A Collaborative Virtual Environment for Situated Language Learning: A case study of English learning in Second Life

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Abstract

This research discusses the collaborative English learning of L2 between learning motivation and learning effectiveness of students in 3D virtual worlds such as Second Life. Twenty-one university students were randomly selected to participate in this research. An English instructor and a tutor conducted English activities in 3D virtual worlds. The Motivated Strategies for Learning Questionnaire (MSLQ) was used to evaluate intrinsic/extrinsic goal orientation, and self-efficacy of students in English learning in Second Life. An English assessment between the pre-test and post-test was used to evaluate the learning effectiveness of students. The data collected was analyzed by descriptive statistics, one-way ANOVA, and regression. The results showed that the intrinsic and extrinsic goal orientations of students in English learning in Second Life had positive influence on their self-efficacy of English learning in 3D virtual worlds. The effectiveness of students has significant difference via self-efficacy of English learning in Second Life.

1. Introduction

Most English learning activities take place in classrooms. However, students frequently do not have enough opportunities to practice English. After class, students do not have companions with which to practice English. The following presents reasons why students do not have good learning outcomes in English learning [1]. The classroom lacks a situated learning environment in which students can immerse themselves during oral practices [2] [3] [4]. Students do not have opportunities to practice English with foreigners after class; and 1earning contents may vary according to distinct instruction methods.

Owing to the above factors, this research developed 3D virtual worlds to assist in student learning. The presence of 3D virtual worlds is so vivid that students feel as if they are learning in the real world. The technology used to develop 3D virtual worlds has become increasingly more mature and computer users enjoy immersing in 3D virtual worlds. Students can play a role and practice English in these environments to progress in

English learning by studying in 3D virtual worlds [5]. In this environment, students can learn without the limitation of time and space and gain more valuable knowledge in this environment than in traditional classrooms.

This research also discusses whether the intrinsic and extrinsic goal orientations of students influence self-efficacy and learning effectiveness and whether self-efficacy influences learning effectiveness in 3D virtual worlds. Previous research has argued that intrinsic or extrinsic goal orientations influence student effectiveness [6], and that high self-efficacy is more significant on learning effectiveness, which raises the following research questions:

a) Question 1: Are the intrinsic/extrinsic goal orientations of students positively related to their self-efficacy of English learning in Second Life?
b) Question 2: Are the intrinsic/extrinsic goal orientations of students positively related to their learning effectiveness of English learning in Second Life?
c) Question 3: Is the self-efficacy of students positively related to their learning effectiveness of English learning in Second Life?

2. Literature review

2.1. Situated learning in virtual worlds

Most learning activities in a traditional classroom involving abstract knowledge are out of context. Lave and Wenger [7] emphasized situated learning as a process of participation in communities of practice that is first legitimately peripheral, but increases gradually in engagement and complexity. The authenticity of learning activities from observation, demonstrations, explanations, and tips provides learners the opportunity to participate in the learning process. Huang et al. [8] emphasized that thematic teaching can efficiently expand learner knowledge while surfing in cyberspace. This study will practice thematic teaching activities based on situations of English learning in Second Life.

Many researchers have attempted to apply virtual worlds to cooperative learning. Kock [9] summarized that a group of learners who collaboratively construct knowledge represent the features of pedagogy. However,

most researchers view virtual worlds as a place to display learning materials. During the learning period, students have to read the online texts and share their ideas with each other. The context in virtual worlds is more abundant compared to the traditional textbook [10]. The simulation in virtual worlds can enhance the learning motivations of students. Students feel as if they are playing a game while they are learning in virtual worlds. Learners interacted through avatars in virtual worlds as a context for online education. The above descriptions illustrate the learning affordances of 3D virtual environments.

2.2. 3D virtual worlds

3D virtual worlds are used in fields as diverse as manufacturing, medicine, and education. Messinger et al. [11] stated that virtual worlds can be traced back to Multi-user virtual environments (MUVEs) and Massively multi-player online games (MMOs). The virtual reality gives the user a sense of presence. The use of authentic 3D space such as MUVEs and MMOs is the current trend. Burigat & Chittaro [12] created virtual worlds where users can update their status and share resources with each other. Popular games such as Never Winter Nights and World of Warcraft allow users to share their resources. However, these games lack storiness and educational goals. Users cannot create their story or scenarios in the same platform. The unstructured 3D is the main factor that attracts educators to conduct education research in 3D virtual worlds. These education researches provide methods to solve the learning difficulties of students. Warburton [13] classified virtual worlds into flexible narrative, social, simulation, and workspace; Second Life is classified into social world, and possesses the characteristics of MUVEs, role-playing, and some degree of cooperative workflow.

Second Life, developed by Linden Lab, and launched in June 2003, is a tool for building virtual worlds and is accessible on the Internet. deWinter and Vie [14] asserted that Second Life is not a game, but a set of 3D virtual world environments without a script. Second life provides tools for users to create 3D virtual worlds. Users can edit their appearances and change their hair, shape, skin, etc. Second Life provides 13 types of prims to sculpt to become anything users like. Linden Script Language provides methods and the process to control objects in virtual worlds. Users can use events, flow control, and functions to edit a play and even use HTTP protocol to record user behaviors. Residents can use headphones and microphones to conduct peer to peer or peer to group communication. In addition to voice chat, residents can send instant messages to chat with each other or a group. Users can access animations to make their avatar clap hands, blow a kiss, etc. Dalgarno and Lee [15] conceived that many characteristics are the learning affordances of 3D virtual worlds. Thus, this research creates a virtual world of English learning and teaching in Second Life.

2.3. Learning motivation & effectiveness

Motivations influence learning effects in many domains, such as a decision support system and game-based learning. Bernstein et al. [16] proposed that motivation is the intrinsic power of individuals (e.g. interests, attitudes and desires) to affect individual actions and change behaviors. An individual must espouse motivations to engage in long-term meaningful learning. Learning motivations will inspire an individual with learning difficulties to continue learning. Intrinsic goal orientation is the inner force, which energizes individuals to do all kinds of things. This force involves a series of processes: an individual starts an activity and continues that activity toward a goal. Extrinsic goal orientations are the external factors that affect the learning motivations of students. Working toward good grades or class honors are extrinsic goal orientations. Motivations and behaviors are contrastive. Behaviors are external activities, while motivations are the inner process, which empowers individuals to do something. Learning motivation is an inner mechanism that encourages an individual to start a learning activity, continue learning, and finally achieve his learning goal. Lin, McKeachie, & Kim [6] pointed out that intrinsic or extrinsic goal orientations influence the effectiveness of students. In Taiwan, students are typically judged by their grades, and the pressure to perform causes them to lose interest in learning and become frustrated. Therefore, it is very important to stimulate the learning motivations of students to assist them to become lifelong learners.

Bandura [17] proposed self-efficacy as the belief that one can accomplish tasks on his own in certain conditions. When an individual faces a significant problem, he will acknowledge the problem and solve it. Self-efficacy influences individual decisions. If a person believes he is not able to face a situation, he will avoid it. Self-efficacy is the belief held by a student that he will behave well in class. High self-efficacy is more significant on learning effectiveness. Law, Lee, & Yu [18] suggested that a well-facilitated e-learning setting enhances learning motivation and student efficacy. They also described self-efficacy and cognitive engagement as having a significant correlation that will affect student learning effectiveness.

3. Methodology

Our school built a 3D virtual learning environment based on Second Life (http://itell.tw/), called iTELL, an acronym for island for Technology Enhanced English Learning. iTELL provides an authentic and collaborative environment to fulfill the needs of students to exchange knowledge.

iTELL enables multiple participants to 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. In virtual worlds, everyone can control his avatar to interact,

communicate, and cooperate with others. In multiple player virtual worlds, people need an icon or an avatar to feel their existence among others. All things are possible in virtual worlds. One can be a tree, a ball, a bird, or an alien. Learning through avatars can increase learning motivations. iTELL provides a virtual learning environment for instructors and students to interact. The traditional classroom is transplanted to the virtual world in iTELL so that students can learn without the limitations of time and space.

iTELL provides a situated learning environment for English learning in Second Life. Situated learning also identifies and arranges the learning community through actual participation and uses experts as guides to provide a real learning environment for students.
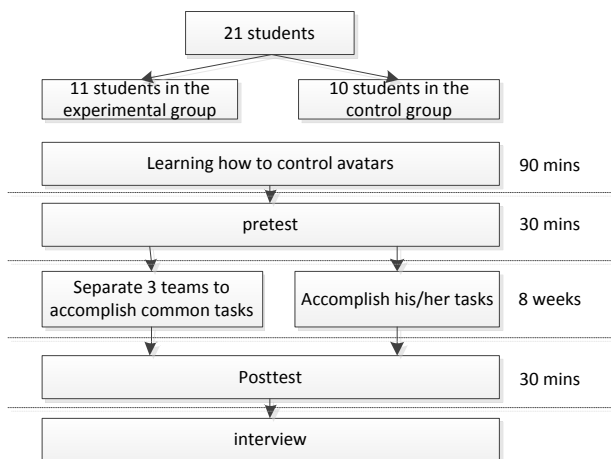

Figure 1. The flowchart of the experiment

The figure 1 shows that twenty-one students, one English instructor, and one tutor participated in this research for eight weeks. This research discusses whether Second Life enhances learning effectiveness by applying thematic teaching to the virtual courses. The theme of these English courses is "Going shopping in the shopping mal1". Learning objectives enable students to understand the meanings of vocabulary and phrases. They can use the exact sentence pattern in the lesson, realize what causes shoppers to buy more products in a supermarket, and understand sales promotion terms. In the first 30 minutes, the instructor explains the experimental objectives and evaluation methods. In the first week, students register for an account in Second Life and chose an avatar they like. Afterwards, the instructor proposes a pretest questionnaire. 21 students were separated with 11 student of experimental group and 10 students of control group. And experimental group were separated 3 teams to accomplish tasks collaboratively. After using Second Life, the instructor administers a posttest questionnaire to students, edited based on intrinsic goal orientation of English learning in Second Life, extrinsic goal orientation of English learning in Second Life, and self-efficacy of English learning in the Second Life subscale.

In the situational environment, students can view 3D

virtual merchandise and listen to the voice of their companions via headphones, and chat with each other through keyboards or microphones. The teaching goal is to enable students to purchase virtual merchandise in the virtual shopping mall. They can feel the authentic environment and discuss shopping issues in the mall. The merchandise in the shopping mall includes prices and English pronunciation. An avatar tutor also helps students practice English in the shopping mall. The instructor assigns tasks to students to accomplish in situated environments. The following is a fragment of conversation practice. The figure 2 shows that the real instructor interacts with students' avatars in the real world. Desktop computers are equipped with a 3D accelerator card, a network, and a headset microphone in the real environment serve as the communication interface with virtual worlds
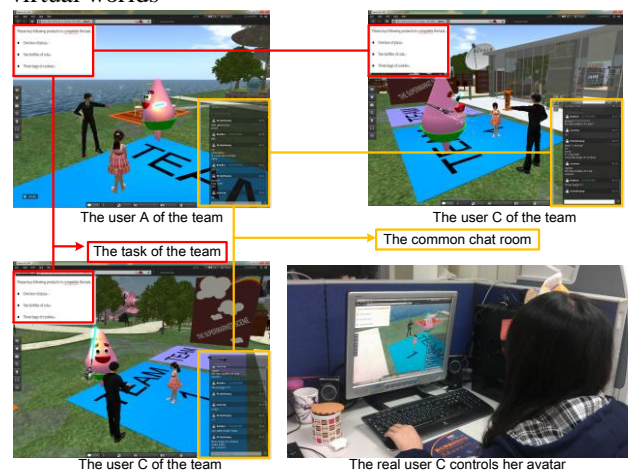
Figure 2. The real user controls their avatar to accomplish common tasks

4. Analysis

Twenty-one students participated in this research. They took the questionnaire and assessment before using iTELL as an e-learning platform to study English. After eight weeks of learning, subjects responded to the questionnaire again to see if they had higher learning motivation and effectiveness of English learning in Second Life. The questionnaire was adopted from Artino [19].

A micro genetic qualitative analysis of student interviews and open-ended feedback indicated that most students feel that their motivation and effectiveness of English learning in Second Life is positive between pre-use and post-use in virtual worlds.

We also interviewed students on certain subjects in this research:

a) I can browse anywhere in virtual worlds without space limitations. I feel more relaxed and active because there is no face-to-face encounter in class. The 3D virtual environments are very interesting and raise my motivation. In addition, I do not need to concentrate in one place because I can go to classes in various locations such as distance learning.

b) Learning in Second life gives me courage to share

ideas compared to traditional learning. Consequently, I feel an amazing sense of learning in virtual worlds.

c) Although the interface is very complicated and takes time to get used to, I would like to learn English with iTELL.

d) Overall, I feel that the sound quality is good and the curriculum planning has doubled. I think the only bad part is that we cannot control the voice volume, because the voice volume of the instructor is controlled by the direction of the camera view in Second Life. When we rotate the camera to watch the curriculum teaching materials, the sound is very low and difficult to hear.

The instructor and students were able to express their views more effectively in Second Life through interviews. When using the Second Life platform to teach English, we recommend extending additional materials, which appear in the chat frame in the virtual class. Instructors may find it difficult to spend time looking for local slides of additional materials. Second life provides various materials located in cyber space. Placing curriculum materials on Second life can avoid wasting time looking for local materials. English learning in 3D virtual worlds differs from Web learning. Beginning 1earners might have trouble trying to control their avatars and viewer operations in Second Life. Especially in hardware, the computer needs to install a 3D accelerator card and higher network bandwidth to keep the frames smooth. The experiment requires considerable time in preparation and training. However, there was consensus among the students that the English learning activities in Second Life impacted their motivation and self-efficacy.

5. Conclusion

This research shows that 3D virtual worlds provide situated learning environments and thematic learning scenarios, as well as socialization and collaborative environments for students. Students can even perform language-learning activities in these environments. This research shows that 3D virtual worlds offer educational potential; therefore, instructors can apply 3D virtual worlds to their teaching. By playing videos, cartoons, and music, teachers can enhance the learning motivations of students. In this way, students will be more involved in their learning and demonstrate enhanced learning effectiveness in Second Life.

Finally, the research reported here was a small-scale study; only twenty-one students, one instructor, and one tutor participated in this research, which may raise issues that require further study.

6. Acknowledge

7. References

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