

**USING A THREE-DIMENSION VIRTUAL WORLD TO REDUCE
LANGUAGE ANXIETY AND ENHANCE ENGLISH-SPEAKING
PERFORMANCE OF EFL UNIVERSITY LEARNERS: A
COLLABORATIVE PROJECT**

Li-Tang Yu
Jayoung Song
Fu-Yuan Chiu

ABSTRACT

Second Life (SL), a three-dimensional multi-user virtual environment, has been used as a platform to administer collaborative projects for second-language teaching and learning. SL provides language learners with promising affordances. Most of the SL research in this area is conducted in regular language classes and has designed communicative tasks to be performed by pairs of target-language learners and native target-language speakers. However, few studies involved learners speaking various L1s in participating in SL communicative activities outside of their classes. Therefore, an intercultural collaborative project was developed for university students in Taiwan and South Korea. This study focuses on how this collaborative project in a virtual world could contribute to reducing learners' foreign-language anxiety and increasing their speaking proficiency. Data was drawn from participants' responses to an anxiety survey, a perception survey regarding the use of SL, pre- and post-speaking tests, and interviews. The findings showed that the participants maintained their anxiety levels due to the partial anonymity presented in the SL context. The participants had a neutral attitude towards the use of SL in the collaborative project. They significantly improved their speaking performance because of the ample conversation opportunities afforded by the SL tasks. Pedagogical implications for language practitioners and program developers are provided.

Key Words: Second Life, intercultural collaborative project, language anxiety, speaking performance

INTRODUCTION

Nowadays, English has become an international language for global communication and interaction. English proficiency is greatly emphasized by education authorities in English-as-a-foreign-language (EFL) countries, particularly in the Asia-Pacific region. EFL learners, however, might encounter challenges in their learning process under traditional language curricula which may hamper successful language learning. For example, they might receive more training in the development of reading and writing skills rather than the cultivation of listening and speaking skills (Kung, 2017), or they might not have sufficient opportunities to practice speaking skills outside of their English class (Sun, Lin, You, Shen, Qi, & Luo, 2017). The lack of an English-speaking environment causes students to learn English in a de-contextualized way which contributes to increasing learner anxiety and hindering speaking-skill improvement (Hwang, Shadiey, Hsu, Huang, Hsu, & Lin, 2016).

In order to enhance speaking skills and reduce learner anxiety, technology-assisted projects have been widely discussed and their effectiveness was greatly recognized in the field of second-language learning and teaching (Hwang & Fu, 2019; Sung, Chang, & Yang, 2015). Among various technology applications, three-dimensional multi-user virtual environments (MUVEs) have received considerable attention (e.g. Palomeque & Pujolà, 2018; Reisoğlu, Topu, Yılmaz, Yılmaz, & Göktaş, 2017; Yamazaki, 2018). MUVEs provide users with communication spaces, immersive environments, and experiential spaces (Hew & Cheung, 2010). Moreover, their affordances allow learners more opportunities for experiential and collaborative learning, as well as to become more motivated and engaged (Dalgarno & Lee, 2010). One of the most popular and well-known MUVEs is Second Life. Second Life offers synchronous, immersive, and interactive functions which are known to be beneficial for language learning (Cooke-Plagwitz, 2008). Due to these promising features, language educators and researchers are paying increased attention to the use of MUVE, and this study contributes to the literature by examining its effects on reducing anxiety and increasing speaking proficiency.

LITERATURE REVIEW

With rapid technological advancements, educators have shown

increased interest in the use of digital tools, resources, and environments in teaching and learning. There is a growing number of three-dimensional MUVES that are being used for educational purposes, such as Whyville, River City, and Second Life, where learning happens through rich interaction, authentic content and culture, visualization and contextualization, and immersion (Liou, 2012). The potential impact of virtual worlds on teaching and learning has been well recognized. Among a range of MUVES, Second Life (SL) has many affordances that are well suited for teaching and learning second languages. Students can be exposed to rich authentic input, adopt various roles which can help them use the language in a more authentic context, interact with native speakers of the language in a virtual space, and collaborate with others to achieve complex goals through appropriate media such as text, voice, and video. Numerous studies exploring various learning benefits from SL projects are reported as follows.

Affective Gains in Second Life Projects

Among the many benefits that virtual worlds can offer, the current study focuses on the effects of language learning in a virtual-world setting on students' affective learning variables. Foreign language educators have long been concerned with the significant role of affective variables in second language learning. A number of studies have shown a consistent negative relationship between language anxiety and second-language learning in various instructional settings with varying language levels of participants (Aida, 1994; Elkhafaifi, 2005; Horwitz, 2001; Horwitz, Horwitz, & Cope, 1986; Liu & Jackson, 2008; MacIntyre & Gardner, 1991; Saito & Samimy, 1996; Yang, 2012). Previous research found that second-language learners feel anxious not only in a face-to-face learning context, but also in an online context (Pichette, 2009). Given online language learning is becoming popular to provide instructional flexibility, considerable support is definitely needed for second-language learners who are involved in online learning environments.

Taking these into account, language educators have been concerned about how to lower anxiety in order to facilitate the student learning process. One of the effective ways is to provide students with engaging and interesting experiences that immerse students in a new language in a stress-free environment. The virtual presence provided in virtual worlds can lower communication apprehension and embarrassment that impede

language performance. In Wehner, Gump, and Downey's (2011) study, the SL group students were represented in the form of avatars when participating in activities. This privacy led to a more informal and relaxed atmosphere, which helped them reduce their language anxiety. Melchor-Couto (2017) also confirmed that undergraduate learners of Spanish who undertook oral activities in SL decreased their foreign-language anxiety more than those who completed activities in a traditional classroom setting. Melchor-Couto (2018)'s study further corroborated the previous finding that SL could be a relaxing environment for learning due to its anonymity among users, making them feel safe behind their avatars.

Another important variable that affects language learning is motivation. Motivation has been regarded as one of the most influential forces on second-language learning (Dörnyei, 2003; Gardner & Clement, 1990; Masgoret & Gardner, 2003). Lack of motivation results in low achievement or incomplete language acquisition. Research has confirmed the positive impact of SL such as language learners' learning involvement, autonomy, and motivation. For example, Deutschmann, Panichi, & Molka-Danielsen (2009) found that language learners became more engaged in learning tasks in SL once they were familiar with SL features. The researchers maintained that the participants' attitudes towards SL itself could affect their engagement and participation. Moreover, Deutschmann and Panichi's (2009) study demonstrated that, as the synchronous conversation sessions on SL progressed, the participants gradually became autonomous and collaborative, with a sense of copresence with the others, thus leading to more interaction. Liou (2012) designed a series of communicative tasks on SL for 25 Taiwanese undergraduates as their pre-service English-teacher training. The students considered that they were better motivated to learn English by immersing themselves in this authentic context, interacting with foreigners, and receiving real-time feedback. They also agreed that they benefitted from the cultural context created in SL, acquiring opportunities to express themselves and interact with other avatars in English. Finally, Chen (2016) queried nine adult learners from Europe, Asia, and Africa learning English as a foreign language about their learning outcome of receiving language training through SL. Based on the students' learning journals and interview responses, Chen argued that SL bolstered peer collaboration and created positive, fun learning experiences for the students.

Language Proficiency Gains in Second Life Projects

Several studies investigated whether SL could lead to successful language-proficiency gains. Wang, Calandra, Hibbard, and Lefaiver (2012) adopted a quasi-experimental design to examine the effectiveness of using SL on learners' speaking gains in an EFL program. Twenty Chinese university students took virtual tours, had group discussions, conducted one-on-one interactions with American university students, and made individual presentations on SL. The study found that, compared with those who did not join the program on SL, the SL group improved their English-speaking abilities significantly. They were more capable of retelling descriptive passages and providing explanations to support their replies, and had more natural English pronunciation and intonation, which confirms that SL creates an optimal learning platform for learning.

Other than the promotion of speaking proficiency gains, receptive skills, such as listening, were explored. Levak and Son (2017) adopted SL as their instruction platform to pair English and Croatian participants for eight communicative tasks. The researchers found that the participants improved their listening comprehension and acknowledged the learning support from SL's authentic circumstances and visual settings. Additionally, Lan, Fang, Legault, and Li (2015) indicated that their native English-speaking participants learning Mandarin vocabulary had a better performance when learning in SL in comparison to a traditional learning environment.

Second-Language Learner Perception about Second Life

Some studies have investigated second-language learners' views on using SL. Positive feedback was generally reported. For example, Grant and Huang (2010) found that 112 university students perceived SL as a satisfactory learning tool for learning a second language as it provides an environment for peer support. The researchers claimed that learners could receive "comprehensible input" in SL due to the immersive nature of SL. For instance, if learners did not understand text-based information, they could still attain comprehension by observing the surrounding context or interacting with objects or agents in the environment. The input could be tailored better for learners to comprehend while the learners could also have opportunities for comprehensible output. It seemed that learners could successfully accomplish collaborative activities in SL by interacting

with objects or agents and getting direct, immediate feedback.

Moreover, İliç and Arıkan (2016) interviewed 24 Turkish university students who undertook learning tasks in SL. The students considered SL an interesting and relaxing platform to boost their foreign-language abilities. Hassan, Dzakiria, and Idrus (2016) conducted a case study to investigate the perspectives of three Iraqi postgraduate students about their English learning experience in SL. It was found that the students supported the use of SL for English learning and perceived the gain in their English skills development.

Furthermore, one qualitative, multi-case study was conducted by Kim, Vorobel, and King (2018) to explore nine U.S. university students learning Spanish in SL. Data such as chat logs, observations, reflective journals, and interviews were collected. The students reported their appreciation for having opportunities to converse with native Spanish speakers and to explore the target-language culture in SL. Several SL features were identified, including the provision of contextual cues and interactivity as well as multimodal communication modes. These greatly benefitted the students' Spanish learning. Finally, Alshumaimeri, Gashan, and Bamanger (2019) integrated SL into their Computer-assisted Language Learning courses and surveyed 41 Arabic university students. Positive attitudes toward the use of SL for English learning were reported.

In the previously reviewed literature, interactivity has been noted as one essential affordance provided by SL. There were various interaction patterns in learning tasks, i.e., in some studies learners accomplished their tasks by interacting with SL objects or residents (Lan et al., 2015; Liou, 2012). In the other studies, on the other hand, interaction occurred between the target-language learners and native speakers of the target language (Kim, Vorobel, & King, 2018; Melchor-Couto, 2017, 2018; Wang et al., 2012; Wehner et al., 2011). However, it was only Chen's study (2016) that involved learners speaking various L1s in participating in an informal communicative project outside of class. More studies are needed to explore this type of interaction pattern: having learners with different L1 backgrounds engage in extracurricular learning tasks. To fill the gap, the current study established an intercultural collaborative project between Taiwanese and Korean students. One benefit of such an eTandem project was that both parties were in relatively close time zones and could participate in the project more smoothly. The present study aims to examine the effects of this type of intercultural collaborative project on language learners' language anxiety and speaking performance. Three

research questions guided the study:

1. What is the impact of an intercultural collaborative project in SL on the language anxiety of Taiwanese students?
2. What is the impact of an intercultural collaborative project in SL on the speaking performance of Taiwanese students?
3. What are the Taiwanese university students' perceptions of using SL for a collaborative project?

METHODOLOGY

A mixed-method design was used in the study. The researchers collected and analyzed quantitative and qualitative data for triangulation so as to examine the effect of using SL as a platform on the development of language learners' language anxiety and speaking performance.

The Intercultural Collaborative Project in Second Life

The project in the study was based on the theory of interaction, aiming to create opportunities for non-native speakers of English to gain language input and produce language output via their interaction (Gass, 1997). Research confirms that the interaction between non-native speaker dyads either with the same L1 or different L1s contributes to the development of target-language skills in a computer-mediated communication context (Alastuey, 2010; Yanguas, 2012; Yen, Hou, & Chang, 2015). Seventeen Korean EFL students in South Korea and 17 Taiwanese EFL students in Taiwan joined the project to perform a series of interactive and collaborative communicative tasks in SL. Based on their time availability, they were divided into three groups of five or six. Each group consisted of a similar number of Taiwanese and Korean university students. They communicated with each other in their target language, English. Five tasks were developed based on two principles: 1) the use of authentic materials and settings in SL; 2) the use of collaborative elements (Deutschmann et al., 2009). The project tasks are described as follows:

In the beginning of the project, Task 1 was designed to familiarize students with SL functions. They received a handout about basic SL functions, such as chatting, teleporting, checking the SL map, and using their avatars, and practiced them for one week. If they encountered any problems, online support was offered by the researchers. Task 1 was

conducted by Taiwanese and Korean students individually.

The second to fifth tasks were given at a three-week interval. The purpose of Task 2 was to get to know each other. The students in Taiwan and Korea made an appointment to go to a designated place in SL to make initial contacts. A list of conversation questions, such as hometown, interests, hobbies, and interesting experiences, was provided to each group. It was expected that this ice-breaker would strengthen their motivation to interact and build rapport for the next two tasks.

In Task 3, the students in both groups exchanged opinions and experiences based on various cultural topics in order to raise cross-cultural awareness. Each group took turns to visit Taiwanese, Korean and American-style places in SL. Suggested places were provided for their convenience. The groups first met at a designated place in SL and discussed the order of subsequent places to visit. After teleporting to that place, they discussed cultural issues such as food, table manners, sports, and family, and shared with each other what they knew about the culture that they were visiting. From the discussion, it was expected that they would gain more understanding of each other's cultures and their perceptions of that culture (i.e., America, Taiwan, and Korea).

The fourth task was discussing their English learning experience. The students went to an educational institute in SL and talked about their experience of learning English. Although the students shared similar backgrounds, learning English as a foreign language, they could have different beliefs, motivations, and emotions about learning English. Through discussions, they could find differences and similarities in their learning experiences. They could also acquire some useful tips and strategies from each other conducive to successful language learning.

Finally, Task 5 required the students to make a brochure introducing a place in SL, which can satisfactorily represent Taiwanese, Korean, or American culture. Participants went to places in SL and had a discussion about possible places that they would like to introduce. Then, each group produced a brochure on a wiki platform. They negotiated work responsibilities, including brainstorming, writing a draft, revising it, and collecting relevant information about the place. An example of an SL meeting is shown in Figure 1.



Figure 1. Group meeting on Second Life

Participants

The collaborative project was first introduced in a Technology-Assisted Learning Course, taught by one of the researchers, at a public university in northern Taiwan at the beginning of an 18-week semester. Seventeen junior students with intermediate-levels of English proficiency were interested in the project and granted the researchers consent to collect their project data. They completed a pre- and a post-project survey. However, due to individual schedule conflicts, not all students took speaking tests and interviews. Five out of the 17 students completed a pre- and a post-speaking test. Moreover, three students who took the speaking test received an end-of-project interview.

Of the 17 participants five were male students and 12 females. They had received English education at school for at least six years. Nine students (53%) had never gone abroad, six (35%) had visited an English-speaking country for less than one month, and two (12%) had stayed in an English-speaking country for up to six months. All of them had used a computer for more than one hour per day. Three of them (18%) had had experience of virtual-world software programs, and only one participant (6%) had used SL prior to the project.

Procedure

Data collection lasted for four months. At the beginning of the course, one of the researchers explained the purposes of the research to students and collected the consent forms from the 17 participants. All participants in the course learned SL because it was one of the topics in the course syllabus. The participants learned how to use SL in their regular class. Then, they were grouped with university students in Korea to undertake the five tasks in SL outside of class. Before completing the first task, all the participants took an online survey regarding their background information and language anxiety. Then, five out of all the participants made an appointment with one of the researchers to take an online English speaking test in SL. Once they logged into SL, the researcher teleported him/her to a quiet location for the test. When all participants had completed all the tasks at the end of the semester, they filled out an online post-survey with respect to their language anxiety and perception about the use of SL. The five participants took a post-speaking test. They made an appointment with one of the researchers and then logged into SL at the appointed time to complete the test. Finally, interviews with three participants were held to further investigate their SL learning experience at the end of the semester.

Data Collection and Analysis

Three types of data were collected and analyzed. Firstly, data on the participants' demographic information and language anxiety were gathered through a pre-project survey. In the pre-project survey were two main sections, one about participants' experiences in English learning and virtual worlds and the other about language anxiety by means of Horwitz, Horwitz, and Cope's (1986) Foreign Language Classroom Anxiety Scale (FLCAS). Twelve out of 33 five-point Likert-scale items (1 means "strongly disagree" and 5 means "strongly agree"), focused specifically on speaking, were selected and adapted for the study (see Appendix 1) after a consultation with an expert in the field of long-distance digital learning and second-language learning. A post-project survey consisted of language-anxiety items and 10 five-point Likert-scale items about SL usage for collaborative tasks (1 means "strongly disagree" and 5 means "strongly agree"). The internal consistency of the survey items was evaluated with Cronbach's alpha, which showed a good internal

consistency according to Nunnally and Bernstein (1994) (i.e., .86 for pre FLCAS, .92 for post FLCAS, and .86 for the SL usage for collaborative tasks). Descriptive statistics were used to analyze the demographic information and SL usage. To deal with the small sample size of the participants, inferential statistics, the Wilcoxon test, which is a nonparametric equivalent of a paired-samples t-test, was performed to determine whether there were any significant differences in participants' responses to FLCAS in the pre- and post-project surveys.

The second type of data was collected from students' pre and post-speaking tests. The format was adapted from the TOEFL speaking test which was completed within 15 minutes. The participants were asked three questions about a person or object familiar to them and described their opinions on an issue relevant to their life. For Questions 1 and 2, the participants were given 15 seconds to prepare responses and were subsequently asked to present their responses for 45 seconds. For Question 3, the participants were teleported to a location in SL and asked to describe the place. They were given 30 seconds to examine the venue and 60 seconds for their descriptions. The pre- and post-speaking tests were audio-taped for holistic evaluation. The first two researchers, as speaking raters, used the TOEFL speaking rubric, one of the most reliable measures for examining non-native speakers' English oral abilities. Its score ranges from 0 (poor performance) to 4 (good performance) points. The two researchers rated the scores independently and showed a good inter-rater reliability ($r = .83$). The Wilcoxon test was delivered to determine whether there was any significant difference in participants' speaking performance before and after the project.

At the end of the project, a face-to-face interview with individual volunteer participants was conducted by one of the researchers. The purpose of the interview was to seek more information about their experience interacting with Korean partners and their own perspectives on the use of SL for a collaborative project. The interview was audio-taped and transcribed. This data was used to strengthen the interpretation of the survey results and speaking performance.

RESULTS

Research Question 1: What is the impact of an intercultural collaborative project in SL on the language anxiety of Taiwanese students?

Table 1 shows the results of the participants' responses to FLCAS before and after the SL project. Students' mean scores in the pre- and post-test were in the middle point, indicating a medium level of language anxiety. Although the mean of the post-test was slightly higher than that of the pre-test, this difference was not statistically different ($Z = -.36$, $p > .05$). This finding demonstrated that the collaborative project in SL did not result in significant changes in students' foreign language anxiety. This was inconsistent with the results from the previous studies reporting a significance decrease in foreign language anxiety after completing projects in SL (Melchor-Couto, 2017, 2018; Wehner et al., 2011).

Table 1

Wilcoxon Test Results of Pre- and Post- Surveys Regarding Language Anxiety

Item	Pre-survey (N=17)		Post-survey (N=17)		Z
	Mean	SD	Mean	SD	
Language Anxiety	3.04	.56	3.14	.82	-.36

Note. Percentages were rounded to the second decimal point. The scores ranged from 1 to 5. * $p < .05$

Contrary to the previous works on language anxiety (Melchor-Couto, 2017, 2018; Wehner et al., 2011), the SL project in the current study was designed to promote NSS-NSS interactions, having Taiwanese students use English in collaborating with other Taiwanese students as well as the Korean students. It is interesting to note that the Taiwanese students did not feel much anxiety when interacting with Korean students about their culture and learning experiences. An interviewee stated, “*I felt less stressed out because my partner was not a teacher who was going to grade my performance.*” Another interviewee pointed out, “*My Korean group member was really nice. She was very interested in learning more about Taiwan. I enjoyed talking to her and sharing things with her. She’s like an online buddy.*” However, the Taiwanese participants appeared to have a concern that they did not precisely convey messages about their own culture and learning experiences and would be corrected by their Taiwanese peers. An interviewee mentioned as follows:

“The reason that I felt nervous was not because I communicated with someone who can’t understand Mandarin. But in my group there was a Taiwanese with the same English learning experiences and backgrounds. S/he might understand if my statements were correct or incorrect. This made me nerve-wrecking. For those who knew no Mandarin and our culture, s/he can’t tell what’s wrong.”

The anxiety coming from negative evaluation by their own peers seemed to be one of the reasons the SL project did not help lower their language anxiety.

Research Question 2: What is the impact of an intercultural collaborative project in SL on the speaking performance of Taiwanese students?

Only five participants were available outside class to take the pre- and post-English speaking tests. Table 2 demonstrates the participants’ scores on the speaking test before and after the project. Before the participants undertook the collaborative project in SL, their mean score on the test was 2.15 out of four. After the completion of the project, they improved their speaking abilities, showing a mean score of 3.02. This increase was statistically significant ($Z = -2.02, p < .05$).

Table 2

Wilcoxon Test Results of the Pre- and Post-Speaking Tests

Item	Pre-test (n=5)		Post-test (n=5)		Z
	Mean	SD	Mean	SD	
Speaking	2.15	.40	3.02	.59	-2.02*

Note. Percentages were rounded to the second decimal point. The scores ranged from 0 to 4. * $p < .05$

This positive result could be derived from the affordance of SL in conjunction with the task design. The nature of task-based learning in the project was meaningful and relevant to the participants’ experiences. While the participants approached individual tasks with their Korean partners, they took a virtual tour in SL, which stimulated real-life interactions and provided authentic contexts. These features motivated the

participants to communicate with their project partners and enabled them to have more opportunities to speak in English. For instance, when discussing pop culture, they visited Taiwanese and Korean places in SL, explored the places together and engaged in discussions on their findings about each other's cultures. The contextualization that they experienced in SL seemed to facilitate active discussions between the Korean and Taiwanese students, which in turn contributed to the increase in their speaking scores. The interviewee positively concluded the task-based learning on SL. She said,

“On Second Life, virtual objects and vivid environments aroused my interest. These helped me pay more attention to my communication with Korean partners. Of course in English. I kind of liked this task-based learning. I felt engaged in speaking English at that time.”

Research Question 3: What is the Taiwanese university students' perception of using SL for a collaborative project?

The second part of the post-survey asked for the participants' viewpoints on using SL for collaborative tasks. As displayed in Table 3, the mean scores of all the items in the survey were slightly above or under 3, indicating that the participants were inclined to being “Neutral” towards the item statements. The mean of Question 1 was 2.75, showing that the participants did not agree with the statement. This result further strengthened the finding that the participants remained anxious in the communicative tasks on SL. Moreover, when the participants were asked about their attitudes toward using SL as a learning platform and for language learning purposes, their mean responses were below 3 (neutral). This outcome might result from the technical issues of SL. Because it requires a high-speed internet connection and high-end computer hardware systems to ensure its smooth operation, all interviewees complained about the inconveniences of using SL:

“When there are a lot of people logging into SL at the same time, SL becomes very slow. SL also needs good computer hardware and fast Internet. It is not friendly to use SL.”

“There were some glitches and lags when I operated my avatar in SL.”

USING 3D VIRTUAL WORLD FOR EFL ENGLISH LEARNING

“Second Life needs very advanced hardware facilities. Its smoothness is always affected by different Internet bandwidth.”

Regarding the following items on the survey, the participants' responses were equal to or modestly above 3, ranging from 3 to 3.50. The participants neither favored nor disfavored undertaking learning tasks on SL (M = 3.00), but slightly expressed their enjoyment of the collaborative experience on SL (M = 3.18). One interviewee stated an opinion:

“We met our Korean partners on SL. English was the only language we used for communication in order to complete our tasks. Using English became a natural thing. I kind of liked it.”

When asked about the strength of SL, the participants did not fully confirm the similarity between SL and real-life situations (M= 3.06). Rather, they modestly recognized that SL brought them more opportunities for communication and up-to-date learning materials than conventional learning contexts using printed materials (M= 3.35 and 3.50, respectively). Two interviewees commented:

“It was Second Life where we can encounter various guys with different cultures and language backgrounds in the process of task completion. English became our tool to interact with them. This was a fresh, valuable experience of English learning.”

“In contrast to our English classes, we had more chances to use English on Second Life in order to interact with people we didn't know. The settings on Second Life were beyond our imagination. They seemed very innovative and gave me different stimuli from my English textbooks.”

In terms of their willingness to participate in SL activities again, the participants fairly tended to display their expectations (M= 3.31). The three interviewees all showed positive attitudes toward the implementation of the collaborative project. The interviewees offered the following positive comments:

I had to speak English to my counterpart. It's a good learning opportunity.”

Through this project, I was able to see my true English ability. This motivates me to continue learning English. I will do better in Second Life activities next time."

Not bad. It's meaningful, authentic to use English for communication. I look forward to the next Second Life project."

Table 3

Student Opinion of Using Second Life for a Collaborative Project

Survey Statements	Mean (N=17)	SD
1. I felt comfortable in communicating in English with my task partners in Second Life.	2.75	0.93
2. Second Life was a convenient and practical learning platform.	2.81	1.07
3. I enjoyed using Second Life for language learning.	2.81	0.98
4. I was interested in learning tasks because they were undertaken in Second Life.	3.00	1.10
5. The collaborative learning experience on Second Life was interesting.	3.18	0.81
6. The use of Second Life helped me collaborate with my team members.	3.12	0.81
7. The Second Life experience was comparable to real-life situations.	3.06	0.77
8. Second Life offered more communicative opportunities than traditional classroom language learning.	3.35	0.70
9. Second Life offered more updated contents than printed materials alone (such as textbooks, handouts, etc.).	3.50	0.82
10. I would participate another Second Life learning experience if I had a chance.	3.31	0.87

Note. The percentages were rounded off to the second decimal point. The score ranged from 1 to 5.

DISCUSSION AND CONCLUSION

This study investigated the effectiveness of an intercultural collaborative project using SL for reducing Taiwanese university students' language anxiety and improving speaking performance perceptions of the virtual world for the collaborative learning tasks. The results showed that the participants retained their foreign-language anxiety in the collaborative project in SL. Moreover, those who took pre- and post-speaking tests were identified as achieving better English-speaking performance at the end of the project. Finally, the participants' perceptions of the use of SL for the collaborative project were inclined to be neutral.

Contrary to previous literature (Melchor-Couto, 2017, 2018; Wehner et al., 2011), the participants in the current study did not show a decrease in their foreign-language anxiety levels. As Peterson (2011) asserted, anonymity is an important feature of virtual worlds to create a low-stress environment, thus encouraging learners to speak naturally and comfortably in their target language. In the present study, the groups consisted of Taiwanese and Korean students. Although the Taiwanese students remained anonymous to their Korean peers, they were not fully anonymous to their Taiwanese peers as they were enrolled in the same class in the university. This partial anonymity coming from group formation might explain the lack of improvement in their language anxiety.

Additionally, regarding the improvement of their English speaking abilities, the result is in line with Wang et al.'s (2012) study, in which the participants' speaking abilities were enhanced by engaging in communicative activities in SL. One explanation for this could be the nature of the intercultural project. Both Korean and Taiwanese students, coming from different first-language backgrounds, viewed English as a lingua franca for communication (Seidlhofer, 2005). This promoted the meaningful use of English in both parties. Another possible explanation might be the affordances that SL provides and the tasks implemented in the project. Firstly, SL enables learners to immerse themselves in a rich, contextualized, and meaningful environment. When discussing differences between Korea and Taiwan, they could visit places in SL which represent cities of both countries where they could hear the language and read authentic signs written in Korean or Chinese. This contextualized environment facilitated active interactions and deeper engagement in the task, which in turn contributed to enhancing students' speaking abilities. Secondly, it is plausible that collaborative tasks play a pivotal role in helping students in distant locations to regularly interact

with their group members and naturally engage in conversations. Following O'Dowd and Ware's (2009) study, various types of tasks were offered, involving information exchange (interview your partner), comparison and analysis (compare each other's culture), and collaboration/product creation (create a joint product). This task-based project seemed to enable learners to communicate for meaning and have opportunities to express their own ideas in their target language (Ellis, 2003).

Having an innovative and immersive environment for learning, however, might not be always accepted positively by the participants. Although the participants enhanced their speaking abilities through the SL project, they also commented that they experienced technical difficulties in using SL for the collaborative tasks. SL makes high demands in hardware equipment and Internet bandwidth. Without these facilities, users could easily encounter downtime and lags when using SL. The participants in the present study addressed hardware and internet issues, which is a common problem in the field of CMC studies (Thorne, 2003; Ware, 2005), specifically in SL studies (Liou, 2012; Mayrath et al., 2010; Wang et al., 2012). It is not surprising that the participants experienced difficulties in using SL during the project.

The current study was designed to provide teachers and researchers with research-based evidence on the effectiveness of an SL project administered outside of regular language classes by carefully designing SL tasks and grouping students with different L1 backgrounds who are geographically close for smooth, synchronous, online collaboration. Although the findings of this study resulted from a small number of participants, it is hoped that this study can provide insight for educators who plan to implement outside-class collaborative projects using SL. Pedagogical implications can be drawn from the study. To begin with, suggested by Appel and Guerrero (2006), experiences gleaned from the widespread implementation of SL in second-language classes emphasize the importance of sufficient preparation for eTandem projects. Students in both groups have to be clear about why they are participating in projects on SL and how they can interact with persons from different first-language backgrounds. Teachers also need to foster positive feedback and rapport among the students and to reiterate that the purpose of the collaboration is not to evaluate each other's level of proficiency but to have more opportunities to speak English in a meaningful way. Consequently, the students' time and effort would be compensated by sharpening their

language competence efficiently. Secondly, the project was undertaken after class throughout nearly one semester. In such a long duration, maintaining students' motivation to engage in the project is important. Teachers have to understand student participation in collaborative projects on SL and give students prompt support to heighten their commitment to the project. Finally, the participants' progress in speaking ability was attributed to the design of tasks they performed on SL. Learning tasks can be designed in accordance with the features of SL, such as rich, contextualized, and experiential environments. This would immerse learners into contextual, meaningful spaces, giving rise to positive learning gains.

The study echoed Wigham, Panichi, Nocchi, and Sadler's (2018) call to provide more knowledge about the association between anonymity and SL usage. To take advantage of SL anonymity affordance fully, more considerations should be included, such as group composition for SL activities. The study also corroborated the learners' speaking improvement in the task-based design on SL and provided information about their neutral perception of SL use. However, the study was constrained by the small sample size of participants. Specifically, few participants took the speaking tests and interviews. This affects the generalizability to the whole population of Taiwanese university EFL students. Furthermore, participant perception of SL was measured through 10 Likert-scale post-task items, which may have been arbitrary and simplified. For future studies, different types of data and more survey items could be included to analyze different dimensions of learner feedback. Furthermore, it would be of interest to investigate the impact of learning partners from different languages and cultural backgrounds on language-learning performance. Finally, conversation analysis could be applied to examine how learning partners in intercultural projects deal with different tasks in SL activities. This could lead to rich discussion on factors affecting the efficacy of SL tasks, such as learner proficiency levels and intercultural competence.

REFERENCES

- Aida, Y. (1994). Examination of Horwitz, Horwitz, and Cope's construct of foreign language anxiety: The case of students of Japanese. *The Modern Language Journal*, 78(2), 155-168.
- Alastuey, M. C. B. (2010). Synchronous-voice computer-mediated communication: Effects on pronunciation. *CALICO Journal*, 28(1), 1-20.
- Alshumaimeri, Y., Gashan, A., & Bamanger, E. (2019). Virtual worlds for collaborative learning: Arab EFL learners' attitudes toward Second Life. *World Journal on Educational Technology: Current Issues*, 11(3), 198-204.
- Appel, C., & Guerrero, R. G. (2006). Finding common ground in LSP: A computer-mediated communication project. In E. Macià, A. Cervera, & C. Ramos (Eds.), *Information technology in languages for specific purposes: Issues and prospects* (pp. 75-90). New York: Springer.
- Chen, J. C. (2016). The crossroads of English language learners, task-based instruction, and 3D multi-user virtual learning in Second Life. *Computers & Education*, 102, 152-171.
- Cooke-Plagwitz, J. (2008). New directions in CALL: An objective introduction to Second Life. *CALICO Journal*, 25(3), 547-557.
- Dalgarno, B., & Lee, M. J. (2010). What are the learning affordances of 3-D virtual environments? *British Journal of Educational Technology*, 41(1), 10-32.
- Deutschmann, M., & Panichi, L. (2009). Talking into empty space? Signalling involvement in a virtual language classroom in Second Life. *Language Awareness*, 18(3-4), 310-328.
- Deutschmann, M., Panichi, L., & Molka-Danielsen, J. (2009). Designing oral participation in Second Life- A comparative study of two language proficiency courses. *ReCALL*, 21(2), 206-226.
- Dörnyei, Z. (2003). Attitudes, orientations, and motivations in language learning: Advances in theory, research, and applications. *Language Learning*, 53, 3-32.
- Elkhafaifi, H. (2005). Listening comprehension and anxiety in the Arabic language classroom. *The Modern Language Journal*, 89(2), 206-220.
- Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press.
- Gardner, R. C., & Clément, R. (1990). Social psychological perspectives on second language acquisition. In H. Giles & W. P. Robinson (Eds.), *Handbook of language and social psychology* (pp. 495-517). Oxford, England: John Wiley & Sons.
- Gass, S. M. (1997). *Input, interaction, and the second language learner*. Mahwah, N.J: Lawrence Erlbaum Associates.
- Grant, S., & Huang, H. (2010). The integration of an online 3D virtual learning environment into formal classroom-based undergraduate Chinese language and culture curriculum. *Journal of Technology and Chinese Language Teaching*, 1(1), 2-13.
- Hassan, R. F., Dzakiria, H., & Idrus, R. M. (2016). Using Second Life platform for

USING 3D VIRTUAL WORLD FOR EFL ENGLISH LEARNING

- improving English language skills: Students' perception. *International Review of Management and Marketing*, 6(8S), 43-47.
- Hew, K. F., & Cheung, W. S. (2010). Use of three dimensional (3 D) immersive virtual worlds in K 12 and higher education settings: A review of the research. *British Journal of Educational Technology*, 41(1), 33-55.
- Horwitz, E. (2001). Language anxiety and achievement. *Annual Review of Applied Linguistics*, 21, 112-126.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *Modern Language Journal*, 70(2), 125-132.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. A. (1986). Foreign language classroom anxiety. *The Modern Language Journal*, 70(2), 125-132.
- Hwang, G. J., & Fu, Q. K. (2019). Trends in the research design and application of mobile language learning: A review of 2007-2016 publications in selected SSCI journals. *Interactive Learning Environments*, 27(4), 567-581.
- Hwang, W. Y., Shadiev, R., Hsu, J. L., Huang, Y. M., Hsu, G. L., & Lin, Y. C. (2016). Effects of storytelling to facilitate EFL speaking using web-based multimedia system. *Computer Assisted Language Learning*, 29(2), 215-241.
- İliç, U., & Arkan, Y. D. (2016). Analysis of student views on foreign language learning in Second Life environment. *Turkish Online Journal of Qualitative Inquiry*, 7(4), 364-395.
- Kim, D., Vorobel, O., & King, B. (2018). Students' use of Second Life in learning Spanish as a foreign language. *Journal of Second Language Teaching & Research*, 6(1), 109-142.
- Kung, F. W. (2017). Teaching and learning English as a foreign language in Taiwan: A socio-cultural analysis. *TESL-EJ*, 21(2), 1-15. Retrieved from www.tesl-ej.org/wordpress/issues/volume21/ej82/ej82a4/
- Lan, Y. J., Fang, S. Y., Legault, J., & Li, P. (2015). Second language acquisition of Mandarin Chinese vocabulary: Context of learning effects. *Educational Technology Research and Development*, 63, 671-690.
- Levak, N., & Son, J. B. (2017). Facilitating second language learners' listening comprehension with Second Life and Skype. *ReCALL*, 29(2), 200-218.
- Liou, H. C. (2012). The roles of Second Life in a college computer-assisted language learning (CALL) course in Taiwan, ROC. *Computer Assisted Language Learning*, 25(4), 365-382.
- Liu, M., & Jackson, J. (2008). An exploration of Chinese EFL learners' unwillingness to communicate and foreign language anxiety. *The Modern Language Journal*, 92(1), 71-86.
- MacIntyre, P. D., & Gardner, R. C. (1991). Language anxiety: Its relationship to other anxieties and to processing in native and second languages. *Language Learning*, 41(4), 513-534.
- Masgoret, A. M., & Gardner, R. C. (2003). Attitudes, motivation, and second language learning: A meta analysis of studies conducted by Gardner and associates. *Language Learning*, 53(S1), 167-210.

- Mayrath, M. C., Traphagan, T., Jarmon, L., Trivedi, A., & Resta, P. (2010). Teaching with virtual worlds: Factors to consider for instructional use of second life. *Journal of Educational Computing Research*, 43(4), 403-444.
- Melchor-Couto, S. (2017). Foreign language anxiety levels in Second Life oral interaction. *ReCALL*, 29(1), 99-119.
- Melchor-Couto, S. (2018). Virtual world anonymity and foreign language oral interaction. *ReCALL*, 30(2), 232-249.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- O'Dowd, R., & Waire, P.D. (2009). Critical issues in telecollaborative task design. *Computer Assisted Language Learning*, 22(2), 173-188.
- Palomeque, C., & Pujolà, J. T. (2018). Managing multimodal data in virtual world research for language learning. *ReCALL*, 30(2), 177-195.
- Peterson, M. (2010). Learner participation patterns and strategy use in Second Life: An exploratory case study. *ReCALL*, 22(3), 273-292.
- Peterson, M. (2011). Towards a research agenda for the use of three-dimensional virtual worlds in language learning. *CALICO Journal*, 29(1), 67-80.
- Pichette, F. (2009). Second language anxiety and distance language learning. *Foreign Language Annals*, 42(1), 77-93.
- Reisoğlu, I., Topu, B., Yılmaz, R., Yılmaz, T. K., & Göktaş, Y. (2017). 3D virtual learning environments in education: A meta-review. *Asia Pacific Education Review*, 18, 81-100.
- Saito, Y., & Samimy, K. K. (1996). Foreign language anxiety and language performance: A study of learner anxiety in beginning, intermediate, and advanced-level college students of Japanese. *Foreign Language Annals*, 29(2), 239-249.
- Seidlhofer, B. (2005). English as a lingua franca. *ELT Journal*, 59(4), 339-341.
- Sun, Z., Lin, C. H., You, J., Shen, H. J., Qi, S., & Luo, L. (2017). Improving the English-speaking skills of young learners through mobile social networking. *Computer Assisted Language Learning*, 30(3-4), 304-324.
- Sung, Y. T., Chang, K. E., & Yang, J. M. (2015). How effective are mobile devices for language learning? A meta-analysis. *Educational Research Review*, 16, 68-84.
- Thorne, S. (2003). Artifacts and cultures-of-use in intercultural communication. *Language Learning & Technology*, 7(2), 38-67.
- Wang, C. X., Calandra, B., Hibbard, S. T., & Lefaiver, M. L. M. (2012). Learning effects of an experimental EFL program in Second Life. *Educational Technology Research and Development*, 60, 943-961.
- Ware, P. (2005). "Missed communication" in online communication: Tensions in fostering successful online interactions. *Language Learning & Technology*, 9(2), 64-89.
- Wehner, A. K., Gump, A. W., & Downey, S. (2011). The effect of Second Life on the motivation of undergraduate students learning a foreign language. *Computer Assisted Language Learning*, 24(3), 277-289.
- Wigham, C. R., Panichi, L., Nocchi, S., & Sadler, R. (2018). Interactions for language learning in and around virtual worlds. *ReCALL*, 30(2), 153-160.

USING 3D VIRTUAL WORLD FOR EFL ENGLISH LEARNING

- Yamazaki, K. (2018). Computer-assisted learning of communication (CALC): A case study of Japanese learning in a 3D virtual world. *ReCALL*, 30(2), 214-231.
- Yang, H. C. (2012). Language anxiety, acculturation, and L2 self: A relational analysis in the Taiwanese cultural context. *Electronic Journal of Foreign Language Teaching*, 9(2), 183-193.
- Yanguas, Í. (2012). Task-based oral computer-mediated communication and L2 vocabulary acquisition. *CALICO Journal*, 29(3), 507-531.
- Yen, Y. C., Hou, H. T., & Chang, K. E. (2015). Applying role-playing strategy to enhance learners' writing and speaking skills in EFL courses using Facebook and Skype as learning tools: A case study in Taiwan. *Computer Assisted Language Learning*, 28(5), 383-406.

Li-Tang Yu, Jayoung Song & Fu-Yuan Chiu

ACKNOWLEDGMENT

The authors would like to thank Professor Paul Resta for his support in this Second Life project. The authors also wish to appreciate the anonymous reviewers of the *Taiwan Journal of TESOL* for their constructive comments to help improve earlier versions of this paper.

CORRESPONDENCE

*Li-Tang Yu, Department of English Language and Literature, Fu Jen Catholic University, New Taipei City, Taiwan (R.O.C.)
Email address: cdpstarn@gmail.com*

*Jayoung Song, Department of Asian Studies, Pennsylvania State University, Pennsylvania, U.S.A.
Email address: jayoung.song@psu.edu*

*Fu-Yuan Chiu, Department of Education and Learning Technology, National Tsing Hua University, Hsinchu City, Taiwan (R.O.C.)
Email address: chiu.fy@mx.nthu.edu.tw*

PUBLISHING RECORD

Manuscript received: October 24, 2019; Revision received: March 30, 2020; Manuscript accepted: May 12, 2020.

APPENDIX

Appendix A. Adapted foreign language anxiety survey items

1. I worry about making mistakes when speaking in English.
2. It frightens me when I don't understand what the speaker/interlocutor is saying in English.
3. I start to panic when I have to speak without preparation in English.
4. When speaking English, I can get so nervous I forget things I know.
5. It embarrasses me to initiate a communication in English.
6. Even if I am well prepared for English speaking, I feel anxious about it.
7. I can feel my heart pounding when I'm going to be asked to respond in English.
8. I always feel that others speak English better than I do.
9. Conversation in English goes so quickly that I worry about getting left behind.
10. I feel more tense and nervous speaking in English than in my native language.
11. I feel overwhelmed by the number of rules I have to learn to speak English.
12. I am afraid that other people will laugh at me when I speak English.