniques, 2) deepen and extend learning experience, and 3) boost

motivation, they also found some negative aspects in SL. For instance, SL is not that

intuitive to students who are not used to 3-D MUVEs and just enter SL for the first time.

So it is imperative at the outset to invest time to orient and train them to function well in

SL (e.g., manipulate 3-D objects; learn basic building skills; use landmarks and notecards

[inventory items containing text used in SL]; and teleport). Since SL has no

predetermined goals as other MMORPGs, it also takes substantial time and the savvy

skills of teachers and the technical support team to develop well-structured teaching

materials and learning activities in SL that align with course objectives (p. 2).

Therefore, even though SL has the characteristics of combining work and play

that brings the spirit of entertainment to education, those factors identified above need to

be taken into serious consideration to avoid the "double-edge-sword " side effect in SL.

In a case study on using SL for a two-semester freshman English literature and rhetoric

course (Mayrath, Sanchez, Traphagan, & Heikes, 2007), students in the first semester felt

frustrated and found building objects in SL time-consuming and irrelevant to their

learning objectives. Learning from the first-semester lesson, the authors identified the

issues and modified their SL activities from building to role-playing. Based on students'

positive feedback in the second-semester survey and interview results, Mayrath et al.

(2007) suggested that when designing SL activities, teachers need to 1) align those

activities with both course and learning objectives, 2) consider students' level of skills

and needs, 3) make sure that the time and effort required to complete a task is plausible,

and 4) provide pre-course training and clear directions to facilitate transition (also see suggestions in Vernon et al., 2009). Trinder and Moffat (2009) also confirmed that the issues of integrating SL in instruction can be detected through piloting and serve as a baseline for further pedagogical and technological development. Teachers' scaffolding and technical team support are the keys to tackling the aforementioned issues without eliminating the fun of learning in SL.

Despite the drawbacks, implementing SL in instruction still has a lot to offer and can address digital natives' learning styles by retaining their attention, arousing their curiosity, and challenging their higher-order problem-solving skills. Their self-efficacy, intrinsic motivation and sense of autonomy will also be enhanced (Coffman & Klinger, 2007, pp. 30-32). As such, I will now focus on how SL is implemented in language learning and teaching across research studies. In particular, theoretical underpinnings drawn from SLA theories will be scrutinized and pedagogical implications provided across studies will be discussed.

Second Life in Language Learning and Teaching

Most language teachers would probably agree that immersion in a country where the target language is spoken can expedite L2 learners' language learning curve. However, the reality is that not every student can afford the cost of traveling to a target country, let alone immersing themselves in the target culture for a long time. Most EFL learners, for instance, hardly get the chance to practice English with native English speakers on a daily basis since they are still surrounded by their L1 when walking out the language class door. Though the budget (traveling) and practicality (talking to different native speakers) may concern most language teachers, it does not mean that we have to

sacrifice the possibility of incorporating real-life tasks in instruction and make language learning more affordable, experiential and motivating.

As previously discussed, "Second Life offers numerous opportunities to observe student competencies in a way that may not be possible in the traditional or text-anchored online classroom" (Vernon et al., 2009). Seeing the potential and benefits that SL can bring to language learning, many private language institutes (e.g., LanguageLab) or educational organizations (e.g., British Council) have built virtual classes and islands in SL, targeting the lucrative market of English learning worldwide (Erard, 2007). The "multimodal communication" channels that SL offers to allow both teachers and students to simultaneously communicate through text-based/voice chat in public/private mode also attract teacher educators to experiment with this 3-D MUVE for language instruction (Holmberg & Huvila, 2008). To illustrate, language teachers can hold virtual classes to simulate real-life tasks (e.g., checking in an airport or visiting a museum) for student avatars to practice the target language with other avatars around the world (Clark, 2009) without the cost of traveling (Cooke-Plagwitz, 2009). SL, with its immersive, simulated, communicative and collaborative nature, could be one of the potential alternatives for real-life language learning (Vickers, 2007a, 2007b).

Language learning in 3-D MUVEs had actually started before SL. In Stevens' (2006) review of research projects done on MUVEs for language learning, *Active Worlds*, developed in 1997, has been used for educational or business purposes in a 3-D avatar-based virtual environment (http://www.activeworlds.com). For example, Gordon Wilson, an English teacher teaching EFL in Japan, created a virtual university in Active Worlds in 2001. His Japanese students used either text or voice chat to communicate with peers and

native English speakers, who were invited to host presentations and speaking sessions with his students[7]. Another case using *Active Worlds* for language learning is Peterson's (2005, 2006) studies. Peterson (2006) found that the use of avatars to communicate not only enhanced his Japanese EFL students' "telepresence," but also promoted negotiation of meaning, use of interactional/transactional communication strategies, evidenced in the analysis of his students' text chat logs during text-based interaction. Stevens (2007) also noted that *Quest Atlantis*, another 3-D MUVE, has been used to "immerse children, ages 9 to 16, in educational tasks" (see http://atlantis.crlt.indiana.edu/). For instance, Zheng, Brewer, and Young's (2005) cross-cultural project between Chinese and American teenage students examined the affordances in *Quest Atlantis* that influenced EFL students' learning outcomes[8].

Silva (2008) argued that "experiential learning, collaboration, social construction of knowledge, and role-playing" (p. 5) make SL an ideal educational tool for language learning. Using both text and voice chats, learners can practice their speaking and writing in different simulated real-life activities, such as ordering food in a restaurant, going to a bank, etc. Being able to use avatars to collaborate and interact with other residents speaking the target language in real time also gives them the opportunity to "use authentic language" and practice their four skills as if they were in real-world scenarios (Vickers, 2007a). Language teachers can integrate the concepts of WebQuest, communicative and task-based language teaching in SL to capitalize on the immersive,

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[7] For more information, see http://www.vancestevens.com/findbuds.htm#active_worlds

[8] For abstract of this project, see http://users.prof2000.pt/wia/oc/abstract.asp?id_bridges=131

communicative and life-like features it offers (Vickers, 2007b). They can also design real-life activities in SL, such as scavenger hunts, virtual field trips, language exchange project and advertising in-land spots to which students teleported, recreating a virtual replica of an historic time/space (Johnson, 2006). For a blended course, students can either present by using "building and scripting" function to create objects (e.g., poster), upload powerpoint slides to a display board in world, or present their completed in-land tasks in oral presentations or written essays in their RL classes. By so doing, students can transfer their learned knowledge in SL to RL (Silva, 2008).

Despite the fact that some digital immigrant teachers view online text-based asynchronous CMC environments (e.g., Blackboard, discussion forum) as a vital instructional portal, ELLs nevertheless find them impersonal and would prefer a more life-like networking mechanism (Cooke-Plagwitz, 2008). Cooke-Plagwitz (2008) claimed that a 3-D MUVE like SL can enable ELLs' "telepresence" to take on avatars in-world and makes them feel like they are "really there," which further sustains their engagement and sense of belonging (p. 548). Using a virtual "self" to "mimic face-to-face interaction" with other avatars in world also makes learning experience more life-like and "decrease[s] the sense of isolation students in online text-based classes often feel" (p. 549). Some introverted ELLs in RL will feel more comfortable participating in SL, given the "disguises" provided by their avatars. Their writing (via text chat) and speaking (via voice chat) proficiency and cultural competence (via interacting with residents) can therefore be enhanced and their language acquisition can occur incidentally anywhere, anytime in SL.

Cooke-Plagwitz (2009) elsewhere argued that the "experiential, real-time, and multimodal" features of SL are well suited to the learning needs, interests, and styles of our digital native language learners. SL provides rich resources of 3-D "SIMs" that simulate cities and countries in RL so language learners can immerse themselves in real-life target-language speaking environments (p. 176). Students can easily find native speakers around the world to interact with in SL without worrying about the cost of traveling in RL. Cooke-Plagwitz suggested that doing mini-immersion fieldtrips to different virtual cities could also maximize students' language learning experiences by literally talking to local residents through virtual reality. Learners can use a plethora of technologies (e.g., powerpoint, audio podcast or video, webpages) to showcase their constructive project work, which also fits into the digital learning styles of the Net Generation. Though aforementioned caveats in incorporating SL in education may also apply to language instruction (e.g., technical and legal issues), Cooke-Plagwitz (2008, 2009) argued that implementing SL in language curricula still holds great potential for simulating RL language immersion situations and promoting authentic target language learning, if planned and monitored carefully.

Viewing SL as an ideal platform for hybrid learning to alleviate the demands of traditional undergraduate Spanish language courses, Clark's (2009) hybrid Spanish classes are another vivid example of how SL can extend in-class activities and promote learning by doing. She built a Spanish-style hacienda on Pennsylvania State University's land in SL to hold her basic Spanish classes in weekly in-world sessions. Clark designed a variety of in-land activities, such as taking a fieldtrip to an European university to practice description, going for a vocabulary scavenger hunt, introducing themselves to

local avatars, practicing numbers by shopping on a Spanish island, visiting an art gallery

to learn about a Spanish artist, ordering food in a Spanish restaurant, and creating a poster

or brochure to advertise a Spanish vacation spot. Based on her weekly journal entries that

reflected on students' in-world immersive participation and assessments of SL

assignments, coupled with survey and interview data, she found that blending courses in

SL can actually optimize a student's language learning experience. Learners practiced the

four language skills (i.e., listening, speaking, reading, writing) as well as grammar and

vocabulary in SL through their immersive interaction and collaboration in various life-

like scenarios and contexts. Students' responses to end-of-semester SL surveys also

revealed that collaborating and interacting with peers aligned with their preferences for

social networking. Their immersion in SL to complete simulated real-life tasks also

deepened their understanding of course material, and gave them opportunities to

construct meaning and discover knowledge. Full of "cultural and interactive

possibilities," SL also brought her classes "to a world that is challenging, fascinating,

motivating and ever-changing" (p. 153).

In a collaborative cross-cultural research project between Georgia State

University in the U.S. and Yantai University in China (Wang, Song, Stone, & Yan,

2009), Wang and his research team explored the effect of integrating SL into EFL

instruction. In particular, they tried to address "1) how the affordances of SL might be a

useful tool that mediate EFL learning, 2) the effects of the EFL program in SL on

Chinese students' oral proficiency, 3) the Chinese students' technology readiness for

using SL, and 4) the Chinese students' perceptions of SL and the EFL program

implemented in SL" (p. 14). Chinese EFL students were required to complete tasks by

interacting with American students through in-land activities, such as a one-on-one interview about university life and using technology for learning and fun, a virtual tour to virtual campuses, and group discussions about how to prepare for ideal jobs. Based on the results drawn from pre-and-post program surveys, triangulated with student weekly blog postings and interview transcripts, they found that Chinese EFL students were ready to use SL for English learning, and perceived SL as a useful learning platform to be integrated in an EFL program (Wang, Song, Xia, & Yan, 2009).

In Deutschmann and Panichi's (2009) study, they conducted an online oral proficiency course for doctoral nonnative English speaking students (except one native English speaking student) in SL. Through students' in-land participation using voice chat in both informal interaction (the first session) and formal presentation (the last session), the authors used discourse analysis to examine how supportive moves (i.e., back-channeling and elicitors) and linguistic behavior (i.e., floor space and turn taking patterns) between teacher-student and student-student interaction led to their participation and engagement in SL. They found that teachers' supportive moves were conducive to students' engagement and that students initiated more linguistic cues, signaling their active involvement in SL. They also found that less proficient students were more active "holding the floor" due to the sense of security of speaking through their avatars. Students were also able to establish rapport and support each other due to the autonomous and collaborative nature of SL (p. 318).

Building on his previous studies on examining EFL students' use of communication strategies and the relationship between task type and the quality of negotiation via text chat in *Active Worlds* (Peterson 2005, 2006), Peterson (2010) has also

started to explore the use of SL for language use. Following the same research design where his Japanese EFL students participated in three sessions of task-based interaction via text chat to complete each task with their dyad partners, his case study using qualitative discourse analysis revealed that learners also used both transactional strategies (e.g., split turns and time saving devices) and interactional strategies (e.g., use of politeness and emoticons) to negotiate meaning with interlocutors. Based on students' responses to a post-course questionnaire and their feedback during interviews, he found that the presence of avatars not only enhanced the sense of telepresence, but optimized learner motivation, engagement and immersion (pp. 288-289).

As promising as the results shown in aforementioned research studies targeting language learning in SL, some research studies are flawed in methodology design, or lacking theoretical foundations in SLA. Therefore, these "research holes" need to be filled before we make such positive claims. To illustrate, among the literature reviewed above, most of the research studies are "anecdotal" description reports simply based on personal observation or experience (Cooke-Plagwitz, 2009, 2008; Johnson, 2006; Silva, 2008; Stevens, 2006, 2007; Vickers, 2007a, 2007b). Even if it is an empirical study, the research design is not as rigorous and systematic as most experimental studies. For example, based on students' responses in surveys and interviews, Clark (2009) in her study found blending SL in language instruction can foster Spanish language learners' experience. However, she did not provide the evidence of students' language learning gains in the four skills as she had claimed. Evaluating students' assignments without a systematic assessment to tap into their language proficiency also raises the issues of reliability and validity. Similarly in Deutschmann and Panichi's (2009) study, even

though there seems to be a positive correlation between students' linguistic behavior through interaction and their engaging participation in SL, it is hard to make such a "causal-relationship" claim. That is, there are other factors that were not considered, such as individual differences in proficiency levels, learning styles, task types, etc. A further qualitative analysis of students' perceptions about learning in SL, in addition to the quantitative discourse analysis, is needed.

Lastly, some studies were conducted using a quasi-experimental design, but still lacking the link between the results and SLA's theoretical underpinnings. For instance, even though students' perceptions about SL as an instructional tool for EFL learning appeared positive in Wang et al.'s (2009) study, whether EFL students' oral proficiency can be enhanced through interaction with native English speakers and task completion in SL has not yet been analyzed. Their discussion on how students' language practices in SL were situated in social constructivist theory as claimed was not fully addressed. Additionally, Clark's (2009) study mentioned above was also not framed by any SLA theory, which makes her study anecdotal and not theoretically-sound.

The current literature review regarding SL for language learning and teaching has unearthed the fact that research done in this field is still scarce. The paucity of rigorous empirical studies to validate whether SL can make a difference in EFL learners' language acquisition also points to the fact that there is a need to bridge this research gap.

Summary

This section opened up by reviewing the key affordances of SL, such as immersion, simulation, collaboration and creation. The unique function of allowing residents to create their 3-D virtual environments rather than following preprogrammed

agendas also distinguishes SL from its MMORPG counterparts. The nature of collaboration and immersive participation in SL is also situated in the notion of communities of practice. Residents are bound together by common interests in the virtual communities where they learn from and support each other through shared expertise and resources to better accomplish tasks toward target goals. Avatars that residents personalize also reveal their virtual identities that are shaped by their sense of belonging. Their collaborative and immersive virtual communities of practice also empower their learning experiences and boost their motivation and engagement. As such, arguments were made to justify why SL, compared with other two-dimensional Web 2.0 tools, can make learning more experiential, immersive and engaging while transcending the constraints of traditional classrooms. To validate these arguments, studies done on SL for educational purposes were then reviewed to further uncover the pedagogical implications that SL can offer.

The immersive and collaborative nature of SL permits learners to discover knowledge, create meaning, transfer skills and retain engagement and autonomy. It also deepens learners' understanding of abstract concepts through simulation. As promising as SL may sound for education, caveats were also posed by researchers when incorporating SL into instruction: technical demands, resources stability, skills mastery, time investment and legal issues. Without taking those factors into consideration, the beneficial potential that SL brings into education may also bring unintended side effects. Finally, research studies done on SL for language learning and teaching were reviewed. SL allows learners to simultaneously interact with peers or native speakers using text/voice chat in both private and public channels anytime, anywhere. These

affordances, manifested in simulating real-life interaction scenarios, sense of presence, and collaborative immersion, also make SL an ideal language learning environment. This section ended with a call for more research to be conducted in SL in order to address the research gap in the current field of SLA targeting SL.

Chapter 3: Research Methodology

Introduction

This chapter lays out the research design that guided the research methods and procedures for this study. First, I will delineate the rationale to justify why and how each research question was developed and framed by the related SLA theoretical framework, provided by a visual representation that illustrates the interrelationship between the theoretical framework and questions. I will then explain the methodology in terms of how the research setting and participants were selected, what instruments and procedures for data collection were employed, and how the data analysis was conducted, provided by a summary table. Issues of validity and reliability as well as ethical issues are taken into account in the discussion in this chapter.

Research Questions

In order to gather empirical evidence that links to learners' language behaviors to address the big question: "What evidence can be found in EFL learners' language practices in SL to indicate that SL can be a viable learning environment that facilitates positive learning outcomes and fosters language learning experiences?", two core questions are raised, each justified by the relevant rationale:

Rationale for Question One

1a. To what extent do EFL learners employ communication strategies to negotiate

meaning during task-based interaction via voice chat in SL?

1b. What are the quality and quantity of EFL learners' oral production during their

language practices in a task-based virtual class?

Question one was intended to examine whether EFL learners' communication strategy patterns through text-based interaction found in Peterson's studies in *Active Worlds* (2005, 2006) and later in SL (2010a) could also be evidenced through voice-based interaction in this study. The rationale behind using the voice chat mode was that much attention has been paid to ELLs' language acquisition using text chat in most synchronous CMC studies (Blake, 2000; Conzalez-Lloret, 2003; Kern, 1995; Kitade, 2000; Lee, 2002; Smith, 2003; Tudini, 2003; Warner, 2004) rather than voice chat CMC. In most EFL contexts, finding an English native speaker to practice on a daily basis is usually not realistic. Talking to peers in English outside the English class walls where their native language is commonly spoken might also seems a bit awkward to EFL students. As such, using voice chat to practice English with other avatars in SL without the restrictions of time and distance has attracted many EFL learners to this new 3-D learning arena in order to improve their speaking proficiency.

From the *cognitive interactionist perspective*, an immersive MUVE like SL also offers a fertile research ground to examine EFL learners' cognitive processes in language acquisition through dyad task-based interaction using voice chat. For example, learners may use different interactional modifications (Pica, 1987) to negotiate meaning with their interlocutors when a breakdown in communication occurs (Gass & Selinker, 2001; Long, 1983; Long & Porter, 1985) in order to make their language output more comprehensible (Swain, 1985, 1995; Swain & Lapkin, 1995). Since EFL learners can use both voice and text chats to interact with other avatars in SL, the *cognitive interactionist theory* (Long, 1981, 1983, 1985) provides an optimal framework for this study to investigate how learners' L2 acquisition will take place during their negotiation of meaning with peers.

This question further tests out what types of communicative tasks would trigger more negotiation to examine the claims made by Peterson (2006) that the decision-making task promotes more negotiation than other task types. It is also hoped that the findings drawn from this research question will contribute to a better understanding of EFL learners' cognitive processes in language acquisition in a 3-D virtual world like SL.

Drawing from the discussion above, evidence of learners' language patterns that point to learners' language acquisition can be defined as negotiation of meaning and communication strategy use from the standpoint of *cognitive interactionist theory*. Aligned with cognitive interaction theory, implementing *TBLT* in SL also seems theoretically-sound and pedagogically-feasible because its unique affordances (e.g., immersion, augmented reality, simulation, etc.) provide opportunities to examine the quality and quantity of learners' language patterns associated with SLA. That is, students' discourse samples during their task-based interaction using voice chat can be elicited throughout various communication task types. What types of tasks trigger more negotiation and communication strategy use in SL can also test the interactionist theory in a 3-D multiuser virtual environment (MUVE) setting and verify the findings of previous task-based research regarding the interrelationship between task types, negotiation and strategy use. Additionally, the quality and quantity of students' language output during their task-based interactions in the virtual course can be examined as to levels of complexity and accuracy (Yuan & Ellis, 2003; see Section 6 below for further detail) to provide empirical evidence for the effects of task-based instruction on learners' oral production in SL.

Rationale for Question Two

2. What are students' perceptions about using avatars to practice English and participate in a task-based virtual class in SL?

Question two was exploratory in nature with an aim to unearth EFL learners' perceptions about their language learning experiences in SL and to provide pedagogical implications for language learning and teaching in a MUVE. Specifically, it referred back to the "so-what" question raised in chapter two: *Why bother with SL as a 3-D platform for language learning as opposed to the existing classroom-based or other Web 2.0 environments? What are the best language practices in SL that can benefit EFL learners' learning experiences but cannot be realized in real life (RL)?* The results drawn from this research study would also enrich our understanding of the field of learning in MUVEs as reported by previous studies. For instance, the telepresence (Schroeder, 2002), configured by avatars in most MUVEs, permits learners to *feel* that they are being present (Dede et al., 2005; Kluge & Riley, 2008; Peterson, 2006), fosters communal engagement and commitment (Holmberg & Huvila, 2008; Johnson, 2006; Mayrath et al., 2007), promotes a sense of autonomy (Dede, 1995; Kluge & Riley, 2008), reinforces the mentor-novice apprenticeship (Hobbs, Brown, & Gordon, 2006; Trinder & Moffat, 2009) and deepens learning experiences (Coffman & Klinger, 2007). The immersive participation and augmented reality (Dede, 2005) afforded by most MUVEs like SL also enable learners to collaboratively simulate real-life tasks (Vickers, 2007a, 2007b) with other peers or native speakers worldwide 24/7 (Clark, 2009) without the burden of traveling (Cooke-Plagwitz, 2009). These unique affordances in SL provide pedagogical implications for experiential learning, collaboration, social construction of knowledge (Clark, 2009; Cooke-Plagwitz,

2008, 2009; Silva, 2008), authentic L2 learning and real-time simulated practice (Cooke-Plagwitz, 2009; Johnson, 2006; Vickers, 2007a), and cross-cultural awareness (Clark, 2009; Peterson, 2010b). These features also set SL apart from other Web 2.0 tools because the latter fall short of affording the real-time simulation, immersion, telepresence (Holmberg & Huvila, 2008; Peterson, 2006) or of displaying nonverbal cues via avatar animations (Peterson, 2006), all of which foster a sense of community instead of isolation (Cooke-Plagwitz, 2008; Peterson, 2005).

Second, the avatars that learners take on to represent their personae open up a new avenue for research on the link between learners' identities and their language learning outcomes. I was propelled to examine whether the claims made by studies done on learners' virtual identities in MUVEs could be transferrable to the current study. For instance, since learners' real-life identities are "masked" in the avatars they create, they are more willing to take risks or make mistakes for learning without "losing face" as they usually feel in real-life classes (Dede, 1995; Clarke & Dede, 2005; Cooke-Plagwitz, 2009). Being flexible to create different personas to construct their preferred self-images to interact with other avatars not only empowers their learning experiences (Dede, 1995) but also provides a comfort zone for them (Deutschmann & Panichi, 2009) to speak "behind the mask" through "the first and the third person" voices (Coffman & Klinger, 2007, p. 30). Those positive findings also shed educational light on the effect of learners' virtual identities on their language learning outcomes. If the new virtual personae EFL learners project themselves onto in SL are as empowering as found in the aforementioned studies, I would venture to examine whether those positive findings could also be evidenced in my study, and explore whether learners' virtual identities realized in avatars

can increase their sense of belonging and lower their affective filter (Krashen, 1985) and language learning anxiety (Horwitz, Horwitz, & Cope, 1986) in their language practices in the virtual community.

EFL learners' perceived attitudes toward their language learning experiences in a task-based language class conducted in SL are still a new research dimension in the field of SLA that deserves further attention. Little do we know 1) why learners are drawn to SL for practicing English, 2) how they perceive learning English in task-based interaction in SL vs. RL, 3) how they feel about using avatars to interact with other avatars in English, and 4) what kinds of features afforded by SL will impact their language learning experiences and outcomes in the virtual world. Also, a full-blown virtual language course designed under the TBLT framework has not yet been fully documented in SL literature. Hence, the findings drawn from this study will verify the positive claims found in existing SL literature regarding the effect of virtual learning on learners' perceptions and identities (Clark, 2009; Coffman & Klinger, 2007; Cooke-Plagwitz, 2008; Dede, 2005; Kluge & Riley, 2008) and further contribute to the body of knowledge in SL literature with a focus on EFL learners.

To further illustrate the interrelationship between the two research questions and this study's theoretical underpinnings, a visual representation is presented below:
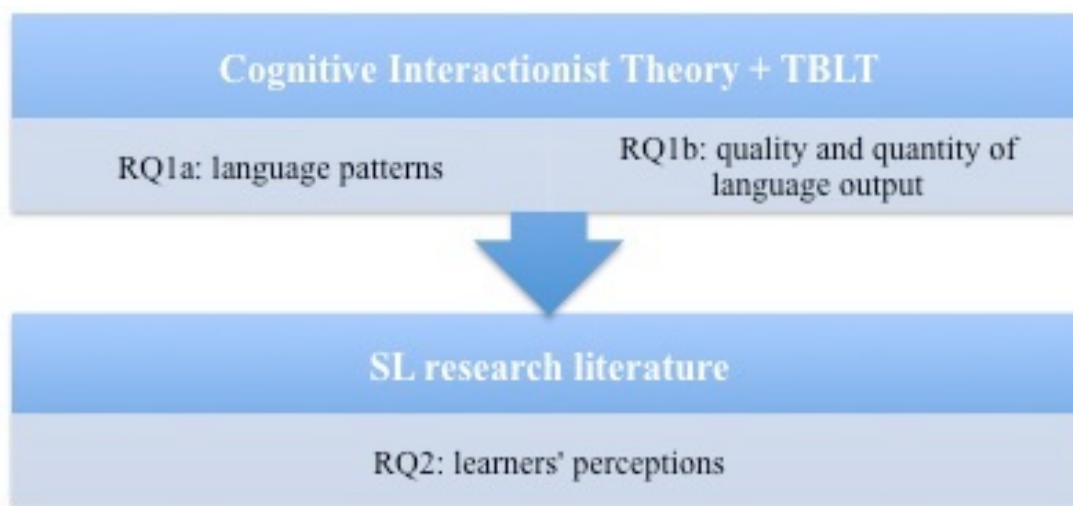
Figure 3.1. The interrelationship of the two major research questions associated with relevant theoretical framework

As Figure 3.1 exemplifies, each research question was interconnected and framed by the specific theoretical underpinnings that situated this current study, as well as informed by pedagogical implications in the literature that this study intends to verify:

1) Both RQ1a and RQ1b were framed by cognitive interactionist theory and operationalized in the TBLT framework in order to examine students' language patterns in negotiation and communication strategies throughout different task types and the quality and quantity of their oral output in the TBLT course (see Research Design below for further explanation);

2) RQ1a and RQ1b (students' language practices in task-based interaction in SL) consequently led to RQ2 regarding how students perceived their task-based learning experience using avatars in SL;

3) The findings drawn from R2 were intended to examine whether the positive claims made in existing SL literature (i.e., SL is an beneifical environment for

learning) can be verified in that SL can empower learners' learning experiences (e.g., immersive engagement) and identities (e.g., masked security in avatars), due to its unique affordances (e.g., augmented reality).

Research Design

In this section, I will delineate three major components that helped frame the current study: the philosophical assumptions about the *knowledge claims* I was making, *strategies of inquiry* about the research procedures I was developing, and *methods* of data collection and analysis I was conducting. Along the line of discussion on each framework element, I will further justify how my knowledge claims informed the multiple methods design for this study rather than a qualitative or quantitative approach alone. I will then present each element of the research methodology for this study.

Rationale for the Multiple Methods Design

As discussed in the research questions section, this research study was both experimental (deductive) and exploratory (inductive) in nature. I was concerned with EFL learners' use of communication strategies in interactive tasks via voice chat and examining whether their language use operationalized in negotiation of meaning would take place when a non-understanding occurred in SL. Inspired by the positive results in Peterson's (2005, 2006) studies in another 3-D MUVE, my hypothesis was that EFL learners would also use various communication strategies to negotiate meaning with peers during communication breakdowns in SL. Systematically observing learners' language performance and identifying the patterns of their language outcomes would enable me to verify the claims made by prior task-based research and further test the cognitive interactionist theory. I was also interested in unearthing the dynamic and

complex phenomena of EFL learners' language practices and their construction of virtual identities in SL and how their language experiences shaped and were shaped by their participations in the virtual community of practice in SL. Consistently documenting the participants' language practices over time and letting learners have a say about their learning experiences throughout the virtual course would help uncover the less explored phenomena.

Taken together, the big question I was concerned about is, *"How did language learning in SL work for my participants?" Put another way, "Did my participants perceive SL as a potentially effective platform for language learning as opposed to traditional English classes or other Web 2.0 environments? What evidence could be found to point to the fact that their SLA did take place in SL?"* The concerns with "what worked" for my participants propelled me to take a *pragmatist standpoint* as my knowledge claims in order to seek better solutions to resolve these concerns (Creswell, 2003, p. 11). Though finding empirical evidences to build on the interactionist theory was one of my major concerns, I was more drawn to providing pedagogical implications that could shed practical light on language teaching and learning in SL. After all, it was the empirical and practical concern about EFL learners in the virtual world that had become the driving force of this study. Since the phenomena of EFL learners' language practices in SL are complex and dynamic, taking a "pluralistic approach" from pragmatism would allow a researcher practitioner like me to more freely choose "what worked" for my study in order to gain a better understanding of the "emergent social and psychological world that includes language, culture, human institutions and subjective thoughts" (Johnson & Onwuegbuzie, 2004, p. 18).

Given the fact that the first research question sought to identify the observational patterns in EFL learners' language performance to test out cognitive interactionist theory, and the second question explored how learners' language practices in the virtual community impacted their virtual identities and perceptions, taking a multiple methods approach allowed me to use multiple research instrumentations to better address both questions quantitatively and qualitatively. Also, recognizing that both qualitative and quantitative methods have their limitations (Creswell, 2003, p. 15), collecting multiple data through a multiple methods approach can "provide quantitative and qualitative research strengths" to "overcome the weakness in another method" (Johnson & Onwuegbuzie, 2004, p. 21).

In this study, EFL learners' use of communication strategies during negotiation breakdown was collected from their language output in *task-based interaction* via voice chat. The quantitative data were further analyzed using discourse analytical techniques to generate the patterns of their communication strategies. Since EFL learners' language practices in SL are developmental and ongoing over time, relying on quantitative data alone would fall short of capturing a full picture of the dynamic and complex learning phenomena. Given the fact that learners' internal processes are usually difficult to access simply through external measures, an "emic" approach from insiders' perspectives will provide a more precise understanding of participants' own interpretations of their experiences in the less explored MUVE (Johnson & Onwuegbuzie, 2004, p. 20). Therefore, qualitative data through learners' learning journals, responses to open-ended items on the pre- and post- course surveys, text chat logs, research journals and focus group interview were gathered in order to unpack the complex dimensions of learners'

language socialization and virtual identities in SL. Adopting the analytical approach of

grounded theory (Corbin & Strauss, 2008), rich and thick descriptions with thematic

patterns would help the researcher interpret how students' language socialization played

out and whether they perceived SL as a potential language learning platform. By

triangulating both types of data, the results would not only yield a more well-rounded

understanding of the complex phenomena of EFL learners' language practices in SL, but

also "strengthen the knowledge claims of the study or explain any lack of convergence

that may result" (Creswell, 2003, p. 217).

Figure 3.2 illustrates the multiple methods approach implemented for the whole

design process of research in this study.

Quantitative Data	Qualitative Data
• 4 types of communication tasks • Language output (oral presentation) in each task-based session	• Learning journals • Survey responses • Focus group interview • Participation observation with field notes • Research journals
Q1a	**Q1b**	**Q2**

Discourse analysis of frequency patterns based on the coding scheme	T-units measure on accuracy and complexity of oral production	Open-and-axial coding (grounded theory)

Figure 3.2. A visual representation of the multiple methods research design

Setting

This study was conducted in VIRTLANTIS, a 3-D virtual island in SL (http://slurl.com/secondlife/UWA%20VIRTLANTIS/110/172/33)[9]. As advertised on the homepage of VIRTLANTIS website,

> VIRTLANTIS is a free resource and open community of practice for language learners and teachers in the virtual worlds of Second Life® and OpenSim. We offer free informal language learning experiences for a growing number of languages: English, German, French, Spanish, Italian, Arabic, Romanian, and more! All language learning activities at VIRTLANTIS are FREE! (http://www.virtlantis.com).

Since all the language courses offered in VIRTLANTIS are free, it has attracted a growing number of language learners who are keen on improving their target language skills as well as language teachers who are willing to help those learners in SL. As an instructor, the creator of VIRTLANTIS granted me access to all the resources in the island to facilitate my teaching. Various interactive and 3-D resources available in VIRTLANTIS have made teaching in SL different from that in real life (RL). For instance, avatar users could rez (i.e., to create or make an object shown) *Holodecks* to simulate a myriad of RL scenarios (e.g., pizzeria), *Skytable* to conduct pair discussion in midair floors, or practice building objects in a *Sandbox.* Figure 3.2 presents a screen capture of VIRTLANTIS island in SL.

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[9] *SLURL* is a teleport link used for locating a place in SL.

Figure 3.3. The entry point of VIRTLANTIS island

Participants

The participants were nine EFL learners who were interested in practicing their

oral English in SL. Some of them were international exchange students, who came to

Linnaeus University in Sweden to improve their English skills with the hope of entering a

graduate program or pursuing a career that demanded advanced English proficiency. I

was able to reach out to these EFL students through a contact I in SL—a senior instructor

at Linnaeus University who offered English courses to those students using SL as a

learning platform. Therefore, those participants were recruited from the email list of his

former students who had finished taking the *Business Talking course* with him in

Kamimo Education Island in SL. I also sent all the members in VIRTLANTIS and Cypris

Chat (another island for language learning and teaching) a notecard to invite them to join

the class. They were all adult residents in SL and had their own avatars to interact with

other SL residents. The level of language proficiency of the students ranged from

beginner to upper-intermediate based on the initial oral proficiency screening in the pre-

course task interaction.

Given the fact that SL is a free space and the participants were all volunteers without any obligations, participant attrition rate was a factor beyond the researcher's control. At the outset of the study, 15 participants were recruited. Due to individual schedule conflicts, RL commitments, etc., some students dropped out in the middle of the course reducing the total class size to nine students by the end of the study. Demographic information of the nine participants can be found in Appendix J.

Ethical Issues

Before the course started, an email invitation regarding the course objectives and purpose of this study was sent out to the participants. They were informed that the virtual course would be conducted in the *VIRTLANTIS Island* in SL. Since participants came from all over the world, they met with the researcher in *VIRTLANTIS* before the pre-course task interaction in order to collect informed consent. To protect participants' confidentiality, they were informed that 1) their real-life identities would not be revealed since their avatar names were not directly linked to their real names; 2) all files stored on computers were password secured; and 3) the researcher would create unique code numbers that only connected the data with their avatar initials. Additionally, they were given time to read the research procedures, potential risks and benefits involved in participating in this research project and encouraged to ask the researcher questions. They were also told that participation in this research was completely voluntary and they could choose not to participate in any of the tasks, or withdraw from the study at any time without penalty.

Instruments

As previously mentioned in the section on research design, the entire study was conducted in the fashion of a virtual English course in SL. Participants' oral production and reflections about their learning experiences were systematically observed and consistently documented throughout the course following a *task-based syllabus*. Quantitative instruments included *communication tasks* that elicited students' discourse samples, and qualitative instruments consisted of participants' *learning journals*, *open-ended items* on the two *questionnaires*, *text chat logs*, a *focus group interview*, *participant observation* with *field notes* and *research journals*. Each instrument is discussed in detail below.

Communication tasks. Four types of tasks were designed to elicit participants' use of interactional modification strategies during negotiation of meaning via voice chat: *opinion-exchange*, *information gap*, *jigsaw* and *decision-making*. The four tasks implemented in this study were designed to verify the contradictory findings regarding task types and negotiation, as well as examining the relationship between task types and communication strategies. There were two sets of the tasks provided in the pre-course phase and post-course phase (see Appendix A for details). The former served as baseline data whereas the latter was an exit assessment to compare language gains after the experiment. In order to make both sets of tasks comparable and avoid the "practice effect" (Mackey & Gass, 2005, p. 116), the task scenarios in the first set were real-life related (before the virtual course) and those in the second set were second-life related (after the virtual course).

In the opinion-exchange tasks, participants were asked to discuss their opinions on which English skill they thought was most difficult to learn (set one), and on how they compared learning English in RL and SL (set two). In the information gap tasks, participants in set one needed to take turns to direct their dyad partners to a location on an real-life city map (see Appendix B), and instruct their partners to build an object in SL step by step following a notecard procedure. In the jigsaw tasks, each dyad held an identical picture that had six differences and they had to work together to spot the differences in set one (Appendix C) and in set two (Appendix D). In the final decision-making tasks, paired participants in set one had to reach an agreement with their partners on which restaurant to dine at based on two real-life restaurant menus (Appendix E), and which gift to buy for their classmate's birthday party in SL based on two SL commercial advertisements in set two (Appendix F).

Questionnaires. Two online questionnaires[10] (Appendix I) incorporating both closed-item and open-ended questions were administered to the participants before and after the virtual course. Since the second research question sought to explore participants' attitudes toward their virtual identities via avatars, perceptions about their language practices in the virtual community, and beliefs about their language development in SL, employing questionnaires would allow me to gather learners' introspective information "that is typically not available from production data alone" (Gass & Mackey, 2007, p.

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[10] Pre-course questionnaire can be accessed at: https://spreadsheets.google.com/viewform?formkey=dDZ4cVFQUjVYLTByT19iNkUya0VOZ2c6MQ. Post-course questionnaire: https://spreadsheets.google.com/viewform?formkey=dGx1THdxa2twTFE2TTJ3Snc5MjhoWkE6MA

148). Both close-and-open-ended items were combined to determine 1) participants'

demographic backgrounds, 2) digital competency, and 3) constructs of engagement (e.g.,

investment of time and effort in each SL task and assignment), motivation (e.g., liking for

English learning in SL), identity (e.g., whether or not using avatars facilitated their

relationships with peers and language production). Additionally, learners' expectations

about learning English in SL before and after the course (e.g., "Learning English in SL

will make me more motivated" versus "Learning English in SL made me more

motivated") were also prompted in the closed items using a five-point Likert scale to

operationalize the measured constructs. Open-ended items prompted learners'

perceptions about their overall learning experiences in SL versus RL and how they

positioned themselves using avatars in the virtual community.

In order to strengthen internal consistency reliability, *multi-item scales* that used

multiple items to measure the same target were employed to "maximize the stable

component that the items share and reduce the extraneous influences unique to the

individual items" (Dornyei, 2003, p. 34). To check the instrument reliability, these two

questionnaires were initially administered to a similar group of EFL learners with

culturally and linguistically diverse backgrounds. Items that were not previously

addressed were added and ambiguous wording was modified. Also, a senior colleague

and an expert who specialized in SLA and questionnaire design were consulted to screen

weak items to check the content validity.

Learner journals. According to Gass and Mackey (2007), language learners'

internal processes and insights are usually difficult to gain access to, if only behaviorally

controlled data is collected. Since the second research question was aimed to explore

learners' beliefs, motivations, and perceptions, the introspective data through students'

reflections on their learning practices in SL over time was paramount to unearth the

virtual learning phenomenon in SL. Therefore, asking participants to keep a learning

journal provided a window for the researcher to look into their learning processes "that

may be inaccessible from the researcher's perspective alone" (Gass & Mackey, 2007, p.

48) and to consistently observe their progress over time. Hence, participants were

encouraged to keep a learning journal after each virtual session. Guided prompts[11] were

provided to help them reflect on the particulars of events and learning behaviors from an

insider account and to ensure the data validity (Dornyei, 2007, p. 157). An online class

blog site was created to organize and document journal entries, which were shared by

students to extend the virtual community of practice in SL. I, as both the teacher and

researcher, also commented on their journals to probe for more useful information to

ensure that the data was systematically and validly documented, especially when the

meaning of their entries was unclear or incomplete.

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[11] Examples of guided prompts can be accessed at class blog site:
http://unicorngluminos.pbworks.com/w/page/39646350/FrontPage

Text chat logs. Since each student used their individual computer to log on SL and to attend each virtual session, recording each pair's interaction via voice chat or retrieving their text chat logs between or among peers was unfortunately not feasible (unless the study was done in a lab setting). That said, text chat logs that recorded the public chat in class helped the researcher trace what was going on in each session and provided another data source to capture the nuances of students' language. It also served as additional layer of triangulation with other qualitative data sources.

Focus group interview. Since the makeup of the student population in this study was heterogeneous, it was useful to obtain "varied and rich data that covers all angles" about their perceptions and attitudes through a heterogeneous group interview (Dornyei, 2007, p. 144). Additionally, some students might feel more comfortable speaking than writing and were likely to provide more insightful information in a conversational mode. The interactive nature in an interview could also elicit more specific data when students' initial responses were vague (Mackey & Gass, 2005, pp. 173-174). Two formats of semi-structured interview were employed for the purpose of collecting useful data as unobtrusively as possible. First, I conducted a debriefing session with the students at the end of this course to invite them to share their thoughts about their overall learning experience in SL (see Appendix K). Five students with different levels of English proficiency, amount of time spent in SL, and experiences with a SL course were chosen for the interview. The rationale behind this purposeful selection was that I hoped to interview students with diverse backgrounds and experiences to make the representation

of interviewees more heterogeneous—e.g., UL, a newbie[12] student, who only came to SL

for the course; PK, a highly motivated student; BL, a beginning-level student; MB, an

advanced student; and NM, a shy beginner. Questions concerning their virtual identities

in the virtual community of practice and what affordances in SL benefited their learning

experience were used to probe for more information. The session was conducted in an

informal way as if they were having a casual conversation with peers and the teacher in

regular sessions. Interview data were recorded and transcribed for further analysis. A

follow-up text-based interview was conducted by instant messaging (IMing) them to

elicit and clarify information.

Participant observation. As both the researcher and course instructor, I was also

one of the members in the virtual community of practice. Being their teacher who also

immersed himself in the culture and spent an equal amount of time with his students, I

was able to establish "rapport" with them. This allowed me to observe learners' language

practice in each session, gain access to the resources created and shared by all members,

and document their learning socialization that was jointly constructed by all the members

(Bogdan & Biklen, 2006, p. 85). Without participating, observing and immersing myself

in the virtual community, I would not have been able to unearth the subtle and complex

learning phenomena in SL nor make sense of the complexity from the insiders'

perspectives. In order to consistently capture the fuller picture of "what is going on" in

this virtual community, I created a blog for keeping a *research journal* with field notes

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[12] Newbie is the term commonly used in SL and refers to a new resident who just created his/her avatar in SL. These newbie residents usually need time to practice all the SL features in order to feel more comfortable functioning in SL like their more experienced counterparts.

right after each virtual session. Based on the researcher blog I kept for my pilot study, I was able to systematically document what I had observed in each virtual session and kept track of the trends and patterns emerging from the virtual learning phenomenon in SL. Using the "researcher [a]s the instrument" in the qualitative research vein, the field notes I took and reflections I made also became an integral source of data to support other qualitative data in order to strengthen the trustworthiness in this study (Dornyei, 2007, p. 56).

Task-based Syllabus

The design of the tasks in each virtual session was motivated by the pedagogical framework of task-based language teaching (TBLT). Hence, the TBLT syllabus employed in this study was adapted from a previous version with another EFL student group in SL. Lesson materials and task design were also modified based on the actual implementation of the syllabus to strengthen content validity. Also, the lesson topics were selected in accordance with the needs analysis of the students to ensure face validity. To illustrate, lesson topics were all real-life related (e.g., food, clothing, traveling, sports, art, and music) that learners found meaningful and interesting. Those real-life oriented topics not only provided them with the chance to practice English in various real-life scenarios in SL, but capitalized on their cultural repertoire (e.g., showcasing tourist attractions and cultural cuisines) that they were knowledgeable about. In addition, the tasks and materials were designed in ways that the SL affordances, such as teleporting, simulating, and object building, were utilized to optimize the task completion process and situate their learning experience in the 3-D MUVE. Appendix G provides a complete version of the TBLT syllabus.

Data Collection Procedures

Before the virtual course, I contacted the former students in the *Business Talking* course at Linnaeus University in Sweden through the instructor's email list. Another invitation notecard was also sent out to all Virtlantis and Cypris Chat members in SL to recruit more potential participants. The invitation included the course objectives and purpose of this study and invited those who were interested to join the virtual class in SL (see Appendix H). I also obtained the online consent forms from the participants before the course started, following the approved IRB protocol. This concurrent mixed-method design study was carried out in spring 2011. The participants invested approximately 18 hours in participating in this project, around 1.5 hours per session, twice a week for 10 sessions in addition to two sessions of 40-minute task-based interaction.

All the students who agreed to participate completed a pre-course questionnaire online to collect their demographic data and expectations about learning in SL before this course started. They were also scheduled for a 40-mintue task-based interaction in SL before the virtual course. They worked in dyads to complete each task and used their avatars to interact with their partners via voice chat. They were also informed that the whole process would be audio recorded for further data analysis, as addressed in their consent form. The discourse samples collected from the participants served as an assessment baseline data to examine their use of communication strategies during negotiation of meaning, which were to compare with the data collected in the last virtual session.

Each virtual lesson was conducted following the task-based syllabus under the framework of the TBLT design. In each virtual session, students completed various

communication tasks in SL that simulated a wide variety of real-life scenarios. For instance, they were assigned to do a fieldtrip to a museum gallery, order food in a restaurant, play musical instruments, play sports in SL, etc. They could use both text and voice chats for communication as they wish, though the latter was encouraged and focused on in this course. Also, public text chat logs between the students and instructor were recorded automatically in each session for further analysis. Their voice chats were recorded using an audio-recorded device (i.e., Audacity) when they were required to do oral presentations, express opinions in the whole class discussion, and take a fieldtrip. Screen-capture software (i.e., Screenium) was also utilized to capture the whole process of their participation in those aforementioned learning tasks.

In order to gain a fuller picture of participants' perceptions about learning English in SL, they kept a learning journal on the online class blog site, documenting their experience and thoughts about each SL session. Students also had the chance to give feedback on their peers' journals to extend the virtual community of practice in SL. Guided prompts were provided to make sure that their reflections were not off topic. Additionally, I dialogued with each student in their journal entries to keep track of their reflective thoughts, probe for more information and participate as a member of the virtual community. Throughout the course, I, as a participant observer, also took field notes in each session and documented my observations along with reflections in the research journal posted on my personal blog.

By the end of the course, students in dyads were scheduled for another 40-minute task-based interaction. Each student was paired in a dyad with a different peer in pre-and-post-course interaction to enhance the authenticity and face validity of the oral output as

opposed to pairing students in the same dyad where they might have been used to the way their peer talked. Their language output via voice chat was audio-recorded in a fashion similar to the pre-course session. They were also given an online post-course questionnaire after their task completion to gather data on whether their expectations about this course had been met and on their perceived attitudes towards the whole English learning experience in SL. A semi-structured focus-group interview was conducted in the last session to further probe into participants' overall perceptions about this virtual course, followed by a text-based interview to clarify the information that was unclear or ambiguous in the debriefing session. Figure 3.3 below sketches out the research timeline that includes the data sources and the process of data collection.

Week 1

Data Collection	Data Sources
Task-based interaction (1)	Discourse samples (audio recorded)
Consent form + Pre-course questinnaire	Close/Open-ended items + Research journal

Week 2

Virtual Course	Participant observation + Research journal
Topic: Greetings + Food	Learner journal + Text chat logs

Week 3

Virtual Course	Participant observation + Research journal
Topic: Holidays + Clothing	Learner journal + Text chat logs

Week 4

Virtual Course	Participant observation + Research journal
Topic: Jobs + Sports	Learner journal + Text chat logs

Week 5

Virtual Course	Participant observation + Research journal
Topic: Music + Art	Learner journal + Text chat logs

Week 6

Virtual Course Topic: Travel	Participant observation + Research journal
Farewell Party + Focus-group Interveiw	Learner journal + Audio recorded interview

Week 7

Task-based interaction (2)	Discourse samples (audio recorded)
Post-course questinnaire	Close/Open-ended items + Research journal

Figure 3.4. Research timeline for data collection

Data Analysis Procedures

      This concurrent mixed methods design incorporated 1) quantitative data generated from students' oral production in task-based interactions, and 2) qualitative data gleaned from students' reflective journals, text chat logs, responses to the open-ended items on the two questionnaires, participant observation documented in the research journal and a focus-group interview. Quantitative data was analyzed through the discourse analytical technique to identify patterns and tally frequencies associated with learners' communication strategy use and negotiation of meaning. The quantity and quality of students' oral production throughout the virtual course were measured by the T-units. The Statistical Package for the Social Sciences (SPSS), a statistical software program, was utilized to further analyze the quantitative data with a significant level set at .05. Qualitative data was analyzed through the constant comparison technique to identify themes and allow nuanced patterns to emerge, following the grounded theory approach (Corbin & Strauss, 2008). The table below summarizes the analytical techniques pertaining to each research question and instruments in each data collection phase. Further explanations are detailed below:

Table 3.1. *Data analysis in relation to research questions and instruments in each data collection phase*

Research Question	Instruments	Data Collection	Data Analysis
RQ1a	4 types of task-based interactions	Pre-and-post course	-Negotiation of meaning coding scheme (Varonis & Gass, 1985) -Communication strategies coding scheme (Lee, 2002; Pica & Doughty, 1985;
RQ1b	-Show-and-tell presentation related to assigned tasks -Pair report related to assigned tasks	Each virtual session	-T-units measure on accuracy and complexity of oral production (Yuan & Ellis, 2003)
RQ2	-Learning journal -Researcher journal	Each virtual session	Open-and-axial coding technique from grounded theory approach (Corbin & Strauss, 2008)
	-Questionnaires	Pre-and-post course	
	-Focus group interview	Post course	

Quantitative data analysis. *RQ1a*: Since the first half of the research question one (RQ1a) sought to examine learners' language patterns associated with SLA evidenced in negotiation and communication strategies, their discourse samples were gathered through task-based interaction. Four types of task-based interaction— opinion exchanging, information gap, jigsaw and decision making (see Appendix A for the detailed task design)—were used in both pre-and-post course sessions to elicit students' discourse samples via voice chat. Students' oral discourse samples in the pre-course task-based interaction served as a baseline to compare with the post-course one. A model for nonnative speakers' (NNS/NNS) negotiation of meaning proposed by Varonis and Gass (1985) perfectly fit into the NNS-NNS discourse and was hence adopted for coding the

instances of negotiation between each NNS dyad during their task-based interaction.

According to Varonis and Gass (1985), the episode of negotiation of meaning will occur

when the understanding between NNS-NNS conversational exchanges has not been

complete and interactional modifications will be taken between interlocutors in order to

keep the conversation going (p. 73). A model that includes four functional components

(i.e., *trigger, indicator, response, reaction to response*) in NNS-NNS negotiation

discourse is illustrated in Figure 3.4 (Varonis & Gass, 1985, p. 74):

Trigger   Resolution

$$\boxed{T} \longrightarrow \left(I \rightarrow R \rightarrow RR \right)$$
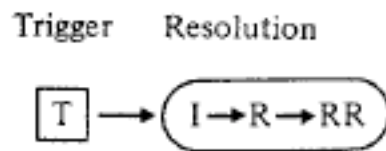
Figure 3.5. Proposed model for non-understandings

The first part of the model is termed as trigger, and the second part, resolution.

The whole model can be operationalized as: 1) Triggers (denoted by T)—"utterance or

portion of an utterance on the part of the speaker which results in some indication of non-

understanding on the part of the hearer" (p. 74); 2) Indicators (denoted by I)—"signal

that an utterance has triggered a non-understanding" (p. 76); 3) Responses (denoted by

R)—"responses to the request for additional information which as been either implicitly

or explicitly stated in the form of an indicator" (p. 76); and 4) Reactions to Response

(denoted by RR)—"an optional unit of the routine, in some way tying up the routine

before the speakers pop back up to the main flow of conversation" (p. 77). An example of

the conversational episode that represents the model is illustrated below (adapted from

Varonis & Gass, 1985, p. 79):

NNS1: But he work with uh uh **institution**. (T)

NNS2: **Institution**? (I)

NNS1: **Do you know that? The name is…some thin like eh** (R)

    control of the state.

NNS2: **aaaaaah!** (RR)

Following Varonis and Gass's framework, a coding scheme was devised to tally the instances of negotiation of meaning generated from the NNS-NNS negotiation discourse. Students' language output in the two sessions of task-based interaction via voice chat was audio-recorded for discourse analysis. The turns of the negotiation occurrences were calculated and the percentage of negotiation episodes across tasks were tallied through the descriptive statistics using SPSS.

The other dimension of RQ1a was to examine learners' use of modification strategies during communication breakdown and the relationship between negotiation and task types. Following the task-design principles (Ellis, 2000; Skehen, 1996, 2003), four task types were designed for this study—*opinion exchange, information gap, jigsaw, and decision making* (see Pica, Kanagy & Falodun, 1993)—to trigger learner's negotiation of meaning and use of modification strategies to resolve the communication breakdown. Three main communication strategies identified in interaction-based literature were adopted for a coding scheme as follows:

1. "*Clarification requests:* Expressions designed to elicit clarification of the preceding utterance (s), and consisted of wh-, yes-no, uninverted intonation, and tag question as well as statements such as *I don't understand* and *Try again.*

2. *Confirmation checks:* Elicitations immediately following the previous speaker's utterance to confirm that the utterance has been understood or heard correctly.

3. *Comprehension checks:* Expressions designed to establish whether the speaker's own preceding utterance has been understood by the addressee…usually in the form of tag questions, repetitions with rising intonation of all or part of the utterance, or by questions such as *Do you understand?*" (Pica & Doughty, 1985, pp. 119-120)

Students' use of other types of modification strategies was also identified as a coding scheme (Lee, 2002; Pica & Doughty, 1985) to examine their language patterns in negotiation of meaning. All the turns in students' interactional utterances were tallied to show the quantity of their language production (Smith, 2003). Therefore, learners' use of modification strategies to make meaning more comprehensible provides empirical evidence to point to their language acquisition. Table 3.2 below exemplifies different communication strategies used by learners in order to modify the non-understanding:

Table 3.2. *Categories, definitions and examples for modification devices (adopted from*

Lee, 2002, p. 279)

	Type of modification device	Definition	Example
1	Comprehension check	To make sure the message is understood	—"Do you understand me?"
2	Confirmation check	To repeat parts of the statement to ensure the understanding	—"Bird?" You mean "turkey." –Yes, "turkey."
3	Clarification check	To express confusion or ask for help due to unfamiliar words or incomprehensible message	—I don't understand. Which one? I'm confused. —What is "amenaza"?
4	Request for help	To request information for unknown lexical items or expressions	—How do you say "freedom" in Spanish?
5	Self correction	To correct errors made on lexical items or grammatical structure	—Who paid for the story (el cuento)? —The story? —No, it should be "the bill." (la cuenta) I'm sorry.
6	Use of English	To use English to substitute words or ideas in Spanish	—El hombre "moved" a otro país. (The man moved to another country.)
7	Topic shift	To give up the topic and switch to a new one due to lack of interest or unfamiliarity with the topic	—I don't know. I don't understand. Let's talk about the second reading.

The frequencies and percentage of the communication strategies were calculated

across the four task types. The total number of turns in the two sessions and the turns that

captured the instances of negotiation and strategy use were also tallied. The

interrelationship between negotiation of meaning, task types and communication

strategies was further analyzed to verify the contradictory findings in interaction research

regarding which task type promotes more negotiation (Peterson, 2006; Smith, 2003).

RQ1b: Given the fact that students participated in a 10-session task-based virtual

course and language learning was an ongoing process, their language production in each

session was also documented to provide further evidence of language acquisition. To tackle the difficulty of shadowing students' oral interaction in each dyad task throughout each virtual session, discourse samples selected from each individual student's oral presentations related to assigned tasks were collected and audio-recorded instead.

To analyze the quality and quantity of students' oral production over time, another data analytical approach was employed. That is, the quality and quantity of their language output were measured by the complexity and accuracy of T-units (i.e., "a main clause and related subordinate clauses and nonclausal structures embedded in it" (Hunt, 1970, in Pica & Doughty, 1985, p. 119). Put simply, a T-unit is the shortest unit of a sentence that can stand alone grammatically. For example, "She was sick yesterday so she decided to stay home." In this sentence, there are two T-units (*She was sick,* joined by *she decided to stay home*) since both sentences can stand alone. T-units analysis has also been used extensively as a device to measure the syntactic complexity and accuracy of learners' speaking or writing samples in the field of SLA (Pica & Doughty, 1985; Yuan & Ellis, 2003; Young, 1995).

In order to determine the complexity and accuracy of students' language output, Yuan and Ellis's (2003) analytical framework of using T-units to measure the quality of EFL learners' oral production was adopted. Because the participants were in the same group performing all the tasks throughout the course, a series of one-way repeated measures ANOVAs were performed on all the measures. The alpha level for reaching the statistical significance was set at .05. Post-hoc Bonferroni tests were run later to further determine the locations of the significance through pairwise comparisons if the *F* scores were statistically significant. In order to provide information of the "magnitude of an

observed phenomenon" that allows future researchers to compare findings across similar studies (Dornyei, 2007) and to get a better picture of the strength of this study (J. D. Brown, 2008; Mackey & Gass, 2005), effect sizes will also be reported along with the statistically significant *p* value. The descriptions of both independent and dependent variables are laid out below:

1. *Independent variable:*

Throughout the virtual course in a 10-session, 7-week duration, there were six major tasks that required students to do oral presentations using voice chat in front of the class (see Appendix G for the detailed description of each assigned task in each course session). However, some students did not complete every task due to their real-life commitments. To ensure the consistency of data analysis using one-way repeated measures ANOVAs, three different points of time in which all students (N = 9) were present to perform all the tasks were selected: *session 2* (show and tell one's cultural artifact), *session 8* (work as a gallery curator), *session 10* (work as a tour guide). Each session was denoted as T1 (session 2), T2 (session 8) and T3 (session 10) in accordance with the progression of the time where each task was taking place.

2. *Dependent variables*:

Since each individual student's oral presentations during in-class virtual sessions were monologic in nature and contained few elliptical utterances, T-units rather than C-units were used as justified by Yuan and Ellis (2003). A measure scheme that adopted Yuan and Ellis' measures on complexity and accuracy using T-Units is presented below (for detailed specifications of each measured variable, see Yuan & Ellis, 2003, pp. 13-14).

Table 3.3. *Measured variables for complexity and accuracy using T-Units*

Level	Measure	T-units (ratio)
Complexity	*Syntactic complexity*	The ratio of clauses to T-units
	Syntactic variety	The total number of different grammatical verb forms used in the task
	Type-token ratio	The number of different words divided by the total number of words in each segment of 40 words. Mean scores for all segments are added as the total and divided by the total number of segments (also known as Mean Segmental Type-Token Ratio)
Accuracy	*Error-free clauses*	The percentage of clauses that contain no errors
	Error-free T-units	The percentage of grammatical T-units divided by grammatical and ungrammatical T-units
	Correct verb forms	The percentage of accurate used verb forms divided by the total number of used verb forms

Intercoder reliability was calculated in order to establish the coding reliability for data analysis. A colleague who specialized in the SLA field was recruited to be the second coder. To ensure the consistency of data coding, several training sessions were conducted where instructions for coding schemes were carefully explained and sample data were provided for the second rater to practice before the actual independent coding process. After questions and concerns raised by the second rater were resolved, both coders independently coded 30% of the whole data set (i.e., pre-course interaction data). Intercoder reliability was then calculated using the formula of an intraclass correlation coefficient, which was set at a two-way mixed model (i.e., raters were fixed) and the absolute agreement type, as suggested by McGraw and Wong (1996). A high level of agreement was reached at .994 of average measure intraclass correlation coefficient ($p <$ .01). To ensure coding consistency, the discrepancies in both raters' codings were further compared, discussed and resolved before the rest of the data were coded.

Qualitative data analysis. *R2:* In order to explore students' perceptions about their overall virtual learning experience, multiple data sources were triangulated to collect the data. First, pre-and-post course surveys were administered to gather their demographic information and general attitudes toward learning English in SL (before the course) and their perceived attitudes toward the task-based virtual course, what affordances in SL worked or did not work for them, and using avatars to practice English in SL (after the course). Second, they kept a learning journal after each session reflecting on their learning experience about the tasks. To consistently document their journal data, they were asked to keep their journal in the class blog site, prompted by guided questions to ensure that their reflections were not off track. Third, a post-course focus group interview was conducted to probe more information about their perceptions about the whole learning experience and clarify the information that was unclear in their responses to survey questions or in learning journal. Lastly, as a participant observer, I created a blog to keep a research journal in order to document what was going on in each session, which also complemented participants' data.

Data collected from learner journals, observation field notes, open-ended survey responses, and focus group interview were analyzed to answer the second qualitative research questions (RQ2) on students' attitudes toward SL affordances, virtual identities and perceptions about their language practices in SL. Three vital issues related to the rigorousness in qualitative research were also addressed throughout the data analysis: *credibility*, *transferability*, and *triangulation*. The credibility of this research was enhanced by the fact that: 1) the whole study was carried out intensively in a full course to allow students to feel accustomed to and behave naturally in each learning event and

task in SL; and 2) data were collected in multiple learning situations and contexts through

students' participation in varied tasks in SL. As such, the breadth and depth of students'

learning phenomena in SL were captured as fully and completely as possible (Mackey &

Gass, 2005, p. 180). The transferability of this research study was augmented by "think

description"— describing in sufficient detail what actually occurred in each virtual

session, illuminated by participants' perspectives of how they made sense of the virtual

learning phenomena— to allow students themselves to determine whether the richly

described context could be applied to their own settings (Bogdan & Bilkqd, 2006, p. 36).

Acknowledging that one method alone could not fully capture the dynamic and complex

leaning phenomena in SL, data triangulation was strengthened through multiple data

sources and perspectives to enhance the *trustworthiness* in current research (Dornyei,

2007, pp. 165-166).

Qualitative data collected from multiple sources were systematically analyzed

using the open-and-axial coding technique from the grounded theory approach to unearth

the thematic patterns underlying participants' perceptions about their experiences in their

language practices in SL (Corbin & Strauss, 2008). Processes of iterative and inductive

analysis were taken. First, I constantly went over the dataset eclectically gathered from

students' journal entries, transcribed interview data, open-ended survey responses and

text chat logs. The multiple data reviewing processes were supplemented and verified by

the field notes and reflections documented in the research journals. In the initial data

analysis, an *open-coding* mechanism was employed for "breaking data apart and

delineating concepts to stand for blocks of raw data" (Corbin & Strauss, 2008, p. 198).

By attaching a code to a big chunk of text, all the reduced data became more manageable

while "highlighting special features of certain data segments in order to link the to broader topics or concepts" (Dornyei, 2007, p. 250). During the iterative data reviewing process, salient themes were identified and thematic categories were created to categorize the coded data related to those emerging themes. After revisiting the data clustered under thematic categories multiple times, axial coding—"the act of relating concepts/categories to each other"— was applied to refine the themes and make connections across categories (Corbin & Strauss, ibid.). Not only were the qualitative data triangulated through multiple data sources illustrated above, but they also served as a mechanism of validation to cross-corroborate the quantitative results.

<div align="center">**Summary**</div>

This chapter sketched out a multiple methods design in order to use better address both quantitative and qualitative questions through multiple research instrumentations. First, I reiterated three research questions with specific sub-questions that guided this study. Then I presented the rationale for a multiple methods research design. I also delineated the methodology of this study by first describing the setting and participants and exemplifying both quantitative and qualitative instruments for data collection. A visual flow chart was presented to illustrate the procedure of data collection in a 10-week duration. Finally, I discussed the data analysis procedures and included a table to summarize how each research question could be answered through related research instruments that adequately elicited both quantitative and qualitative data.

Chapter 4: Quantitative Results

In this chapter, empirical evidence will be presented by addressing each research question respectively. First, I will discuss EFL learners' use of strategies during task-based negotiations and the interplay of task types and negotiation that involved strategy use (RQ1a). Next, I will report the results that reveal whether the quality of learners' oral production progressed throughout the virtual course, as measured by complexity and accuracy of language (RQ1b). I will also provide tables summarizing relevant statistics.

Question 1a. To what extent do EFL learners employ communication strategies to negotiate meaning during task-based interaction via voice chat in SL?

Strategy Use

The first question deals with EFL students' use of different types of communication strategies to resolve communication breakdowns. Table 4.1 summarizes the strategy use by EFL students in the four tasks in both the pre- and post- course task interactions by strategy type. Table 4.2 summarizes the frequency of strategy use.

Table 4.1. *Communication strategy types, definitions and examples across four tasks in both task-based interactions*

Strategy type	Definitions	Examples
Comprehension checks	To ask yes-no questions, ask to repeat the received information or repeat with rising intonation	• "You understand me?" • "Can you repeat what I am telling you?" • "Do you know the circle? The circle?"
Confirmation checks	To ask confirmation questions or repeat with rising intonation	• "Do you mean he has something on his head?" • "Rotate??"
Clarification requests	To express confusion, ask for repeating what was said, or request further explanation on confusing information	• "I don't understand." • "Repeat, please?" • "What did you say? You agree what?"

Request for help	To request peer's direct assistance in further explaining unfamiliar words or expressions	• "Can you write, please?"
Self-correction	To correct errors made on lexical, grammatical or phonological items within the same turn of utterance	• "And the three coordinate is cuatro, zero…Oh, no! Four, zero"
Topic shift	To abandon the current topic and abruptly shift to a new topic due to the difficulty or unfamiliarity with the former	• "…forget about the right picture. Just focus on the left picture."
Metacognitive strategy	To verbalize one's thinking process in order to make input more organized and output more comprehensible	• "Hmm, let me see how I can describe myself…"
Spell out the word	To assimilate the feature of text chat by orally spelling out the word that causes confusion	• "You need to build a tube, T-U-B-E, a tube."

Table 4.2. *The frequency of strategy use in both sessions*

Strategy type	Number of times strategy is used	Percentage of all communication strategies
Comprehension checks	73	16.3%
Confirmation checks	184	41.2%
Clarification requests	148	33.1%
Request for help	18	4%
Self-correction	11	2.5%
Topic shift	6	1.3%
Metacognitive strategy & spell out the word	7	1.6%
Total	447	100%

Of all the abovementioned communication strategies, *confirmation checks* are the strategy that students used most frequently (41.2%), followed by *clarification requests* (33.1%) and *comprehension checks* (16.3%). These three communication strategies account for 90% of the total use of strategies. For instance, to ensure that students

understood their peer's meaning correctly, they used the strategy of confirmation checks to *ask confirmation questions* or *repeat parts of their peer's utterance with rising intonation*. The rising intonation indicates a question. Following are examples[13] of the strategies highlighted in bold.

Confirmation Checks

The first example below is from the pre-course jigsaw task, "spot the differences." One student asked her partner a confirmation question to check whether she understood correctly.[14]

(1) Confirmation check: asking confirmation questions

    1. A: Another difference, uh…Ok, a guy in the picture in your left side, I can see

        that a guy sitting at the end of the class, he's wearing like horns…

    2. U: Hmm, **you mean he has something on his head?**

    3. A: Yes, his head, like horns, or…

    4. U: Ok, that? (He is using the digital pen to circle it)

    5. A: Good. Yes, yes.

The other pattern using the strategy of confirmation checks involves repeating parts of the received utterance with rising intonation to seek further confirmation from

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[13] All examples are from dyad exchanges and numbered accordingly. For example, discourse samples one, two, and three will be numbered as (1), (2), (3), and so forth throughout the dissertation.

[14] Students' errors in their language output in the following examples were kept intact to show the authenticity. Each turn was numbered and coded only when the flow of the utterances in the turn-taking discourse was complete and the floor was shifted to the next interlocutor. Targeted communication strategy was highlighted in bold. Students' initials of their avatar names were used for the ease of coding and presentation of the result. Pauses or ongoing utterances that were not related to the highlighted linguistic output were coded as "…". Researcher's note was put in parenthesis.

the conversation partner. The second example below is from the post-course information gap task of "building an object." Here we see how a student repeated what he heard with rising intonation to signal confirmation as to whether he had understood the information correctly.

(2) Confirmation check: repetition with rising intonation

    1. U: Then you need to rotate the object.

    2. P: **Rotate?**

    3. U: Yes. For X, you need to rotate it in the 352 degrees.

Clarification Requests

       The second most frequently used communication strategy is clarification requests—characterized by *expressing confusion*, *asking for reiteration*, or *requesting further explanation for incomprehensible words or information*. The following example is from the pre-course task of opinion exchange. The content deals with which English skill students thought was the most difficult. One student voiced her confusion about the information she heard and indicated that she needed to have her partner further clarify the meaning.

(3) Clarification request: expressing confusion

    1. F: Yea, mistake...Sometimes I don't know, I don't know use which…(long
         pause)…sometimes I want to say something has happened but I used the tense
         is, was happening.

    2. B: **I don't understand.**

    3. F: Hmm, I always make the grammar mistake…

    4. B: The grammar? Yes…

The other type of clarification strategy can be seen in the scenario where a student would ask the interlocutor to repeat the previous utterance that seemed unclear or confusing to him/her. The example below is from the pre-course task of "spot the differences."

(4) Clarification request: asking for repeating what was said

    1. I: Uh..the woman in different class, on the upper arms…the picture has draw

       (embroidery) but right picture there is no draw (embroidery)…

    2. N: **Repeat, please?**

    3. I: In the shirt of the woman, in front of the class, uh...do you see the arm left

       picture the left arm has the pen, but right picture, no pen on her, on her

       shirt.

The third type of clarification request is characterized by signifying the confusing word or information received from the interlocutor, coupled by requesting further clarification. The following vignette is from the decision-making task in the pre-course interaction. Students needed to agree on a restaurant for dinner.

(5) Clarification request: requesting further explanation on confusing information

    1. Ul: What time do we have to come back home?

    2. M: We can go back home a quarter past 6.

    3. Ul: A quarter past 6…uh…I also agree to half past 9. And you?

    4. M: I bet your pardon...I didn't hear you. **What did you say? You agree what?**

    5. Ul: I can go home at, uh, half past 9. About half past 9.

    6. M: Past 9? We'll be home at, uh, by 9. Yes. So you will be home, eh, half past 9. It

       will be ok, I think…

Comprehension Checks

As shown in Table 4.2, comprehension checks are the third most used strategy in addition to confirmation check and clarification request. A comprehension check usually occurs when student A asks his/her partner, student B, if student B has understood. This type of exchange is evident in information-gap and jigsaw activities as well as during opinion-exchange and decision-making tasks. This strategy is usually characterized by the use of *tag questions*, *repetition with rising intonation* or *yes-no questions* or *asking the peer who received the information to repeat what was said*; however, the use of *tag questions* that was identified in Long's (1980) research was not found in the present study. The first type of comprehension check (i.e., asking yes-no questions) is evident in the pre-course information gap task; in this task, students took turns directing peers to the final destination on a map. In addition, asking a partner to repeat what was said also characterizes the post-course task of information gap, in which one student told his peer how to build a particular object.

(6) Comprehension check: yes-no questions

1. P: OK, right now you are in the 34th street, ok, and in the Walnut…You need to walk in the Walnut street until 40th street. **You understand me?**

2. T: No.

3. P: No, ok. Right now you're moving in the direction. Go to the right.

4. T: Go, go to the right.

5. P: Right on Walnut street. And go ahead up to the street, 40, 40th street, 40. Go ahead. The next one.

6. T: Oh ya, I see, 40

(7) Comprehension check: asking to repeat the received information

    1. U: Ok, listen to me. If you just click on the ground, right click on the ground, and

        you will hit the Build option…**Can you repeat what I am telling you?**

    2. P: No, but I don't understand you. I need to understand around.

    3. U: Korobase, you need to make an object. Ok?

    4. P: Yes, ok.

      Another type of comprehension check strategy, using repetition with rising intonation, is found in another interaction in the post-course task of object building.

(8) Comprehension check: repetition with rising intonation

    1. T: Ok you rez tube, not cube, tube. Ok, do you know **the circle, the circle?**

    2. B: Circle? Ok, one moment. (she is rezzing an object of the circle shape)

    3. T: It's not a circle, but tube, round, a 3-D of a circle.

    4. B: Oh, one moment…Cylinder?

    5. T: Ya…

    6. B: Ok, like a cylinder.

Other Strategies

      Although the rest of categorized communication strategies only account for one tenth of the overall strategy use across tasks, it is also worth noting how students employed these strategies. For instance, a *request for help* was triggered when a student could not figure out the meaning of unfamiliar words or expressions that he/she encountered during task interaction and desired direct assistance from his/her peer. By singling out the communication confusion in the "hot spot" and showing the need for help, students used the "request for help" as a strategy to resolve the problem and moved

the discourse forward in order to finish the assigned task. The next example in the pre-course task of decision-making illustrates how one student asked for help with the meaning of the word, "sleeved," while they were negotiating with each other on what to wear on a date at a restaurant. She asked her peer to write down the sentence that was unclear to her in text chat, in spite of the fact that they were reminded that only voice chat was allowed during the task interaction.

(9) Request for help:

    1. F: Ok, we have two choice. Long sleeved shirt or pants. So which you wear, which you will wear? You prefer to wear.

    2. B: Yes…Prefer wear?

    3. F: Long sleeved shirt or pants. Which you prefer to wear?

    4. B: This word (sleeved), I can't understand…**You can write, please?** ((laugh))

    5. F: No…((laugh))...Long sleeved, long sleeved shirt.

        A *self-correction* strategy is used when a student is aware of his/her error, either in a lexical item, pronunciation or a grammatical structure and intends to correct it within the same turn of utterance. The following example illustrates how a Spanish student tried to tell her conversation partner how to build an object in the post-course task of object building. Instead of saying the number "4" in English, she said "cuatro" in her native language and "noticed" the error right away by switching back to the target language (Gass, 1997; Schmidt, 1990).

(10) Self-correction:

    1. B: 3, 5, 2. The second coordinate is 3, 2, and 9.

    2. T: 3, 2, 9, ok

3. B: And the three (third) coordinate is **cuatro**, zero…Oh, no! **Four**, zero.

4. T: Four what?

5. B: Four, zero.

Topic shift is the least frequently used strategy among the strategies listed in Table 4.2. However, it is apparent during a task interaction when a learner abandons the current topic—because the topic has been exhausted or is too difficult—and abruptly moves on to a new idea. The following conversation in the post-course task of information gap reveals how one student tried to tell his partner where to find a difference in the two seemingly identical photos. He had a hard time getting his meaning across and finally gave up (in turn 6) and decided to go on to the next one.

(11) Topic shift:

1. P: Yes, but are you speaking about the wall?

2. U: Sorry?

3. P: The wall? in the bottom? Uh..you can see the wood in white and in the right
    picture, it's red.

4. U: No, you're talking about something, which is different.

5. P: Yes, but I understood that something is white in the left picture, and red in the
    right picture.

6. U: No no no, **forget about the right picture. Just focus on the left picture**
    (he confused right with left). Again, on the left side, you can see on the
    bottom of the picture, it is white.

Strategies that Were Not Previously Reported in MUVE Literature

Lastly, there are also strategies found in the current study but are not yet documented in the literature of task-based interaction in a 3-D virtual world. Similar to the strategy of topic shift previously discussed, they were not frequently used (1.6%) but were evident in both pre- and post- course interactions. Two types of strategies are identified. The first one is related to a *metacognitive strategy*, evidenced in the pre-course task interaction of information gap when one learner verbalized her thinking process as to how she could make her points more clearly in order to direct her peer to the final destination.

(12) Metacognitive strategy

 1. F: Is west…the way you put is west. So I want you go to the north…Ok, the

   direction you go is west. Do you understand me? West…

  B: West? I can't know where is west, south or north.

  F: Left of the building is west and right of the building is east. So now I want you

   go through…Go to the north of the building…**Hmm, let me see how I can**

   describe myself…(long pause)…There are four crossroads around the post

   office. Did you saw it? Barrabax? Can you hear me?

  B: I can hear u but I don't understand you.

  F: Ok, do you know a crossroad, cross-cross-crossroad.

  B: Help? please….

  F: Ok, crossing…corner...the corner of the post office…Do you saw? **Ok…How**

   can I express myself ((laugh))…

  B: Help, help, please…((laugh))…

Due to the constraint of only using voice chat, some students developed a "shortcut" strategy by asking their peer to orally "spell out the word," especially when it was new or unclear to them. This strategy use, for example, was found in the post-course task of object building where one student tried to help his partner distinguish between the objects "tube" and "cube" by spelling out the word, tube.

(13) Spell out the word

1. P: Perfect. Now you need to do something different. You need to build a tube,
   T-U-B-E, a tube. So you need to rez an object. In that case, please, right click
   on the ground and choose Build or Create, ok?

   U: Sorry, Korobase, you're going so fast. Should I build a tube?

   P: Don't worry…yes, a tube.

   U: Ok, it's a tube here. (He is rezzing a cube, not a tube)

   P: No no no, you put a tube, not a…cube. It's not a cube. It's a tube. **T, like
   triangle, U-B-E.**

   U: Tube, you mean?

   P: Tube, yes, tube. Not cube. Tube.

   U: Ok.

Negotiation of Meaning

The current study also intends to address the core question regarding how EFL students negotiate meaning during task-based interactions in SL. In the same task-interaction vein, it further aims to investigate which type of task will trigger a greater degree of negotiation. Following Varonis and Gass's (1985) model of analyzing language patterns in negotiation of meaning between nonnative speakers (NNS-NNS), EFL

students' discourse samples in this study were coded in order to identify each episode of "trigger, indicator, response and reaction" in negotiation across tasks (see the detailed discussion on the coding scheme in the section of data analysis in Chapter 3). As indicated by the data, the language patterns of EFL students' oral discourse samples also abide by Varonis and Gass's proposed NNS-NNS interaction where both single-layered trigger-resolution (indicator, response and reaction) sequence and more complex multi-layered trigger-resolution sequence can be indentified. For example, the following episode—the post-course decision-making asking students to decide on which gift to buy for their SL friend based on two birthday gift advertisements in the SL Marketplace—illustrates the typical trigger-resolution routine. In other words, there is no embeddings in negotiation routine other than four turns of utterance within the single-layered negotiation routine[15].

(13) Negotiation of meaning: single-layered sequence

    1. E: Well, in the cake, it gives out gifts and also starts fireworks, which

       is quite nice when it's starting. (T)

    2. N: Sorry, but I couldn't understand you clearly. (I)

    3. E: I am so sorry. I just think that the birthday cake…it includes gifts

       and also fireworks, which is quite nice. You get both a cake, and

       some gifts, plus fireworks, which could be quite nice when you are

       having a birthday. (R)

    4. N: Ya, I think it's a nice thing to enjoy in a birthday party… (RR)

---

[15] In the trigger-resolution episode, trigger will be denoted as (T), indicator, (I), response, (R), and reaction to response, (RR), for the sake of data coding and presentation.

In the abovementioned NNS-NNS discourse sample comprising four turns of negotiation, the routine was triggered by the information delivered by student E (turn 1), which seemed unclear to her peer, student N. As such, he indicated his non-understanding (turn 2) in order for her to clarify the meaning of her previous utterance, to which she responded and explained in more detail (turn 3). Also worth noting is that her response in turn 3, after being "pushed" by her peer in turn 2, also demonstrates the improvement of the quality (e.g., the variety of lexicons) and quantity (e.g., the range of sentence structures and word counts) in her language output. After her clarification, student N reacted to this response positively (turn 4), which indicates that the non-understanding was resolved.

As noted by Varonis and Gass (1985), the discourse of most NNS-NNS interaction also consists of multi-layered trigger-resolution sequences that are more lengthy and complex with embedded non-understanding routines (p. 78). The following example is taken from the post-course jigsaw task of "spot the differences" where each student in the dyad took turns to tell his partner the location of the differences.

(14) Negotiation of meaning: multi-layered sequence

    1. U: Ok, if you just focus on the left picture, yes, on the left picture, you

        can see some barrels, uh, like dark brown (color), but in the picture

        on the right, there is no barrels. (T)

    2. P: Barrels? (I)

    3. U: Barrels (R)

    4. P: Barrels? (I)

    5. U: Barrels, something you can pour water in it. (R)

6. P: Well, I can see one bottle in the left, not in the right… (RR)

7. U: No no, I am not talking about bottles, I am talking about barrels. (T)

8. P: Barrels? (I)

9. U: Barrels, something bigger that maybe you can keep water or wine

in it, I guess? (R)

10. P: I still don't know what this means. (RR)

11. U: Barrels. B-A-R-R-E-L, I guess. (T)

12. P: B-A… (I)

13. U: ...R, double R, E-L, I guess. Barrel…If you just take a look at the

picture on the left, you can see one, two, three, four barrels. One,

which is standing… (R)

14. P: OHH, barrels, yes, yes, yes, barrels. (P was using a pen to mark it) (RR)

15. U: Yes, Korobase ((laugh)) (R)

16. P: Hahaha..((laugh))…All right..((laugh)) (RR)

17. U: Hehe…you are so good!

This multi-layered discourse sample illustrates a more complex routine of negotiation of

meaning (17 turns), compared with the aforementioned single-layered one (4 turns). As

we can see in this episode, *barrels*— the word that student U singled out (turn 1)—

triggered the beginning of the negotiation routine. Student P repeatedly indicated that he

was confused by the word (turn 2, 4, 8, 10, 12), regardless of several attempts that student

U had tried to clarify the meaning (turn 3, 5, 7, 9, 11, 13). The negotiation routine did not

reach the resolution stage until student U used the strategy of spelling out the word (turn

11, 13). At that point student P finally realized what barrel meant (turn 14)—with his

relieved laughter as a reaction to his partners' response (turn 16). In other words, after several embedded layers of negotiation routines within the same discourse episode, they finally resolved the non-understanding. Again, we can clearly see that the quality and quantity of student U's language output, after being pushed by his peer's indications of non-understanding of "barrels," are much more improved in his attempts to define *barrels*, evidenced in turn 5 (*Barrels, something you can pour water in it*) and turn 9 (*Barrels, something bigger that maybe you can keep water or wine in it, I guess?*) than just replying with the word "barrels" again in turn 2. Apparently, the linguistic structure of the language output—after being further "pushed" by the interlocutor— is far more complex, and the semantic meaning is more comprehensible as the whole negotiation process moves along (Swain, 1985; Swain & Lapkin, 1995).

Task Types, Negotiation and Strategies

In order to get a better understanding of the interrelationship among task types, negotiation and strategy use, Table 4.3 below sums up the overall frequencies and ratio of turns in the instances of negotiation across the four tasks (i.e., opinion exchange, information gap, jigsaw and decision-making), as well as the quantity of strategy use associated with negotiation in both pre- and post- course interactions.

As shown in Table 4.3, *jigsaw* is the task that promotes the most occurrences of negotiation (N=65) during dyad interaction in both pre- and post- course interactions, followed by *information gap* (N=35) and *decision-making* (N=16), whereas the *opinion-exchange* task is the one that triggers the least instances of negotiation (N=5). This result reveals that the language output of EFL students in this study was pushed the most when they were tasked in the jigsaw dyad interaction in SL. Given the fact that both students in

each dyad needed to reach the same goal under task-related conditions (e.g., find out 6 differences in two identical pictures together), the "closed" jigsaw task, in this case, provides more opportunity for negotiation of meaning than the "open" one (opinion-exchange), in which students were not required to agree upon the same consensus (Long, 1980, 1990). Also identified in Duff's (1986) study, convergent (closed) tasks require each interactant to equally contribute the pieces of information to reach the same goal with a shared outcome whereas divergent (open) tasks do not require each dyad to reach the same goal but allow for multiple outcomes.

Table 4.3. *Total number of turns, negotiation of meaning, turns associated with negotiation of meaning and strategy use in four tasks*

Task type	Total number of occurrences in negotiation	Total number of turns	Total turns involving strategy use	Total turns involving strategies associated with negotiation	Percentage of turns in negotiation
Opinion exchange	5	206	23	57	2.5%
Information gap	35	493	140	320	13.8%
Jigsaw	65	1125	238	557	24%
Decision-making	16	495	45	111	4.8%
Total	121	2319	446	1045	

Similar results can also be evidenced in the task of two-way information gap where one student held the information and the other did not (e.g., taking turns to direct the peer to the final destination on a map). Those who held the information were also pushed to take the responsibility to help his/her partner reach the targeted goal. During the task interaction under the convergent condition, the opportunity for negotiation also

increased more than simply exchanging opinions. The decision-making task was expected to also promote more negotiation since it also pushed each dyad to reach the same goal under the convergent task condition (e.g., deciding in which restaurant to eat based on the menus). Interestingly, however, it did not trigger more negotiation than the jigsaw or information gap tasks in this study, though it still initiated more negotiation in quantity than the opinion-exchanging task.

Additionally, the extent to which the total turns of utterances were initiated in each task also corroborates the total numbers of instances in negotiation. That is, the jigsaw task still predominates the overall turns in students' language output (N=1125), twice more than that of the information gap (N=493) or decision-making task (N=495). Interestingly, the initiated turns in both the information gap and decision-making tasks are almost equal, despite the fact that the former has twice the number of negotiation instances than the latter. The opinion-exchanging task, nevertheless, still initiates the fewest number of turns (N=206) when compared to the other three tasks, similar to the outcome found in the counts of negotiation instances previously discussed.

If we further examine the extent to which strategy is employed in each task type, the results in Table 4.3 also reveal that the jigsaw task still tops the chart for total turns in the use of communication strategies (N=238). This is more than one and half times the number of turns in the task of information gap (N=140), over five times the number in the task of decision-making (N=45), and 10 times the occurrences in the task of opinion exchange (N=23). This finding indicates that EFL students in this study employed more communication strategies when tasked in convergent, shared-goal tasks (i.e., jigsaw and information gap) with task conditions that required each dyad to come to a consensus

(Duff, 1986). The decision-making task might have yielded more strategy use if it had been designed differently (see further discussion in the next chapter)—given the fact that it also shares convergent task conditions similar to the conditions in the other two tasks. The divergent task of opinion exchange, however, did not seem to prompt more strategy use than the other three tasks. In other words, the finding of the extent to how strategy use is employed in different task types also aligns with that of the total occurrences in negotiation, as discussed above.

Furthermore, the result of the total turns that contain strategy use during task negotiation also consistently supports the findings discussed above. That is, the jigsaw task still elicits the highest number of the overall turns in negotiation involving the use of communication strategies (N=557)—nearly twice the number of turns in the task of information gap (N=320), approximately five times the number in the task of decision making (N=111), and almost 10 times the results of opinion exchange (N=57). The data drawn from the percentage of the turns associated with negotiation among the overall turns across tasks types also points to the same finding—jigsaw task accounts for almost one fourth of the total turns in negotiation found in the four task types (24%), followed by information gap (13.8%), decision-making (4.8%) and opinion exchange (2.5%). To illustrate the interplay of strategy use and negotiation across task types in this study, we will look at the following vignette. In this example, we see how the dyad used different communication strategies when negotiating meaning in the pre-course information-gap task, directing his/her peer to the final destination on a map[16].

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[16] Each strategy use was highlighted in bold and bracketed with the identified strategy.

(15) Negotiation involving strategy use in the information-gap task

    1. A: Ok, Emelie, you start from the Fine Arts Building, and if you can

        find that, it's in the center of the map. You have it in front of you.

        The Fine Arts Building is in the University City District. **Do you**

        see that? [comprehension check]   (T)

    2. E: Uh…I can see University City…uh, **what is it called?**   (I)

        [clarification request]

    3. A: Fine Arts Building University City District. It's in the center of

        the map, a bit further down. Just to the right of the library if you

        can see the library.   (R)

    4. E: Is it, uh, so **is it under, uh, underneath the University of**

        Pennsylvania? [confirmation check]   (I)

    5. A: It's just above that on Locust Walk.   (R)

    6. E: It's above that…hmm….oh oh, I saw it!   (RR)

    7. A: **Do you find that? [comprehension check]**   (T/R)

    8. E: Yes, yes ((laugh)). I was trying to find the Fine Arts Building,

        but just can't see it in there, but…yes.   (RR)

    During this information-gap task interaction, the negotiation routine that consists of eight turns of discourse involves the use of multiple strategies employed by both of the students in this interaction. For example, student A—after telling student E where to start and head toward (turn 1)—used a "comprehension check" (*Do you see that?*) to make sure her peer was on that right track. Student E, however, did not catch the start point, *Fine Arts Building*, and therefore "requested" her peer to clarify the meaning again (turn

2). Also evidenced in student A's reply (turn 3), her linguistic output after being pushed by her peer's request for clarification was more comprehensible with specific information provided (Swain, 1985). Student E, in this case, used a "confirmation check" to make sure that the information was received correctly (turn 4), followed by her peer's use of a comprehension check again (turn 7) to double check that she had spotted the right location. Taken together, there are three different types of modification devices used in this multi-layer negotiation routine during the information-gap task interaction—comprehension checks, a clarification request and a confirmation check. It also further demonstrates how the relationship between negotiation and strategy use plays out across task types. That is, EFL students in this study also employed a variety of interactional modifications to resolve communication breakdown during the process of negotiation of meaning, especially in a convergent, shared-goal task (e.g., two-way information gap, in this case).

1b. What are the quality and quantity of EFL learners' oral production during their language practices in a task-based virtual class?

Complexity

To provide empirical evidence of whether the EFL students' oral production had progressed over time in a task-based course conducted in SL, the complexity and accuracy of their oral production were measured as an approach to examining the quality of their language output. As indicated in Table 3.3 (see the data analysis section in chapter 3), there were three dependent variables that tapped into the construct of complexity of the nine students' language output in the format of oral presentation— syntactic complexity, syntactic variety, and lexical variety (measured by Mean Segmental

Type-Token Ratio). Results of the complexity level of students' oral production measured by each variable are presented in Table 4.4 below:

Table 4.4. *Differences in complexity throughout three progressional sessions*

	Means (SD)						Post-hoc (Bonferroni)		
	T1	T2	T3	*F*	*p*	Par. eta^2	T1-T2	T2-T3	T1-T3
Syntactic Complexity	1.27 (.16)	1.46 (.14)	1.35 (.13)	6.383	.009*	.444	.035*	.253	.333
Syntactic Variety	5.89 (1.54)	5.67 (2.83)	8.67 (1.22)	12.430	.001*	.608	1.000	.011*	.003*
Lexical Variety	.79 (.04)	.77 (.05)	.79 (.04)	.931	.415	.104	.492	1.000	1.000

Note: T1 = session 2, T2 = session 8, T3 = session 10; partial eta2 (η_p^2) = partial eta-squared (effect size)
* *p* < .05
** *p* < .001

After performing a series of one-way repeated measures ANOVAs with Huynh-Feldt corrections (i.e., a more conservative procedure), the results showed that the overall differences in means of the three dependent variables that measured complexity across the three sessions over time were statistically significant in syntactic complexity ($F(2, 16)$ = 6.38, p = .009) and syntactic variety ($F(2, 16)$ = 12.43, p = .001), but not in lexical variety ($F(2, 16)$ = .93, p = .415). The effect sizes also indicated that the magnitude of the difference was large with 44.4% of the variance accounted for by syntactic complexity and 60.8% of the variance by syntactic variety. In other words, EFL students throughout the course improved more in grammatical complexity as measured by syntactic complexity and variety, but not as much in the sophistication of lexicons as measured by the variety of vocabulary use.

A further post-hoc test using the Bonferroni correction revealed that in the case of syntactic complexity, students in session 8 (T2) improved more than in session 2 (T1) at the statistically significant level ($p = .035$). However, the language output produced in the last session (T3) did not differ significantly from T1, though greater in mean (M = 1.35 > M = 1.27). The post-hoc test on syntactic variety also showed a similar result that students' latter output in the final session (T3) outperformed the two earlier sessions both at the statistically significant levels ($p = .011$ for the T2-T3 comparison, and $p = .003$ for the T1-T3 comparison). That said, no difference was found between the comparison of the first two sessions, let alone that the mean of the latter was slightly smaller than the former (M = 5.67 < M = 5.89). Since the difference on lexical variety was not found statistically significant, the post-hoc test was not performed. Nevertheless, the means in lexical variety of the three sessions are almost equal (.79), though the second session (T2) is slightly lower (.77).

Accuracy

In a similar vein of the statistical procedure, accuracy of students' oral production was measured by the percentages of the error-free clauses, error-free T-Units and correct use of verb forms. Table 4.5 below summarizes the results of how the three measured variables pointed to the accuracy of students' oral production.

Table 4.5. *Differences in accuracy according to three progressional sessions*

	Means (SD)						Post-hoc (Bonferroni)		
	T1	T2	T3	F	p	Par. eta^2	T1-T2	T2-T3	T1-T3
Correct Clauses	32.67 (13.55)	29.89 (15.55)	62.11 (13.29)	14.157	.000**	.639	1.000	.005*	.003*
Correct T-Units	22.89 (8.81)	20.00 (10.95)	46.67 (13.23)	13.615	.000**	.630	1.000	.008*	.006*
Correct Verbs	51.33 (23.40)	45.11 (25.36)	107.89 (29.51)	20.922	.000**	.723	1.000	.003*	.001*

Note: T1 = session 2, T2 = session 8, T3 = session 10; partial eta2 (η_p^2) = partial eta-squared (effect size)
* $p < .05$
** $p < .001$

The one-way repeated measures ANOVAs revealed that there were overall statistically significant differences for all the three dependent variables that measured the construct of accuracy in students' oral production across the three sessions over time ($F(2, 16) = 14.157$, $p < .001$ for correct clauses; $F(2, 16) = 13.615$, $p < .001$ for correct T-Units; $F(2, 16) = 20.922$, $p < .001$ for correct verbs). The effect sizes also indicated that the strength of the within-subject effect accounted for by each measured variable was quite large (63.9% for correct clauses, 63.0% for correct T-Units, and 72.3% for correct verbs). The positive findings indicated that the quality of students' language output improved greatly in the level of accuracy measured by the use of error-free clauses, error-free T-Units and the use of correct verb forms.

Further post-hoc tests pointed to the fact that statistically significant differences were located between the last session (T3) and the other two (T1, T2) in each measured variable, but no statistically significant differences were found between T1 and T2. In other words, students' oral production in terms of accuracy progressed greatly in the final

course session, much better than the earlier sessions. That being said, the mean of each variable in the case of T2 is slightly lower than T1, a finding that needs further discussion in the next chapter.

Summary

Results for EFL students' strategy use in negotiated interaction across task types, show that confirmation checks, clarification requests and comprehension checks were the three most frequently used strategies. They accounted for 90% of the total strategy use in both task-based sessions. Confirmation checks were characterized by asking confirmation questions and repetition with rising intonation. Clarification requests were noted by expressing confusion, asking for repetition about what was said, and requesting further explanation on confusing information. Comprehension checks were identified by yes-no questions, asking to repeat the received information, and repetition with rising intonation. Other types of strategy use were also found, such as request for help (asking for peer assistance due to lexical or phonological confusions), self-correction (self-correcting linguistic mistakes made in the utterance) and topic shift (moving to a new topic after employed strategies could not solve the negotiation issue). Also, two strategies were found in this study that had not been previously documented in task-based research in 3-D MUVEs. That is, a metacognitive strategy (verbalizing cognitive processing to plan and organize input before producing output) and spell out the word (approximating text chat by orally spelling out the key word).

Following Varonis and Gass's (1985) framework of negotiation of meaning, two types of negotiation routine were also identified: single-layered trigger-resolution sequence (standard negation routine in a four turn-taking discourse) and multi-layered

trigger-resolution sequence (more complex routine that involves above four turn-takings). Additionally, the interrelationship among task types, negotiation and strategy use was also established in the study. That is, the jigsaw task prompted the most instances of negotiation and strategy use, followed respectively by the information-gap task and the decision-making task, whereas the opinion-exchange task triggered the least. This evidence shows that close-ended, shared-goal tasks triggered more interactional strategies to resolve communication breakdown during negotiated interaction as opposed to open-ended, divergent tasks.

Adapting Yuan and Ellis's (2003) framework of T-units measures, the quality and quantity of EFL students' oral production measured by complexity and accuracy over time were also revealed. After performing a series of one-way repeated measures ANOVAs, results indicated that EFL students had a statistically significant improvement on grammatical complexity on the levels of syntactic complexity and variety, but not on lexical variety. The post-hoc test, however, showed a mixed result since the last session did not consistently outperform the first two sessions at the statistically significant level, let alone the second one. In terms of the accuracy of students' oral production, results showed that the improvement of their linguistic accuracy—as measured by correct use of clauses, T-units and verbs—was statistically significant across the three sessions over time. After running the pair-wise comparisons, the post-hoc tests also confirmed the findings, though not the case between the first two sessions.

Chapter 5: Qualitative Results

Gleaned from multiple data sources (learning journals, interviews, surveys, text chats, digital assignments), triangulated with the researcher's teaching observation blog, this chapter reports qualitative findings that unearthed EFL learners' perceptions about their virtual learning experiences of engaging in a task-based course in SL. Specifically, learners' vignettes generated from various data sources provide a holistic lens to better zoom in on how they made sense of the virtual world through using avatars to participate in each task-based project. Results are categorized by themes and patterns, anchored by students' verbatim to illustrate each emerging thematic pattern.

2. What are students' perceptions about using avatars to practice English and participate in a task-based virtual class in SL?

To answer this question, the study utilized several methods: the open coding approach from the grounded theory (Corbin & Strauss, 1990), systematic analysis of recursive examination and comparisons of multiple qualitative data (students' learning journal entries, focus group interview transcripts, pre- and post-course survey results, student project work, and in-class text chat logs). These were triangulated with the researcher's blog documenting moment-to-moment activities in each session and accompanied by observation notes. Three core thematic categories emerged:

(1) Perceptions about factors that impact virtual learning experience in SL.

(2) Attitudes toward learning English via avatars in SL.

(3) Beliefs about the effects of task-based instruction on learning outcomes in SL.

The three categorized themes were aimed to address the second research question regarding the participants' perceived attitudes toward their overall virtual learning

experience and beliefs about the task-based approach and using avatars for English learning in SL. Using axial coding to cross-examine each thematic category, sub-themes also emerged to unearth the underlying patterns centering on each identified theme as presented in the following tables. Additionally, each thematic pattern is exemplified by verbatim evidence[17] drawn from students' journal entries, interview transcripts and survey results to further illustrate the nuanced patterns arising from each main theme.

Perceptions about Factors that Impact Virtual Learning Experience

The first theme manifests itself in the immersive, simulated and creative nature of SL. SL features, such as voice/text chat, teleporting, notecard and object building, also enhanced EFL students' virtual learning experience in this study. Table 5.1 below summarizes all student data about whether a 3-D virtual environment facilitated or debilitated their learning experience, coupled with the sub-theme of how learners compared their English learning experience in RL and SL. Each of the findings will then be analyzed.

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[17] To respect the originality of students' verbatim, grammatical errors, typos and mechanical mistakes made by them are kept unaltered, except those that hinder the understanding of the intended meaning and therefore are blanketed. Additional notes added by the researcher are put in parentheses to clarify information that is unclear or missing.

Table 5.1. *Students' perceptions about their overall learning experience in SL*

Positive Perceptions	Negative Perceptions	Learning English in SL vs. real-life (RL)
SL features that maximize overall learning experience	Technical issues	Impact of prior RL learning experience
Simulated immersion in SL	Lack of paralinguistic features	SL vs. CMC tools
Multicultural/lingual and collaborative environment		Self-perceived learning progress in SL
Fun factor		Skills and knowledge transfer to RL
		SL as a potential learning environment vs. RL

Positive Perceptions about Overall SL Learning Experience

SL features. Reflecting on their overall learning experience documented in their learning journals, interviews and survey responses, EFL students in this study all pointed out that the *unique features* afforded by SL (e.g., voice/text chat, teleporting, building) had made their learning experience rewarding. They perceived that those features in general had facilitated learning, or made learning in SL much easier and saved a lot of time without the RL problems of traveling and additional costs. For example, MB, in one of her journal entries, expressed how she benefited from the ease of learning via private voice chat and time saving via teleporting in SL:

It saves a lot of time (in SL), really, and you have private call to talk with a partner apart from all the students and have a private call. It saves a lot of time without distraction. And sometimes when we move from one place to another (teleport), having private calls, we have all the tools around us (in SL), maybe it would not be available in RL class…Second life saves a lot of time and effort and

full of many tools that make the lesson more interesting than real life. (MB, journal, 05/31/201)

MB's perception about the convenience of teleporting to different simulated regions (SIMs) in SL in seconds had energized her virtual learning experience because of the time-saving factor. The ease of learning that alleviated the trouble of traveling in RL was also echoed by BK in her interview, "…in RL is very difficult...Here we can travel in a few seconds...in SL, it's more easy... The time and the ability to go anywhere in seconds, the limit is in the imagination only" (BL, interview, 06/18/2011). The positive perception owing to the unique SL features was also reinforced by cost-saving, especially when doing multiple real-life tasks that required frequent "travels" in one course session. As UG put it,

The advantages are that in [SL] you have more opportunities to meet [E]nglish speakers without going to an [E]nglish country and spend money for that…It is suitable for people who works and don't have much times and money to travel. (UG, post-course survey, 06/13/2011)

In addition to the "cost-effective" advantages above, students also expressed how each feature afforded by SL was conducive to their English learning. For instance, NM stated in his interview that "the voice chat, from (which) we can talk and interact. This is the most amazing thing for communication. It is of course helpful for chatting" (06/18/2011). The voice chat mode enabled them to practice not only English speaking skills, but also listening and exchanging opinions with peers. Other comments centered on the flexibility of multiple methods of communication—being able to easily switch chat modes from public talk using voice or text chat to private chat using IM: "…save time and

concentrate as you can have a private call with your friend and don't disturb others around us (MB, journal, 05/31/2011), which "would be deemed as one of the best tools usable in SL" (UL, post-course survey, 06/13/2011).

As illustrated above, students were largely positive about the benefit that teleporting brought them in making learning easy and time saving. If we further examine how teleporting led to positive English learning from their perspectives, it was helpful "…because it's just in seconds you can go anywhere you like…to save time and energy of the students…It really facilitates and expedites finding places and moving around without wasting time" (UL, post-course survey, 06/13/2011). The unique way to "gather very easily which helps indirectly in English learning" (NM, interview, 06/18/2011) also enabled them to "discover new things and new place that mean new things for [the] language" (TR, post-course survey, 06/13/2011). That is, when traveling to different SIMs instantly, they were able to conveniently talk about each newly discovered place, accidentally learn new vocabulary signaled on floating tags above each 3-D object, and frequently share new knowledge exchanged among peers.

Another feature that stood out from the triangulated qualitative data was the ability to build 3-D objects in SL. From the cognitive standpoint, building helped EFL learners in this study "visualize" how a concept could be developed and served as a visual mechanism to mediate their thoughts. In other words, the process of building enabled them to experience and see how their internal ideas could be solidified and put into a concrete 3-D form that they could use to accomplish a project task (e.g., creating a poster for presentation). As MB vividly reflected on her object building experience,

Object building, it's very interesting but not easy to do it in RL...It's one of the features that is unique here and special. But I met a lot of people here in SL and they enjoy building and they think it's very useful. But I think building and doing anything using your brain in it is very good. So that's why it's interesting, especially for the mind. Ya, for posters, it helps you to create your presentation. (MB, interview, 06/18/2011)

From the pre-course survey data, almost above half of the students did not have any building experience before joining the class. Therefore, they found their first building experience challenging but also rewarding because it was conducive for language acquisition. To illustrate, they needed to read and follow the building instructions on the notecard given to them in order to successfully build their own object. UL responded in the post-course survey that building was helpful for him to acquire the target language "because I just learnt a lot doing this task in SL. Useful expressions and vocabularies made this part of SL exciting to me" (UL, post-course survey, 06/13/2011). Furthermore, those who were competent in object building would try to mentor those who were not by explaining each building step as well as demonstrating it. The collaborative interaction offered the more building-proficient students another chance to practice how to deliver the meaning more comprehensible to their peers in English; it also allowed less proficient students the opportunity to learn from doing and following directions by asking questions in English, as exemplified in NM's case:

Things like building objects, we may interact with others to do so if we need some help. In that way, it also helps learning. If we talk about building, anyone doesn't know anything about how to build objects. So we need help from someone else.

We need to help others. In that way, we interact with others. (NM, interview, 06/18/2011).

Not only did building enhance the acquisition of new vocabulary via reading and maximize practicing in speaking via interaction with peers, it also fostered a sense of achievement by allowing participants to see and create their own object step by step. As UG illustrated,

…we did the building exerci[s]e, I tried to explain as the best I could do and hoped I was been understood but this exerci[s]e was pleasant as its involves creating and speaking. I created a beautiful pyrami[d] as I like them because its reminds me of [E]gypt histoty of pharaoh. (UG, journal, 06/09/2011)

The excitement of building, creating and learning English simultaneously also optimized their learning experiences by empowering students to discover their own learning autonomy and experience the "fun" of doing things. As EC voiced, "[I] enjoyed building it by reading instructions, I was very pleased with my result. This was a fun start and I looking forward for tomorrows lesson!" (EC, journal, 05/03/2011).

Simulated immersion. Aside from all the salient features exemplified above, SL also allows residents to freely visit different SIMs that simulate various real-life regions, such as museums, restaurants, tourist attractions and so forth. As such, resident avatars can easily fly or teleport to the SIMs they are interested in as if they were traveling to those places in the real world. This "augmented reality" configured in a three-dimensional virtual environment also made learning in SL an immersive experience for the EFL students in this study. As BL put it,

A well-developed 3-D environment is a scenario where you can do many things, simulate a scenario, traveling to different places, be in a theater, conference room, etc. It's an immersive environment. You can see the stage and avatars and it helps you interact...It's very interesting because you feel the person in the room, for example, in the [role-play] exercise of pizz[eria]...You interact with others as in RL. It is a fun experience. (BL, interview, 06/18/2011)

Echoing BL's opinion about the "feel" of being virtually "present and immersed" as if in real life, other students also commented that the 3-D simulation empowered their learning experience since they could interact with 3-D objects while being immersed in the SIM. Despite the lack of the real physical senses, 3-D simulation in SL allowed these EFL learners to virtually experiment with tasks that might have been otherwise risky or dangerous in real life. For example, UG reflected on how the sense of immersion augmented his experiential learning while virtually going figure skating in SL:

Then, we go skating; the design of the environment was a success; it lacked just the feeling of the cold that we can feel only in [RL]. I took time to find how to wear the skating boot; when it was ok, I tried some skating figures that I won't try in [RL] because I care about my arms and my legs. (UG, journal, 05/31/2011)

The immersive simulation also enhanced their positive language learning experience, given the ample opportunities to experience and simulate real-life tasks while acquiring rich second language input in real time. For example, UL described how 3-D simulation configured in SL helped him learn English better:

Learning a language in SL is that you are able to experience what you are learning. I mean, you can learn something around, something about museums,

arts, gallery and it was really possible for us to see a museum immediately. I think it's really helpful for learning languages coz you know what you are talking about, what you need to know about the place, for example, museums. I think this part of SL is that we can experience and you can feel at heart almost everything. (UL, interview, 06/18/2011)

By being immersed in different SIMs across subject matters and real-life interests, SL made it convenient for learners to use the target language in real-life contexts beyond the constraint of physical travels. In addition, students could easily map out their interlanguage input with corresponding visual objects in a 3-D fashion that further solidified their language acquisition.

Multicultural/lingual and collaborative environment. Owing to its boundary-crossing and imagination-free nature, SL attracts residents from all walks of life around the world to the in-world [18] on a daily basis. As such, it also transcends boundaries in conventionally fixed real-life classrooms, which are confined by distance and time differences. The advantage of participating in the virtual course in SL, hence, was that students had the opportunity to interact and collaborate with other students across culture, nationality, gender, and linguistic repertories. As BL vividly illustrated,

I really enjoyed this class for several reasons. I have known beautiful places in SL that invites to be visited later. But most importantly, I enjoyed watching the presentations of my companions. It is wonderful to hear people who live in different countries around the world and share their experiences. His works reflect

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[18] In-world is the term widely used in SL that refers to being connected to SL and activities that take place in the 3-D MUVE.

the dedication and time invested in them…It is nice experience with people of

different cultures. You live in America, I live in Spain, or in India. It's incredible.

(BL, journal, 05/12/2011)

Resonating with BL's statement above, other students also voiced that the multicultural/lingual dynamics raised their cross-cultural awareness of the rich and colorful cultural capital each student brought to the virtual class, especially when they were doing oral presentations through which they "realized how much variety there are in different cultures or countries (UL, journal, 05/24/2011). Being able to share, exchange and appreciate different cultures and learn from each other also reinforced each student's cultural capital and allowed them to demonstrate what they were knowledgeable about. For instance, UG described in his journal that he sensed his colleagues' passion when they were presenting their home cultures to the class, which he really appreciated:

The poster which have been presented, were very beautiful; specially the way that their owner was speaking about them. We felt that they was speaking about something they love. The atmosphere was very friendly and unique, what makes the class very special I liked because we can learn about different countries and culture. (UG, journal, 05/09/2011)

The "friendly and unique" atmosphere that UG described above also lent itself in a collaborative virtual learning environment co-constructed by all the participants. EFL students in this virtual course established a bond by supporting, collaborating with and learning from each other. For example, MB reflected on the assistance that she received to help her complete the building task:

> This was a nice experience it was the first time for me to build in [SL] and I was nervous so I hadn't read the notecard correctly, but I was able to build after the lesson. I am glad that I was introduced to new people for all over the world they all seem helpful and nice. I am looking forward to working and interacting in more interesting lessons. (MB, journal, 05/03/2011)

Echoing MB's opinion about getting peer support in SL, PK also stated that the collaboration in SL "...is fantastic because it is not easy to have all this support in RL" (PK, journal, 05/17/2011). Students considered bringing a multicultural/lingual cohort around the world to the same virtual class as unique and positive since each member also brought their cultural, linguistic and SL expertise to the class. As much as those who benefited from getting the help from their peers (e.g., building objects), those who helped also gained the opportunity to practice their speaking via mentoring as in IL's case, "I used to build in [SL] before come here, so it's not much difficult. This part is nice. I 'm happy to try use [E]nglish language to help friend. Good to practice [E]nglish for me. ^^ nice to join this group ;-)" (IL, journal, 05/03/2011).

Indeed, for those EFL learners, the chance to practice speaking with native English speakers around the world or with other English language learners who speak English as a lingua franca, was unfortunately scarce in real life—let alone establishing a friendship or collaborating in the same place, at the same time. Given the diversely linguistic and cultural makeup of the class, the universal language that they could use to communicate with each other was English—which further pushed them to use the target language for communication purposes. As NM asserted,

To learn any language, we need to practice, nothing else. If you ask about colleagues or someone who speaks not the native language, it doesn't help. But of course, if we interact with them in English, then we get something. At least, we can practice English...Also things like we meet people from all over the world, we come here and get together, we chat and we enjoy. Preparing for presenting helped to know more about your team members and helped how to do a good teamwork. We came together, we worked together and of course as a result we learned something new together. (NM, journal, 05/12/2011)

Hence, collaboration with peers not only strengthened the bond among students in the virtual community and cultivated their cultural competence, but also optimized their learning experience by providing them with the chance to practice their English skills through interaction. As BL stated, "Activities with my colleagues are useful for learning English--enhance the interactivity, listen to different forms of English pronunciation, share interesting personal experiences, culture, knowledge, etc. We can do fun and diverse group activities" (BL, journal, 05/12/2011).

Fun factor. Another vital pattern emerging from the multiple data sources was the term "fun" or "interesting" repeatedly appearing in students' reflective account of their virtual learning experience. One of the reasons students found learning English in SL enjoyable was due to the unique features afforded by SL that optimized learning as previously illustrated. For example, MB summed up why she thought that those features made her learning in SL so much fun:

I think all the features are very useful and save time, effort and make the learning experience funny and interesting. For example, teleporting from one place to

another only takes 30 seconds. Building objects is good exercise to create the object you desire. Holodeck offer you lot of places where you can roleplay and the places are usually not crowded unlike RL. So you will feel relax while practising. In General I think all the features are prefect tools for learning and teaching…I think if I were taught English or any other subject in this interesting way I would be better...I think [SL] is really amazing. (MB, journal, 05/24/2011)

Indeed, those SL features not only facilitated their virtual learning experience in a 3-D environment that infused an element of fun into learning, but also provided an open, free, immersive and creative venue that further motivated learning. As PK put it, "I think SL is a new way which helps a lot to learn English in a funny and motivator way. Nobody had this possibility in the past and I feel very fortunate to discover this new possibility" (PK, post-course survey, 06/13/2011).

The immense possibilities and potential in SL also transformed learners' prior English learning experiences in a traditional classroom in SL in a sense that they found English learning not "conventional" or "boring" anymore. They were finally able to learn and practice English as if they were using the target language in different real-life situations, owing to the SIMs and Holodeck features. Practicing English everywhere, anytime, at their own pace, ease and interest strengthened the perceived "fun" in learning in SL. Learning in a fun way (or in their term, like a "game") hence stimulated them to use English spontaneously and pushed them to produce their language output through interacting with peers. Because they found it so engaging, interactive and immersive, they did not even realize that they were learning and that time had passed even faster than

when they sat in a traditional language class. For example, both TR and IL voiced their opinions about how they found the virtual learning interesting in the "job naming" task:

> The fact this class was really different i like the game which is interesting way for learning language also to work ur mind very fast also the time is go very quickly didn't realize it just in the end when u say it's finish also when i go with to speak with my partner about his job and try to use my language to deliver my idea and so...oh, i can say in general this class was interesting class (TR, journal, 06/09/2011)

> I learn different way to explain one job because we exchange clue together in our team. From the interview make me know how different between real and dream (job). The guess job game is fantastic. Competition atmosphere make me motivate and fun to learn. I know new vocabulary about job and still remember it because this experience is so attractive. I think fun make us better learning and better remember. thanks for fun class. ;-) (IL, journal, 06/06/2011)

Negative Perceptions about Overall SL Learning Experience

Technical issues. As much as the unique features, simulated immersion, multicultural/lingual class and fun factor appeared to have made SL an beneficial learning environment for the EFL learners in this study, they also perceived some issues in SL that might have hindered their virtual learning experience. Specifically, the most obvious technical issue arising from their accounts of learning in SL was the quality of voice chat. Many students expressed their concerns with the poor sound quality of the voice chat of some of their peers. When interacting with others or listening to their

presentations, they found it difficult to communicate with students who had poor voice quality; this, of course, made understanding the message very difficult. The poor voice quality also dampened the motivation to speak (e.g., EC's poor voice quality had made her speak less in order to not embarrass herself). Consequently, the undesirable voice quality, exasperated by an echoing noise—either due to a poor microphone, the internal voice-out setup in one's computer or a bad Internet connection—had debilitated the process of task completion. MB expressed her concerns about the sound issue that negatively impacted her learning experience:

> The most well-known problem here in [SL] is the voice problem because some avatars have weak internet connections. It sometimes affects my English learning because I can't hear them clearly or I cannot use voice with them due to this technical problem. I think using voice in [SL] plays an important role in learning English...[Although] I enjoyed the lesson today as usual, I only think the voice or sound problem, many students have bad connections, in these lessons is a negative side…but I don't know the way of solving this problem. (MB, journal, 05/31/2011)

Unfortunately, a well-intentioned and well-planned task-based session could be counteracted by unpleasant technical issues in SL, such as undesirable voice and sound quality as noted above. On top of that, sometimes the platform instability in SL also resulted in unexpected computer crashes and difficulties logging back into the SL in-world. Also, the bad Internet connection (sometimes at the student's terminal) also caused lagging that made the avatar difficult to move around. As IL put it, "Internet connection can be my problem sometime. I try to log in to [SL] a lot but it fail, So I have

to absent some class. I feel so sad about it because I really would like to learn" (IL, post-course survey, 06/13/2011).

Despite the negative impact that those technical issues had on their virtual learning experiences, some students seemed to cope well with them and still considered SL a viable learning environment because of its overall benefits. They also commented that technical issues also plagued real-life learning, especially when the course was conducted in a web-based platform as well. Both PK and TR stated:

The only issue I found was the sound quality some times. But many times the issue came from us. It is ne[c]essary to use microphone and headphones instead of speakers. We must close the icon to speak with other is speaking, etc. When voice is not good is easy to loose many words of presentations. But that is a com[mon] problem in all open web conferencing. (PK, post-course survey, 06/13/2011)

…only just one problem suddenly frozen or sound problems but in general it's not big problem. [I]n [RL] we may face problem like this ..so, it's not effect soo much (TR, post-course survey, 06/13/2011)

Lack of paralinguistic features. Although SL affords in-world residents to virtually "see" each other's presence while they gather around with other avatars, real-life non-verbal cues in communication, such as eye contact and gestures, are still missing. Despite the fact that SL also allows users to configure some animation scripts to initiate those nonverbal cues, most users do not pay attention to animating the gestures while taking part in a real-time conversation. Instead they attend to meaning, trying to speak and be understood without a communication breakdown. In other words, participants can

see each avatar's movements, but these paralinguistic features are still not simultaneously displayed to match the appropriate moment (e.g., smiles shown on the avatar's face when the speaker is talking).

The lack of these paralinguistic features could also result in the removal of non-verbal support. Generally EFL students sense whether or not they are understood, judging by others' facial expressions or eye contact in the real world. As IL put it, "But there are something that we can not do in [SL] such as eye contact with teacher" (IL, post-course survey, 06/13/2011); or as EC pointed out,

> Well yes I think there is a different, it is easier to give individual help in RL, as well as you can see on people if they are with you, or completely lost. Even if you do not understand in SL, there is no chance for the teacher to see if you do not say anything (EC, post-survey)

Another example of the impact of the lack of non-verbal cues in two-way interaction discourse was evidenced in UL's learning experience in one of the earlier in-class tasks—"breaking the ice." The task objective was to allow students working in pairs to get to know each other by exchanging information with their interlocutor (e.g., find out two interesting facts about your partner). As much as the task was intended to build community and give students additional opportunities to practice speaking via a peer interview, UL found that SL still lacked important real-life paralinguistic features—even if those features had a negative connation due to stress, shyness, or a first-time encounter with a stranger:

> But I really don't know whether I can deem it's virtuality as a drawback of this exercise or not. Because, in RL, we need to become face to face looking at each

other's eyes using somehow the same dialog if keen on breaking the ice (in conversation), while here in SL there is no such a dealing stress or shyness since we cannot look at each others...(UL, journal, 05/03/2011)

Learning English in SL versus RL

Impact of prior RL learning experience. Another salient pattern arising from students' reflective journal entries and interviews were accounts of prior English learning experiences in the real world. For example, the English classes they had taken in their home countries were mostly grammar-focused. Paying less attention to using English for meaningful and communication purposes was a common EFL learning experience shared by most EFL learners. The "unpleasant" learning experience of only sitting in a traditional English class had dampened participants' motivation to learn English in a real-life class due to the lack of fun and practicality. Case scenarios in a traditional English class could be illustrated by NM, UG and MB's recollection of their prior EFL learning experience in their home countries—India, France and Egypt, respectively:

> If I talk about my class in RL, I had started to attend English classes. But, actually, I left classes after I attending 4 to 5 lectures. In those 4 to 5 lectures, we learned some basic grammar and we, I had started to give presentations, and due to my duty of life, I couldn't attend classes afterwards…Afterwards, I don't know what actually is done about English classes here. (NM, interview, 06/18/2011)

> In RL class, very often the study of [E]nglish are focused on grammar, vocabulary or a text to read. And, that doesn't have be neglected, it's like a plan to build a house but it's not enough. Conversation is also important and this activities

involving more talking are more practical and goes in that direction (UG, journal, 05/25/2011)

That (taking classes in RL) has a very bad impact on me...Because the boring methodology to teach students is not working for every one. I was one of students who got bored of studying. If I had been taught English language and other subjects in this interesting way I would have been better. (MB, journal, 06/02/2011)

As pointed out by these students, practicing English speaking for communication purposes in traditional EFL class settings seemed to have become a moot point since the grammar-oriented approach did not offer the opportunity to use English in real-life scenarios. Consequently, their experience with the less practical and meaningful way of teaching/learning English also resulted in their demotivation to attend any real-life English class. However, this group of EFL students was still driven to improve their English speaking and communication skills, in spite of their negative prior English learning experience. To change the status quo and limitations of real-life English classes, they discovered that SL opened up different avenues for English learning that could be dynamic, interactive and immersive. As both BL and UL put it,

In a traditional class, we have whiteboards, [P]owerpoint, etc…The 3D environment is more attractive and its possible (and) interact with people who are not in the same place. (BL, interview, 06/18/2011)

I want to say the last word of mine. I prefer learning any languages in SL rather than sitting in those boring classes in RL when you cannot understand anything, especially when it is not really practical. I'd like to go to SL first (UL, interview, 06/18/2011)

Indeed, the unique features afforded by SL as previously mentioned had also made learning easy for them. Participants were able to speak in English with other resident avatars from all over the world, anywhere, and at anytime in SL. Students could immerse themselves in different SIMs, learning informally and discovering new knowledge at their own pace by simply sitting at home. As such, the experience virtually simulated a wide variety of real-life scenarios in SL where they could use English for more goal-oriented purposes—resulting in more interesting and meaningful learning experiences than those of a traditional EFL class.

SL versus CMC tools. Even though SL appeared to be a viable learning environment for the EFL students as evidenced by the aforementioned advantages, another interesting pattern arising from students' interviews was their perceived attitudes toward comparing learning in SL with other CMC tools available in the real world. While the CMC tools, such as Skype, instant messenger, etc., also enabled the EFL students to communicate with others in English, they nevertheless found that the tools fell short of offering the more dynamic features as in SL that led to a better learning experience. For example, BK stated why she preferred SL to other CMC tools for learning, "I think SL is more interesting…to do a lot of things that in Skype is not possible…[t]he messenger or [S]kype, I feel more passive and more traditionally. Second life is more complete and attractive" (BK, interview, 06/18/2011). Resonating with his

colleague's opinion, PK further delineated the reasons why he thought SL had more to offer for learning than other CMC tools as well,

> The more important is a 3-D virtual world like this, like SL. There are several advantages against Skype, and against IM, etc. It's that you can come here, you can have meetings, but you can see the avatars. Immediately in your mind, it's like you're watching one movie that you are inside of them so all the avatars and you, first of all, are people. And you are living like, a RL. Secondly, you have the possibility to make roleplays so you can see more like a real life situation. That's not possible with [S]kype or IM or things like that (augmented reality). Third, we have the possibility to move to certain places. Teleporting is a fantastic tool. Four, you can create objects, which is absolutely fantastic. Why? Because you interact in real time. So you can see how the others see building things. So it's like real life, it's fantastic, or even better than RL, in that case (building). (PK, interview, 06/18/2011)

Indeed, in addition to teleporting and building—two of the most unique features in SL—the 3-D simulations in SL had taken their learning experiences to the level where they could virtually experience specific real-life tasks. Being immersed in various interesting simulated regions not only augmented reality, but made them feel as if they really were doing the tasks in the real world. Therefore, the immersive, creative, and interactive nature of SL had set it apart from other CMC tools, which in turn led to students' positive attitudes toward judging SL to be a more beneficial learning environment. MB nicely distinguished the differences of using SL as a platform versus other CMC tools:

Look, it's (SL) interesting. I think, uh…it makes (learning) more exciting and you feel that you are…uh…Sometimes I feel that I am addicted to SL. I am living here. I am really sitting on the chair. But it's more exciting and enjoyable than Skype, right? Ya, in SL, that's more real. You feel like you're in class and you are sitting with each other…You know, the first assignment you gave us to go to a restaurant, right, remember? It was really nice to see beautiful restaurants in SL. You feel that you really go to these places and enjoy yourself there than just going to some websites. (MB, interview, 06/18/2011)

Self-perceived learning progress. According to the pre-course survey results, this was the first virtual English course for most students. They also hoped that their English proficiency, especially in speaking, could be improved after the course. Reminiscing about their overall learning experience in this virtual course, students in general held positive perceptions about their progress. They expressed that they could "feel" the difference in their English proficiency from the first virtual session until the end, greatly because of the confidence they gained by speaking English to their peers, the teacher, and other SL residents and to productive vocabulary acquisition. Self-perceived progress was frequently evidenced throughout students' reflective journal entries, such as "I am honestly sanguine about the remarkable progress of my English while attending in this virtual course" (UL, journal, 05/03/2011), "Really a nice experience…Very interactive and engaging…I am improving my confidence to use English in my presentations. And not only my confidence but the vocabulary too. Thanks!" (PK, journal, 05/25/2011), or "I think that this course improve me and maybe I am the only

one who can feel it. But I think I gained [a] little self-confidence and I still I have to work on myself" (MB, journal, 06/09/2011).

As illustrated above, "self-confidence" stood out as one of the key factors that led to students' positive perceptions about their learning progress in this virtual course. Additionally, the supportive virtual learning environment developed and nourished by all the students and the teacher also contributed to their sense of self-esteem and motivation to use English for communication and meaningful purposes. Echoing their colleagues' self-perceived progress, IL also recollected her improvement in speaking and TR vividly described how she was impressed with being able to speak in front of her real-life class— attributing the change to her enhanced confidence and practice in SL:

I feel most confident and comfortable in case comparing with past. I talked by nature (spontaneously). I think this course help me improve English speaking skill a lot. This course make time in [SL] is value because I have opportunity to spend a lot time with nice classmate, nice teacher and nice activity. I hope there will be nice course like this again! ;-) (IL, journal, 06/14/2011)

[I]'ll give the answer from the progress in learning [E]nglish in my RL... today i have presentation in my college .. i was afraid to stand front more than 40 and talk about my project ..but after i stand and start to talk i imagine every person there like my classmates in SL, and talking to them for 15 minutes so, i think this give more confidence. also help me to speak a lot in [E]nglish which i didn't have many chance to speak in RL (TR, journal, 05/24/2011)

Another striking case that exemplified the effect of language practice in this task-based course on EFL students' self-perceived progress was BK's learning trajectory. Originally from Granada, Spain, she was a very shy, beginning-level EFL learner as compared to her peers at the outset of the course. Despite the fact that she was initially lagging behind, she decided to stay and participate in each virtual session. Below is BK's reflective account of her language practices throughout this virtual course:

> Comparing my first interview (pre-course task interaction) with the latter I can see that the change in me has been incredible. At first, I had no initiative and I had trouble to speaking. I thought this class was too advanced for my poor English. But now I can see that I have more security, I understand better than before (even I have some troubles because my vocabulary is still limited), and I have more security and initiative. I feel good and fun with my partners and the teacher. I want to continue learning English, step by step, learning more words, grammar, etc. and speak in a manner acceptable in the future. Thanks to this wonderful experience I can think it is possible. thanks to all…Now I understand the conversation in English, not all words, of course, but much of the conversation and it is easier for me. Even at home, I am speaking in English, looking for words and phrases in my mind. This represents a great breakthrough in a few weeks. I think to improvise English and tasks you suggested for the course have been very successful. Thanks, very much:)) (BL, journal, 06/09/2011)

As illustrated in her heartfelt recollection of her entire learning process from initially struggling to eventually thriving, BK demonstrated the beneficial effects for EFL learners in SL. The positive perception about the prospect of "feeling" the gains in self-

improvement, self-confidence and self-esteem had carried over to her firm belief in using English for meaningful purposes in both SL and RL. Also worth noting is that the class only lasted for 10 sessions in six weeks. Such progressive improvement in speaking and language acquisition—given the short time frame—was even more striking.

Skills and knowledge transfer to RL. Due to the simulated reality augmented in SL, students in this study experimented with different real-life tasks that they might or might not have had the chance to do in their real-life classes, such as taking fieldtrips to museums, playing musical instruments or practicing figure skating. Consequently, they held positive attitudes toward the language practices in SL that they perceived as transferrable to real-life situations. Below, PK vividly reminisced about how his first cooking experience came into play in SL while preparing for the cultural cuisine project:

> First of all I want to tell you I never had cooked more than fried eggs or [F]rench omele[t] and nob[o]dy motivated me to cook something in RL because I always refused to do it. After these fantastic classes not only I've looked for information in Internet about how to cook one of the more famous Spanish dishes for tourists who visit our country but I decided to cook it. Yes, I've cooked it!! And the result was surprising for my family in RL. I think I have discovered a new skill which I will put in practice in the future (PK, journal, 05/09/2011)

The experience of virtually "rehearsing" or "simulating" a real-life task also made students discover other real-life skills that they had not explored or believed they had not been capable of doing. By going through required steps in the completion of the SL tasks (cooking paella, in PK's case), they broke down the step-by-step task process, which helped them practice and acquire the necessary skills. It made real-life tasks less daunting

and more tangible since they were able to "see" how task completion came into play and simulated the whole process. Also, by actually doing the tasks in SL and by learning from their peers, students' motivation toward actually performing in real life was also boosted.

The positive perception of simulating different real-life tasks in English also bolstered learners' motivation and self-confidence. Specifically, the growth of building confidence to speak English reinforced the belief that they could also transfer their improved speaking skills to various future real-world scenarios. As MB stated:

> Ya, but it is a good first step. Because if I practice this a lot in SL, I consider practising English in S[L] is a good step toward practising in RL. I feel I will gain self-confidence and be brave to use English language in RL. (MB, interview, 06/18/2011)

Indeed, the growth in confidence through practicing English in SL without being hampered by the nervousness experienced in RL helped learners develop a strong sense of self-efficacy needed to tackle real-life tasks in the future. As such, they felt more confident and were motivated to speak English not only in SL, but also in RL.

> Nevertheless, it is possible that going to RL have some more difficulty or…uh..But I think the key point is to lose the shame and it helps you in RL. Nevertheless, I want to tell you that the experience you can have in SL help very much to go to RL. Sure, because it is like RL. If you are speaking here, it is like RL. You are going to speak with people around the world…That's true, perhaps SL helps us to go to RL after these exercises here, like the first step. I think it's a good preparation or work to do that here...It's easy to do it here than in RL. (PK, interview, 06/18/2011)

Although students' perceptions about the transferability of skills practiced and knowledge gained in SL to RL were largely positive, UL, on the other hand, was upfront about his doubts regarding this effect. As he asserted,

> On the other hand, I cannot consider SL as a complete absolute educational area since in addition to proper tools and facilities required for education, there are some other factors affecting education such as shyness, fear of communicating in other language etc. Nonetheless, since in SL it is impossible to be face to face with others while communicating in other language, I think SL cannot be helpful to subside the shyness and fear of facing people to talk in a second language. So it would be deemed as drawback of SL if language learners cannot apply what they've learnt in SL for RL. All in all, I believe learning language in SL is by far more efficient and exciting than doing it in RL. (UL, post-course survey, 06/13/2011)

Interestingly, the transformation from being stressed and nervous when talking or presenting in public in RL to being less shy and more at ease in SL had become a double-edged sword for UL. On the one hand, he acknowledged the fact that SL had made him become more "brave" to speak English in front of the class without the nerves that held him back in RL. On the other, he was hoping he could have felt the same "nervousness" and "stress" as he usually did in RL so that he could also experience the same negative feelings in SL that qualified for the so-called transferability. UL went on to explain why he found it difficult to transfer the skills practiced in SL to RL using his personal case as an example:

...you know, I believe that the value of everything we are learning is in using them. If I learn to speak English fluently in SL but I am not able to use it in RL, I think I'm just trying in vain...Yes, it is really helpful but let me tell you something. I really don't know the problem where it originates from. I have a lot of presentations in front of my supervisor and others. And I feel..uh, lots of stress and I will feel very nervous. But when I am in SL, talking about something. It's so easy and convenient to me. So we cannot transfer what we learn in SL to RL. (UL, interview, 06/18/2011)

When asked if the RL course was mandatory with credits, UL came to realize that the stress in public presentations and nervousness in talking with a professor in English were also due to the RL mandatory obligations imposed on him. He was also reminded that the virtual course in SL was not restricted by the same factors (e.g., pressure of getting credits and meeting the standards of the professor) that impacted him in his RL course. All the members in the virtual community were equal and free from the hierarchical power structure of a RL course. He and his colleagues came to the class of their own free will with the same goal to practice speaking English. If the virtual course had had the same mandatory credits and requirements as a class in RL, and if it had been conducted in a more traditional (non-tasked based) manner, would UL have been as nervous and stressed as he previously reported? Such a question is worthy of examination.

SL as a potential learning environment versus RL. Considering all the factors that had an impacted on EFL learners' perceptions about English learning in SL—both advantages (e.g., SL features) and disadvantages (e.g., technical issues)—we are faced with the overarching question of whether students still considered SL a potential English

learning environment when compared with traditional English classes? As evidenced in the triangulated qualitative data, in general, students acknowledged the value of the overall virtual learning experience. To start off, a wide variety of rich and free SIMs available in SL offered the potential for students to discover and learn in real time. The flexibility to teleport and explore each 3-D simulated region not only provided them with easy access to various immersive SIMs, but also enriched their learning experiences beyond their expectations since "a lot of different [SIM](s) mean a lot of various experience to learn (IL, post-course survey, 06/13/2011). Hence, virtual learning was not static or linear as in a traditional RL class, but fluid and dynamic, as guided by their imagination, creativity and interests. Virtual learning was augmented and supported by multimodal, 3-D features in SL, ranging from mouse-over, floating tags above each 3-D object that rendered visual support for vocabulary, to augmented reality and simulated immersion that deepened their understanding of both content and linguistic knowledge. Being immersed and exposed to a myriad of SIMs across real-life subject matters also bolstered their researching a topic on their own. PK vividly depicted his overall virtual learning experience as follows:

> I can tell you one thing. I never thought in all my life that I could be in a world like this because I don't like to play with computers…Some people think when you go to SL, "Oh, you like to play SL." I never say that. I don't play in SL. I learn in SL. I share experiences in SL. These are absolutely incredible. I never thought I can do it until I discovered this possibility that many people don't know…because I could see how Second Life can help us simulating RL situations. I could speak with people all around the world, I could learn about

music instruments more than never. Imagine I built a piano which can sound different music!!!!. Imagine I found some needs to make presentations in SL and I was motivated to build a portable video projector. Imagine I could understand we need some laser or chalk to make annotation over a 3D sculpture and I made it after my visit to the sculpture museum. Imagine I studied Plato when I never liked Philosophy. Imagine I visited castles in order to know the English name of different part of castles...And imagine I cooked for first time of my life a PAELLA in RL because I needed to study how to do it to explain it in SL. The PAELLA in RL was really fantastic because nobody of my family believed it!!! (PK, journal, 06/02/2011)

PK's positive learning experience was also echoed by his colleagues' views about why the learning potential in SL was superior to that in RL. For example, both BL and TR stated that a traditional RL class was usually constrained by inevitable restrictions—distance, time, mandatory credits—that counteracted "freedom" and flexibility in learning. Conversely, SL transcended the limitations and freed their minds to discover their learning interests at their own pace, which is not easily done in RL:

For example, going to museums in SL…The landscape, the waters, the waterfalls…in RL, it's more beautiful, of course...the advantage in SL is you can access to a scenery [SIM] more easy and share experience with all others. You can not gather a group of people living in different places in RL, RL is not possible to move people to different places for free and in seconds...in RL you can go the site, it needs a lot of time. Here we can travel in a few seconds...The

activities can be made in two worlds; but in SL, it's more easy. (BL, interview, 06/18/2011)

…there is many difference but the important different [I] notice that in [SL] we can live the situations of the lesson which make the lesson easy also apply it and practice it and make it funny also more useful but in [RL] there is no practice…It's hard to live situation also require more time which [I] don't think the teacher [in RL] will give that for each students and [yo]u know there are marks and must be careful about...all above reasons [RL] will not give me the freedom as in sl. (TR, journal, 05/12/2011)

If we delve more into why SL was beneficial for second language acquisition after this virtual course, students commented that the chance for learning English was available anytime and anywhere in SL—which was again least likely for those EFL students in their real lives. Being able to interact in English with both native and nonnative speakers of English around the world, as well as hearing rich language input in all the SIMs visited, was a "pleasant surprise" to them. As NM put it,

Hmm I feel very much similar learning English (here I am considering 'speaking' English only) in SL and RL. But I found SL more interesting way to learn it since we can do different kind of activity in SL, as we have done during course which makes learning English entertaining too. And the most interactive activity that most of the people do worldwide is chatting which is helpful to learn and practice in knowing more about English because we come across new words and terminology while we are chatting and also we get enough time to explore about

that word also. The SL is full of variety of SIMs. If we explore them we come

across new world and thus new knowledge. So exploring new SIM is entertaining

and becomes informative too. (NM, post-course survey, 06/13/2011)

Indeed, the ease of virtual learning at home, abundant opportunities to interact with other

SL residents in English, and fun in learning and discovering new knowledge and

vocabulary in different SIMs all led to positive English learning experiences. For

example, EFL students' language acquisition was enhanced by rich input solidified in 3-

D form available in those SIMs visited by them. Their oral proficiency was also

improved by interacting with other residents in English. UL further illustrated how SL as

a virtual learning environment was conducive to his English learning experience:

It is actually two different sides of the same coin. On the one hand, it is really

helpful to participate in a language class in where all students coming from

different nationalities, cultures and dialects, something which seems unlikely to

happen in RL. Moreover, for further comprehension, there are some virtual places

in SL assists language learners to feel the ambient as well. You can define some

words, or expressions, and immediately transfer or teleport students to the place

related to what the words or expressions you're defining is exactly like. In SL I

can recall more words and phrases and bring nicer colour to my sentence...If

doing a task regarding art or museum, as an illustration, it is possible to teleport to

a gallery or museum easily and free of charge to discuss the terms related to art in

a proper relevant place like a gallery not in a simple class that there is no sign of

art or museum tangible there [in RL]…although it is less real in SL, but i was

pretty convinced that it can be helpful practicing in SL to make progress and

improvement in RL...But on the other hand, there are some failures. But yes, the

advantages outplay the failures. (UL, journal, 06/02/2011)

UL expressed his viewpoints about the advantages of learning English in SL versus RL,

but also honestly pointed out the disadvantages. Although students in general agreed that

SL had the potential to enrich their language learning experience as compared to RL, EC

was not in agreement, as shown in her survey result (indicated as "Disagree"). This might

be due to the repeated malfunction of her voice device. Students would comment in the

text chat that they couldn't hear her clearly when she talked. The frustration of the poor

voice quality and her embarrassment at not being able to verbalize clearly also led to her

to have a less positive attitude.

Another interesting phenomenon arising from students' perceptions about SL as a

viable virtual learning environment has to do with the reasons that attracted them to the

environment. Drawn from the post-course survey results, the reasons why students were

drawn to SL can be categorized into two factors: *practical* and *holistic*. The former was

mostly associated with students who were either new users or came to SL only for the

sake of attending the virtual class. Socializing with other resident avatars, or exploring

other SIMs for extracurricular activities outside the class was not their priority. Both UL

and EC expressed their reasons for entering SL as "I did not us[e] to come to SL before

attending this English course. The only thing I'm doing in SL is just learning English"

(UL, post-course survey, 06/13/2011) or "I am mainly in SL to either attend classes or

work on presentations, group work etc" (EC, post-course survey, 06/13/2011). Their

practical approach might also be attributed to the fact that UL had been to SL for only six

weeks and had not fully explored it through networking with other avatars except for the

virtual class. As for EC, her voice issue might have gotten in the way of her interacting with other avatars besides those in the class, because she might have felt embarrassed by not being understood by the other residents she might have encountered.

Besides the above-mentioned exceptions, a majority of students came to SL not only for the virtual course, but to discover more interesting SIMs, to interact with peers and new friends and to attend various social events. For them, logging onto SL had become part of their daily routines. They were willing to spend time exploring SL, talking to friends in English and having fun by playing SL games. It was surprising to see that the line between SL and RL had become blurred for these students—the time they devoted to SL might have been more than the time they spent on their RL activities. To illustrate, TR and NM voiced the reasons that drew them to SL:

> [I] used it at first just for ur course but now i discover more more and like playing game like tiny empire and sometimes speak with people in cyber['s chat] (another SIM for English learning)...(TR, post-course survey, 06/13/2011)

> I come to SL to attend English course but it is not only reason to log on to SL as I have joined SL before more than 7 months. I log on to SL whenever I get chance from RL. And I like to spend time in SL. I enjoy chatting with SL friends and like to meet new people here from all over the world. I do like to participate in different SL activities like dancing, combating, playing board games with friends, [S]plodder events (online game configured in SL), etc...(NM, post-course survey, 06/13/2011)

As noted previously, the fun factor of SL had transcended the SL-RL boundaries by attracting students more to SL. Also, seeing the values rendered by SL, they were willing to invest more time in the virtually open space where they could freely discover new SIMs, learn new knowledge, make friends and practice English with people around the world.

<div align="center">

Attitudes toward Learning English via Avatars

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One of the most unique devices in SL is using avatars to communicate with other resident avatars or attend various in-world events in the 3-D multi-user virtual environment (MUVE). Throughout the virtual course, students used their avatars to participate in each task project and interact with their peers and teacher. It is interesting to examine their perceived attitudes toward the impact of using avatars to learn English in the 3-D MUVE and whether they identified themselves with their avatars in SL, as represented in Table 5.2 below:

Table 5.2. *Students' perceived attitudes toward using avatars for learning English in SL*

Learning English via Avatars
The effects of masked identity on learning
The impact of telepresence and copresence on learning
The perceived attitudes toward avatar affinity

The Effects of Masked Identity on Learning

A salient pattern drawn from students' reflective accounts of their experiences of in SL was the *sense of security* provided by their avatars. Being "cast" in their own avatars enabled them to speak behind the "avatar mask" without worrying about being judged by the way they looked or acted while interacting with others as were they in the real world. It seemed that the "masked identity" enjoyed by the avatars projected "force

fields" for students to shield themselves from the embarrassment or shyness when speaking in public or vis-à-vis interlocutors unfamiliar to them. When translated to the virtual learning context, the masked identity via avatars augmented learners' sense of security and comfort, especially when doing oral presentations in front of the class. UG and MB both pointed this out:

> To be honest, I don't pra[c]tice speaking of front of people in RL and I don't feel at ease with it. But I've noticed that I dare more to do it in [SL]…So you can easily ignore the pressure in [SL], but [not] in RL. (UG, journal, 05/24/2011)
>
> I feel more comfortable and less shy when using my avatar to speak English in S[L] because no one notices how I am embarrassed when I make a mistake whether in pronunciation or grammar…[But] when we talk in front of a lot of people, I feel I am frightened. I am afraid. I think people would judge me also when looking at me at the same time. (MB, post-course survey, 06/13/2011)

Another issue arising from the phenomenon of representative avatars is whether students positively perceived that they could transfer their virtual sense of security to the real world. After all, they might have to converse in English on the street or do a public oral presentation in English for business or academic purposes. As a shy and self-perceived novice in real life, NM explained in his journal why he thought using his avatar to practice English helped him control his nerves in speaking publically in RL,

> I think it's not a disadvantage for learning English in SL because to learn English, we need not to have eye contact. We have to interact. Nothing else. It is only needed when we need to present something…Presenting in SL was much like

presenting in RL and more beneficial too as I feel less nervousness than I have in RL...And it was as interactive as in RL. I felt more confident than RL. While presenting in SL we focuses only on presentation what I have to say about presentation and I am less concerned about what people do whether they are listening or not. And it is beneficial for beginner because sometimes newbie feels nervousness in RL when people listening to presenter are not interested in him. (NM, journal, 05/06/2011)

IL also echoed NM's viewpoint by stressing the beneficial effects of speaking English through her avatar; this arrangement provided her with a sense of security and confidence that she thought would transfer to the real world:

…because behi[nd] avatar is me. It still show myself...yep it 's more comfortable because no real people around me but I still feel everybody quiet and listen me…I feel better than [RL] because nobody look at my real face. I think if I practice a lot in [SL], It will add confident to present in [RL] because we can pass it in [SL]. So [we] should be, can do it even though it 's more pressure level [in RL]. (IL, journal, 05/12/2011)

As much as students generally held positive attitudes toward the effect that learning via avatars could have on speaking English in public, UL felt differently. As noted in his previous comment, he still had doubted the extent to which SL could totally simulate all the face-to-face aspects of a real-life context, such as non-verbal features present in a conversational discourse. As he put it,

If I want to be honest with you, this avatar cannot convey anything real to me. I mean when you are in RL, when you interact with others, you can experience

diverse feelings, upon reflections. Based upon the reflections, you can understand what's actually happening, what you're supposed to say. It's not something that you can experience in SL just by looking at avatars. I cannot feel anything real. That's my point of view (UL, interview, 06/18/2011)

Interestingly, although he felt less stressed and more confident when delivering an oral English presentation in SL, he would have preferred feeling the same level of nervousness as he would have in the real world. Only when he could confirm in SL the "negative" aspect of speaking English encountered in RL would he verify that the skills learned in SL could be transferred. However, his colleague, EC expressed the opposite point of view:

> Yes, no one will see you and they do not how you look like and they can not see if you['re] nervous. I think I can perform better in SL than in real life...I would say, that from my point of view it is an advantage to do a presentation in SL since I get nervous. I would not agree with that is makes it less real, an oral presentation is always an oral presentation. I hate speaking in front of larger groups, but you just have to deal with it :) (EC, journal, 05/06/2011)

The sense of masked identity safeguarded by their avatars led to students gaining self-confidence to speak with ease and comfort even in front of the whole class in SL. As illustrated above, they would not have had the courage to speak English freely with others whom they did not know well, had the discourse been in a real-life context. The removal of non-verbal features (e.g., eye contact) in a real-life discourse also lowered their affective filters since they could avoid the face-to-face shyness or embarrassment

when making a grammatical mistake, for example. Gradually, learners were increasingly willing to speak English in SL.

The Impact of Telepresence and Copresence on Learning

Another unique feature that sets SL apart from other CMC tools, as previously reported, is that SL allows in-world residents to have a sense of being "present" in real time, or "telepresence." Being able to see all the resident avatars in the same place, at the same time, also creates the sense of "copresence." As such, it would be insightful to unearth whether or not EFL students in this virtual course found that the sense of tele/copresence had made a difference on their virtual learning experience. To illustrate, several students expressed why they preferred learning in SL with the sense of tele/copresence as opposed to learning in other web-based environments in RL— "telepresence is something I never found in Internet with the same possibilities. It is better than a video conference, from my point of view" (PK, post-course survey, 06/13/2011) or "actually for some people it's meaning nothing but i feel it's help some thing [is] present when u speak, not like when u speak to screen (TR, PK, post-course survey, 06/13/2011).

Indeed, other CMC or web-based environments may provide similar interactive tools, such as voice and text chat. Some of those environments can even enable users to use videoconferencing so that participants joining the same conference can see each other. Although participants using videoconferencing might also feel the sense of "telepresence" since they can see each other in real time, the sense of "copresence" is nevertheless lacking since they are not present "together" in the same place. SL offers both types of presence by means of avatar presence. In the virtual course, for example, all

the EFL students around the world teleported to the same class site, at the same time. The avatars provided these students with the feeling of "being present" and "being together." They were able to see their classmates' and the teacher's avatars just as if they had been in a real-life class. As UL stressed, "So one thing helpful to simulate a virtual world called SL, as the real one called RL, is the capability to see teacher and classmates. Avatar conveying the same feeling as you feel in RL classes" (UL, post-course survey, 06/13/2011). Resonating with UL's opinion, BL further explained the concept of tele/copresence by using her interview with the researcher as an example,

> It's more real if you can see the avatar, yes, it's more real. For example, in this moment, you and me sit in the chair…I feel that I can see the avatar. I think perhaps you are here in this moment. It's more real when I can see you (avatar), I mean...we are in a real situation in second life, this helps us to interact between us. (BL, interview, 06/18/2011)

If we delve further into the relationship between students' language practices and the tele/copresence phenomenon in SL, a question arises as to how the sense of tele/copresence positively affects virtual learning as in this task-based course. In other words, did tele/copresence facilitate or debilitate the task-based learning experience? The evidence of the positive effect that tele/copresence had on EFL students' learning was exemplified in NM's vivid recollection about his language practices in the task of leading the class as a tour guide and museum curator:

> yes, it does help by having them to project (themselves) using avatars and project onto avatars. Yes of course, when your avatar is present here, I feel like you are present here. That makes the sense of (presence), uh…which is a feature in SL,

which is different from other (online) services…Sometimes it was like a real-life experience. The places (while we were) together (doing tasks) like restaurant and tour guide and gallery… In the task in which I had to take everyone to a place in SL only and to tell them about things from different objects and what we can do in SL. So everything while I was telling and while I was watching, they (classmates) also watched the same thing. (NM, interview, 06/18/2011)

The Perceived Attitudes toward Avatar Affinity

From the results in this study, students were largely positive about the effects that the sense of security masked in avatar identity and tele/copresence rendered by avatar presence could have on their overall virtual learning experience. We may further examine whether they also had a strong attachment to their created avatars forming a so-called "avatar affinity." Interestingly, the results of students' perceived attitudes toward their self-image via avatars were mixed. Some students valued their self-image as projected by their avatars. They were also concerned about how their avatars were perceived by others, even if they knew the latter had no way to see what was behind their avatars. Both NM and PK vividly illustrated how they identified with their avatars in order to make a positive first impression in SL:

If I talk about my avatar in SL…it has no relationship with my RL appearance or anything, but of course, I like to decorate my avatar. I also try new stuff, new appearance for my avatar. Hmm, no, I never try to make it look like real (me), but since it's type of a game, we can make our avatar as I wish. Also, it (avatar) helps to make interact with others because whenever we get some new stuff (for my avatar), and my friend see that, of course, he will talk about my new outlook. Of

course, it is better that helps people look at my avatar…I think it's the first impression. It represents me so I like to make my avatar the way my friends also like, not only me. (NM, interview, 06/18/2011)

It is specially important to offer a good image...My avatar means to me the same as a pseudonym for a writer. It is me. I feel my avatar like myself in RL…But really, the image of avatar, I think from my points of view, that is important. Why? Because when your avatar has a good image, many people are immersed in SL and sometimes you beautify avatars like real. So the image can attract people close to you. That's interesting because it is one way that you can…uh…other people can think you are interesting or funny or something like this. Of course, you can have very good avatar with very good image but if you are stupid at some words that everybody cannot understand that, it's not real, not good. But it helps. (PK, interview, 06/18/2011)

As clearly demonstrated by both NM's and PK's comments, the self-image projected by their avatars played a crucial role in terms of how they would like to be perceived by other avatars. They also cared about whether their avatar outfits were appropriate or even attractive. For them, their avatars represented who they were in SL, and they also expected to make positive impressions on other avatars in different social contexts in SL, much as in the real world.

An interesting point about avatars has to do with the situation in which avatar appearances did not resemble those in real life; this did not necessarily mean that students lost their real-life identities. Although students felt that their avatars spoke for them in

SL, they also perceived that what was really perceived was their real-life personae and characters. As TR put it,

> …i think i am person here in [SL] and speak to people but we don't lost our identity in sl ..b/c i notice the most things the people asked about here is where r u from so my avatar is carrying some of my identity personality (TR, post-course survey, post-course survey, 06/13/2011)

> Not everyone perceived the value of having a strong attachment to his/her avatars.

For some learners, an avatar was just a tool to aid interaction with others in SL. This attitude was also evident in students who were SL novices and still needed time to take full advantage of what SL could offer. For example, UL explained why he considered his avatar as a tool only for him to attend classes and practice English:

> No, I don't believe in avatar at all. Of course, the character each person uses is actually originating from personal behavior. But I myself didn't think about my own avatar coz I am not really familiar with this SL have to change avatar, have to change their outfits, appearances. It's really not important for me. The most important part is just attending some classes, meeting some people and improving English. Nothing more. (UL, interview, 06/18/2011)

Echoing UL's opinion, BK also commented that she viewed her avatar as a tool. Because of the current limitations of SL avatar design, she felt that her avatar would never have looked exactly like her real-life self. As she put it,

> I know some people in SL who did identify with their avatars, but not in my case. But it's more real (to see each other's avatars)…I think in the future, 3-D programs allow interacting with world more real than this and will be more

interesting…Now the avatars seem very simple…Avatars (will) seem more real (like real me), too, in the future. (BL, interview, 06/18/2011)

Conversely, it is worth noting that the more time students spent in SL, the more they developed a strong sense of attachment to their avatars. The correlation between the time spent in SL and the affinity for their avatars also explained that their avatars were not simply "3-D dolls" anymore, but that they were personal 3-D representatives that spoke and acted for their creators in SL. Students, therefore, preferred his/her avatar to look presentable and were willing to spend time beautifying their avatar appearances and outfits. As MB illustrated,

You know what, when I first came to SL, the first question people ask me like, "Do you know how to change your clothes?" I told them, "I don't care." "Do you know how to change your eyes of your avatar?" I told them, "I don't care." But after a while, I felt that I want my avatar (to look) similar to me...My avatar is a tool for me to interact with others. But I believe that the appearance of my avatar tells about my character and how I like people to interact with me. (MB, post-course survey, 06/13/2011)

Beliefs about the Effects of Task-based Instruction on Learning Outcomes

Operationalized under the TBLT framework, this course provided EFL students with ample opportunities to practice English while participating in a wide range of real-life tasks, such as taking on the role as a tour guide or museum curator. Drawn from multiple data sources, thematic patterns regarding students' beliefs about their overall learning experiences and the effects of task-based instruction on their learning outcomes are summarized in the following table:

Table 5.3. *Students' beliefs* about *task-based instruction in SL on their learning outcomes*

Task-based Instruction in SL
Communication tasks retain learner engagement, motivation and promote spontaneous output via interaction
Culture-driven tasks foster learner autonomy and investment in language practices
Simulated tasks deepen real-life task learning experiences that reinforce knowledge and language acquisition

Communication Tasks Retain Learner Engagement, Motivation and Promote Spontaneous Output via Interaction

EFL students participating in this virtual course were generally positive about the impact that task-based instruction during the 10 sessions. They found that tasks conducted in SL were not static, but realistic, interesting and communicative—different from what they used to experience in a traditional English class. Since each virtual session was varied by topics related to their own lives and all tasks involved interaction via voice chat, they became more motivated and committed to participating in each task-based session. Their engagement and motivation—due to the perceived values in those various communication tasks—were thus enhanced. To illustrate, both BL and MB reminisced about their entire task-based learning experience and the positive effects that task-based instruction had had on their learning in SL:

> The tasks are very useful in learning because thanks to the tasks we do things different, fun, every day, we are very motivated and very attentive in class. Besides the tasks that you propose are always fun...All tasks seems interesting. The tasks help students to interact between us. (BL, journal, 06/02/2011)

This course improved me because I was given different tasks about different subjects and I was required to read about these topics in order to be able to present the topics for my colleagues. I gained knowledge and I learned new vocabulary. Also, I was required every time to participate in the lesson. I want to tell you UnicornG (researcher's avatar name) that I always avoid participating in any class in real life and you imagine what is the impact of this on me...So I was happy to participate as it is a very good step for me. (MB, journal, 06/09/2011)

Indeed, being able to retain engagement and motivation throughout an English-language class in SL was a breakthrough that they had not previously made in their real-life English learning experiences, especially in MB's case. Having the opportunity to interact with their peers using voice chat during all the communicative tasks further strengthened students' positive attitudes toward task-based interaction in SL. After all, practicing speaking interactively in motivating tasks related to their real lives was the component missing in their prior/current real-life English classes. For example, students commented that they found tasks carried out in pair/group work were beneficial and promoted more interaction, as stated by NM, "…every task was involving pair/group work that makes task more interactive, more interesting & thus more helpful" (NM, journal, 05/03/2011).

Their beliefs about the effects of task-based instruction in SL on their learning outcomes also led to the perceived improvement in their English proficiency. Specifically, they expressed that communication tasks carried out in pre- and post-course task interactions—such as information gap or jigsaw tasks—were particularly challenging in a sense that they needed to think and speak simultaneously in English.

That is, the way those tasks "pushed" them to produce oral output spontaneously and process the target language without translating from L1 to L2 was both cognitively and linguistically demanding. As MK vividly explained why she found those communicative tasks motivating albeit challenging,

> In the interview I find the tasks were very useful for my English learning, if I practice these tasks regularly, I will definitely be better. All the task are real life situations you must be alert, you must think in English not in your native language in order to be fast and that for sure the best way to learn how to communicate in English. All the task are challenging and interesting. (MB, journal, 06/09/2011)

The communication tasks—especially the convergent, goal-oriented tasks—required learners' full attention to get meaning across comprehensibly and to interact with interlocutors spontaneously. This type of language practice was beyond their comfort zone, a new arena to which their prior English learning experiences had not led them. Despite the perceived task difficulty, students were motivated and stimulated to undertake those challenges because they believed in the benefits that those communication tasks could ultimately bring to their learning. Worth noting is that two beginning-level students, BL and NM, recounted why they found those tasks demanding for beginners and how they perceived the value of completing the assigned tasks:

> All the tasks we did I think are very helpful for learning English…the task we chose finding the differences, and we had to explain to somebody what you want to say. That way, it was a bit challenging because if I am talking about myself, I am a new beginner of learning English, then I don't know enough knowledge of

English. So if I had something in my mind, I could not express in the words. To make somebody understand what I mean is part of making sentences. (NM, interview, 06/18/2011)

[T]asks are important in the sense of focusing our attention on an issue and allow us to talk about it freely. The variety of topics makes the interest in the classes is greater. All this is positive to improvise our English. (BL, journal, 06/09/2011)

Another vivid example of how communication tasks benefited EFL students' interlanguage processing was their use of language strategies to deal with the cognitive and linguistic demands of task-based interaction. For instance, PK delineated how he used different communication strategies (e.g., circumlocution by replacing unknown words with expressions he had known) to deal with the linguistic challenges in the post-course task interaction where he was asked to instruct his peer in how to build an object:

Regarding the task in which we were asked to give instruction to our classmate to create an object…First the great interactivity, secondly how easy is to teach and learn using that capacity to create objects and the last, but not least, how happy we finalize our task when we could understand each other in English...As you can imagine it is not easy to understand perfectly to all due (to) different accents and my limited vocabulary, so I use the technique to use long sen[te]nces to substitute the unknown word. I try to explain the meaning with other words. But the key point is to lose the shame. When I don't understand what the other person say I use two ways. One is to ask for and the second one is to explain what I understood in order to be sure what I understood is correct or not. (PK, journal, 06/09/2011)

Having the opportunity to speak "freely" and think "in English" as much as those communication tasks enabled them to was the type of practices that they unfortunately did not have in a conventional English class, at least from their prior English learning experience in real life. Throughout the task-based language practice in SL, students also witnessed the change in their levels of self-confidence as well as their progress in English. The evidence of the impact of task-based instruction on EFL students' learning outcomes can also be evidenced in IL's vivid account of her virtual learning journey in SL:

> I think all task help a lot for improve my English learning. I learn to ask to make it clear when I didn't understand and learn to use English in role-play situation. there are a lot different between first time and this time. First, I feel more confident, more comfortable and I can speak continuous don't take time to pause for thinking like in first time. I[n] the first time I feel very excited and feel IT' s a bit hard to find word in my brain to speak, but After I finish the wonderful course everything go on good way. THANK YOU SO MUCH!!!! (IL, journal, 06/09/2011)

Culture-driven Tasks Foster Learner Autonomy and Investment in Language Practices

If we recall the tasks carried out in this research study, not only were they communicative and promoted interaction, but they were also designed according to the TBLT framework where all the tasks were related to students' real-life interests and were meaningful to them. Those real-life tasks also exploited each learner's cultural repertoire—ranging from introducing cultural outfits or cuisines to guiding the class to

tourist attractions in their home countries simulated in SL. Since this virtual course brought together a group of multicultural/lingual students from around the world, it also made sense to include a cultural element in the task design. Therefore, students had the opportunity to showcase their cultural heritage to their classmates. A salient pattern gleaned from students' reflective accounts of their experiences with completing the culturally-related tasks was that they were willing to "invest" their time and effort in preparing oral presentations to promote their home cultures. For example, BL talked about how much she enjoyed every step of preparing for her culture-related task (i.e., presenting cultural outfits), echoed by MB's account of the time and work she had put into each task project:

> I feel very good (about the tour guide task) because I like to teach things about my country to the group, the class. I look for sites in SL and I spent sometime in these, look for information on [I]nternet. It's very interesting for me. I learn subjects, too. Yes, it's nice experience...I feel this task (cultural outfit) I spent a lot of time look for objects for this. I look for nice dress, some photos, dancing, the tent in 3-D, etc. I want to show that done better as possible (I could do it as better as possible) to show the dress and my own culture." (BL, interview, 06/18/2011)

> I think it's a very fortunate to find a SL course like yours. That's why I was engaged and I was committed to it. I wanted to complete it. It has no difference from RL. I think you have to, I mea, myself, I have to work a lot, I have to read a lot and I have to make great effort and your course was a great opportunity for me

to read as I wrote in one of my journals. I started surfing the net and looking for the information about the project. It was great to find someone to push you. (MB, interview, 06/18/2011)

As illustrated above, students felt as if they were the "advocates" for their home cultures and took full responsibility to deliver an accurate message to their classmates who were unfamiliar with their home cultures. Consequently, they were motivated to spend time online doing research on the history, background, tradition, customs and facts about their own cultures in English. The time and effort invested in those tasks, as voiced by students, were spent on making sure that the quality and content of their oral presentations professionally and accurately represented their home cultures. PK explained the approach he had taken regarding the preparation of his assigned task, followed by MB's vivid recollection of why she found the task on promoting her home culture to the class meaningful and the extent to which she benefited from completing this task:

During the preparation of my current assignment I worked much more [than] I though[t] and I had the opportunity to learn a special vocabulary about the subject of my presentation and some histo[r]y about it. I used Second Life to find a place and create a special tool, Internet to study some history about that and Google translation for some special vocabulary. Fu[r]thermore, I used Scribblar (a tool you used in the first class) which is fantastic to use in combination with SL to share work simultane[o]usly. It was fantastic. You can see it next time. (PK, journal, 05/17/2011)

I was happy to talk about my country (Egypt) and felt that it is real life situation, and that I must talk in confidence. Also, I must be sure of what I am saying in order not to give false or misleading information. Besides, I must choose the most important information in order to keep the people who are listening to me following what I am saying and not to feel bored. As usual I liked this task I think it is good practice for learning English. I enjoyed this course very much:)) (MB, journal, 06/14/2011)

Indeed, as MB vividly stressed, students' investment in preparing for each oral presentation also paid off. Through browsing and reading materials online, they were able to acquire new vocabulary, learn how to explain certain culturally specific terms to the class in English and even acquire new knowledge about their home cultures. Seeing the effort their colleagues put into their presentations also motivated them to invest more time and effort in their own presentations in order to reach the high standard set by their colleagues. To illustrate, IL vividly described how she acquired new vocabulary both from putting effort into preparing for her task of cultural outfits and interacting with the class when asked to explain some culturally-laden terms in her home culture:

I try to find my outfit and found it. that's good. after that a bit more difficult to find how to explain them in English. because I know not much vocabulary about them. I learn a lot way to talk about them after I done assignment and listen presentation. There are amazing experience to learn in [SL] again because we learn it fr[o]m people who real[l]y know well about detail of their outfit and try their best to explain it. After class, I know more [E]nglish about [each culture] So, I think if I have to use it in [RL], it will be easier…I use [G]oogle and look a lot

website and see different way that they explain same cloth. After that I try to make my word to explain about it. So, everything go easier. It mean look at friend presentation and trying to explain my clothes make me learn new vocabulary and new sentences (IL, journal, 05/24/2011)

Students' investment of time and effort in various task projects related to their home cultures—from the standpoint of second language acquisition—resulted in rich exposure to a wide range of authentic, online materials in the target language. Also worth noting was that taking the initiative to do their own research online for each task project was unexpected—given the fact that this virtual course was not mandatory and did not bear credit. Participants were willing and motivated to invest their time and effort into each task aside from their real-life commitments, gradually developing learning autonomy. Playing the role of the representative of their home culture who took full responsibility for delivering accurate information about that culture reinforced their sense of learning autonomy. Additionally, seeing the effort and passion that their peers put into making their own oral presentation professional further validated the fact that every member in this multicultural/lingual class was devoted to promoting their home culture. BL, a shy, novice student before joining the virtual course later described in her journal excerpt below, how doing the task of introducing her cultural outfit (a Flamenco dress) fostered her learning motivation and autonomy:

The presentations of my classmates were very interesting. I feel very motivated because I know people prepare your presentations as good as possible. It is a challenge to explain my culture to people from other places…I want to explain customs of my country as clearly as be possible. My goal is to prepare the classes

and make a clear statement with the most interesting points related to the lesson of the day. In the class of the flamenco dress, I had a nice time looking for objects in sl for the exposure (presentation). I was not nervous because I had previously written a guide that i could [referred to]. (BL, journal, 05/24/2011)

As evidenced in BL's case, being able to promote one's home culture to other members in this multicultural/lingual class in SL was an experience that they would not have had in a real-life, conventional class. The tasks reinforced their learner autonomy which further led to growth in their sense of achievement and self-confidence. As UG stated,

The idea on talking about "Le Moulin Rouge" came sudde[n]ly in my mind because it's a famous place and not everyone know much about it. I wanted to show its story as being the patrimony of the [F]rench culture. I am not fluent in [E]nglish but I'm proud that I can talk about important thing. Firstly, it was very exciting to go to The Moulin rouge in SL and take the photo and then presenting it to the class. I felt as if I was telling a travel. It was a good moment that I won't forget. This tasks helps not only to become self-confident but gives a huge motivation to learn [E]nglish. (UG, journal, 05/06/2011)

Simulated Tasks Deepen Real-life Task Learning Experiences that Reinforce Knowledge and Language Acquisition

As previously reported, a conspicuous feature of SL is that the 3-D virtual environment makes simulated representations of real-world scenes feasible. Through the 3-D configurations of a myriad of real-world scenes and objects, "reality" comes into play in SL, and some of the tasks in the virtual course capitalized on this. Students role-played by simulating real-life scenarios using the *Holedeck*. To illustrate, they were

simulating a "dine-out" scenario in a pizzeria animated by Holodeck where they played the roles as servers or diners as if they were in a real pizzeria. Both IL and MB voiced their opinions about why they found role-playing in a pizzeria rezzed by the Holodeck interesting and as real as in real life:

> …there are still positive thing role-play in [SL] it's easier to go to virtual restaurant and role play about it. if we set class like that in [RL], it must take time so much to prepare a lot of thing. This task make me have more experience about situation that happen[e]d a lot in [RL]. I learn differ[e]nt way that our group order food and what server said. So, if I have to do it in [RL], it will help a lot. (IL, journal, 05/17/2011)

> I enjoyed the role-play and I hope we will do it again. I think it is similar to R[L] class, the decoration of the pizzeria was so real but I think we save more time in [SL] as we went to pizzeria in seconds…About my feeling during acting the server it was challenging I actually got a paper and pen to write down the orders and to make sure not to forget any dish or drink (so exactly like R[L] but the difference was nobody was watching me). For sure practicing any real life situation in English will improve my English speaking and reinforce my self-confidence when I meet the same situation in real life. (MB, journal, 05/17/2011)

Worth noting was how MB described her experience of literally taking a pen to jot down the orders from her classmate customers—a vivid example that students' real-life task learning experiences could also carry over when they were doing a simulated task in SL. The experiences of simulating real-life tasks in SL via Holodeck in turn reinforced their

real-life task learning experiences using the target language. Another interesting pattern gleaned from the data was that doing a role-play in SL was a totally new learning experience to most students. Since simulated tasks targeting real-life scenarios were seldom incorporated into their traditional English classes, they talked about the advantages of simulating different real-life scenarios in SL, while being immersed in a virtual 3-D "real" pizzeria. Both NM and UG reminisced about their simulated task experiences:

Introducing restaurant was as real as in RL because we just have to present them whatever is there in restaurant like 'what can we do there?' It was like same thing as we do in RL. Our spectator watching the same thing as what we are watching and we describe about same thing to them which is easily done by good conversation…Learning in this way differs from learning in a RL class. The main difference is, in RL we are not taught by such activity, which involves real life situation. And yes such activity can't be done in RL too since It would be more time consuming to go from one restaurant to another which is easily done in SL by providing teleporting facility. (NM, journal, 05/12/2011)

It's the first time that I did a role-play in S[L] also in a pizzeria. I enjoyed sitting and booked a pizza but I didn't feel the smell of the pizza neither the taste but I liked the warm atmosphere there when we were sitting there together. I liked it because it felt like drama in which I have to play, I felt like acting. And all the picture of movies on the wall give a different enviro[n]ment from piz[z]eria that I frequent in RL. It's different from a RL class because I felt more relaxed, I felt

less being in a class. the feeling of being in a class disappeared, it was like a

drama stage (UG, journal, 05/17/2011)

Indeed, as UL put it, the feeling of "being in a class" was alleviated through simulating a

real-life dine-out scenario in SL. Because they were simulating a real-life situation

without rehearsing it or learning English in isolation (out of context), they were able to

use English for real communication purposes (i.e., take orders or order food from a

menu). As such, they functioned in English spontaneously and enjoyably without

realizing that they were practicing and learning English at the same time. As IL stated,

"Role play make us learn English [in an] informal way. we didn't feel we learn English

while we role play but we learn from it a lot. it's fun" (IL, post-course survey,

06/13/2011). Echoing IL's opinion, both UG and UL also further voiced why they found

that role-playing in the Holodeck pizzeria not only improved their English fluency, but

enabled them to formulate expressions appropriate to the pizzeria discourse:

Through this experience (role-play in a pizzeria) I speak like in today's life. That

helps because it's not artificial but natural conversation. I think that natural

conversation increases much [E]nglish fluency. I didn't see the difference

b[e]tween booking a pizza in RL (and in SL). I am focus[i]ng more on practical

(practice) now to improve my [E]nglish and roleplaying is the better choice. (UG,

journal, 05/17/2011)

As the matter of fact, there are some special expression we can use while we are

ordering food, such as: I will have ..., or I'd like .... . This task helped me to use

them as I am using in RL. So really similar SL and RL in this term...After all, It

was a good task included in this course. (UL, journal, 05/17/2011).

Students also had the opportunity to do fieldtrips by teleporting to different SL regions

that simulated various real-life scenes (also called SIMs in SL), ranging from figure

skating in a 3-D ice skating arena to walking around a museum gallery. Being able to

freely visit as many SIMs in SL as they desired was a unique learning experience. They

could explore and immerse themselves in numerous 3-D SIMs at their own pace. Both

TR and UL recounted their first learning experience of visiting a museum gallery in the

task of being a curator:

> …and in gallery when we visit it first time i have the feeling like i want to
>
> discover every place and want to know about every objects there (and my
>
> classmate give nice information about them) (TR, journal, 06/02/2011)

> You may not believe this, but it was the first time I visited a museum in my life. It
>
> was an astonishing experience. Lots of sculptures for which there are numerous
>
> information and a big history behind. So once more, thanks to SL I could enjoy a
>
> new experience. It was a little bit hard at the beginning, because choosing one out
>
> of hundred objects was so challenging. But talking as curator, was a unique
>
> experience, something I guess won't repeat in my life. It would be another
>
> awesome aspects of SL make almost everything plausible (UL, journal,
>
> 06/02/2011)

What sets learning in SL apart from RL is the ample opportunity provided to

virtually simulate real-life tasks in 3-D SIMs anytime, simply with a mouse click. Having

taken different "fieldtrips" to various simulated, 3-D scenes in SL, students also reflected on their simulated task learning experience—as compared with their prior real-life English learning experience—and on why it was difficult to carry out those simulated tasks in a traditional class. For example, both NM and UL stressed why it was less convenient to experience simulated tasks (e.g., ice skating) in RL, followed by IL's comment on the ease of doing those tasks in SL (e.g., playing different musical instruments for free):

> And as far as Skating experience is concerned [i]f [i]t is discussed in RL English class then [i]t can't beat SL skating class. In RL class we can discuss only about skating while in SL we can demonstrate it also while discussing. So in that way plus one for SL. :-) (NM, journal, 05/31/2011)

> The skating activity was a kind of relaxing activities and we benefit from it because we have to speak to ask information about how to skate or to wear a boot. So to practice [E]nglish, its was a good idea. In R[L] class, rarely skating are used to stimulate conversation because of problem of organisation, of insurance, fear the a student being injured.... In [SL], it's easier to organise that and we can benefit from it. (UL, journal, 05/31/2011)

> My favourite task is learning music in Magnatune (SIM). It difficult for me in [RL] to sep[a]rate type of music by English language in [RL]. but I can do it now because I can listen music and see vocabulary in the same time at Magnatune. After class I went to it again to review what I learn. I can (play) many different

music instrument in [SL] but [RL] can not. that make it 's more fun in sl. I mean some of music instrument is usually play in some local place in rl and people who not live near this place may don't know about it. I found some music instrument that I never know before and I can listen its sound and play in in sl. that's good point of sl that rl is difficult to do. (IL, journal, 05/25/2011)

As evidenced in students' accounts of their virtual learning experiences above, the opportunity to simulate various real-life scenarios also deepened their real-life task learning experiences, which they might or might not have experienced due to the concerns of getting hurt (e.g., ice skating) or the cost (e.g., dining at different restaurants) in real-world contexts. Being able to learn, explore and have fun outside the class walls was the experience that they had not had (e.g., taking the lead to educate and entertain their classmates). Consequently, not only did they dedicate more time to doing more research on the assigned task in order to professionally execute the task, but they also discovered new knowledge and interests. Both NM and PK vividly depicted how doing those simulated tasks broadened their knowledge and benefited their language skills:

It was wonderful experience visiting sculptor gallery for first time in SL. I was surprised to see that even such beautiful sculptor can be made in SL. Of course they can't be compared with RL one because 'original is original' I think; but they were very well designed to represent RL sculptor…Begin a curator of museum was like being guide in restaurant project but in this task it was more responsible than previous task because we had to talk about a sculptor for that we need to know information behind that sculptor. Language can't be taught like any other subjects like maths; It must be practiced and that's what helps us to learn English.

And this task once again was another helping hand to learn English better. This is my first time when I have searched for History. And I came across with new words & new knowledge. So my mind was fed with new dish of words + knowledge. (NM, journal, 06/02/2011)

Despite I only could attend to last Wednesday class in the museum/gallery visit in SL during last 20 minutes, it was very exciting and motivator to me. Why? Exciting because I could see more possibilities for teaching. It is absolutely different to attend to a RL class in which a teacher shows sculptures in images or videos that visiting a museum in which you can see sculptures in 3D moving around them. Motivator because this short visit has motivated to me to investigate more about something which I didn't know almost nothing. For example, I am engineer and Philosophy was something I didn't like. But now after this visit I chose the Plato bust. Due (to the fact) that I must explain something about Plato, I've spent some time to search for information about him and now I can say something I never thought before I could explain. :-) When and where he born? What he teached? Who was his teacher?. Who was his more famous student? Some of his books, etc. That is fantastic. (PK, journal, 06/02/2011)

Indeed, being able to simulate real-life tasks in SL not only nurtured their content-specific knowledge, but took their learning experience to the next level—discovering and acquiring new knowledge concretely represented in 3-D visual modes (SIMs) and retaining learning motivation and engagement. Playing the leading role as a tour guide or museum curator, for example, also motivated them to enrich their knowledge bank by

taking extra time outside their SL class and real-life obligations to research their assigned task using multiple online sources (e.g., Google search, Wikipedia, etc). As such, they had a rich exposure to authentic materials in both native and target languages, which led to their acquisition of content-specific or culture-related vocabulary and expressions within a short period of time. In order to make their guided tour professional as a responsible guide, students met with peers in SL to further discuss their presentation or even went on interviewing the owner of a specific SIM (e.g., museum gallery) in order to gather more information about the topic they were assigned to. Consequently, they also practiced their English listening and speaking while being tasked. To illustrate, the following students gave a detailed account of how doing simulated tasks benefited their second language acquisition (i.e., PK introducing his partner's favorite musical instrument, MB as a museum curator):

> …after the class I was very motivated to return to the same place in SL to play all instruments we saw there and I could see the name in English. After that and I went to Wikipedia to know instruments' names in Spanish too, So I can sp[e]ak about all those instruments in Spanish and in English too. I went to Google and looked for every instrument. I found there when one specific instrument was created or more used…I wanted to say that I never investigated [any]thing about instruments in RL because I never played any instrumen[t], but now after do it in SL I was motivated to look for information about them. Perhaps I can start learning to play guitar or...maracas...:-) If I will start to learn, it will be due to Second Life..:-) Day by day I can see the big possibilities to motivate students when a good teacher uses a Virtual World to teach. (PK, journal, 05/25/2011)

Working as curator in a museum was a very nice experience to me. Also, exploring the museum was amazing. I chose a sculpture, I read information and several articles about it and I gained knowledge…Also, the course forced me to read and surf the net for information. I used the word "forced" because I don't like reading and of course I am not interested in all the subjects and topics. But in my opinion reading is the key to learn language and you must read different subjects and not only topics that you are interested in. I learnt a lot from this course. I wish I can do the same presentations in real life, it is really difficult to do that in real. I feel it is scary to be a curator and talk to different people who (I) don't know, I am sure my knees will be knocking together. But i think practising this in [SL] life is a good step to gain self confidence and be able to present in R[L]. (MB, journal, 06/02/2011)

Lastly, having experienced language use in simulated tasks throughout the course gradually developed both the depth and breath of their knowledge and English proficiency, as well as a sense of self-confidence and self-perceived progress. Being able to immerse themselves in the SIMs and use English for real-life communication purposes had made learning more meaningful and motivating—a learning experience that they had not had in a conventional English class. NM commented on his final simulated task as a tour guide:

It was another great day for me to be in SL and to have my wonderful classmates as tour guide…Then [UL] took us to tour of historical place 'Mont Saint-Michel' of France. [UL] gave very good information on each place we passed by. During

walking down on street of shops It gave real like experience because of design of that place and also It felt as real street when We all was together like real crowdy street. Then comes our (me and IL) turn to lead everyone to The Grand Canyon. I was feeling more confident and the least nervous compared to early classes because I had to introduce activity which can be done at Grand Canyon which are very entertaining and we can explain such thing easily…I could not notice when time passed. Then I had to go to bed to see another beautiful day in RL. :-) (NM, journal, 06/14/2011)

Summary

This chapter reported qualitative data results gathered from multiple document sources (students' online journal entries, survey responses, interview transcriptions), triangulated with the researcher's teaching blog and observation notes. Three core themes emerged: 1) *perceptions about factors that impact virtual learning experience in SL*, 2) *attitudes toward learning English via avatars in SL*, and 3) *beliefs about the effects of task-based instruction on learning outcomes in SL*.

Underlying the first theme, three salient patterns were also identified: *positive perceptions*, *negative perceptions*, *learning English in SL versus RL*. The first pattern lent itself to several factors that positively impacted students' perceptions about their overall virtual learning experience: 1) *SL features that maximize overall learning experience*, 2) *simulated immersion in SL*, 3) *multicultural/lingual and collaborative environment*, and 4) *fun factor*. As much as SL appeared an beneficial virtual learning environment evidenced in the EFL students' positive perceptions, the second thematic pattern encompassed two factors that negatively impacted their overall virtual learning

experience: *technical issues* and *lack of paralinguistic features*.

The last pattern stemmed from students' reflective accounts of comparing their current language learning experience in SL and prior ones in RL. Several salient factors emerged: 1) *impact of prior RL learning experience*, 2) *SL versus CMC tools*, 3) *self-perceived learning progress in SL*, 4) *skills and knowledge transfer to RL*, and 5) *SL as a potential learning environment*.

The second thematic category—*attitudes toward learning English via avatars in SL*—encompassed three salient patterns: 1) *the effects of masked identity on learning*, 2) *the impact of tele/copresence on learning*, and 3) *the perceived attitudes toward avatar affinity*. The first pattern unearthed that EFL students, under the avatar mask, were able to gain a sense of security when speaking English vis-à-vis other avatars without feeling the same shyness and embarrassment as would they in a real-life conversation discourse. Ultimately, their self-confidence was boosted and affective filter was lowered. The second pattern tapped into the impact of tele/copresence on students' learning. The sense of "being present" and "being present together" in the same place, at the same time, by means of avatar presence had also reinforced their sense of virtual community and alleviated the sense of isolation that was often felt in an asynchronous or videoconferencing environment. The last pattern revealed that students' perceived attitudes toward their avatar affinity were mixed. Experienced student avatars usually spent longer time in SL and valued their self-image perceived by other avatars and developed a stronger attachment to their avatars. Conversely, novice students' avatars only deemed them a tool for attending classes. Additionally, students voiced that it was their real-life persona and character that gave soul to their avatars, regardless the fact that

their avatar features might not resemble their real-life appearance.

Given the fact that the whole virtual course was designed according to the TBLT framework, the last theme—*beliefs about the effects of task-based instruction on learning outcomes in SL*—emerged. The first thematic pattern manifested itself in the *communication tasks* used in the course. Results showed that interacting with peers not only led to longer engagement and increased motivation of students, but the convergent, goal-oriented tasks—though cognitively and linguistically demanding— pushed them to deeply process their interlanguage repertoire and to speak more spontaneously. The second pattern explored the effects of *culture-driven tasks* on students' learning. Results indicated that playing the role of a culture representative motivated students to invest more time and effort into professionalizing their oral presentations, which further reinforced their sense of learning autonomy. The invested time and effort on researching for culturally-related tasks also led to their rich exposure to a wide range of authentic, online materials in the target language. The third pattern tapped into the impact of *simulated tasks* on students' learning. Capitalizing on the 3-D, simulated nature in SL, simulated tasks not only deepened students' real-life learning experiences, but enhanced their acquisition of new knowledge and vocabulary concretely represented in a 3-D visual mode. Being able to act out in simulated tasks and immerse themselves in SIMs also alleviated the feeling of "being in a class" that further bolstered their learning motivation and engagement.

Chapter 6: Discussion

The foci of this research study are to investigate the interactional patterns of EFL learners' use of communication strategies during task-based negotiation in SL, examine the quality of produced language output over time, and explore students' perceptions about their language practices in this task-driven virtual course. Building on the quantitative results in this study, this chapter further explores how the reported findings confirm or disconfirm previous task-based SLA research. Specifically, this chapter deals with: 1) patterns of strategy use in task-based interaction, 2) patterns of negotiation of meaning triggered by communication breakdowns, 3) interrelationship of task types, negotiation and strategies, and 4) learners' developed linguistic performance, as measured by complexity and accuracy. Also, the reported qualitative results will serve as a vehicle for verifying the positive claim made by SL research that SL is a beneficial language learning environment.

Patterns of Strategy Use in Task-based Interaction

Strategy Use in SL

The extent to which communication strategies were employed across tasks (as shown in Table 4.1) revealed that three strategies were those used most frequently by EFL students: *confirmation checks* (41.2%), *clarification requests* (33.1%), and *comprehension checks* (16.3%). These consisted of almost 90% of the total strategy use in pre- and post-course interactions. To illustrate, students used "confirmation checks" by repeating the interlocutor's previous utterance with rising intonation. Learners employed "clarification requests" by voicing confusion, and asking for repetition or explanation on unclear information. "Comprehension checks" were evident by using yes-no questions,

asking for repetition or repeating specific lexicon with rising intonation. The reason why the three strategies were employed more often than the others could be that in a virtual environment like SL, though students could still "see" and interact with peers using their 3-D avatars, paralinguistic features (e.g., gestures, facial expression, eye contact) in face-to-face communication as alternative strategies to complement oral interaction (Kötter, 2003; Negretti, 1999; Peterson, 2006) were not fully available as indicated in the chapters on literature review and quantitative results. It was clear that in the fast-paced, two-way task interaction, EFL students tended to attend more to the process of task completion via voice chat than to the configuration of those nonverbal cues in real-time—since the latter were not automatically displayed by the avatar itself unless it was manually animated. Also, students were allowed to use voice chat only to complete each task, but not text chat to type "emoticons" as non-verbal cues to facilitate communication (Smith, 2003), or spell out key words to resolve lexical confusions. Without these alternative strategies available in text chat, students were "pushed" to utilize the three strategies commonly used in face-to-face communication that were available to them via voice chat to tackle any oral communication issues similar to real-life interactional discourse.

Though not as frequently used as the abovementioned strategies, the rest of the interactional strategies also deserve further attention on how and why they were employed. Students used the *request for help* strategy (4%) only after they had failed to resolve the communication problem caused by a troublesome word or expression. Inevitably, they exclaimed the immediate need for help (e.g., "Help!" or "I don't know how to say it in English!"). When faced with mis-/non-understandings during task interaction, beginning-level students tended to use this strategy more often than their

advanced-level counterparts. For example, BL, a beginning student, resorted to this *request for help* strategy by asking, "Help, please!" "You write this, please?", quite often in the recorded discourse data. However, her request for peer help during negotiation appeared less frequently in the post-course task interaction because students in the latter phase had become more confident using multiple strategies to resolve the communication breakdown before asking for help. Delaying requesting for help also provided learners with more opportunities to activate their linguistic repertoire and produce more target-like output (Pica, 1988).

Another type of strategy, *topic shift* (1.3%), was also found when students gave up on the topic discussed due to its difficulty or having encountered an obstacle to continue the negotiation process. They shifted to a new topic to keep the conversation going. *Self-correction* strategy (2.5%) was also evident, in that a learner was aware that h/she had just made a lexical, syntactic or phonological mistake and attempted to correct it immediately within the same turn of utterance. It also showed that the learner's "metalinguistic awareness" was raised by "noticing" the differences of linguistic knowledge between their mother tongue and the target language (Schmidt, 1990; Schmidt & Frota, 1986) due to the process of code switching (e.g., "…the three coordinate is **cuatro**, zero… Oh, no! **Four**, zero"; Kötter, 2003). The use of self-correction also verifies Swain and Lapkin's (1995) output hypothesis that "…a learner will on occasion become aware of (i.e., notice) linguistic problems (brought to his/her attention either by external feedback (e.g., clarification requests) or internal feedback). Noticing a problem 'pushes' the learner to modify his/her output" (p.373). Noticing linguistic errors made in one's oral production in L2—triggered by either negotiated feedback from interlocutors

or self-reflection/monitoring, as in this case, is also documented by Kitade's (2000) synchronous, CMC text-chat study.

Additionally, in this study, there are two strategies that had not been previously identified by task-based research in 3-D virtual environments (cf. Peterson, 2006). The first is a *metacognitive strategy* (1.6%) manifested in the same turn of utterance where the student would "think aloud" about how s/he could make the meaning more comprehensible to the interlocutor (e.g., "Let me see how I can describe myself."). Employing this type of metacognitive strategies shows that the learner was regulating his/her cognitive processing of L2 knowledge by "planning" how to "organize" the language input so that the output could be conveyed more clearly to the interlocutor (Oxford, 2011). Additionally, metacognitive strategies, such as thinking aloud about how to resolve communication breakdowns, were also employed more often in the post-course stage. This might indicate that students were more attuned to consciously processing language input and output. That is, students deliberately organized and planned their language production in order to get their meaning across more effectively (cf. using different metacognitive strategies to learn target words in de la Fuente, 2003).

Interestingly, the last type of strategy—*spell out the word* (1.6%)—serves as a "shortcut" to compensate for not being allowed to use text chat. When negotiating on a "hot spot" during task interaction (e.g., a word that seemed troublesome to the peer due to its unfamiliarity or the issue of pronunciation), students tried to explore alternative strategies when commonly used strategies (e.g., clarification request) had been tried unsuccessfully. Under the restriction of voice chat only, they found that orally spelling out the word triggering the lexical confusion could serve as an alternative. This

phenomenon is also documented in Sauro's (2001) task-based CMC study examining learners' oral communication, where learners also used the written mode to support listening comprehension and express meaning. Taking advantage of the "mixed modes" afforded by SL—to approximate the text-chat function via voice chat—could be effective to tackle the task demands and communication breakdowns for the EFL learners in this study.

Comparisons of Strategy Use in the Present Study and Prior Research

The findings discussed above corroborate the positive claims made by earlier SLA research on interactional modifications (Long, 1980, 1981, 1983; Pica & Doughty, 1985; Pica, Young & Doughty, 1987; Porter, 1986). That is, modification devices, such as confirmation checks, clarification requests, and comprehension checks, are often used by NNS in two-way information exchange tasks (Long, 1983); indeed, they employed these modification strategies to fine tune language input and output (Swain, 1985; Swain & Lapkin, 1995) and to repair communication breakdowns (Gass & Selinker, 2001). In the study by Doughty and Pica (1986) on the effects of interactional tasks and communication patterns in classroom-based interaction, the three aforementioned conversational strategies were shown to make input more comprehensible due to deeper cognitive processing of linguistic knowledge (Long, 1981; Pica, 1987, 1994; Swain, 2000).

Previous research on synchronous CMC text- and voice-based interaction has shown that NNS learners also signal a mis-/non-understanding by using different modification strategies to resolve the hot spot in a negotiation routine just as in face-to-face interaction (Pelletieri, 2000; Sotillo, 2000; Tudini, 2002). In other words, EFL

learners employ similar strategies to resolve non-/mis-understandings and to modify language input and output when engaged in interactional tasks, much as they would do in a face-to-face setting in real life (Chapelle, 2007). As 1) interactionist, task-based research on strategy use in SL or 3-D virtual environment is still scarce (except Peterson, 2006), and 2) text and voice chats are communication modes available in both CMC and SL environments, I will draw upon prior studies on synchronous text- or voice-based task interaction in CMC environments as a parallel for research implications in CMC and SL.

The results discussed above differ from the strategies used in Lee's (2002) study on the use of communication strategies in nonnative speakers' synchronous text-based discussions. Although most of the communication strategies were also identified by Lee (except for "the use of approximation" and "emoticons," due to the text-based mode), instances of "request for help," "emoticons" and "self-correction" appeared more often in her study as opposed to comprehension checks, confirmation checks and clarification requests in the current study. Although clarification checks were also the third most used strategy in Lee's study, neither comprehension checks nor confirmation checks were among her top two strategies, signaling a difference from the current study. Moreover, In Peterson's study (2006)—the only task-based study conducted in a 3-D virtual environment (*Active Worlds*)—the three most frequently used strategies only accounted for a small percentage of transactional communication strategies (4.2%).

In another research study, Kötter (2003) examined the patterns of negotiated interaction and codeswitching between synchronous text chat and face-to-face communication between German students of English and American students of German in an online collaborative project configured in a MOO. He found that students used

more clarification requests (11.9%) than had been noted in previous research on face-to-face task interaction. Specifically, Kötter's (2003) results were higher than the combined percentage (8%) of clarification requests, confirmation checks and comprehension checks in Pica & Doughty's (1985) study. Kötter's (2003) findings, however, are partially supported by the present study. That is, although clarification requests occurred among the top three repair moves both in this study and in Kötter's, the occurrences of clarification requests in this study were almost three times more than his (33.1% versus 11.9%). The instances of both confirmation checks and comprehension checks in the current study (41.2% and 16.3%, respectively) are also much higher than those in his study (1.7% and 0.1%, respectively).

Similar to the present study, comparing nonnative students' repair moves in synchronous text and voice chat rooms, Jepson (2005) found not only that voice chat generated more turns in negotiation and repair moves than text chat, but clarification requests were used more often (followed by confirmation checks) than other repair types. The use of clarification request has been supported by previous research in that it prompts learners to refine their interlanguage with more target-like quality and quantity in later language production (Nobuyoshi & Ellis, 1993; Pica et al., 1989). Although both clarification requests and confirmation checks were found in Jepson's (2005) study, there was no evidence of "comprehension checks" and "self-correction." Jepson justified the absence of the two repair moves by inferring that "…comprehension checks and questions are primarily pedagogical by nature (Long & Sato, 1983), and are thus scarce in NNS electronic conversation" and "self-correction is largely dependent on the social context, and it may be that NNS electronic chats are not fora conducive to self-correction

(Kormos, 1999)" (Jepson, 2005, p. 89). These claims, however, were not supported by the present study. That is, comprehension checks were the third most used strategy, and self-correction also occurred, though not frequently. NNS voice-based interaction in SL, in this case, did prompt students' use of comprehension checks in dyad task interaction to ensure the information was conveyed accurately; therefore, the comprehension check strategy was conducive to students' self-correction awareness, despite the constraint of voice chat only and the fast-paced flow of turn-taking routines similar to real-time oral conversation (Fernández-García & Martínez-Arbelaiz, 2003).

Interestingly, students in this study were more concerned about correcting their own linguistic mistakes when "faced by" a peer's avatar—in order to deliver the correct information required for the completion of a task—than about "face threatening" as Jepson indicated in his 2005 study. This phenomenon also differs from earlier SLA research on NS-NNS interaction where NNS learners either tend to avoid requesting help or ignore the non-understandings in order not to lose face because of not understanding their partners' information or not being understood (Long & Porter, 1985). On the contrary, NNS-NNS negotiated interaction in SL shares the interactional patterns of NNS-NNS groups in face-to-face contexts where NNS interlocutors, as Varonis and Gass (1985) have asserted, "have a shared incompetence" since they are not yet competent in the target language and therefore are more willing to recognize peers' repair moves during negotiation "without embarrassment" (p. 71).

Taken together, this study supports prior interactionist, task-based research in that the patterns of interactional modifications can also be identified during task-based interaction in SL. Confirmation checks, clarification requests, and comprehension checks

were notably most used by EFL students in this study, in addition to other types of communication strategies (e.g., request for help, self-correction, topic shift). Also, two new types of strategy use were discovered (i.e., metacognitive strategy and spell out the word). Despite the positive finings supported by prior SLA research on face-to-face communication, most of the earlier studies were carried out in the context of NS-NNS discourse (Long, 1980, 1981; Pica & Doughty, 1985; Pica, Young & Doughty, 1987), focusing on the interactional patterns of nonnative students vis-à-vis classroom teachers or native speakers. As such, the patterns of strategy use in NS-NNS discourse might differ from those in NNS-NNS discourse and the instances of negotiated interaction that involve strategy use might not be as sizable as the latter (e.g., see Pica & Doughty, 1985; Sauro, 2001; Varonis & Gass's for the argument that NNS-NNS interaction promotes more negotiation). Additionally, confirmation checks appear to be the most frequently used strategy in the current study, which does not support Long's (1996) assertion that confirmation checks are not an effective device to prompt negotiation since only the confirmation move is required (e.g., yes or no). On the contrary, students' employment of confirmation checks in SL supports the claims made by both Varonis and Gass (1985) and Pica (1988). That is, confirmation checks can serve as an effective device to indicate a linguistic problem and prompt the interlocutor to further modify his/her output so that meaning can be more comprehensible.

Patterns of Negotiation of Meaning Triggered by Communication Breakdowns

The current study also found ample evidence of two types of negotiation routines previously identified in Varonis and Gass's (1985) work on NNS-NNS negotiated interaction: *single-layered trigger-resolution sequence,* and the more complex *multi-*

layered trigger-resolution sequence. The former is a typical negotiation routine (i.e., trigger, indicator, response and reaction) that usually consists of four negotiation turns. The latter, however, is far more lengthy and complex and consists of more than one trigger-resolution layer[19]. The multi-layered trigger-resolution sequence constituted a high percentage of negotiation discourse samples in this study, which also confirms Varonis and Gass's (1985) assertion that "NNS-NNS discourse allows greater opportunity than NS-NNS or NS-NS discourse for the negotiation of meaning" (p. 71). In this study, the evidence of multi-layered trigger-resolution sequences discovered herein also supports the extended routine of negotiated interaction found in prior synchronous CMC studies (Blake, 2000; Lee, 20002; Smith, 2003).

As in previous synchronous CMC research, lexical confusions are usually the triggers for the majority of the negotiation routines (Blake, 2000; de la Fuente, 2003; Lee, 2002; Pellettieri, 2000; Smith, 2003; Tudini, 2003). For instance, the following discourse sample in the post-course interaction demonstrates students' taking turns telling each other how to build an object in SL and indicates how the lexical confusion, "pyramid," triggered the extended negotiation routine[20]:

(17) Negotiation triggered by lexical confusions

    1. U: Ya, you know, I make you to build some a pyramid for me.   (T)

    2. P: A what? Huh?   (I)

    3. U: A pyramid   (R)

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[19] For examples of the two types of negotiation routine, see the discourse samples (13) and (14) in the chapter of quantitative results.

[20] The negotiation routine of trigger, indicator, response, and reaction to response will be denoted as (T), (I), (R), (RR).

4. P: I don't know…   (I)

5. U: You know pyramid?   (R)

6. P: I don't know what a pyramid is.   (I)

7. U: They are some beautiful buildings in Egypt.   (R)

8. P: I don't, I don't know what is a pyramid.   (I)

9. U: OK, listen to me. If you just click on the ground, right click on the

    ground, and you will hit the Build option…can you repeat what I

    am telling you?   (T/R)

10. P: No, but I don't understand you. I need to understand around.   (I)

11. U: Korobase, you need to make an object. OK?   (R)

12. P: Yes, OK.   (RR)

13. U: So for this purpose, please right click on the ground…(pause)…   (T)

14. P: I go to the Menu or what?   (I)

15. U: And then click on the Build option…choose build, please…   (R)

16. P: To create, OK…and now?   (RR/I)

17. U: Yes, there is another activity for you to do. There are different

    kinds of shapes you can see.   (R)

18. P: Ok   (RR)

19. U: Choose…the first one is Pyramid.   (R)

20. P: Yes…A ha! Pyramid!   (RR)

21. U: Ya, so please touch the ground until you can find the pyramid

    on the ground.   (R)

22. P: It is easy to learn now the pyramid!   (RR)

This multi-layered discourse sample exemplifies a more complex routine of negotiation of meaning (22 turns) among NNS-NNS interaction. As we can see, *pyramid*— the lexical confusion uttered by student U (turn 1)— triggered the beginning of the negotiation routine. Student P continuously indicated that he was confused by this lexical gap (turn 2, 4, 6, 8), despite the effort made by student U to clarify the meaning of pyramid (turn 3, 5, 7). Although the confusion was not yet resolved within 10 turns of negotiation, we can still see how the quality and quantity of student U's language output evolved after being "pushed"; he began with a single-word reply (*pyramid*, turn 2), progressed to the use of a comprehension check (*You know pyramid*, turn 5), and finally began to define the word (*They are some beautiful buildings in Egypt*, turn 7). The linguistic structure of student U's pushed output, as illustrated above, became more complex as the routine of negotiated interaction moved along. As Swain (1985, 2000) asserted, the "pushed output" allows the learner to draw his/her attention back to the cognitive processing of the inaccurate linguistic forms and prompts fine-tuning of the output that is more comprehensible to the interlocutor. Without the process of negotiation that further pushes output—even with the continuous processing of meaning of input (Long, 1996)—there is no guarantee of the further processing of linguistic forms that is beneficial for learners' language acquisition.

Another interesting aspect gleaned from this discourse is that, after trying to clarify what pyramid means, but still failing, student U switched to another strategy by directing his peer's attention to the unique building features available in SL (turn 9); despite this, his peer was still focusing on the confusing word, "pyramid." The negotiation routine was not resolved—that is, the word, pyramid, was still confusing to

student P) until student U instructed student P step-by-step to use the Menu feature of object building in SL to locate different object shapes (turn 17, 19)—that student P finally saw the pyramid shape (turn 20) and understood its meaning (turn 21). After an extended negotiation routine involving multiple embedded layers, they finally resolved the lexical non-understanding (turn 22).

This case scenario illustrated above not only demonstrates that lexical gap is usually the trigger for the routine of NNS-NNS negotiation of meaning, but also that the quality of the learner's pushed output is usually far better in terms of linguistic complexity. Also, students focus more on semantic processing than syntactic processing during task-based negotiation (Gass, 1997; Lee, 2002). Put another away, in the dyad task interaction, students drew more attention to how the meaning of task information (e.g., word meaning) could be received and conveyed more accurately for task completion than lingering on a grammar mistake—except that when they were pushed to produce their own output, they started to attend to the "form" (Swain, 1985, 2000). As long as the grammar mistake did not impede the understanding of the information, they would just let it go by. As such, non-understanding of new or unfamiliar words associated with task completion usually triggers the two-way information exchange, and therefore needs to be resolved before the correct input meaning can be conveyed and received. This is similar to the claim made by prior synchronous CMC research (e.g., de la Fuente, 2003; Lee, 2002). As Blake (2000) pointed out, "Vocabulary breakdowns constitute the most obvious barrier to learner/learner discussions, especially on the Internet where no body language clues are available to support the speaker's meaning" (p. 133). On that note, the 3-D features afforded by SL, in this case, provided EFL learners with additional visual

resources (e.g., building features accompanied by specific lexicons) as alternative strategies to help resolve the non-understanding. Although some of the non-verbal cues could be configured in students' avatars, students did not really use those cues, but focused more on whether the meaning was conveyed and received clearly during task completion via voice chat.

In addition to the lexical confusion revealed by interactionist, synchronous CMC research, the current study also found phonological confusions as illustrated below, supporting Jepson's (2005) and Sauro's (2001) findings.

(18) Negotiation triggered by phonological confusions

    1. U: Yes…After that, touch the ground until you see the tube shape.

       Move it into the hair (It should be *air* but he pronounced it as *hair*)   (T)

    2. I: In the hair?   (I)

    3. U: Move it into the hair.   (R)

    4. I: In the hair…   (RR)

    5. U: In the hair…   (R)

    6. I: Hair? Aww….my hair, right? (She literally moved the tube to her   (I)

       hair as if she was wearing the tube instead of moving it to the midair).

    7. U: Move it into hair…like the altitude of the pyramid…move to, uh…   (R)/(T)

    8. I: Sky?   (I)

    9. U: Yes, move it to the sky.   (R)

    10. I: OK…OH, you said AIR, OK…   (RR)

In this interesting episode of multi-layered negotiation (10 turns), we can see that student U was trying to tell his partner how to build a tube object in SL and asking her to

move the tube in mid-air. It was clearly his pronunciation mistake ("hair" rather than "air") that triggered the mis-understanding (turn 1). As such, student I indicated her confusion (turn 2) by using the "confirmation request" strategy in order to make sure she heard it right, as "in the hair?" (turn 2). After she literally moved the object near her avatar hair (turn 6), student U realized that she made a mistake and was pushed further to modify his output (turn 7: *like the altitude of the pyramid*). This modification of his language output prompted student I to raise the intonation of the word "sky" (air) as a confirmation resolved in turn 10 (*OH, you said AIR, OK*). This discourse of negotiation vividly exemplifies how a phonological confusion can also trigger the whole process of negotiation of meaning that involves the use of different communication strategies to resolve a pronunciation problem.

This finding does not come as a surprise since students in this study came from different linguistic and cultural backgrounds. The phonological confusions, resulting from variation of pronunciation, intonation and accent, sometimes triggered the process of extended negotiation of meaning. Additionally, not every student was equipped with decent quality microphones or headphones, which also led to unclear communication and also became a catalyst for negotiation of meaning. Another positive note evidences how the unique 3-D features in SL also provide visual support to help learners "notice" the linguistic gap (e.g., hair versus air) (Schmidt, 1990) and compensate for the absence of textual support.

Interrelationship of Task Types, Negotiation and Strategies

As revealed in the quantitative results section (see Table 4.3), the interplay of negotiation of meaning that involves the employment of communication strategies across

task types in SL can be reiterated as follows: Among the four task types, *jigsaw* stimulated the most occurrences of negotiation during dyad interaction in both pre- and post-course interactions, followed respectively by *information gap* and *decision-making*; *opinion-exchange* triggered the least negotiation. The result that jigsaw task predominated the instances in negotiation also consistently carried over to the other discourse levels: total turns of utterance across tasks, turns in strategy use, turns in negotiation that involves strategies, and percentage of turns in negotiation. This finding confirms what has been documented in previous task-based SLA literature. That is, two-way information-exchange tasks with a "closed" nature prompt more negotiation—where each interactant is required to contribute the pieces of information they have and work cooperatively in order to reach a single solution—than one-way or "open" tasks that allow for "free conversation" with no "predetermined" solution (Long, 1980, 1990).

Pica, Kanagy, and Falodun (1993) further confirmed that tasks should consist of obligatory information exchange with a single task outcome in order to better prompt learners' language acquisition through the process of negotiation that involves the use of modification devices. By Pica et al.'s task definitions, jigsaw and information gap tasks in this study share the optimal task conditions—characterized by two-way, required interaction, convergent goal with only one single outcome option—as opposed to an optional two-way, not restrictive interaction, divergent goal with multiple outcome options in the opinion-exchange task (Duff, 1986). Therefore, as evidenced in this study, the two-way and more "obligatory nature of the gap" built in jigsaw and information gap (the former in particular) initiated the most interlanguage processes and pushed students to produce more language output operationalized in strategy use accompanying

negotiation of meaning among EFL learners in SL (Doughty & Pica, 1986, p. 307). The open-ended, opinion-exchange task—free from restrictive and convergent task conditions—conversely, led to fewer instances of negotiation and strategy use, which also supports the claim made by Pica, Holliday, Lewis, and Morgenthaler (1989).

In contrast to other types of closed tasks (e.g., jigsaw), a decision-making task is characterized by interaction that is not totally restrictive and can have multiple task outcomes. In other words, since more than one outcome option is available and "no one specific decision is required" in its task conditions, mutual contribution to the task completion may not be equal between the two interactants. For example, the more fluent student could possibly dominate the decision-making process and still reach the goal without equal contributions from the peer (Doughty & Pica, 1986; Pica, 1987; Pica & Doughty, 1985). Compared with the more restrictive jigsaw or information gap task, the somewhat "semi-lenient" decision-making task in this study provided fewer opportunities for the processes of pushed negotiation involving interactional modifications as Pica et al. (1993) indicated.

Prior CMC studies on the effect of task-based interaction in CMC environments have found that communication tasks do promote negotiation of meaning and strategy use in both online text-based (Blake, 2000; de la Fuente, 2003; Kötter, 2003; Lee, 2001; Smith, 2003) and voice-based task communication (Jepson, 2005; Sauro, 2001), though a majority of studies were conducted in texted-based environments. This study's finding that the jigsaw task promoted more negotiation of meaning, accompanied by the use of communication strategies in SL, confirms previous CMC, task-based research. For instance, both in Blake's (2000) study investigating which task type (i.e., jigsaw,

information gap, decision-making) would promote more negotiation of meaning during online text-chat interaction, and in his later research (Blake & Zyzik, 2003), *jigsaw tasks* triggered more instances of negotiation of meaning, as predicted by Pica et al.

However, the results of this study do not support the only task-based study conducted in the 3-D virtual world (i.e., *Active Worlds*) where Peterson (2006) found that a *decision-making task* prompts more turns in negotiation than the jigsaw and opinion-exchange tasks (also see Smith, 2003). This is surprising because Peterson's and Smith's results differ not only from Pica et al.'s prediction that a jigsaw task stimulates more negotiation of meaning than other task types, but also from previous CMC studies where jigsaw provides additional stimulus (e.g., Blake, 2000). The present study not only echoes Blake's finding, but confirms Pica et al.'s prediction that a jigsaw task triggers more negotiation than decision-making and opinion-exchange tasks. It also further verifies the claims made by prior interactionist task-based research that convergent tasks with obligatory interaction and single outcome option will generate more interactional discourse patterns associated with SLA (Doughty & Pica, 1986; Duff, 1986; Long, 1980, 1990; Pica, 1987; Pica & Doughty, 1985; Pica, Holliday, Lewis, & Morgenthaler, 1989).

Learners' Developed Linguistic Performance, as Measured by Complexity and Accuracy

To the researcher's best knowledge, the development of EFL learners' language output measured by complexity and accuracy using T-units discourse analysis in a 3-D virtual world has not yet been investigated. The positive results reported in this study have provided empirical evidence of EFL learners' employment of multiple communication strategies during negotiated interaction across tasks in pre- and post-

course sessions. Nevertheless, it is also worth examining the extent to which the complexity and accuracy of learners' language output changed throughout the duration of the virtual course in order to bridge the research gap. Therefore, Yuan and Ellis's (2003) analytical framework of using T-units to measure the quality of EFL learners' oral production over time was adopted.

After performing a series of one-way repeated measures ANOVAs on the measured variables (see the details for defining both independent and dependent variables in the data analysis section), the results of the development of learners' oral production are mixed. In terms of the complexity of language output, the statistical results in Table 4.4 reveal that EFL students showed statistically significant improvement in the levels of syntactic complexity and variety, but not in lexical variety. The positive results were also supported by the large effect sizes with 44.4% of the variance accounted for by syntactic complexity and 60.8% of the variance by syntactic variety. On the other hand, students' linguistic performance in the accuracy aspect improved overall on all levels: error-free clauses, error-free T-Units and correct verb forms. The large effect sizes also supported the positive results where 63.9% of the variance accounted for by error-free clauses, 63.0% by error-free T-units, and 72.3% by correct verb forms.

This is surprising, given the fact that the virtual course was task-oriented and focused more on the process of task completion as opposed to a grammar-oriented focus on linguistic elements (Long, 1990). Although "focus on form" could also be implemented in a task-based syllabus design (Long & Crookes, 1992), more attention was paid to whether each student could finish his/her oral performance followed by peer/teacher's feedback on their overall presentation due to the time constraint in each

virtual session. It was also hypothesized that the sophistication of students' vocabulary use measured by the lexical variety would have outpaced the grammatical growth since the "noticing" of learners' interlanguage processing was triggered mostly by lexical input in this study as previously discussed (e.g., Blake, 2000; Smith, 2003), and vocabulary acquisition, be it intentional or incidental, is the building block of language development due to the exposure to abundant lexical input from peers' oral presentations and teacher's talk (Gass, 1999).

One possible explanation for this unexpected finding could be related to students' *pre-task planning* investment for each oral presentation. Unlike the unrehearsed task-based interaction in pre- and post-course interaction sessions, in-class virtual sessions allowed time for students to prepare their materials and carefully plan their linguistic performance before their oral presentations in SL. Regarding the complexity variable, the current results support the claims made by previous SLA research that pre-task planning has a positive impact on grammatical complexity of learners' language production (Crookes, 1989; Foster & Skehan, 1996; Ortega, 1999). As evidenced in the findings, their grammatical performance was improved on the level of syntactic complexity, measured by ratio of clauses to T-units and syntactic variety and by total number of different verbs used. Mehnert (1998) also found that the more time is given for pre-task planning (i.e., none versus 10 minutes in her study), the better complexity is enhanced— which is confirmed by this study since students had even more than 10 minutes before producing their oral output. Skehen (1996b) also argued that L2 learners usually have a hard time focusing on meaning and form simultaneously and need to compensate for allocating their attentional resources to one aspect but not to both. Given the time to plan

for modifying the linguistic aspects (e.g., syntactic and lexical), they have a better opportunity to improve the quality of their language output. Using Skehan's (1996b) research as a guide, EFL learners in the current study had more time to plan and revise their presentations, which led to the use of more complex grammatical structures than in previous pre-task planning research.

Another surprising but positive finding is that learners' linguistic performance was improved on all accuracy levels of error-free clauses (percentage of clauses containing no errors), error-free T-units (percentage of grammatical T-units divided by both correct and erroneous ones) and correct verb forms (percentage of correctly used verbs divided by all used verbs). As mentioned above, this virtual course was built according to a task-based syllabus design, not a linguistic one. Grammatical errors made during students' oral presentations were not corrected in order to keep the presentation flow going. As such, the fact that the quality of their oral production excelled in accuracy across all measured levels is unexpected. Once again, a possible explanation might be the effect of pre-task planning. This study's findings also support prior SLA research on pre-task planning in that allowing time for learners to plan before they are tasked will optimize the accuracy of their grammatical performance (e.g., the use of verb forms; also see Ellis, 1987; Foster & Skehan, 1996; Mehnert, 1998; Ortega, 1999; Skehan & Foster, 1997).

Even though the results are positive overall—EFL learners did produce more complex and accurate language output on the syntactic level (but not on lexical level) in SL—post-hoc tests revealed mixed results for the locations of significance across the three progressional virtual sessions. Regarding the complexity measure, the last session (T3) outperformed the previous two sessions (T1, T2) on syntactic variety, but the

differences were not statistically significant on syntactic complexity and lexical variety—though the average means of T3 were slightly greater than the previous two. Interestingly, session 8 (T2) was hypothesized to outperform the previous session (T1), but it was not statistically significant on the measures of syntactic and lexical variety (though it did surpass on syntactic complexity). In addition, it was surprising that the means in T2 were slightly lower than T1 on the last two measures on complexity. As for the accuracy measure, the locations of statistical significance performed by post-hoc tests quite consistently resided at the developmental trend where the last session (T3) surpassed the first two sessions (i.e., T3 > T1; T3 > T2) across the three measures—error-free clauses, error-free T-Units and correct verb forms. However, no statistically significant difference was found between T1 and T2 after post-hoc tests. It turned out that the average means in T2 across the three measures were slightly lower than T1, which was not expected and should have been otherwise reversed.

Taken together, it is not possible to make a strong claim that students progressively developed better linguistic complexity over time since the results were somewhat mixed. The mixed results might be confounded by the factor of the interaction of time and task conditions, despite the fact that the format of oral presentation was consistent in all three sessions. It would be hard to determine if the positive effect was due to the progression of time or to the real-life tasks in SL. For instance, if we look deeper into the task conditions in the three sessions, students in session eight (T2: work as a gallery curator) were allowed to work collaboratively in pairs because of the time constraint, whereas in session two (T1: show and tell one's cultural artifact) and session 10 (T3: work as a tour guide) were mostly individual work since each student brought his/her own cultural

expertise from the home country that might or might not have been shared by others. In this case, students' oral production in session eight (T2) might have been constrained by time (since each student only had a certain amount of time to finish his/her part); this could have lowered the overall ratio of T-units analysis in T2. This may also explain why T2 did not outperform the first session on syntactic and lexical variety, given the fact that the two levels were measured by tallying the total number of different grammatical verb forms and type-token ratios.

The virtual course centered on real-life tasks that capitalized on students' cultural repertoire and world knowledge (e.g., show and tell about your home culture in a digital poster, work as a curator in a museum gallery, be a tour guide your foreign friends in SL) and provided students with opportunities to practice English speaking skills in the format of an oral presentation throughout the course. An interesting phenomenon that emerged as the course moved along was the "peer stimulus." Seeing so many well-prepared and well-articulated peer presentations positively motivated learners to better polish their work so they could be seen as professional as their fellow classmates. In the task of tour guiding, for example, student UL, after seeing his colleagues' impressive presentations, stated he wanted to postpone his oral presentation so that he could have more time to do additional research. Student comments on the weekly learning journals and in the post-course interview also revealed that they usually spent a lot of time doing research online to enrich their presentation content (regardless of whether the topic was familiar to them or not). They would go to Wikipedia or other sites to search for more information about the topic in order to talk like a professional in front of the class in SL. As a result, they were also exposed to a lot of syntactic and lexical input in the online materials. The work

and time they put into the pre-task planning also manifested themselves in richer content with the use of more complex sentence structures and sophisticated vocabulary—although the latter did not translate as much as the former into the oral production measured by the overall quality.

Plagiarism is another unexpected factor that might have had an impact on the results of their oral production. A couple of students directly used parts of the web content that they had researched in order to enrich their presentation—especially when the topic was beyond their current cultural and world knowledge (e.g., introduce the class to the origin of Persian rugs). These students would read their own scripts word for word during their oral presentation, as opposed to their colleagues who would speak more spontaneously and only used their notes as talking points. The issue of plagiarism was not evident until the researcher started to transcribe the data. Although the copied content was removed from the data analysis and only students' own words were analyzed, awareness of this issue should have been raised. As much as the intention to do research online and take responsibility for their own presentations deserved credit, the issue of plagiarism should have been taken into consideration. That being said, the quality and quantity of EFL students' oral production did change over time throughout the course in SL. A vivid example is the language output of the beginning-level student BL (see Appendix L). Not only did the quantity of her oral production in the final session (T3) increase more than in the first two classes (T1 & T2), as measured by word counts (T3: 543 > T2: 196 > T1: 75), the language complexity also improved related to the number of different verbs used (T3: 7 > T1: 5 > T2: 4). In addition, she used more correct clauses (T3: 70 > T1: 22 > T2: 20), correct T-units (T3: 62 > T1: 18 > T2: 16) and correct verb

forms (T3: 103 > T1: 32 > T2: 28).

SL as a Beneficial Language Learning Environment

As reported in the chapter on qualitative results, a holistic picture of EFL learners' perceived attitudes toward their language practices throughout the task-based virtual course was captured by three major themes: *perceptions about factors that impact virtual learning experiences in SL*, *attitudes toward learning English via avatars in SL*, and *beliefs about the effects of task-based instruction on learning outcomes in SL*. This section further examines the salient patterns that underscore each thematic category and discusses 1) how participating in culture-related, simulated tasks in the 3-D MUVE shaped EFL learners' perceived attitudes toward the benefits and caveats of English learning in SL, 2) the sense of avatar identity and tele/copresence and 3) the task-based approach in SL. Specifically, findings drawn from this study will serve to explore whether different claims regarding the potential of SL as a viable learning environment in existing SL research can be verified.

Virtual Learning in SL: Strengths and Weaknesses

As indicated in the empirical evidence of EFL students' journals, interview and survey responses, their overall perceptions about language practices in SL were largely positive—owing greatly to the conspicuous nature of SL (e.g., immersion, simulation, collaboration and creation). Factors such as unique features afforded by SL played a crucial role in creating a positive difference in the virtual learning experience. To illustrate, EFL students took advantage of SL features to facilitate their language practices, teleport to different SL regions, build posters for oral presentations, and speak English with avatar residents around the world. The ease of learning, saving time and

alleviating the hassle of travel and costs in SL also corroborated the positive claims made by previous SL research. That is, a 3-D MUVE (also known as "metaverse") better resembles the real world in the sense that EFL students were able to continue their various real-life activities in SL with flexibility and creativity (Kluge & Riley, 2008; Lamb, 2006). They were also able to communicate with other peers or native speakers worldwide 24/7 (Clark, 2009) without the burden of traveling (Cooke-Plagwitz, 2009).

Another crucial factor in EFL students' positive virtual learning experiences was the simulated reality augmented in SL. Students were able to immerse themselves in various SIMs or simulate various real-life scenarios via the Holodeck feature. As such, they were able to manipulate 3-D objects and SIMs that simulated tasks that were too costly and/or risky to accomplish in real life (e.g., traveling around the world and practicing ice skating) (Kluge & Riley, 2008). The immersive participation and augmented reality (Dede, 2005) afforded by SL also enabled EFL students to collaboratively simulate real-life tasks (Vickers, 2007a, 2007b), which also provided pedagogical implications for experiential learning (Clark, 2009; Cooke-Plagwitz, 2008, 2009; Silva, 2008), authentic L2 learning and real-time simulated practice (Cooke-Plagwitz, 2009; Johnson, 2006; Vickers, 2007a).

Since this virtual course brought together a group of EFL students from all over the world, a multicultural/lingual virtual community was also established and nourished among all the student participants and the researcher/teacher. Throughout the course, all members of the virtual community participated and collaborated in all task projects, learned from and supported each other, and exchanged and shared their cultural and linguistic repertoire. The impact of the multicultural/lingual learning community on EFL

students' virtual learning experiences was also evidenced in their positive perceptions about the opportunities to interact with colleagues of culturally and linguistically diverse backgrounds. Hence, their language practices in the virtual community not only fostered communal engagement, commitment, motivation (Holmberg & Huvila, 2008; Johnson, 2006; Mayrath et al., 2007) and sense of belonging and trust (Wenger, 2000), but also reinforced a mentor-novice apprenticeship (Hobbs, Brown, & Gordon, 2006; Trinder & Moffat, 2009) and cross-cultural awareness (Clark, 2009; Peterson, 2010b).

Collaborating with peers in SL, students also deepened their learning experience and knowledge construction across subject matter and felt a sense of achievement by helping and "teaching" their peers (Trinder & Moffat, 2009). A case in point is the case of the Spanish student, BL. As a shy, beginning-level newcomer, she moved from the initial *peripheral* circle of community of practices through commitment and participation, toward the inner circle, and eventually gained full membership by observing and learning from old-timers (more experienced students) (Lave & Wenger, 1991; Wenger, 2000), which gradually strengthened her virtual identity as a more competent member (Lave & Wenger, 1991).

Also revealed in the current study, EFL students occasionally encountered technical glitches in SL (e.g., poor voice quality, Internet connection lag, unstable SL platform) during their language practices in the virtual course. Their reflective accounts of the impact of technical issues on their learning experiences indicated that the problems had made learning and participation difficult, increasing the levels of frustration. For example, due to the poor quality of her voice device, the student, EC from Norway, decided to talk less in order to avoid the embarrassment of subjecting others to the

background noise present whenever she turned on her microphone. This negative aspect mirrors previous SL research that technical mishaps in SL may impact learners' virtual learning experience (Trinder & Moffat, 2009; Vogel, Guo, Zhou, Tian, & Zhang, 2008).

Another negative aspect of SL drawn from EFL students' reflective accounts is the lack of paralinguistic features, such as gestures, facial expressions and eye contact. Students commented that those nonverbal cues on which they usually relied as paralinguistic support in face-to-face contexts were absent in SL. Although some students expressed that they felt less stressed and nervous when eye contact was removed, others voiced that they would have preferred receiving those nonverbal cues in SL. For example, UL stressed that the absence of nonverbal features in SL had led to his negative perception about the transferability of SL to RL—whether he could face the reality of feeling nervous vis-à-vis other English speakers in RL since he did not feel nervous in SL. Although previous studies on 3-D MUVE have revealed that the use of nonverbal cues can facilitate communication, they focused only on the discourse patterns in text chat since learners can still display nonverbal cues in real time via text chat (Peterson, 2005, 2006, 2010). Further research is needed on students' preference for receiving nonverbal cues in SL—as would they in real-life interactional discourse—despite the negative aspect of face-to-face stress and nervousness while using voice chat as the communication tool. That said, the absence of nonverbal features via voice chat did push EFL learners in this project to make their oral output more comprehensible and less ambiguous in order to avoid communication breakdowns (Bignell & Parson, 2010). This, in turn, promoted more strategy use and negotiated interaction as evidenced in the quantitative results.

English Learning in the Virtual and Real Worlds: SL versus RL

Building on students' virtual learning experiences and language practices in SL, salient patterns also emerged regarding EFL students' reflective comparisons between their prior English learning experience in RL and the current one in SL. Not surprisingly, they all voiced that conventional grammar-focused instruction in a traditional real-life class setting had not prepared them to use the target language for communicative and meaningful purposes, as identified in most research in the EFL contexts (Cheng, 2000; Su, 2006). Students did not find the materials and lessons in traditional classes reflective of the tasks they actually encountered in the real world (Coffman & Klinger, 2007; Hobbs, E. Brown, & Gordon, 2006; Kemp & Livingstone, 2006; Kluge & Riley, 2008; Trinder & Moffat, 2009; Vernon, Lewis, & Lynch, 2009; Vogel, Guo, Zhou, Tian, & Zhang, 2008). They felt more attuned to the dynamic, fluid, immersive and creative learning styles in SL, which reflected their digital learning preferences and interests (e.g., use English to interact with other avatars around the world in SL, explore different real-life SIMS at their own pace, etc.). Such comments mirror prior research on the impact of digital divides on learners in the digital era (Dede, 2005; Frand, 2000; Jones-Kavalir & Flannigan, 2006; Oblinger, 2005; Prensky, 2001a, 2001b, 2004; Warschauer, 2002).

Despite the advantage of using CMC tools for interaction (i.e., voice/text chat and videoconferencing), results gleaned from students' reflective data indicated that those CMC tools still fell short of configuring the real-time simulation and immersion that conspicuously set SL apart from other Web 2.0 tools. In this study, SL allowed students to teleport to 3-D SIMs that simulated diverse real-life scenes and objects they were interested in 24/7 and to immerse themselves in real-life scenarios rezzed by Holodeck, a

feature that was not available in two-dimensional CMC environments (Trinder & Moffat, 2009). Also, students felt that being able to see classmates' avatars in the same place, at the same time, enhanced their sense of belonging and provided a face-to-face "feel" that was not feasible in a CMC setting; this is a finding that resonates with the positive claim on the constructive effect of tele/copresence (Holmberg & Huvila, 2008; Peterson, 2006) that fosters a sense of community rather than one of isolation (Cooke-Plagwitz, 2008; Peterson, 2005).

Another relevant pattern arising from the thematic category of the language learning experience in SL versus RL was the transferability of experience in SL. Through simulating different real-life scenarios in SL, EFL students felt that they could progress through each step of completing real-life tasks, something that they did not have the chance to experience in a traditional English class due to the constraints of costs, travels, risks, etc. The simulated immersion also allowed them to connect linguistically and cognitively abstract/demanding knowledge to more concrete, 3-D scenes and objects that provided immediate visual support. This finding confirms the positive claims made by research in MUVE that the skills students practiced (e.g., through simulating real-world tasks) and the new knowledge acquired in SL (e.g., through researching for task projects across subject matters) can also be *transferred* to their real lives. This aspect transforms abstract concepts into concrete experiences (Coffman & Klinger, 2007) and makes learning more hands-on, immersive, authentic and constructive (Kluge & Riley, 2008). Additionally, the collaborative and immersive nature of SL provided learners with the opportunity to interact with peers who supported and inspired one another as they executed their language tasks. In the mentor-apprentice ecology, they were able to

observe, explore, reflect and *integrate* prior knowledge into new concepts that also fostered self-confidence through the development of autonomous and collaborative learning (Hobbs, Brown, & Gordon, 2006; Hobbs, Gordon, & Brown, 2006).

Reminiscing about their overall task-based, virtual learning experiences in SL, EFL students in general considered SL a viable environment for English learning, highlighting the following: 1) ease of learning and transcending the boundaries of time and distance, 2) opportunities to speak English with other avatars around the world, 3) the simulated immersion environment and augmented reality, 4) exploring and discovering new knowledge at their own pace, 5) deconstructing abstract concepts supported by concrete and visual 3-D scenes and objects, and 6) the exciting method of learning. Consequently, participants held positive perceptions of their learning progress, evidenced by gains in self-confidence, vocabulary acquisition, self-efficacy and learning motivation. These positive findings once again support existing research on the effects of a 3-D MUVE on students' learning outcomes. From the educational standpoint, using a MUVE as an instructional approach has been evidenced to foster learner motivation, higher-order thinking skills, learning autonomy, and knowledge and skills transfer (Dede, 1995; Dede, Clarke, Ketelhut, Nelson, & Bowman, 2005). Simulated immersion that augments reality in SL also maximizes students' learning experiences and affords them opportunities to explore and discover knowledge by making more meaningful connections with more abstract content. The flexibility to showcase their creative work in SL through building objects also fosters a sense of ownership for learning (Coffman & Klinger, 2007).

Language Practices via Avatars: Identity and Tele/Copresence

An interesting theme emerging from students' virtual learning was their perceived

attitudes toward learning English via avatars in SL. EFL students all voiced that they felt more secure and comfortable when interacting in English with their peers and teacher under their "avatar skin." Specifically, they reported the distinct absence of the stress and shyness of speaking in English vis-à-vis a stranger in real life, and the embarrassment of making a grammatical mistake. Indeed, similar results confirming the sense of security and comfort students found in their avatars are also documented in 3-D MUVE research. Since learners' real-life identities are "masked" in the avatars they create, they become braver about taking risks or making mistakes without "losing face" than they usually feel in real-life classes (Dede, 1995; Clarke & Dede, 2005; Cooke-Plagwitz, 2009). By taking on a masked virtual identity, shy or beginning-level students are more willing to participate and share their real-life knowledge in the virtual community (Dede, 1995). The masked identity also provides a comfort zone for them (Deutschmann & Panichi, 2009) to speak "behind the mask" through "the first and the third person" voices (Coffman & Klinger, 2007, p. 30).

Such positive findings also shed light on the effects of learners' virtual identities on their language learning outcomes. Qualitative results reported herein verify that the new virtual personae into which EFL learners projected themselves in SL are as empowering as the claims found in the aforementioned SL research. Their virtual identities projected through their avatars also bolster their self-confidence and lower their affective filter (Krashen, 1985) and language learning anxiety (Horwitz, Horwitz, & Cope, 1986). As much as the masked identity can lower the pressure level (i.e., eye contact pressure in face-to-face discourse), it also becomes a double-edged sword because of the lack of real-life nonverbal cues in SL (e.g., eye contact, gestures, facial expressions). For example,

one student, (UL), stressed that he appreciated being able to speak English with less stress via his avatar, on the one hand; on the other, he considered the lack of non-verbal communication cues as well as the absence of anxiety in face-to-face conversation made interaction in SL less "real." Although UL was the only student that expressed concern about not feeling as nervous when speaking English in SL as much as in RL, further research is needed to explore how the removal of negative sociolinguistic aspects in SL due to the avatar effects impact SL transferability to RL.

Students' perceived attitudes toward their avatars' are also mixed. Results show that more experienced students spent more time in SL and more greatly valued how their avatars were perceived by others. They also developed a stronger affinity with their avatars by making them more physically appealing so as to give others a positive impression. Interestingly, even though students' avatars did not necessarily resemble their true appearances, they all confirmed that their avatars represented their true personalities. The findings also echo those in previous research in that being able to personalize one's self-image, create one's desired environment and attain communal recognition from other avatars in MUVEs further strengthens learners' virtual identity (Dede, 1995; Prensky, 2005a, 2005b). Taking on a new virtual identity projects a new self-image and allows students to find their own voices and gain self-confidence; this, in turn, liberates them from the real-life persona that they consider too shy and/or reticent (Clarke & Dede, 2005).

Interestingly, "newbie" and beginning-level students in this study only viewed their avatars as a tool for attending the virtual course. They spent less time in SL outside the virtual course (expect for assigned tasks) and cared less about how their avatars looked as

long as they could function in class. This finding differs slightly from the positive claims mentioned above. One possible explanation could be that novice students still had not developed a good command of all the features in SL, given their brief prior experiences in that environment. They viewed the avatars in terms of their possibilities to talk, move and teleport; their goals were to practice English and function well in each session. Learning English was their priority in SL; they had not yet taken advantage of the immense entertainment possibilities in in SL.

The last emerging pattern dealt with the phenomenon of tele/copresence. Different from two-dimensional CMC environments, SL allows avatar users to have a sense of "being present" (telepresence) and "being present together" (copresence) (Schroeder, 2002). Although videoconferencing is also available in certain CMC environments, the element of copresence is still absent since not all participants are gathered in the same location. As revealed in the qualitative results, EFL students also expressed that that they found the unique feature of tele/copresence had made their language practices in SL as real as in RL (Peterson, 2010). Since they could see and interact with each classmate's avatar in the same place, at the same time, they felt as if they really were in class (as in RL), and not "physically" distant from each other. This finding verifies the positive claims that tele/copresence enhances a sense of community and belonging, encouraging learners to feel that they are all present together to participate in all the communal tasks (Dede et al., 2005; Kluge & Riley, 2008; Peterson, 2006), and to such a degree that no one feels left out. The effect of avatar presence also transcends the constraints set by asynchronous or videoconferencing environments where having students virtually present or complete tasks together (e.g., doing multiple fieldtrips to various museums in one

online session) is still not feasible, thereby leading to a sense of isolation (Cooke-Plagwitz, 2008).

Task-based Instruction in SL: Communicative, Cultural and Simulated

Operationalized under the TBLT framework, tasks carried out in this 10-session virtual course were communicative and aimed to trigger interaction for meaningful and spontaneous purposes. In addition, the tasks were culture-specific, capitalizing on EFL students' funds of knowledge, and simulated real life so that they promoted learning by doing. The emerging theme of EFL students' beliefs about the effects of task-based instruction on learning outcomes in SL also supports the findings evidenced in the interactional patterns of language use addressed in research question one. The first pattern examines the effects of *communication tasks* on EFL students' learning outcomes in SL. Qualitative results showed that not only did students find that interacting with peers (in pair/group work) in communicative tasks helped them retain longer engagement and intrinsic motivation, but that convergent, goal-oriented tasks (i.e., jigsaw and information gap) pushed them to produce more spontaneous and comprehensible output, leading to their perceived improvement in the quality and fluency of their speaking skills.

The findings above once again validated the positive claims made by previous interaction-based research in that language learners' SLA will take place when they engage in communication tasks that stimulate negotiated interaction (Pica, 1987; Pica & Doughty, 1985). Also evidenced in the quantitative results, EFL students used a variety of communication strategies to modify their oral output in order to repair mis-/non-understandings occurring during their interaction (Doughty & Pica, 1986). The process of negotiated interaction also pushed them to draw cognitive attention to their existing

interlanguage system to modify their output in order to resolve the communication breakdown (Swain, 1985; Swain, & Lapkin, 1995). The communication tasks used in this virtual course not only provided students with more opportunities to bring about their language acquisition associated with strategy use in negotiation, but enabled them to use the target language spontaneously in SL, as they did in RL (Ellis, 2000).

Also noted in the qualitative data, students stated that their prior EFL learning experiences did not prepare them to use English for communicative purposes. Although they found the communicative tasks cognitively and linguistically demanding, they were motivated to participate and complete each one because they found them meaningful, communicative, authentic, and challenging (Skehan, 1996; Willis, 1996). This type of interactive language practice was the learning experience that they had never experienced in a traditional English class. Additionally, the communicative, collaborative, 3-D environment in SL facilitated communication via voice/text chat and IM as well as provided conducive conditions for students to interact in English with other avatar residents around the world (Vickers, 2007a, 2007b). Consequently, their perceived attitudes toward the positive impact of implementing communicative tasks in SL further fostered their engagement in and motivation for English learning.

The second pattern zeroed in on the effects of *culture-driven tasks* on students' learning outcomes. Given the multicultural/lingual nature of the virtual class, EFL students also brought their cultural, linguistic, and SL expertise to the class. Following the principles of TBLT design, it also made sense to build connections between learning tasks and students' personal experiences that were meaningful and familiar to them (Nunan, 2006). Results show that the culture-oriented tasks (e.g., showcase your cultural

outfits or cuisines) allowed students to draw upon their existing cultural repertoire. Taking on the role as a "culture ambassador" also motivated them to be responsible for delivering accurate information about their home culture. As such, they were willing to invest more time and effort into making the content and delivery of their presentations correct and professional. Since the virtual course was free, and without a mandatory credit requirement, taking the learning initiative (e.g., spending time researching online for their task projects) resulted in various students moving toward the center of the virtual community of practices, as reflected in their increasing engagement and commitment (Lave & Wenger, 1991). They also enjoyed that their investment of time and effort had been validated by their virtual community (Norton, 2001).

The results reported above also epitomized the positive impact that incorporating theoretically-sound and pedagogically-feasible task design can have on language learners either in real life (Skehan, 1996) or in a 3-D virtual environment. When tasks are meaningful and related to the real world with a focus on learners' cultural, linguistic and world knowledge, language learners will become not only more engaged and motivated, but more geared toward taking the challenge of task demands (Ellis, 2000; Skehan, 2003). Since participants could see the link between the tasks and their home cultures (e.g., food, clothing, travel), they exploited their cultural resources to help them execute culture-embedded tasks that might be cognitively and linguistically challenging. Hence, tasks building on EFL students' cultural repertoire not only triggered more language output, but stimulated cognitive processes that drew upon their background knowledge related to their home cultures and the world (Duff, 1986).

The last pattern examined the impact of *simulated tasks* on students' learning

outcomes. Owing to the 3-D, immersive, simulated nature in SL, tasks simulating real-life scenarios difficult to carry out in a conventional English class were feasible to conduct in the virtual course. Results revealed that simulated tasks (e.g., role-playing in a pizzeria rezzed by Holodeck) not only deepened EFL students' real-life task learning experience, but maximized input acquisition of new knowledge and vocabulary, as visually represented in 3-D scenes and objects. Being able to role-play and immerse themselves in tasks that simulated real-life scenarios also removed the feeling of "being in a class," which fostered their learning motivation and engagement.

Indeed, for these EFL students, the opportunity to "act out" real-life scenarios that required "real" use of the target language for meaningful purposes was not available in their traditional English classes. Language practices in their prior EFL contexts were constrained by the class walls. Being able to use English while doing real-life tasks (e.g., visiting museum galleries or traveling to tourist attractions around the world) was not feasible in a traditional class. According to Long (1985a), the term task refers to "… the hundred and one things people do in everyday life, at work, at play, and in between" (p. 89). Therefore, tasks should include activities that students will encounter in the real world, such as making reservations or finding destinations (Ellis, 2003; Skehan, 1996). One of the paramount conceptual principles for TBLT is "learning by doing" (Doughty & Long, 2003), or as Nunan's (2004) explained, it is "experiential learning" that "contrasts with a 'transmission' approach to education in which the learner acquires knowledge passively from the teacher" (p. 12).

Conversely, SL augments reality and enables learners to take learning ownership of exploring, discovering and constructing their new knowledge (Dede, 1995; Kluge &

Riley, 2008). Not only did the 3-D MUVE augment reality and make the simulation of real-life tasks feasible for the EFL students in SL (Clark, 2009; Holmberg & Huvila, 2008), but the simulated immersion also promoted experiential learning that allowed them to use English for real-life and meaningful purposes as if they had been in the real world (Silva, 2008; Vickers, 2007a). The unique features afforded by SL made carrying out real-life tasks much easier for both the students and teacher, so much so that they could go on multiple virtual fieldtrips in seconds, for example (Johnson, 2006). Also echoing the positive claims in SL research, the findings in this study demonstrated that SL can transcend time and distance (constrained by a conventional classroom) and promote learning by doing that allows EFL students to simulate how to carry out various real-life tasks (Clark, 2009). The ability to simulate real-life language immersion situations also deepens their understanding of knowledge construction, promotes authentic target language use, and provides rich exposure to language input enhanced by 3-D, multimodal support (Cooke-Plagwitz, 2008, 2009). As such, implementing task-based instruction in SL has the potential to accommodate EFL learners' digital learning styles by retaining their attention, challenging their higher-order cognitive skills, and fostering their self-efficacy, intrinsic motivation and sense of autonomy (Coffman & Klinger, 2007).

Summary

This chapter presented an in-depth discussion on the findings drawn from both quantitative and qualitative results to examine whether positive claims made by previous studies on task-based interaction and research in 3-D MUVEs could be verified. The quantitative results confirm that patterns of interactional modifications found in prior

interactionist, task-based research were also identified in the present study. Confirmation checks, clarification requests, and comprehension checks were mostly employed by EFL students in this study, as well as other types of communication strategies (e.g., request for help, self-correction, topic shift). Two newfound strategies were also identified (i.e., metacognitive strategy and spell out the word).

Although confirmation checks, clarification requests and comprehension checks were also found in previous CMC research, this study showed significant differences in the amount of strategy use. One example is that these strategies occurred more frequently than in prior synchronous text-based research (Lee, 2002; Peterson, 2006). Another example showed a significant increase of these three strategies as compared to the results of prior voice-chat research (Jepson, 2005). In addition, this study indicated the robust combined use of all three strategies, which differs from Jespon's research in that his results showed the predominance of one strategy only.

Also worth noting is that EFL students in the study were not embarrassed to correct their own linguistic mistakes in dyad interaction (Varonis & Gass, 1985), different from the "face threatening" factor reported in previous SLA research (Long & Porter, 1985). Also, confirmation checks were found to be the most frequently used strategy in this study, which verifies claims made by Varonis and Gass (1985) and Pica (1988), but does not support Long's (1996) assertion that confirmation checks are not an effective device to prompt negotiation. Taken together, EFL learners also employed similar strategies to resolve non-/mis-understandings and to modify language input and output during task-based interaction in a 3-D MUVE like SL, as much as they would have in real-life interactional discourse (Chapelle, 2007).

The current study also discovered two types of negotiation routines—the *single-layered trigger-resolution sequence* and the more complex *multi-layered trigger-resolution sequence.* The multi-layered trigger-resolution sequence accounted for a high percentage of negotiation routine, which supports Varonis and Gass's (1985) finding that NNS-NNS interaction promotes more patterns of negotiation of meaning than NS-NNS or NS-NS discourse, even in a 3-D virtual environment like SL. This study also found that both lexical and phonological confusions triggered negotiation, although the former initiated the majority of negotiated patterns (Blake, 2000; de la Fuente, 2003; Lee, 2002; Pellettieri, 2000; Smith, 2003; Tudini, 2003). Additionally, 3-D features in SL served as alternative visual support to help EFL students notice the linguistic gap in negotiation of meaning (Schmidt, 1990) and compensate for the absence of textual support since only voice chat was required in this study.

In terms of the interrelationship of task types, negotiation and strategies, results showed that *jigsaw* prompted the most instances of negotiation, followed respectively by *information gap* and *decision making,* with *opinion-exchange* triggering the least negotiation. Interestingly, this finding does not support the only task-based study conducted in the 3-D MUVE (Peterson, 2006): a *decision-making task* affords more stimuli than a jigsaw task (cf. Smith, 2003). Conversely, this finding corroborates prior task-based, SLA literature that two-way information-exchange tasks with a close-ended, convergent nature prompt more negotiation (Doughty & Pica, 1986; Duff, 1986; Long, 1980, 1990; Pica, 1987; Pica & Doughty, 1985; Pica, Holliday, Lewis, & Morgenthaler, 1989) than one-way or open-ended, divergent tasks that allow for free conversation with no predetermined solution (Long, 1980, 1990). It also supports previous CMC, task-

based research that *jigsaw tasks* prompt more instances of negotiation of meaning (Blake, 2000; Blake & Zyzik, 2003).

The results are mixed regarding the development of EFL students' oral production measured by complexity and accuracy. Statistically significant improvement was found on the levels of syntactic complexity and variety, but not on lexical variety. On the other hand, students' improvement in accuracy was statistically significant across levels of error-free clauses, error-free T-Units and correct verb forms. Though it was hypothesized that the growth in lexical variety would outperform the grammatical complexity, a possible explanation for this surprising finding could be due to the pre-task planning effect on grammatical complexity (Crookes, 1989; Foster & Skehan, 1996; Mehnert, 1998; Ortega, 1999). Another unexpected but positive finding that learners' linguistic performance was improved on all accuracy levels could also be due greatly to the effect of pre-task planning—allowing time for learners to plan before tasks will enhance their grammatical accuracy (Ellis, 1987; Foster & Skehan, 1996; Mehnert, 1998; Ortega, 1999; Skehan & Foster, 1997). Even though the results are positive overall, post-hoc tests revealed that the results on the locations of significance across the three progressional virtual sessions were mixed. As such, the researcher could not make a strong claim that students did progressively develop better linguistic complexity over time, probably due to the confounding factor of the interaction of time and task conditions (e.g., students were allowed to work collaboratively in the second virtual session whereas the other two sessions were mostly individual work). Additionally, the issue of plagiarism was found during some students' oral presentations, which might also have impacted the results of their oral production (though the copied content was removed from the data analysis).

The qualitative results reveal that the unique features afforded by SL had led to EFL students' positive perceptions about their language practices in SL. This finding corroborates the positive claims made by previous research that SL allows learners to discover and create their own learning experiences (Kluge & Riley, 2008; Lamb, 2006), enables learners to interact with other avatar residents in English 24/7 (Clark, 2009), and alleviates the burden of travels and costs (Cooke-Plagwitz, 2009). The nature of augmented reality for simulated immersion in 3-D MUVE also provides language learners with ample opportunities to simulate real-life scenarios that are not feasible in a traditional classroom setting (Clark, 2009; Cooke-Plagwitz, 2008, 2009; Vickers, 2007a, 2007b; Silva, 2008). Also, the multicultural/lingual virtual community established by all the student members not only nourishes the communal engagement, commitment, motivation (Holmberg & Huvila, 2008; Johnson, 2006; Mayrath et al., 2007) and sense of belonging and trust (Wenger, 2000), but also reinforces the mentor-novice apprenticeship (Hobbs, Brown, & Gordon, 2006; Trinder & Moffat, 2009) and cross-cultural awareness (Clark, 2009; Peterson, 2010b).

Despite all the positive effects, the technical glitches that EFL students encountered unfortunately negatively affected their virtual learning experience—as reported by previous SL research (Trinder & Moffat, 2009; Vogel, Guo, Zhou, Tian, & Zhang, 2008). Another negative aspect of SL found in the qualitative data is the lack of nonverbal cues as an alternative interactional support. Despite the negative impact of face-to-face stress, some EFL students still preferred receiving nonverbal cues as would be the case in a real-life interaction setting. Future research is needed to examine the impact of the removal of paralinguistic features on language learners via voice chat in a

3-D MUVE.

The thematic pattern of comparing language learning in SL versus RL was also identified. EFL students expressed that static, monomial, grammar-focused instruction in EFL contexts had not prepared them to use English for communicative and meaningful purposes (Cheng, 2000; Su, 2006). On the contrary, the dynamic, fluid, immersive and creative learning styles in SL not only reinforced their positive virtual learning experience, but aligned with the positive claims made in digital learning research (Dede, 2005; Frand, 2000; Jones-Kavalir & Flannigan, 2006; Oblinger, 2005; Prensky, 2001a, 2001b, 2004; Warschauer, 2002). Also, the nature of tele/copresence and simulated immersion—that fosters the sense of community as opposed to the sense of isolation (Cooke-Plagwitz, 2008; Peterson, 2005)—is the factor that sets SL apart from other two-dimensional CMC environments (Holmberg & Huvila, 2008; Peterson, 2006; Trinder & Moffat, 2009).

Also found in the study was students' positive perceptions about the transferability of practiced skills and acquired knowledge in SL to RL. It was evidenced that through simulating different real-life scenarios in SL, abstract concepts became more concrete (Coffman & Klinger, 2007) and learning more meaningful, immersive, authentic and constructive (Kluge & Riley, 2008). Students also felt that their learning progress had improved, which led to their perceived attitudes toward viewing SL as a beneficial learning environment. This positive finding also confirms the existing research on the effects of a 3-D MUVE on students' learning outcomes, such as the growth in learner motivation, higher-order thinking skills, learning autonomy, knowledge and skills transfer and sense of learning autonomy (Coffman & Klinger, 2007; Dede, 1995; Dede,

Clarke, Ketelhut, Nelson, & Bowman, 2005).

Another interesting theme arising from the qualitative data is students' perceived attitudes toward using avatars for language learning. Results show that EFL students felt less stressful when speaking English with their peers and the teacher using their avatars. The sense of security and comfort that students found in their avatars supports the "masked identity" that alleviates learners' embarrassment of making mistakes for learning (Dede, 1995; Clarke & Dede, 2005; Cooke-Plagwitz, 2009) and fosters participation especially for shy and reticent students (Deutschmann & Panichi, 2009). Also, students' virtual identities not only lower their affective filters (Krashen, 1985) and their language learning anxiety (Horwitz, Horwitz, & Cope, 1986), but creating their own self-image boosts their self-confidence (Clarke & Dede, 2005). It was also found that newbie students only viewed their avatars as a tool for attending the virtual course, as opposed to having stronger affinities, as did their experienced counterparts. Additionally, the unique feature of tele/copresence afforded by avatar presences had made EFL students' language practices in SL as real as in RL (Peterson, 2010), which also enhanced the sense of community and belonging (Dede et al., 2005; Kluge & Riley, 2008; Peterson, 2006).

Finally, students' beliefs about *the effects of task-based instruction on learning outcomes in SL* also corroborate the findings documented in the research on task-based interaction and 3-D MUVEs. First, those communication tasks used in this virtual course not only prompted EFL students' language acquisition to take place (Doughty & Pica, 1986; Pica, 1987; Pica & Doughty, 1985), but enabled them to use English spontaneously in SL as they did in RL (Ellis, 2000). Though the communicative tasks were cognitively and linguistically challenging to EFL students, the values in those meaningful,

cooperative, challenging but interesting tasks kept them motivated and engaged (Skehan, 1996; Willis, 1996). Second, tasks that were meaningful and related to the real world with a focus on learners' cultural, linguistic and world knowledge (Duff, 1986) resulted in the prolonged motivation and engagement of students (Ellis, 2000; Skehan, 2003); such tasks also promoted learner autonomy as evidenced in the investment of time and effort in each culture-embedded task (Lave & Wenger, 1991; Norton, 2001). Lastly, simulated tasks in this study—owing greatly to the simulated immersion in SL—not only made the simulation of real-life tasks feasible for the EFL students (Clark, 2009; Holmberg & Huvila, 2008), but enhanced experiential learning (Silva, 2008; Vickers, 2007a) and deepened knowledge construction and language input acquisition (Dede, 1995; Kluge & Riley, 2008)—strengthened by 3-D, multimodal support (Cooke-Plagwitz, 2008, 2009).

Chapter 7: Conclusion

The present study demonstrates that a task-based approach infused with a theoretically-grounded and pedagogically-driven syllabus design that draws upon learners' prior linguistic, cultural and world knowledge can be conducive to learners' language acquisition. It also shows that TBLT can be stretched and extended beyond traditional classroom-based settings and can capitalize on the unique features in SL to bring real-life teaching and learning to the 3-D virtual environment. Gleaned from both quantitative and qualitative results, I will first highlight major findings and provide implications for conducting task-based research and language teaching/learning in SL. I will then discuss limitations encountered in this study and conclude the final chapter with suggestions for future research directions in SL.

Overview of Major Findings with Implications

One major finding in this research is that SL and TBLT work together to provide a promising language learning environment. The 3-D, simulated, immersive and multimodal nature of SL can maximize the implementation of TBLT—which is difficult to carry out in a conventional class setting. Incorporating TBLT in SL also takes the 3-D MUVE to the next level in that SL is conducive to language instruction and positive learning outcomes, if informed by a theoretically and pedagogically sound framework, such as TBLT. Even though SL is an immersive and sophisticated technical environment, it is imperative that instruction drives the use of technology to avoid the fallacy that all technology makes learning better a priori. The empirical evidence drawn from this full-blown, task-based virtual course illustrates how SL and TBLT can be blended to provide a realistic, engaging and pedagogically feasible arena for both teachers and researchers

involved in relevant SLA studies associated with 3-D MUVEs.

Strategy Use in SL

Evidenced by the quantitative results, this study reveals that EFL learners also employed different types of interactional strategies during communication breakdowns in task-based interaction in SL. Communication strategies, such as *confirmation checks, clarification requests and comprehension checks*, were identified as the most frequently used during dyad negotiated interaction. Additionally, students used other strategies, such as a *request for help* (asking for immediate assistance), a *topic shift* strategy (switching to a different topic), *self-correction* (showing the metalinguistic awareness) and a *metacognitive strategy* (self-regulating language input and output). These modification devices also resemble those used in face-to-face communication as documented in prior task-based SLA literature (Long, 1980, 1981, 1983; Pica & Doughty, 1985; Pica, Young & Doughty, 1987; Porter, 1986). Based on the positive findings in this study, we can concur that SL also offers a beneficial venue for learners' language acquisition to take place during task-based interaction. This opens new research opportunities.

In terms of strategies categorized in previous task-based, SLA studies, it was also noted that the variations between how strategies or modification devices are categorized and defined still exist from one researcher to another (Kotter, 2003). For example, in Lee's (2001) study, she used "clarification check" instead of "clarification request" as defined in other studies (e.g., Peterson, 2006). A more consistent categorization of strategy use is desired to allow for more consistent comparisons and replications for similar task-based, interactionist research.

The Effects of Multimodal Communication Modes on Language Use

Despite the fact that those commonly used strategies in face-to-face communication were also found in the present study as well as previously in some synchronous CMC studies, the strategies, such as clarification requests and confirmation checks, did not constitute a higher percentage of overall strategy use in the latter. This finding may not come as a surprise since those CMC studies were conducted in a text-based setting. Learners in those studies capitalized more on the modification devices afforded by text chat to repair the communication gap (e.g., emoticons), whereas voice chat was only allowed in this study. When negotiating meaning via voice chat, students resorted to those strategies commonly employed in face-to-face oral discourse that were found in previous interactionist, task-based research (e.g., Pica & Doughty, 1985)—which is also supported by Jepson's (2005) study that voice chat generates more negotiation patterns and repair moves than text chat. The marked difference of strategy use between the two CMC modes is worth further research attention, especially regarding whether learners engaged in text-based, task-oriented interaction in SL would utilize more keyboard symbols as discourse markers as claimed by those synchronous text-based studies.

Due to the task condition of voice chat only in this study, students came up with a new strategy—spell out the word—to mimic the text-chat function in the oral form. The finding of this new strategy also supports that language learners, when engaged in negotiated interaction, often resort to multimodal resources for additional linguistic support available in a CMC or 3-D virtual environment (Sauro, 2001). They mix both written and oral modes simultaneously by using textual input to support oral output—in order to tackle the task demands and communication problems. The present study also

shows that students used a pencil or highlighter to confirm that they understood the information received from the interlocutor, which facilitated the flow of communication and maximized input enhancement (Ellis, 2001; Skehan, 2003). Allowing students to manipulate rich language input in 3-D multimodal resources in SL not only scaffolds their language acquisition, but also offers them more visual support to employ in their modification strategy toolkit.

Extended Negotiation Routine of NNS-NNS Interaction

Corroborating earlier studies on negotiated interaction, the present study also identifies similar negotiation routines, evidenced by typical *single-layered trigger-resolution sequence* (Varonis & Gass, 1985) and *multi-layered trigger-resolution sequence* as extended negotiation patterns found in most synchronous CMC studies (Blake, 2000; Lee, 20002; Smith, 2003). This finding echoes the evidence found in strategy use and points to the fact that EFL learners also employ similar strategies during negotiation of meaning in SL, much as they would do in real life. The negotiation discourse is also lengthy and complex and involves more than one negotiation routine and multiple strategies as identified in the NNS-NNS dyad interaction in this study.

As evidenced in the study, negotiation routines are usually triggered by *lexical* gap found in most interactionist CMC studies (Blake, 2000; de la Fuente, 2003; Lee, 2002; Pellettieri, 2000; Smith, 2003; Tudini, 2003) and *phonological* gap due to the voice-chat task requirement. The "pushed output," prompted by negotiation of meaning (Swain, 1985), is also found to be more refined and comprehensible than was otherwise (Swain & Lapkin, 1995). Therefore, 3-D MUVEs like SL offer researchers a potential research arena as much as other CMC environments to conduct task-based studies on examining

language learners' employment of strategy use during negotiation of meaning. The multimodal communication modes will also generate spontaneous discourse samples of negotiation of meaning triggered either by lexical (text chat) or phonological confusions (voice chat).

The Link between Task Types, Negotiation and Strategy Use

The interplay of task types, negotiation and strategies was also identified in this study. That is, *jigsaw* triggered the most negotiation of meaning and strategy use, followed by *information gap* and *decision making*, with *opinion-exchange* providing the least negotiation and the smallest number of strategies. This finding supports prior task-based, SLA research (Duff, 1986; Long, 1980, 1990; Pica, Kanagy, & Falodun, 1993) and further illustrates the following: two-way directed tasks with convergent (closed), obligatory, single-outcome conditions will stimulate more cognitive and linguistic processes of negotiation involving interactional modifications than divergent (open), not restrictive, and multiple-outcome tasks. The positive finding also supports previous CMC, task-based research that *jigsaw tasks* prompt more negotiation of meaning (Blake, 2000; Blake & Zyzik, 2003). Contrary to Peterson's (2006) result that a *decision-making task* provides greater stimuli than a jigsaw task, the decision-making task in this study did not spark more negotiation patterns or strategy use than either the jigsaw or information gap task.

This result confirms that the decision-making task is not totally restrictive and allows for one or more outcomes. Mutual contribution to the task completion might not be equal since the more fluent interactant may dominate the whole decision-making process (Doughty & Pica, 1986; Pica, 1987; Pica & Doughty, 1985). Drawn from this

result, two-way interactional tasks with a more close-ended and restrictive nature are not only conducive to EFL learners' language acquisition that should be promoted in task-based teaching and learning, but applicable in a 3-D virtual environment like SL.

The Effects of Pre-task Planning on Linguistic Performance

Also found in this study, the quantity and quality of EFL students' oral production did show statistically significant improvements on the levels of syntactic complexity and variety across all accuracy levels. As indicated in the discussions, the positive results were due greatly to the pre-task planning effect on grammatical complexity of learners' language production (Crookes, 1989; Foster & Skehan, 1996; Mehnert, 1998; Ortega, 1999) and grammatical accuracy (Ellis, 1987; Foster & Skehan, 1996; Mehnert, 1998; Ortega, 1999; Skehan & Foster, 1997). This finding supports the positive claim made in prior pre-task planning research. That is, allowing time for learners to plan before tasks will make a difference in learners' linguistic performance measured by complexity and accuracy. As a consequence, it is suggested that pre-task planning should be seeded in task-based instruction either in a classroom-based setting or 3-D virtual environment—in order to optimize learners' language acquisition and production.

The locations of significance across the three virtual sessions, however, did not show consistently progressive improvements after post-hoc tests were run—due to the confounding interaction of time and task conditions. So a strong claim that students did progressively develop better linguistic complexity over time cannot be made. Additionally, it cannot go unnoticed that some EFL students might not be aware of the issue of "plagiarism" during their pre-tasking planning (e.g., using the same online text in their oral presentation without quoting). From the research standpoint, as much as pre-

task planning could be beneficial for their linguistic performance, reminding students of the seriousness of the issue is crucial in order to make sure that the collected data are original.

Task Design

      Tasks built in SL features. It has been demonstrated in this study that comparable scenarios and materials in real-life and SL can avoid the practice effect and increase face validity—since those tasks are associated with students' real-life activities before the virtual course and SL activities after the course. As such, authentic tasks are more meaningful and purposeful, which further prompt more spontaneous discourse samples. It has also been found that tasks that capitalize on SL features, such as object building, can make task-based interaction more linguistically and cognitively stimulating—given the fact that students can virtually see the movement of a 3-D object after being directed by their interlocutor through dyad interaction. It also boosts their sense of engagement and achievement by seeing their objects take form step-by-step, thereby increasing their enjoyment during the process of task completion. In this case, incorporating the building task in SL as part of the task design not only generates more authentic discourse samples, but leads to longer task involvement by students. Taking advantage of SL features (e.g., object building) for task design can therefore faciliate the process of data collection by maximizing the elicitation of discourse samples and participants' task engagement.

      Use of communication tasks. Also evidenced in this study, tasks with a closed nature promote more opportunities for learners to focus both on form and meaning. Such tasks require students to attend to the semantic meaning of input in order to complete the

task, and at the same time, draw attention to their output when being pushed by their interlocutor during a negotiated interaction (de la Fuente, 2003). Seeding communication tasks in instruction also sheds light on what type of task would serve as the catalyst for learners' language acquisition in a 3-D MUVE. Task principles—such as interactive, collaborative and problem-solving (Doughty & Long, 2003; Long, 1990)—should be taken into consideration when implementing TBLT in SL. With careful attention paid to task design and conditions (e.g., jigsaw task), a language teacher can make language learning in SL more engaging and stimulating. When EFL students see the value of accomplishing a task that is meaningful to them and enjoy the process of using the target language for communicative purporses, they invest more time and effort, which in turn, optimizes their language learning experience (Lave & Wenger, 1991; Norton, 2001).

Use of real-world and culture-related tasks. The present study also shows that tasks capitalizing on students' funds of knowledge prompt more language output and boost motivation and engagement since those culture-specific tasks validate their existing knowledge about their culture and the world. Because the task topics are familiar and meaningful, students' learning autonomy is fostered—they take responsibility for delivering accurate information about their home cultures. Their investment of time and effort in their assigned tasks is also exemplified in their searching for a large number of online resources, exposing them to more authentic language input while acquiring new knowledge. This finding also echoes the implication offered by Duff (1986) that language learners should be given more opportunity to not only process more linguistic and cognitive capacities during task-based interaction, but draw upon their world knowledge, prior experience and nonlinguistic and linguistic skills (p. 171).

Use of simulated tasks. The simulated, immersive, creative and collaborative nature of SL has attracted thousands of digital natives to this 3-D MUVE. However, SL is not just a game (like most MMORPGs) that is confined by a scripted storyline (Kemp & Livingstone, 2006; Lamb, 2006), but a MUVE that "mirrors the real world" (Kluge & Riley, 2008) and allows residents to create and manipulate their imagined virtual environments (Hobbs, Gordon, & Brown, 2006). As seen in this study, the unique features in SL, such as SIMs and Holodecks, have provided flexibility for teachers to simulate and create real-life tasks (Vernon et al., 2009) that are either impossible or too burdensome to conduct in a traditional class. Immersion in different real-life tasks in 3-D form also deepens students' learning experiences (Dede, 2005); the skills learned and practiced in SL can be transferred to RL as well (Coffman and Klinger, 2007; Hobbs et al., 2006). From the pedagogical perspective, simulated tasks in SL make learning more meaningful, real, and fun than in other two-dimensional Web 1.0 or 2.0 tools (Trinder & Moffat, 2009). SL as a 3-D virtual environment that maximizes real-life task experiences should be promoted in a language class because it multiplies learning possibilities outside the physical classroom.

The Effects of Avatar Identities on Language Learning

The avatars that embody EFL students allow them to personalize their preferred self-images and provide a safe environment for those who tend to be shy in real life (Dede, 1995). For most EFL students, their virtual identities also empower them to take risks to try out their interlanguage repertoire without feeing inhibited as in a real English class (Cooke-Plagwitz, 2008; Dede, 1995; Prensky, 2005a, 2005b). Consequently, practicing the target language via avatars boost their sense of self-image and confidence

(Clarke & Dede, 2005; Dede et al., 2005), which in turn fosters positive language learning experiences.

The study also found that EFL students did not shy away from correcting their own linguistic mistakes (self-correction) or requesting peers' help during task-based negotiation in SL—a result that differs from the "face saving" claim made by Long and Porter (1985) and Jepson (2005). Possessing similar interlanguage competence (rather than in Varonis & Gass's (1985) term, "shared incompetence," p. 71), they were more concerned about how to help each other complete each communication task than about losing face. Using avatars for language practice in SL also helped them avoid the embarrassment of making grammatical mistakes in a spontaneous face-to-face interaction (Cooke-Plagwitz, 2009). From this phenomenon, we can conclude that task-based interaction in SL provides EFL learners with ample opportunities to test out their interlanguage processing without feeling as intimidated as in a face-to-face discourse.

Suggested Research Protocols for Task-based Research in SL

Text chat logs. Acknowledging the constraint of keeping each student's individual text chat log as well as recording dyad voice chat, it is crucial to record the public text chat. This enables the researcher to keep track of the conversations and examine students' public utterances. It serves as another useful research tool to triangulate with other qualitative research instruments, such as the researcher's journal. When reading through the public text chat logs, the nuanced interaction between researcher/students and among students in each virtual discourse would be easier to identify.

Researcher journal. Keeping a researcher/teacher blog on the basis of participant observation and field notes helps the researcher document what is going on in each

course session as well as anchor lessons learned from each task (Bogdan & Biklen, 2006). In particular, systematically reflecting on the moment-to-moment task-based interaction of students also cross-validates other qualitative data and facilitates the process of data analysis (Dornyei, 2007).

Reflective journal. Students' learning journal entries not only help the teacher get a better picture of their reflections about which tasks worked and which did not in each session, but also allow the researcher to systematically document how the task-based approach in SL shaped their virtual learning experiences. Also, using the comment feature embedded in a class blog site serves as a vehicle for the teacher/researcher to probe further, especially when the meaning is unclear or ambiguous. The back-and-forth dialogue journal between students and the teacher also fosters a virtual community, in which all the members can also read comments and become motivated by the postings contributed by their peers.

Conducting a Virtual Class in SL

Class size. Researchers suggested that small class size is ideal for class management (Kitade, 2000) and student interaction (Kotter, 2003) especially in a CMC environment. This principle is also exemplified in the current research study conducted in SL. As previously addressed, there were around 15 students at the outset of the virtual course. The researcher was originally torn between keeping a bigger group of students (so that more data could be collected and analyzed) and allowing enough time for each student to orally practice English. However, some students had to drop the course due to their real-life commitments and the class size went down to nine. Some students who dropped the course commented that they felt that the class was too big for them to fully

practice English. A class of 10 or less is ideal for a virtual course in SL since a small class size can give each student more opportunity to practice English. This size also provides the baseline for task interaction in case certain students are absent due to their real-life schedules.

Virtual community of practice. EFL students' immersive and collaborative participation in SL also resonates with the concept of virtual communities of practice (Wenger, 1998; Wenger & Snyder, 2000). Learners bring their own expertise to the virtual community by helping and supporting other resident avatars who are less experienced in order to complete different tasks (joint enterprise), share and exchange learned knowledge (shared repertoire of communal resources) and make commitments driven by common interests and needs (mutual engagement). Therefore, social practices in SL foster co-construction of meaning, creation, diffusion and sharing of knowledge, and problem-solving skills, which further strengthen the language learning experience (Wenger, 2000). Engaging and participating in a supportive virtual community through mentorship also reinforces a sense of belonging (Wenger, 2000) and strengthens self-identity (Lave & Wenger, 1991) and a sense of autonomy (Hobbs et al., 2006).

Obstacles. Despite the promising pedagogical implications, challenges in implementing SL in language instruction, such as technical problems, accessibility, skills mastery, and legal issues, were also encountered in this study as reported in prior SL research (Kemp & Livingstone, 2006; Kluge & Riley, 2008; Vogel et al., 2008). Nevertheless, these effects can be alleviated by well-planned task design and pre-course training to orient students to SL features and environment (Coffman & Klinger, 2007; Mayrath et al., 2007; Trinder & Moffat, 2009).

SL as a Beneficial Environment for Teaching and Learning

Different from traditional asynchronous or synchronous environments without seeing the interlocutors face to face, "tele/copresense" rendered by avatars enhances the learning experience and fosters a sense of community and belonging (Johnson, 2006; Mayrath et al., 2007; Schroeder, 2002). Tele/copresence makes in-world interaction more real and immersive to language learners. The tele/copresence of avatars, their capabilities of communicating with multiple interlocutors simultaneously, and the possibility of sharing the same virtual space also make SL a more ideal educational tool than other asynchronous (e.g., discussion board) or synchronous (e.g., chat room) CMC tools (Holmberg & Huvila, 2008). These unique features also make participation in SL more engaging and life-like and open up a new language teaching/learning arena.

Taken together, the pedagogical implications point to the fact that SL potentially offers a beneficial learning environment that enhances language learning and teaching (Vernon et al., 2009). Being able to simulate real-life scenarios to practice the target language with avatar residents worldwide without the cost of traveling also makes SL an ideal educational tool for language learning (Clark, 2009; Cooke-Plagwitz, 2009; Johnson, 2006; Silva, 2008; Vickers, 2007a, 2007b). The collaborative nature in SL, strengthened by the multimodal communication channels via text and voice chat in private and public modes, also stimulates interaction between avatars and promotes language use in written and oral proficiency (Holmberg & Huvila, 2008). Since negotiation of meaning during interaction is the key to EFL learners' language acquisition, SL offers abundant opportunities for learners to "experience life-like social interaction while at the same time engaging in meaningful learning activities" without

"losing interest or sidestepping intended learning goals" (Cooke-Plagwitz, 2008, p. 547).

Limitations

This study had several limitations, discussed below:

Confounding Factors

As previously discussed in analyzing the quality of students' oral production over time, the factor that might have confounded the interaction of the time and tasks was not fully controlled in the research design. Although effort had been made to keep each task comparable throughout each session (i.e., oral presentation) and students did show statistically significant improvements as measured by complexity and accuracy, it is hard to ascertain whether the positive effects were due mostly to the progression of time or to the tasks. To avoid the pitfall of the confounding factor in time and tasks, it is suggested that a *counterbalanced measures approach* could be employed to cancel out the carryover (sequence) effects in future repeated measures design. In order to spread out the carryover effects (time*task) evenly over the measured conditions, we could either use 1) random ordering of tasks for each student or 2) the counterbalanced measures design through *Latin Square* procedure for the sake of practicality. That is, the *tasks* will be rotated throughout each *course* session and students will be randomly divided into several *subgroups*[21]. Consequently, each student group would receive all the same treatments (tasks) but in a different order for each group. By so doing, the effects of the confounding factor can be minimized since the variations have been spread out evenly over each condition.

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[21] For the sake of data coding, tasks can be denoted as T1, T2, T3; course sessions, C1, C2, C3; subgroups, S1, S2, S3.

Technical Factors

An inhibitory factor that complicates conducting research in SL deals with unstable technical issues (e.g., unexpected computer freezing due to too many avatar residents in the same SIM at the same time). As documented in this study, the quality of the headsets and microphones that students used was quite varied, which not only complicated teaching a virtual course in SL (e.g., all students could be heard except one particular student with poor voice quality), but jeopardized the data collection while recording their oral production (e.g., a student's voice might be breaking up in the middle of task-based interaction). These technical glitches may also speak to the fact that conducing research in SL is not an easy task, much less that recording students' voice-based output is even more cumbersome. Despite the difficulty, SLA research in SL is still a promising and new research area that deserves more investigation in order to contribute to the body of knowledge in the field of SLA.

Loss of Data

Also worth mentioning is the data loss during the process of data analysis. It was found that some audio-recorded segments using the *Audacity* recording software were unfortunately broken and impracticable to retrieve. Though the lost data only accounted for a small portion of the whole dataset, the instances of negotiation patterns and strategy use, for example, might have increased more in related task types if added to the original data pool. Having a second copy of recorded data using another audio-recording software as a backup might counteract such unexpected technical glitches and alleviate the unfortunate incident in data loss.

Teacher Effect

Another issue that needs to be addressed is the "teacher effect." It might be argued that student motivation in class was due to the researcher/teacher's "passion" or "deliberate commitment" to make each session engaging and interesting. These factors might have led to students' willingness to participate more actively in class due to 1) the "Hawthorne effect": students felt positive about being included in this research study, or 2) the "Halo effect": they tried to work harder to please the teacher. Perhaps the presence of the researcher/teacher (in his avatar form) might have increased the bias of the two aforementioned effects. However, the participant attrition rate in this study did show that the teacher effect did not carry over. Students who dropped in the middle of the course were honest about their attitudes toward each task and the course as reflected in their journal postings. Some expressed negative comments about using SL for language learning, such as big class size, time wasted on scaffolding novice students, etc. As such, the teacher bias was minimized due to the fact that students were learning for their own sake, and not just for the researcher/teacher per se. Those who stayed were motivated by the tasks and inspired by each peer's commitment and the effort put into each assigned task. They were more engaged and immersed in the tasks that were meaningful and interesting to them instead of trying to please the researcher/teacher.

Small Sample Size

As previously addressed, the class size decreased from 15 to nine due to students' real-life obligations. From the research standpoint, it might seem negative to have had such a small sample size. However, the researcher would argue that, depending on the research questions and design, an in-depth discourse approach using T-units analysis to

examine learners' language use and quality of language output can still reveal insightful, nuanced information about the quality of language production without sacrificing the quantity of instances of produced language patterns. If the class size had been larger (e.g., 25), the study would not have gathered enough in-depth data from each individual student, given the time constraint in each virtual session (Kitade, 2000). Additional students might have increased the difficulty of collecting recorded oral data since a big class size would have resulted in the overloading of the SIM, leading to poor voice quality and computer freezing. Also, the lack of equal participation and practice opportunities in class might have impacted perceptions about learning English in SL (Kotter, 2003)—which would also have affected the qualitative results. As MB expressed her opinions about the big class size in her journal:

> I had read some of students' comments and I have a point of view. I think UnicornG is a teacher who cares about his students' welfares. He lets everyone participate and this is really great. I admire his efforts and I want him to continue like that. But I think this course will be more interesting if the number of the students is less. Of course a good teacher is a good teacher. Also the teacher must practice how to manage a class full of many students. I am here saying that UnicornG is doing his best...But no one can deny that when the number of the students is less it is a privilege for them they will not be bored, they will take their time to participate and the lesson will be interesting. I want to thank UnicornG for his efforts…Also I want to tell him please keep it up (MB, learning journal, 05/09/2011).

Concluding Remarks

Given the fact that SL as an instructional tool is still relatively new, it is not too surprising to learn that studies done on SL for educational purposes, let alone for language learning, are still lacking (Kraemer, 2008; Peterson, 2010a; William & McMinn, 2009). Though emerging Web 2.0 technologies (e.g., blog, wiki) have spawned substantial research in the field of CMC or CALL, little is known about how MUVEs like SL can make a difference on ELLs' language learning outcomes (Deutschmann & Panichi, 2009), not to mention in EFL contexts (Wang et al., 2009). Even when some scholars have begun to explore the effects of SL on language learning and how SL could impact learners' language outcomes and perceptions about virtual learning, most studies are anecdotal, without a solid research design (Cooke-Plagwitz, 2008, 2009; Johnson, 2006; Silva, 2008; Stevens, 2006, 2007; Vickers, 2007a, 2007b) or not grounded in relevant SLA theories (Clark, 2009; Wang et al., 2009).

In contrast, the presnt study uses theoretically and pedagogically sound frameworks to inform the research design. However, the delimitation of this study is that the core theoretical framework is limited to cognitive interactionsist theory. There are also other SLA frameworks that might yield insightful results—which however are not included due to the scope of this study. For instance, second language learning through tasks in SL might be investigated utilizing different theoretical lenses of language play, identity construction, motivation, the impact of social networking, etc.

Additionally, prior studies examining the strategy use in students' oral production in 3-D MUVEs are mostly text-based, as in most CMC studies (e.g., Peterson, 2006), as opposed to using voice chat to examine learners' oral production, as in the current study.

The lack of research on voice-based chat in 3-D MUVEs may be due to the burdensome data recording and transcribing processes, since text chat logs are automatically kept in students' computers and are more easily gathered. Empirical studies on the complexity and accuracy of EFL learners' language output via voice chat in SL have not yet been fully documented in the SLA literature. The link between EFL learners' language behaviors associated with SLA and virtual learning in SL has not been connected. Therefore, more research is needed before we can make positive claims that SL can make a difference in students' language learning. Even though research in SL is still in its infancy when it comes to the field of SLA, its pedagogical potential and long-term cost-effective benefit to SLA instruction are nevertheless worth exploring.

This study also demonstrates that the multimodal modes of communication (text, voice, IM) afforded by SL increase opportunities for EFL students to engage in collaborative tasks outside the class walls (Blake, 2000) and "provid[e] an authentic and purposeful cross-cultural experience which is otherwise limited to the language teacher, members of the local community or other learners" (Tudini, 2003). Also echoing Varonis and Gass (1985), NNS-NNS interaction realized in each EFL student dyad promotes more negotiation of meaning and strategy use—given the sense of shared interlanguage *competence* without the "face-threatening" effect. Nevertheless, the demographic makeup of the students in this study was quite diverse across culture, language, nationality, race, gender, and age. It would be interesting to examine whether the same positive results could also be evidenced in a monocultural student group sharing the same linguistic and cultural background (e.g., EFL context). It may be also insightful to see if students who

register for the virtual course as mandatory with credit requirement, would not feel stressed, as reported in this study.

Analyzing students' negotiation episodes also reveals that the 3-D features available in SL provide additional multimodal support to help learners resolve mis-/non-understandings along with their use of communication strategies. For example, student UL directed his peer to attend to the different 3-D shapes on the building Menu feature in the object building task so that his partner could see what a "pyramid" looked like—only after all other strategies had been exhausted but failed to solve the lexical problem. Another case in point is that student IL mistakenly moved the built object onto her avatar "hair" due to her peer's phonological mistake (instead of pronouncing "air"). Because both students could see each movement of the 3-D object in real time, her partner realized the mistake and modified his output by saying "*like the altitude of the pyramid.*" Being able to see simulated objects and the interaction process in the 3-D mode gives EFL learners more visual support and helps them "notice" the gap (either in lexicon or pronunciation; Schmidt, 1990). The effects of the unique features of SL on scaffolding learners' target language acquisition deserve a closer look in future research.

As evidenced in the present study, taking a discourse analysis approach by examining the language patterns of learners' oral production over time can shed light on what types of communication strategies are employed during communication breakdowns, how negotiation routines take place, the nature of the interrelationship between the strategy use, negotiation and task types, and whether the quality of language output improves measured by complexity and accuracy. Above all, examining learners' language practices in SL can unearth how virtual task-based learning experiences provide

empirical evidence to show that SL can potentially be a viable learning environment. Therefore, investigating language use and the quality of oral production will contribute greatly to the body of knowledge in the SLA field. Despite the laborious transcribing processes and the technical issues of collecting oral data, the present study demonstrates that theoretically driven, pedagogically sound, task-based research is still feasible in a 3-D MUVE. A call for more voice-based, task-oriented, discourse-analyzed research is therefore encouraged.

This study also demonstrates that TBLT can be a beneficial teaching/learning model, especially when it is implemented in SL. When being tasked for meaningful and communicative purposes, students find their own voices and develop a sense of autonomy and responsibility for their own learning. Specifically, when the assigned task is operated in a subject domain that is meaningful, engaging, real-life like and interactive, it will engage students, boost motivation, and promote investment in learning. Additionally, the unique features in SL—augmented reality and simulated immersion— make task completion in SL more realistic, leading to heightened motivation and engagement. If teachers can virtually lead students to the Grand Canyon for shooting, camping, or skydiving, or to the Nile River in Egypt to be ferried across a river by an ancient Egyptian, teleporting anywhere in seconds without the cost of traveling, perhaps it is time to consider the pedagogical potential that 3-D MUVEs can bring to conventional language instruction. The testimonial of one EFL student in his journal entry perfectly advocates that language practices in SL can make a difference in students' virtual language learning experiences and the unique features afforded in SL can offer language educators immense possibilities to create a beneficial instructional environment

for language learners beyond the class walls:

> [This class was useful] because I could see how Second Life can help us simulating RL situations. I could speak with people all around the world, I could learn about music instruments more than never. Imagine I built a piano which can sound different music!!!!. Imagine I found some needs to make presentations in SL and I was motivated to build a portable videoprojector. Imagine I could understand we need some laser or chalk to make annotation over a 3D sculpture and I made it after my visit to the sculpture museum. Imagine I studied Plato when I never liked Philosophy. Imagine I visited castles in order to know the English name of different part of castles.... And imagine I cooked for first time of my life a PAELLA in RL because I needed to study how to do it to explain it in SL. The PAELLA in RL was really fantastic because nobody of my family believed it!!! The most important, from my point of view, was to see the possibility to teach and interact in SL like we were in RL. It was a demonstration how valuable are virtual worlds to teach in 3D and interact like we were in the same place...After several time visiting SL and with the number of Universities and teachers teaching different languages here, I am sure Virtual Worlds will be in the next future one of the most successful tool to learn another language. Many teachers don't know that and we have the responsibility to make of possible research to demonstrate in which we believe. (PK, journal, 06/02/2011)

**Appendix A. Communication tasks for eliciting participants' language samples**

Task Type	Pre-Session	Post-Session
Opinion exchanging	Please share your opinions with your partner: "Which English skill do you think is most difficult to learn?" You may agree or disagree with your partner.	Please share your opinions with your partner: " Do you think it is better to learn English in real life or in second life?" You may agree or disagree with your partner.
Information gap	The city map is Philadelphia in the U.S. Your partner will follow your direction to a destination. Don't tell your partner where it is but direct him/her there. The instruction will be given to you on a notecard. You can spend 30 seconds studying the map. Partner A: Tell your partner to start from Fine Arts Building in University City District. Direct him/her from there to AMTRKA at the 30th Street Station. Partner B: Tell your partner to start from the Post Office near the 30th Street station. Tell him/her how to go from there to the Dental School on 40th & Spruce Street.	You will tell your partner to build an object STEP by STEP. He/she will follow your instructions: Partner A: Tell your partner to build a PYRAMID by rezzing an object: 1. In the Object tab, tell your partner to move the object in the air and then change the size and rotation to Size: (X: 2; Y: 2; Z; 3) Rotation: (X: 352; Y:329; Z: 40) 2. Tell him/her to change the color on each side of the pyramid (using *SELECT FACE* to do it). You can decide the four colors for your partner. Partner B: Tell your partner to build a TUBE by rezzing an object: 1. In the Object tab, tell your partner to move the object in the air and then change the size and rotation to Size: (X: 3; Y: 2; Z; 2.5) Rotation: (X: 0; Y:90; Z: 98) 2. Tell him/her to change the color on each side of the tube (using *SELECT FACE* to do it). You can decide the four colors for your partner.
Jigsaw	You are looking at two identical pictures. Since they look a bit similar, you and your partner will take turns to spot as many	Remember that we teleported to the 1920s Berlin Bar last time. Work with your partner to identify 2 similarities and 4 differences in the

	differences as you can. Each time you have to tell your partner where a difference is so that he/she can circle the difference to show that s/he understands your description. It will also allow him/her to find other differences without overlapping yours.	two given images. Try to describe the differences and similarities in detail so that your partner won't find the same thing that you already described. Also, your partner will circle the differences/similarities to show that s/he understands your descriptions.
Decision making	You and your partner have to decide at which restaurant you want to eat tonight. You will be given the following information on a notecard for you to consider: budget, type of cuisine (Japanese or Italian), time to meet and dress code. You should reach the agreement with your partners. Partner A: Your budget for dinner tonight is US$15 because you've shopped too much lately. You prefer Asian food. You can meet with your friend between 6:00-6:30pm and need to go home by 9:30pm. You just want to be casual tonight so you probably will just wear jeans and T-shirt with sneakers. Now discuss it with your friend and see if he/she's also fine with your decision. Partner B: Your budget for dinner tonight is US$30 because you want to enjoy a nice meal tonight. You prefer Western food, but don't mind trying Asian food once in a while. You can meet with your friend between 5:45-6:15pm and need to go home by 9:00pm. You like to dress up a bit tonight so you probably will wear a long-sleeved shirt (blouse for lady), pants	You and your friend are invited to a classmate's birthday party in SL this Sunday. You and your partner decide to buy a birthday gift together for her. You'll see the information about 2 different gifts on a display board. Both of you need to consider the budget, gift type and time to attend the party. You should reach the agreement with your partners. Partner A: Because you are a poor student, your budget is pretty tight (less than L$400). However, you still want to give your classmate a big surprise in his birthday party. You're available on Sunday from 6:00pm-9:00pm to meet with your partner and go to the party together. Now discuss it with your friend and see if he/she's also fine with your decision. Partner B: Since your classmate is your best friend, you don't have a budget for the birthday gift. You want to impress your classmate and make his party fun and unforgettable. You're available on Sunday from 5:00pm-8:00pm to meet with your partner and go to the party together. Now discuss it with your friend and see if he/she's also fine with your decision.

	(dressy skirt), and dress shoes (high-heeled shoes). But you also want to match your friend's attire. Now discuss it with your friend and see if he/she's also fine with your decision.	

Appendix B. City map for the information gap task in session one (source:

http://mappery.com/Philadelphia-Tourist-Map-2)
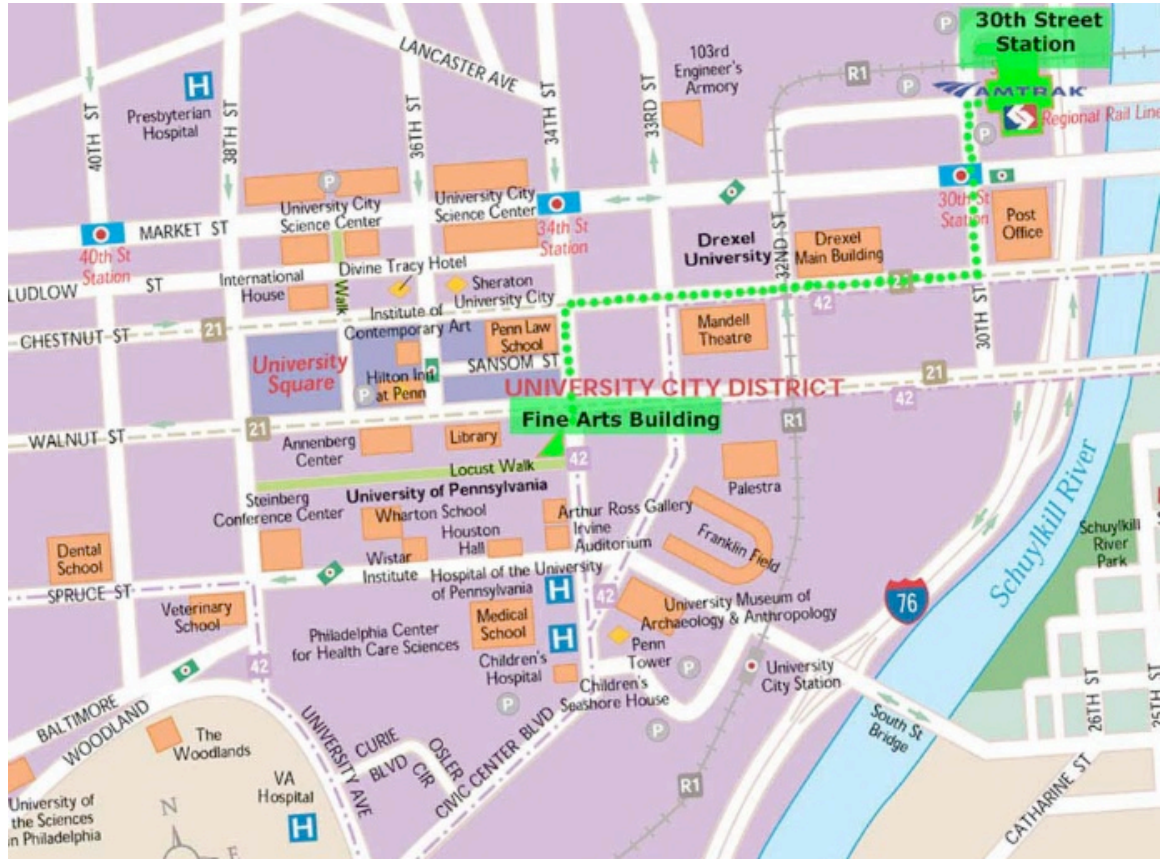
Appendix C. Jigsaw task (spot the differences) in session one (source:

http://www.agame.com/game/dreams.html)

Appendix D. Jigsaw task (spot the differences) in session two

Appendix E. Decision-making task in session one (source:

http://www.my247.com.au/brisbane/menus/The-Pineapple-Hotel.8036)

menu

lounge bar

garlic bread		2.50
fat chips		5.00
potato wedges		6.00
rib fillet steak sandwich w chips		11.00
cajun chicken strips w salad & chips		11.00
bangers & mash w vegetables		11.00
garlic prawns w rice		12.00
rissoles w sweeet potato mash & vegetables		11.00
roasted pumpkin, spinach & ricotta		
ravioli w parmesan cream sauce		12.00
caesar salad		10.00
chicken caesar salad		12.50
roast of the day*	lunch	3.50
	dinner	10.00

THURSDAY NIGHT SPECIAL

t-bone, salad & chips*	7.99

prices subject to change
*only availabe with drink purchase

Appendix E. Decision-making task in session one (cont'd) (source:

http://www.musthavemenus.com/menu/msword.do?id=199016&page=0)

Flying Dragon Cafe

SPECIAL ENTREES

SP 1. HOUSE SPECIAL CHICKEN...... 10.50
Batter fried chicken breast fried
to golden brown with shrimp, chicken,
roast pork and Chinese vegetables.

SP 2. HAPPY FAMILY 10.50
An exotic combination of shrimp,
lobster, roast pork, chicken, and
beef with mixed vegetables with brown
sauce.

SP3. SEAFOOD COMBINATION 11.50
Lobster, shrimp and scallops mixed with
mushrooms, bamboo shoots &vegetables.

SP4. GENERAL TSO's BEAN CURD 8.25
Fried bean curd w. sautéed broccoli vwith
hot & spicy sauce.

**SP5.NEPTUNE'S CATCH IN BIRD'S
NEST... 12.95**
Jumbo shrimp, scallops sauteed with
vegetables in a light creamy sauce then
served in crispy potato nest

Vegetarian
Bean Curd w. Garlic Sauce.......................7.25
Bean Curd w. Szechuan Sauce 7.25
Bean Curd w. Mixed Vegetables 7.25
Kung Po Bean Curd....................................7.25

Monday – Saturday 11-9
Call for take-out   (000) 000-0000

Appetizers
Vegetarian Spring Rolls (2)................. 3.75
Egg Rolls (2)... 4.25
BBQ Spareribs.. 7.50
BBQ Boneless Spareribs 6.95

Soup
Hot and Sour Soup (For 1) Meatless. 2.95
Wonton Soup (For 1) 2.95
Egg Drop Soup (For 1)......................... 2.95
Bean Curd Soup (For 2)....................... 5.75
Chicken with Vegetable Soup (For 2)6.25
Shrimp Chow Foon Soup (For 2)...... 6.50
House Special Soup (For 2)................. 7.25

Beef
Beef with Broccoli 9.95
Beef with Assorted Vegetables 9.95
Mongolian Beef. 10.25
Pepper Steak 10.25
Beef with Black Mushrooms 10.25

Chicken
Moo Goo Gai Pan 7.75
Chicken w. Cashew Nuts 7.75
Chicken w. Black Bean Sauce 7.75
Chicken w. Broccoli 7.75

Seafood
Shrimp w. Cashew Nuts 8.95
Shrimp w. Snow Peas 8.95
Shrimp w. Curry Sauce 8.95
Lemon Shrimp 8.95
Pineapple Shrimp............................... 8.95

Noodles
Vegetable Lo Mein 6.00
Roast Pork Lo Mein 6.25
Beef Lo Mein 6.85
Chicken Lo Mein 6.25

Appendix F. Decision-making task in session two (source:

https://marketplace.secondlife.com)

Birthday Party Set (unpack me)

L$5 $0.33 USD
★★★★☆ Reviews (96)

Add To Cart
or
Buy Now
Add To Favorites

Forever01 Himmel
Visit The Store

Permissions:
√Copy √Modify Transfer
Prim count: 0
Flag this item

Birthday Party Set includes:

00. Birthday dancepad animated with 4 rythm discolights
01. Heart Balloons different colors and textures and animated string
02. Normal Balloons different colors and animated string
03. Ballon with colorchanging on touch with color menu
04. animated purple flame
05. 8 Birthday particle launcher in different colors
06. Cake and cake peaces
07. A wick
08. 4 different giftboxes
09. 1 HAPPY BIRTHDAY sign Wall and one balloon wall
10. 3 HAPPY BIRTHDAY signs, one with color changing , one with shaking letters
11. Balloon Poofer

Appendix F. Decision-making task in session two (cont'd) (source:

https://marketplace.secondlife.com)

FIREWORKS BIRTHDAY CAKE REZDAY,Welcome HOME, Theme Changing, RAINBOW CONFETTI GIFT GIVE

L$390 $1.96 USD

★★★★½ Reviews (30)

Add To Cart

or

Buy Now

Add To Favorites

Lohoha Chestnut
Visit The Store

Permissions:
Copy Modify ✓Transfer
Prim count: 0
Flag this item

Share this item | f t ✉

Watch it in action   Zoom/View images (8)

Mmmm Delicious looking WHITE CHOCOLATE CAKE for ANY OCCASION!
This awesome multi-layered cake is fully scripted and menu driven, and comes on a beautiful crystal sculptie cake dish.

It Gives out gifts!
It includes fireworks
It is customisable for 12 different events (birthday, rezday, anniversary, wedding, baby shower, congratulations, good luck, welcome home, bon voyage, get well soon, I love you or plain)

Appendix G. A task-based syllabus for the 10-session virtual class

Session	Lesson Topic	Lesson Plan Outline
Pre-	Task-based interaction (1)	1. Students will be informed of the research project and ask questions if they have. Consent form that was distributed earlier will be collected with their typed avatar names. 2. Each pair will be scheduled to complete the four types of tasks. 3. After completion of the tasks, they will be directed to the online pre-course questionnaire to fill it out.
1	Greeting	1. Housekeeping: group contact/notice, chat log, organizing inventory, learner blog. Remind them to turn off speaker when someone's talking to avoid echo. 2. Find someone who: Get to know your classmates (spin the bottle). Take notes and use CALL/IM. 3. Greetings: how to greet in different cultures and the US. Learn English phrases/idioms in greetings. Compare and contrast cross-cultural differences/similarities in greetings. 4. Show and tell demo 7. Homework reminder: Save in your inventory an image that represents your home culture for the show-and-tell presentation in next session.
2	Food	1. Talk about agenda (comment on their blog, learning how to build objects, show-and-tell, food game, role-play) 2. Sandbox: Create their first poster and upload their cultural image. Each student takes turns for the show-and-tell presentation. 3. Food game: Work in a team to describe the food items on the display board without naming the foods. The other team has to guess the food item base on your description. 4. Role play in the pizzeria using Holodeck. Students take turns to play servers taking orders and customers ordering food on the menu. 5. Fieldtrip to Berlin bar for drinks and dancing.

		6. Homework reminder: Find a restaurant in SL that you'd like to take us to next time.
3	Holidays/ Traditions	1. Compare/contrast holiday celebrations around the world (Valentine's Day & New Year). Notecards will be provided for students to take notes when they interview their partners. 2. Watch a video clip on dragon boat festival and fill out the key information on a notecard. Discuss with a partner to compare the answers. 3. Fieldtrips to the SL restaurants. 4. Homework reminder: Change your avatar outfit that represents your home culture to class next time or bring a poster with the cultural attire if you can't find it in SL.
4	Clothing	1. Showcase your avatar outfit and tell us about how it represents your cultural clothing. 2. Fieldtrip to *Virtual Morocco* in SL and experience the Muslim culture and clothing. 3. Fieldtrip to *Sirena Hair* to get some freebies for making your own clothes
5	Job	1. Job game: a. Each team will have 5 minutes to go over their job titles and discuss the definitions (without naming the jobs) b. Each team takes turns to describe the job without naming it. The other teams have to use text chat to guess the job. Whoever guesses it right will get 1 point. If no one can guess the job, the speaking team will get 1 point. c. Each team member will take turns to describe the job. 2. Interview your partner about the job he/she has based on the questions on a notecard. Report your findings to the class. 3. Job Fair: a. Scaffold job-related vocabulary (e.g., employee, employer) and discuss job qualifications. b. Each pair creates a job ad in SL, including job title, job description, salary (L$), benefits and promotions. c. Simulated Job Interview: Each pair will take turns to play the role as the employer and employee. Half of the class will play the job seekers and the other half, employers. Job seekers will go from one company to another and ask about the jobs. They are only interested in the compensation package that the job offers and the employers are interested

		in finding employees who meet the requirements of the job. They will also take notes during the interview. When they are done, employers will tell the class why they would like to hire someone.
6	Sports/Games	1. Work in pairs to discuss their favorite sports based on the questions on the notecard. 2. Play sports in Virtlantis Island (e.g., soccer, water jet-skiing, etc.). 3. Fieldtrip to Covenstead for figure skating. Take snapshots of your skating performance and put them up on your blog .
7	Music	1. Guess who I am: a. Identify the pictures of those famous celebrities in the display board and discuss with the class how much you know about them. b. Ask your partner who his/her favorite musician is (spin the bottle). 2. Music genres & instruments: a. We'll teleport to *Magnatune* and work in pairs to write down as many music genres as possible. b. Try as many music instruments as you like. Choose 1 instrument to play and ask your partner to take a snap shot of you playing the music instrument. You'll also do the same for him/her. c. Interview your partner. Ask him/her why he'd like to play this music instrument. d. Come back to sandbox. Create a poster for your partner. Tell the class why he/she likes to play this instrument. 3. *Vincent*: a. Listen to the song and try to fill in the blanks on a notecard. b. Compare your answers with your partners. 4. Teleport to a *Karaoke Club* and sing along!
8	Art	1. Museum fieldtrip: You will have the chance to explore *Caerleon Museum* in SL to discover what your RL identity and SL identity mean to you. You'll also work with a partner to research what you notice in one of the exhibits in the museum and take some snapshots of what strikes you the most. You will present your findings with your partner and report to class. 2. Homework reminder: Find a SIM in SL that simulates any city or landmark in your home country. You'll be our tour

		guide next time to promote your culture and tourism.
9	Travel	1. Each student will take turns to play the role as a professional tour guide and take the class to the SL SIM they found that can showcase any striking landmark or famous city in their RL countries. 2. Students who are the tourists will have the chance to ask their "tour guide" questions and take pictures of those tourist sites along the way. They will post their traveling experience in their blog afterwards.
10	Farewell party	1. A briefing session will be conducted at the outset of today's class for students to exchange opinions about the lessons they have learned throughout this course. A semi-structured interview format will be employed. 2. Refreshments and drinks will be provided in SL along with music played. 3. A virtual certificate that acknowledges each student's performance and completion of the course will be granted.
Post-	Task-based interaction (2)	1. Each pair will be scheduled to complete the second set of four types of tasks. 2. After completion of the tasks, they will be directed to the online post-course questionnaire to fill it out.

Appendix H. Email invitation

Hello everyone,

My name is UnicornG Luminos, an English teacher in both RL and SL. I will be offering a new English class in both *Virtlantis Island* and *Cypris Chat* in SL. I am inviting you to join my class if you are interested in improving your English proficiency and willing to participate in a research project I am conducting with Dr. Roberta Lavine at the University of Maryland, USA. You will have the chance to practice English speaking and writing, teleport to different interesting places in SL, improve your oral presentational skills, keep a journal on your learning, play exciting games, have a lot of fun, and more!

Before our first class, I will also have one task-based session with you and your classmates using voice chat to better understand your use of communication strategies. I will also conduct another voice chat of this kind at the end of this course. I will let you know the exact time and date after the number of students is finalized.

If you are interested, please IM me in SL (UnicornG Luminos) or email me at jucchen@umd.edu in RL. Looking forward to seeing you all!

Your teacher,

UnicornG

Appendix I. Text adaptation of online surveys

Pre-course Questionnaire

Hello class, please thoughtfully and accurately fill in the information below. It will help me get a better understanding of your background, interests, and needs.

Digital and SL Competence

Digital/SL competence before the course

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
Technology has become an important of my daily life.					
I know how to use a blog.					
I know how to use a wiki.					
I have my personal social networking site (e..g, Facebook, Myspace).					
I like playing online games.					
I know how to play games like War of Warcrafts.					
I know how to play Second Life.					
I like to make friends in the virtual world.					
I think using technology will help me learn English more effectively.					
I consider myself a digital native (i.e., confident and skillful					

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
with technolgoy).					
I prefer that teachers use technology in class.					
I enjoy trying new technology.					

SL Immersion

In general, how often do you come into SL in a week?

In general, how much time do you spend in SL in a week?

Based on your answers above, why do you spend your time in SL?

Overall perceptions before the Course

Your expectations about learning English in this SL course

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
It is a good idea to learn English in SL.					
It will be fun to learn English in SL.					
It will be more effective to learn English in SL than in real life (RL).					
I will enjoy learning English more in SL than in RL.					
Learning English in SL will be as real as in RL.					
I will spend more time learning English in SL than in RL.					
Learning English in SL will make me more motivated.					

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
I will participate actively in SL activities.					
I will take responsibility for my learning in SL.					
I will be more willing to go to SL to learn English than in RL.					
I will become more brave to speak in English using my avatar in SL than to speak English in RL.					
I will use text chat a lot to communicate with others.					
I will use voice chat a lot to communicate with others.					
I will enjoy collaborating with other classmate avatars.					
My speaking will improve after this course.					
My grammar will improve after this course.					
Working with classmates in SL will help me learn.					
Using my avatar to talk to others in SL will make me feel less nervous.					
I will know how to get my meaning across by using different strategies (e.g., rephrase my					

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
words).					
I will know how to negotiate meaning with others by using different strategies (e.g., ask for clarification).					
I will feel more confident using English to interact with others in SL than before in RL.					
Sharing with classmates what I can do and know in SL will also help me learn.					
My English speaking will improve from interacting with other classmate avatars.					
My learning experience in this virtual course will be positive.					
After this course, I will feel more comfortable speaking English with people in RL.					

Demographic Information

Your Avatar Name (First/Last)

Are you male or female in real life?
- Male
- Female

What is your age range?

When did you start to learn English?

What is your native language?

Which country in real life are you from?

What is your English proficiency level?

Have you taken any English proficiency tests? If so, what is your overall score?

What other languages can you speak?

How many language classes have you taken in SL before this course?

Why do you want to attend this course?

THANK YOU FOR YOUR TIME!

Post-course Questionnaire

Hi class, please take your time to reflect on what you think about this SL course. Your insights are much appreciated.

Your Avatar Name (First/Last)

SL Immersion

In general, how often did you come into SL in a week?

In general, how much time did you spend in SL in a week?

Based on your answers above, did you only come to SL for this course? What else did you do while you were in SL?

Which computer did you usually access to attend our SL class?
- My own computer
- Computer lab at school
- Friend's or family's computer
- Internet cafe

Please describe any problems (e.g., technical) you encountered in SL. If so, did that affect your English learning?

Overall Perceptions after the Course

Your experiences about learning English in SL after this course

	Strongly disagree	Agree	Neither agree or disagree	Agree	Strongly agree
It was a good idea to learn English in SL.					
It was fun to learn English in SL.					
It was more effective to learn English in SL than in real life (RL).					
I enjoyed learning English more in SL than in RL.					
Learning English in SL was as real as in RL.					
I spent more time					

	Strongly disagree	Agree	Neither agree or disagree	Agree	Strongly agree
learning English in SL than in RL.					
Learning English in SL made me more motivated.					
I participated actively in SL activities.					
I took responsibility for my learning in SL.					
I was more willing to go to SL to learn English than in RL.					
I became more brave to speak in English using my avatar in SL than to speak English in RL.					
I used text chat a lot to communicate with others.					
I used voice chat a lot to communicate with others.					
I enjoyed collaborating with other classmate avatars.					
My speaking improved after this course.					
My grammar improved after this course.					
Working with classmates in SL helped me learn.					
Using my avatar to talk to others in SL made me feel less nervous.					
I knew how to get my					

	Strongly disagree	Agree	Neither agree or disagree	Agree	Strongly agree
meaning across by using different strategies (e.g., rephrase my words).					
I knew how to negotiate meaning with others by using different strategies (e.g., ask for clarification).					
I felt more confident using English to interact with others in SL than in RL.					
Sharing with classmates what I can do and know in SL also helped me learn.					
My English speaking improved from interacting with other classmate avatars.					
My learning experience in this virtual course was positive.					
After this course, I feel more comfortable speaking English with people in RL.					

SL Affordances

Please check the following SL features that you find useful for learning English. You may check as many as you wish.

- Teleport (e.g., fieldtrip)
- Build objects (e.g., poster)
- Holodeck (e.g., roleplay in a pizzeria)
- Changing avatar appearances
- 3-D animation (e.g., dancing)
- Notecards (e.g., talk on a worksheet)
- Snapshot (e.g., taking photos)
- IM (e.g., sending classmates private messages)
- SIM (e.g., Time Square in SL)
- Telepresence (e.g., able to see all the classmates and teacher together)
- Other

Based on your responses above, can you explain your choices?

Do you think there are any differences between learning English in SL and RL? Why or why not?

Your Virtual Identities

My avatar doesn't really matter to me. It's just a tool for me to interact with others.

	1	2	3	4	5	
Not at all				Very much		

My avatar appearance looks DIFFERENT from me in real life.
- Yes
- No
- Undecided

Based on your answer above, please explain why.

When I use my avatar to speak, I speak both for myself in RL and my avatar in SL.
- Yes
- No
- Undecided

Based on your answer above, please explain why.

I feel more comfortable when I use my avatar to speak English in SL.

	1	2	3	4	5	
Not at all				Very much		

Based on your answer above, please explain why.

MANY THANKS!

Powered by Google Docs

Appendix J: Demographic information of the participants

Avatar name (initials)	UG	MB	PK	TR	NM	UL	IL	EC	BL
Gender	M	F	M	F	M	M	F	F	F
Age Range	31-40	31-40	51-60	21-30	18-20	21-30	21-30	21-30	41-50
Home country	France	Egypt	Spain	Saudi Arabia	India	Iran	Thailand	Sweden	Spain
Native language	French	Arabic	Spanish	Arabic	Gujarati	Persian	Thai	Swedish	Spanish
Other languages spoken	Learning German	N/A	Catalan	N/A	Hindi	French, Swedish	no	Czech	no
English proficiency	Inter-low	Inter-mid	Inter-mid	Inter-mid	Inter-low	Inter-high	Inter-mid	Inter-mid	High beginning
First exposure to English	Middle high (but more practice in SL)	N/A	From doing business in real life	Since 2007	Since 2002	In college (since 2007)	Kinder-garten	10 years old	In high school
Language Classes taken before SL	3 (mostly German)	none	none	none	2 (only sit-in)	none	1	>3	none
Reason to attend this virtual course	Serious about taking it as a good experience	Improve English; speak more confidently	Course info looks profess-ional & helpful	Improve English	Improve commun-ication skill & present-ation skill in English	Improve English in a unique way, especially in speaking & listening	Good opportunity to practice English, exchange experience and knowledge with people around the world; learn new technology that teachers can use	Improve English	Find learning English in SL interesting; easy to interact with others by just sitting home; SL offers many educational opportuni-ties
Why spend time in SL	N/A	Improve English; learn new things; interact with friendly people	Practice English with people around the world; motivate teachers to use new technolo-gy in the virtual world	Improve listening and speaking skills	Make friends and talk to people around the world; practice English	A newbie in SL; just created the avatar for this course (28-04-2011)	Love learning new things in SL (e.g., science, language, culture).	Required in a universi-ty course	Enjoy building objects, exploring playing and learning in SL; knew SL since 2008

Appendix K: Focus group interview questions

1. How does working with your classmates help you learn English?

2. What are the features in SL that you find most useful for learning English after this class?

3. What are the things that we did in SL that are not possible in RL for English learning?

4. What do you think about using your avatar to practice English? Do you feel that your avatar represents the real you?

5. We did a lot of tasks in SL. How do you like those tasks? How do they help you learn? Can you also do those tasks in a RL class?

6. How do you compare using SL to learn English vs. other technology in RL (e.g., Skype, chat room, discussion board?)

Appendix L: Examples of student BK's transcribed oral production in the three sessions

B: This is my poster. This is called xxx from my window. The mountains are Sierra Nevada. Mountains surrounding my city. I live in Granada, Spain. Ok, it is a small city. It is famous for its monuments, such as Alhambra and the university city, too. It's a small city. Its climate is very cold in winter and very hot in summer. That's all. It is the presentation, ok? …My presentation is too short, ok? Hehe…   (session 2)

B: Ok, follow me, please. I chose this sculpture, the street artist because it's the painter on the street, very humble and xxx materials like chalk and crayons. The canvas is the soil on the floor. It's exhibit art, use perspectives to xxx the edge and the themes are various, depending on the artist's imagination. It is the art open to the people of the city including the street not necessary go to museum to see it. I think it is full of imagination and xxx of the artist to the people. I chose this because it shows that art is accessible to all and don't need expensive materials or related gallery to show them, ok? Each artist is unique and this piece is unique, too. It's exhibit art, not copy or fake photo. In the painting, it disappears quickly. Ok, the art is everywhere. I think we must xxx our eyes to see it everywhere. The concepts of art are something difficult for the men, not children today, ok? Here I show you something to sample this type of street art. One moment. This is the sample, and fantastic! And I finish my presentation. That's all.   (session 8)

B: We know Al-Andalus to the territory of Iberian Peninsula and the Muslim rules during the modern age to 1492. I choose this place because it has the beautiful version of Alhambra in Granada, my hometown. This place is so extends. I only show you five important places today. You can take the landmark of this place and come later. It has the fantastic tour around the SIM. Please, fly with me, to the first point of the journey. The first point of my journey is this, the Alcazaba. The Alcazaba is this, this fortress is the oldest part of Alhambra. It was built in the middle of the 13th century by Sultan Alhamar. The first impression of Alhambra is the 45 complex of 2200 meters. It is said it's made by the characteristics of the land. The real Alhambra has 22 towers. In front us, you can see every tower with the view up. This is the famous tower of Alhambra, Vela Tower. It's the larger tower of Alhambra. It has four floors and a dungeon. Here you can shoot the guns and walk inside the towers. Now we will go to the palace. I am not sure if Muslim people used canons at that time? Follow me, please, to the sun of palace. This is a great land in SL, perhaps the most beautiful place I saw in SL. This site is very well built. Follow me, please. This is Nasrid palaces. There are 3 separate areas in the Nasrid palaces. This first point, follow me, please. This is the Mexuar, the first palace. The Mexuar was the place of hidden and Justice for important cases. It is the older palace. And here is the second palace, Comares palace. This is the Comares palace. It was used as official meeting to the king and was decorated with difficult styles. I want you to do an exercise today. Comares palace is the residence of Ibn Yusuf I. So he ordered it to be built in a very exquisite form, this palace. You can walk around this palace during any minute you want. And I will go to the three palace, the Lion's palace. Follow me, please.

This is the Lion's palace, with walls of private residence of Mohamed and his family. In the center, you can see the fountain's lion. Lion comes from the home of the Jewish vizier Yusuf Ibn Nagrela…represents the textile of Israel. It is the night sight, do you know? Wait a minute. We will fly to the Bath, the four point of my journey. When you are ready, we'll fly to the Bath. Follow me, please. I want to show the Bath and the Partal Garden but it is really extensive. If you want, I show the Bath and I am finished. The Bath is from here, follow me, please. There is a room, undressing, the first room. The wall lights are beautiful and the light in the bathroom in RL is magic. This is the furnace. This last room is the heart of the baths. I hope you can come to Granada in the future and you will see the Alhambra in RL. It is very, very nice. That's all. Thank you very much for your attention. (session 10)

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