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Editors

Ahmad Fauzi Mohd Ayub

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Krittaya Leelawong

Fu-Yun Yu

Tsukasa Hirashima

Gautam Biswas

APSCE

NECTEC a member of NSTDA

TCU THAILAND CYBER UNIVERSITY

MAEJO UNIVERSITY

Chapter 3

Real Education in Virtual Worlds

Preface

Virtual worlds have generated much attention and interest among educators and researchers over the last few years. To response the increasing calls for practical evidences of applying virtual worlds in educational settings, the first workshop on Real Education in Second Life was held in conjunction with The 18th International Conference on Computers in Education (ICCE2010). We had a fruitful harvest in the workshop. Researchers and educators from different countries got together to share and exchange experiences in Second Life. To expand the participance and influences, the second workshop on Real Education in Second Life is renamed as Real Education in Virtual Worlds. We have accepted 8 papers from 4 countries. The two-hour workshop will provide a forum where international participants can share knowledge, experiences and concerns on related educational issues in Virtual Worlds and explore directions for future research collaborations.

Organizer
Yu-Ju Lan, *National Taiwan Normal University, Taiwan*

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Using Second Life® for teaching genetics laboratory sessions to undergraduates

Suzanne Lavelle, Paul Rudman and Annette Cashmore

GENIE Centre of Excellence in Teaching and Learning in Genetics, University of Leicester, UK

Abstract: There is a growing need for new approaches to effective laboratory-based learning. Issues of space, time and resources, lead to pedagogical limitations in the use of practical classes involving student engagement in pre-designed experiments. There remains a need for approaches that help students develop skills such as experimental design and teamwork, whilst effectively combining theoretical and practical aspects of the subject. We describe the processes involved in setting up three genetics-based practical classes in Second Life, a virtual world where students access the information as avatars. First year biological science students and first year medical students have each taken part in different virtual laboratory activities, designed to complement current real laboratory practical sessions. We have evaluated whether or not Second Life is an effective education tool. Initial findings show that many students felt that the virtual laboratories were very beneficial to them, helping them link the practical work with the underlying theory. There was also some improvement in the knowledge gained and retained by the students.

Keywords: Genetics, Second Life, virtual worlds, laboratory, evaluation

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Development of 3D virtual math games on Second Life

Indy Y.T. Hsiao[a*], Irene Y.S. Li[a], Jeff J.S. Huang[b], Stephen J.H. Yang[a], Ellis S.J. Fu[a]
[a]*Department of Computer Science and Information Engineering, National Central University, Taiwan*
[b]*Department of Computer Science and Information Engineering, Hwa Hsia Institute of Technology, Taiwan*
*indymajere@gmail.com

Abstract: Mathematical education in elementary school is the key fundamental of math learning. It plays an important role of pupils' future math learning. This study tries to combine information technology and mathematics to build a mathematical learning environment in Second Life. We expect to create a new learning style for mathematical education in elementary school. While Second Life has got a lot of empirical results in education, some researches indicate that students need guidance or teaching aids to learn in such environments. In order to improve the pupil's learning outcomes, this study proposes a problem-based learning approach with teaching aids and embeds mathematical learning materials in the built virtual classrooms facilitating teaching as well as learning.

Keywords: Second Life, problem-based learning, Math game, virtual classroom, teaching aids

Introduction

Mathematical education in elementary school is the key fundamental of math learning. It plays an important role in pupils' future math learning. According to Pólya's idea of *How to solve it* (1945), students need to know the meaning of a question and its goal before they solve a math question. Then, they have to think of strategies and plan a way to solve it. After they solve a question, they need to verify if the answer fits to the question and to think if there is a better answer. Pólya's idea looks simple. However, it is difficult to realize in educational field. Gu (1999) fingered out that even students already have the abilities to calculate a math question, they may still encounter the problem of understanding the meaning of math questions. According to the reasons above, we need teaching guidance to help students to understand the questions and solve them.

Schoenfeld (1985) pointed out that the major goal of mathematical education is to help students become a person with problem-solving ability. After famous Mathematician Pólya published *How to solve it*, *Mathematical discovery* and *Mathematics and plausible reasoning*, mathematics educators attach great importance to the tendency of math education. After all, training students to solve questions is an important task of math education, especially in the changing world. According to the ideas above, the main philosophy of the study is to design a problem-based teaching aids and materials which can help students to think and solve the math questions.

Living experiences are the best materials for students to learn. They learn in the environment which they are familiar with and they learn in daily life. *The Nuffield Foundation* (1965) proposed that I do and I understand at the beginning of the book. The author wrote Xi Wan Zhe Dong De Yi, which is the main concept of *The Nuffield Foundation* (1965), in Chinese in the introduction. Math games therefore become a trend and are improved with the progress of information technology. For example, interactive learning games, which are funny and interesting, can reduce students' fear of math and improve students' learning outcomes. Thus, this study use math games to design elementary math materials.

Since Second Life is easy to use and free to build (Boulos, Hetherington & Wheeler, 2007; Prasolova-Førland, Sourin & Sourina, 2006), it becomes a popular 3D platform in education field (Edwards,2006). Besides, everyone can own his virtual environments, also called Sims, in Second Life. Therefore, many universities and language institutions (such as, British Council, Confucius Institute, Cervantes and Goethe Institute) have their own Sims, and do a lot of researches in SL. Although there are many empirical research results of education in Second Life, few emphases are put on math. Nevertheless, most of the mathematical learning materials are presented in 2D in digital learning. However, some materials are best presented in 3D. Since Second Life can present learning materials in 3D, we decide to do our mathematical teaching experiment in Second Life.

The objective of this study is to develop a new mathematical learning environment, combing information technology with mathematics. We develop 3D virtual math games based on Problem-based learning approach in the popular 3D virtual platform Second Life. The research questions of this study are described below:

1. Whether Problem-based learning approach can guide students in learning mathematics in Second Life?
2. Compare to those who do not study math based on Problem-based learning approach, do students study mathematics in Second Life in this study get better learning effectiveness?

1. Virtual math classroom

Most of the teachings in present are carried out in the classrooms. In this way, teachers will be able to handle students' learning progresses instantly. Besides, students can interact with their teachers closely in the class. However, this kind of face to face teaching has its limitations. For example, students have to go to the classroom to gain knowledge. For minorities or those who live in remote areas, they may not have the chance to gain knowledge because they may not be able to go to the classroom. On the other hand, distance learning breaks the limitation of time and space. Yet, it lacks of presence and sense of interaction. Students cannot immerse in distance learning because they watch educational videos most of the time and discuss with their peers via instant messages. To solve the above-mentioned problems, teaching in virtual environments becomes a trend in recent years. Therefore, we choose Second Life, a popular virtual platform, as our teaching environment. Second Life, a massively multiplayer online social game, is now applied into educational field extensively. It has vivid presence (Biocca & Levy, 1995) and provides the environment for cooperative learning and co-editing (Petrakou, 2009; Bishop, 2009). It is hoped that Second Life can help students immerse in online learning. The learning environments developed by us in Second Life are described as follows.

- Virtual classroom: The virtual classroom which simulates the real world classroom will help students get used to virtual learning environments quickly.
- Virtual platform: Teachers can teach on the platform and switch his slides here.
- Projector screen: Usually, there are one projector and one projector screen in traditional classroom. However, there are ten projector screens in these virtual learning environments. Students can see the projector screens from different directions.
- Podiums: There are podiums in front of students' seats. Students can raise their hands and vote in their seats.

With the help of above 3D learning environments, teachers can teach mathematics by slides, videos, voices or texts in Second Life which provides the environment for distance learning. Besides, Second Life also has vivid presence and sense of interaction.

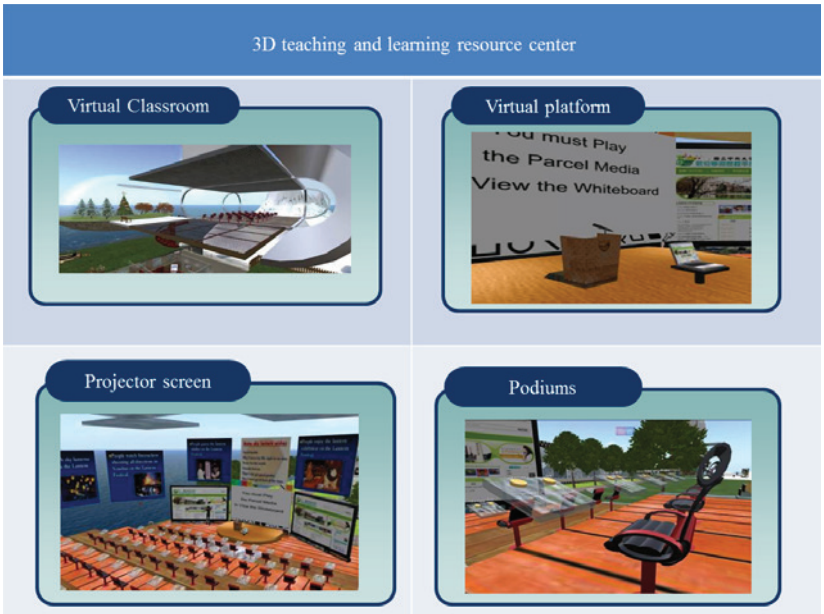


Figure1 Virtual teaching environment

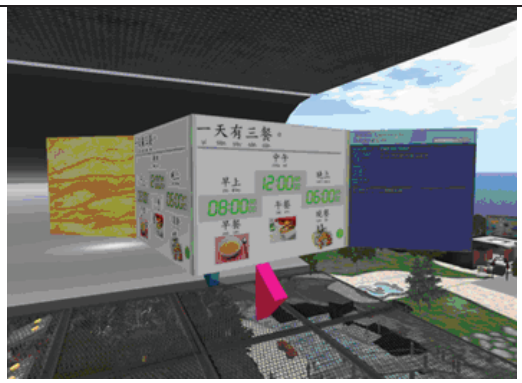
2. Virtual math game

Previous research (Sang Joon Lee , 2011 ; Rovai & Downey , 2010 ; Wheeler , 2006) showed that teachings on online platforms such as Second Life might face the problem that students' learning motivations and learning effectiveness might be decreased because students cannot get learning guidance from teachers. Therefore, it is necessary to develop mechanisms or tools to guide students learning in 3D online environments. For example, University of Sussex designed a lot of learning tasks to increase students' interactions with others in Second Life. These learning tasks were designed based on Problem-based learning approach and Constructivism (Good, Howland & Thackray, 2008). Thus, we develop 3D virtual math games based on Problem-based learning approach in Second Life. These games are carried out in the way of scavenger hunt. We also develop a series of learning aids (table 2) to help students finish scavenger hunt.

Table 1 Scavenger Hunt

Scavenger Hunt	
There are three stages in the mathematical class. Students have to finish one task in each stage. If they can finish these tasks, they can watch movies in the theater in iTELL. The stages are described as follows:	
1. Class teaching	
First, the teacher will teach basic mathematical knowledge in the classroom in Second Life. In this way, students can learn mathematics in a way that is close to their previous learning experiences. In this stage, the teacher will teach with slides and talk to students with voice functions provided by Second Life.	
2.Doing scavenger hunt	
This study will build a test bank for student to do self-path learning. After students finish learning, they will do the scavenger hunt. They will first go to the supermarket in Second Life to go shopping. They will be told what to buy before they actually do the shopping. Then, they can buy the products and do arithmetic practices with the clerks so that they can learn mathematics in authentic environments. In addition, they can review what they have learned by in Second Life after class.	
3. Get awards or certification.	
After students finish their tasks, they can watch a movie in the theater, get awards or get certification.	

Table 2 Introduction to teaching aids

1.Web PPT	
The slides for teaching are uploaded to the web server through the shared media function of Second Life viewer 2. In this way, the instructor can switch their slides at any time and save the charges for uploading slides. In addition, there are spaces for instructors to show their personal websites on the sides of the cube. Instructors can interact with students through these websites.	
2. The settings for buying products in the supermarket	
The products in the supermarket are provided with voices and texts. If students decide to buy a product, they would get an object so that they can pay for the product and practice supermarket checkout.	
3. HUD for collaborative learning	
To make full use of teaching resources in Second Life, we develop a set of teaching aids to assist students in learning. One of the teaching aids developed by us is HUD for collaborative learning. Students can take pictures in Second Life and upload their pictures to a php sever. They can wear HUD for collaborative learning to share pictures with their classmates. Even if students are in different places, they still can see the same picture and discuss it with each other. With HUD for collaborative learning, students can get guidance from teachers and tutors as well as get help from their classmates.	

3. Conclusion and future research

This study aims to promote elementary students' learning effectiveness in mathematics. We design a virtual mathematical classroom, 3D problem-based mathematical materials and teaching aids to assist students in learning mathematics. It is expected that the methods proposed in this study can solve the lack-of-guidance problem and promote students'

learning effectiveness. To see whether 3D virtual mathematic games that are designed based on Problem-based learning approach can enhance students' learning effectiveness and whether Problem-based learning approach can assist students in learning mathematics, we design a series of mathematical experiments which will be done in an elementary school. Students will be divided into experimental group and control group. The control group will be taught by traditional teaching methods while the experimental group will be taught by the methods proposed in this study. The experimental results will show that whether the learning methods proposed in this study will enhance students' learning effectiveness.

References

Biocca & Levy (1995). The Cyborg's Dilemma: Progressive Embodiment in Virtual Environment. *Journal of Computer-Mediated Communication*, 3(2)

Bishop, J. (2009). Enhancing the understanding of genres of web-based communities: The role of the ecological cognition framework. *International Journal of Web-Based Communities*, 5(1), 4-17.

Boulos, M., Hetherington, L. & Wheeler, S. (2007). Second Life: an overview of the potential of 3-D virtual worlds in medical and Health education. *Health Information & Libraries Journal*, 24(4), 233–245.

Edwards, C. Another world. *IEEE Engineering & Technology*, December 2006

Good, J., Howland, K., & Thackray, L. (2008). Problem-based learning spanning real and virtual words: a case study in Second Life. *Research in Learning Technology*, 16(3), 163-172

Petrakou, A. (2009). Interacting through avatars: Virtual worlds as a context for online education. *Computers & Education*, 54(4), 1020-1027

Polya, G. (1945). *How to solve it*. Princeton. New Jersey: Princetion University Press.

Prasolova-Førland, E., Sourin, A. & Sourina, O. (2006). Cybercampuses: design issues and future directions. *Visual Computing*, 22(12), 1015–1028.

Rovai, A. P., & Downey, J. R. (2010). Why some distance education programs fail while others succeed in a global environment. *The Internet and Higher Education*, 13(3), 141 – 147.

Sang Joon Lee, Sandhya Srinivasan, Trudian Trail, David Lewis, Samantha Lopez(2011), Examining the relationship among student perception of support, course satisfaction, and learning outcomes in online learning, *Internet and Higher Education*.

Schoenfeld, A.H. (1985). *Mathematical problem solving*. New York: Academic

The Nuffield Foundation. (1965). *I do, and I understand: Nuffield Mathematics Teaching Project*. London: Author.

Wheeler, S. (2006). Learner support needs in online problem-based learning. *Quarterly Review of Distance Education*, 7(2), 175 – 184.

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Lessons learned from the birth and evolution of a virtual community for educators

Kim Holmberg[a*]
[a]*Department of Information Studies, Åbo Akademi University, Finland*
*kim.holmberg@abo.fi

Abstract: Educators around the world are experimenting with the possibilities virtual worlds have for education and learning how to use these new environments efficiently. Virtual worlds have the potential to bring some added value to education and educators can use them to create something that is not possible to do or show in traditional classrooms. Although a lot have been learned about virtual worlds and their potential, a lot more has to be learned before virtual worlds can become an integrated part of education on various levels. The article looks back at the birth and growth of the EduFinland community in the virtual world of Second Life and discusses lessons learned so far during the years of its existence.

Keywords: education, virtual worlds, learning, teacher, student, EduFinland

Introduction

The interest towards educational use of virtual worlds and virtual realities is not a new thing [1, 2, 3], but it has only been since the middle of the last decade that the educational possibilities of virtual worlds and virtual realities have been available to all educators. This was the time when the virtual world of Second Life (www.secondlife.com) and other similar virtual worlds opened. These new three dimensional worlds could be accessed from personal computers and anyone with a bit of practice could build virtual objects and modify the space for their purposes. Soon educators around the world realized the potential these environments could have in education and started experimenting with the possibilities virtual worlds had to offer. To spread information and knowledge and to meet others interested in virtual worlds communities of educators were born.

EduFinland is a virtual community for Finnish educators, a collaborative network, and a collection of islands in the virtual world of Second Life. EduFinland opened its first island in spring 2008 and today, three years later, the archipelago has grown into a lively community consisting of 25 islands and it is the virtual home of more than 50 schools, universities and other non-profit organizations from Finland. EduFinland has been an interesting place to observe how educators and organizations take their first steps in a virtual world and how they learn how to use them for educational purposes.

Many of the steps taken by schools, universities and other organizations entering a virtual world have been repeated over and over again by newcomers. Some of these steps may be seen as a need to understand the virtual environment and oneself, represented by an avatar in this new virtual environment. All the steps indicate how everybody are trying to understand the possibilities and the potential these new three dimensional environments may have in education. Some of the things happening in virtual worlds today remind of the early days of the web, which makes it possible to try to make some predictions of the future of virtual worlds and how they could be used in the future. While other steps and

observations have raised some concerns for the future of educational use of virtual worlds and indicated some challenges that have to be overcome before virtual worlds can be fully used in education.

This paper will discuss some of these observations and their implications for the future development and evolution of virtual worlds in education and educational communities in them. The paper will present some examples but also discuss some of the concerns that current developments in virtual worlds have raised. However, the main goal of this paper is to share the knowledge created and the experiences learned in the EduFinland community of educators.

1. Virtual education

People use virtual worlds for a multitude of different reasons. Among the most important reasons are self-therapy (i.e. to increase self-esteem), as a source for instant pleasures, to escape social norms, for self expression and for exploration [4]. Interest towards educational use of virtual worlds has grown significantly around the world in the last few years and several scientific articles report on successful experiments and positive attitudes among students and teachers towards using virtual worlds in education [e.g. 5, 6, 7, 8]. In learning foreign languages virtual worlds have been found to improve motivation [9], while in health care education virtual worlds are perhaps best used in simulations where students can and are allowed to make mistakes in a risk-free environment [e.g. 10, 11, 12]. This is supported by some earlier research that has shown that virtual worlds can be very efficient as experiential learning environments where students can learn through experience and by doing [13]. Virtual worlds offer different possibilities for different disciplines and different topics. Some may use virtual worlds for simulations or to demonstrate something very abstract that would be difficult or even impossible to demonstrate in a traditional classroom while others can benefit from the tools for three dimensional building, but probably all can use virtual worlds to deliver lectures and to organize group discussions.

Lucia et al. [6] wrote that "*learning is strongly related to the user perception of belonging to a learning community, as well as to the perception of awareness, presence and communication*". In virtual worlds students feel the presence of other students represented by avatars [7] and they experience a sense of community which in best cases reflects in students teaching and guiding each other [14]. The experienced sense of presence and community in virtual worlds are perhaps the greatest benefits virtual worlds have to offer education. Especially in distance education it is very important that the students feel that they are not alone on the course and that they can meet other students. Another benefit that virtual worlds bring to distance education is that meetings and lectures in virtual worlds can substitute at least some of the face-to-face meetings that would often require that the students travel long distances. This is a benefit that many students have stated as a very positive thing about education in virtual worlds [15, 16]. Although several articles report on the possibilities of the virtual worlds there are only few reporting on dangers and challenges with virtual worlds. Boulos et al. [17] state that many of the same dangers and challenges that exist in the conventional web exist in virtual worlds as well, e.g. gambling, addiction, vandalism, identity and privacy issues, pornography, quality of information. But virtual worlds bring with them some new challenges as well. Hardware requirements and bandwidth issues are real concerns for the development of educational use of virtual worlds [17, 18]. Warburton [18] identified eight barriers in the use of Second Life and state that each of the barriers represents "*a challenge that requires the careful consideration of a number of design possibilities*". These barriers include technical and economical issues, but also barriers related to the culture of virtual worlds and identity issues in them. Warburton

[18] means that virtual communities can be difficult to find and that it may be challenging to learn the norms and the etiquette of virtual worlds. Educators (and students) are facing several challenges that they have to overcome before virtual worlds can become part of everyday education.

2. Building of EduFinland community

Activity on EduFinland archipelago has grown rapidly after the first island was opened in spring 2008. New islands have been added and currently the EduFinland archipelago consists of 25 virtual islands and the EduFinland group in Second Life has over 400 members, all interested in the educational possibilities of virtual worlds. EduFinland offers educators a low-barrier entry to virtual worlds and a place to start investigating the educational possibilities of virtual worlds. For this purpose EduFinland rents virtual land for educators, provides support and organizes meetings and seminars of different types. Ever since the beginning the goal and purpose of EduFinland has been to gather people interested in the educational and learning possibilities of virtual worlds together and to promote interaction between people and avatars that are interested in similar things. By gathering people to the same area we can better learn from each other's mistakes and successes so that everyone do not have to repeat the same mistakes over and over again. EduFinland has also supported and guided teachers, and avatars, taking their first virtual steps in Second Life. The administrators of EduFinland have organized lectures, workshops, courses and networking meetings to meet these goals. Organizing such events is one of the keys in creating an active community and sense of community in a virtual world.

Many of the educators entering Second Life for the first time have heard about Second Life at a conference or a workshop somewhere or read an article about it and they have become curious about this new world. When they login to Second Life for the first time they are facing the same problem as everyone else: how to find something of interest in this vast virtual world and how to find other people. It can be very frustrating for newcomers to enter an empty virtual world and not immediately find anything of interest. This is where EduFinland comes in. EduFinland aims to be the starting point for people interested in education in virtual worlds and a place to find others interested in similar things. This first contact with a virtual world may be crucial for the future use of it. If the first visit gives a negative impression the person will probably never log in again. This is what EduFinland tries to prevent by creating a positive experience for those visiting Second Life for the first time. One way to succeed with that goal is to create different networking events where people can meet and find others interested in similar things.

Many educators worldwide are experimenting with the possibilities Second Life has to offer. This makes it a great place to meet others and to network. Through these meetings collaboration and perhaps even joint courses can be born. The networking opportunities are not restricted to the teachers alone; students can meet other students too. A student from a university in Finland is probably not likely to meet students from another university from Brazil or New Zealand, but when our virtual spaces are close to each other in Second Life it is even likely that they will meet. Currently the networking opportunities are perhaps the most important reason for educators to enter the virtual world. To promote networking the administrators of EduFinland have organized various networking events, such as Christmas and summer parties, but also seminars with a particular topic. The goal with organizing topical seminars and discussions (e.g. foreign languages, health care, archaeology, etc) is that people interested in that particular topic can enter Second Life and meet others interested in similar things and they can get advice on how to use Second Life in their own courses. The years of development of the EduFinland archipelago have taught that creating

networking opportunities and providing guidance and support for newcomers are key factors when building up a vibrant community of educators in a virtual world.

3. Lessons learned

EduFinland has been a place where one have been able to watch closely how Finnish schools, universities and other non-profit organizations have started to use this virtual three-dimensional environment. It has been very interesting to notice that some of the steps and patterns have been repeated over and over again by newcomers. Some of these steps can be seen as attempts to understand this new virtual environment through creation of something familiar and something that can be understood with the knowledge and experience we have. Organizations are trying to bring sense in to an unfamiliar environment and controlling it by building familiar objects. Many organizations start by building a virtual house to protect the avatars from weather and from the view of other avatars. Weather does not change in Second Life and even if it did avatars or the persons behind the avatars would not get cold even if the climate on a certain island was programmed to be rainy and windy. Although there is an urban legend or a virtual legend about an event where the organizers had underestimated the number of attendees and hence they had not reserved enough chairs for all the participating avatars. This meant that some of the avatars had to stand through the whole event. According to the story, some of the people whose avatars had to stand talked with the organizers after the event and told them that they were physically tired because their avatars had to stand for a long time. The connection between the avatars and people behind them is strong and the experiences of the avatars can evidently be transferred to the persons behind the avatars.

To create a house as protection from other avatars' views may indicate that the builder of the house is not very familiar with Second Life, as experienced users of Second Life can easily see through walls and around corners, but building a house may also indicate something else than inexperience. Perhaps we are building houses because they are familiar to us. When we see a house, a chair or a coffee cup in Second Life we know what we can or are supposed to do with it, we understand what the object is and how it works. After all, these objects are familiar to us from the world outside Second Life. We know how to use familiar objects and we do not have to use a lot of time and energy to figure out what we are supposed to do with a certain object. Because of this it is logical and even necessary that we bring familiar objects and things to virtual worlds.

Understanding and controlling the environment should not take a lot of time and energy. We have to keep in mind that the virtual worlds that we use in education are tools just like Adobe ConnectPro or Moodle are and it should not take excessive amounts of time and effort to learn how to understand and use them. The virtual classrooms and other educational areas that we build should not be too complicated or futuristic because the students would have hard time understanding how to use and how to be in them. However, the classrooms should not be plain gray boxes either. In an ongoing research we have studied what kind of impact different virtual environments have on learning. Preliminary results indicate that students both liked more and learned better in an esthetically pleasing virtual environment than in a plain gray room without any stimulating objects. While we are trying to understand and learn more about the use and possibilities of virtual environments, we should build familiar and user-friendly spaces with familiar objects to help us understand and control these new environments better. On EduFinland the environment has been created to resemble summer time in Finland, which has been thought to be esthetically pleasing for most users. The administrators have built shared spaces such as lecture halls and discussion circles that anyone can use. These spaces have been built with accessibility

in mind. Offering shared spaces also means that the educators do not have to build their own classrooms because they can use one of the already existing spaces. This has been another key factor when helping educators use virtual worlds.

Another very typical phenomenon that can be seen all over Second Life is that in the beginning everyone tries to build their own spaces. Some complete their building projects with amazing innovations while others soon realize that it may be better that they focus on functions and content instead and leave the building work to experts. Similar development could be seen in the early days of the web. At the end of the last millennium when the web was young everybody tried to code their own websites, with various successes. Today only few persons can actually code their own websites and it has become usual to hire a professional web designer for the job. A similar development can be seen in virtual worlds today. It is becoming more and more usual that organizations hire a professional builder that is an expert in designing and building three dimensional environments. Building in a virtual world is very different from coding web pages because the designer has a three dimensional space to work with. Building in Second Life requires besides mastering of different tools and software also some architectural knowledge. The builder also has to have an eye for interior design and exterior design. It is not enough to know how to build an authentic and esthetically pleasing tree, the designer also has to know where to place it so that the tree so that it looks good and helps people use the space. Already today we need people with these skills and in the future the demand will be even greater. As far as we know, currently there are no schools giving education in these skills, but the situation will hopefully change in the near future.

Some teachers have created so called “dummy-avatars” for their students to use during lectures. The benefit of using ready avatars is that the students do not have to create their own avatars, which saves some time. However, based on the experience from organizing numerous workshops and lectures about virtual worlds we have witnessed that it is through creating their own avatars and by modifying the avatars’ look that students create some kind of an emotional bond with their avatar. This bond between the avatar and the user is important for the sense of presence of others and to fully experience the immersive virtual world and this bond is something that cannot be achieved when using someone else’s avatar. Teachers should reserve enough time for the students to create and modify their own avatars and to slowly take their first virtual steps. On EduFinland we have noticed how newcomers first refer to their avatars as “that avatar” or simply “that”, but after a while this changes and they refer to their avatars as “I” or “me”. Anyone that enters a virtual world for the first time needs some time to explore the environment and to get familiar with their avatar. Only after that the students are ready to take part of lectures or group discussions. Using “dummy-avatars” may be a good option if the students are only attending a single lecture in a virtual world, but it is probably not the best way to use virtual worlds when the environment is used for a single lecture or for just a couple of lectures. It is not justified to use a tool for lectures that takes longer time to learn how to use than the lecture takes. There are other tools and methods that can be used to deliver single lectures and that are easier to use. Also the key benefits of virtual worlds are lost if the environment is accessed with someone else’s avatar and just for a single lecture. When virtual worlds are used in education they should be planned into the course schedule so that the key benefits of sense of presence and sense of community can be fully utilized.

Even though virtual environments successfully support synchronous communication and social interaction and create a sense of community [6], using virtual worlds such as Second Life in education clearly divides the students’ opinions [e.g. 15, 19]. Some of the students see new learning environments as a positive thing and they see the benefits of virtual worlds especially in distance education while other students are afraid that using virtual worlds may lead to decreased classroom education and less face-to-face

meetings [15]. There may also be other reasons for the students to even refuse to use virtual worlds (e.g. lack of necessary computer skills, danger of addiction). This is something that every teacher has to be aware of when planning to use a virtual world in education. Should there be other possible ways of attending the lectures or can attendance in virtual worlds be required of every student? Virtual worlds have become such a huge part of so many people's lives (both professionally and for entertainment) that it is important to at least know something about them. Even though some students and teachers would refuse to use virtual worlds themselves, it is important that they are aware of these environments because chances are that someone close to them is already spending time in a virtual world.

4. Challenges to overcome

Another set of familiar things that we currently bring to the education in virtual worlds are the teaching methods we have found useful in traditional classrooms outside Second Life. We know that PowerPoint presentations can support lectures and deliver information in traditional classrooms and hence we bring them to Second Life. We know that different group discussions and various participatory teaching methods work outside Second Life and hence we have brought them to Second Life and we have noticed that they work in Second Life as well. For a long time already educators have been delivering lectures and organizing group discussions in Second Life and these have been working well. Lectures and group discussions are easy to set up and they do not require a lot of work or knowledge about the environment from the teacher or the student. Virtual classrooms are in fact not that different from traditional classrooms if they are used for synchronous meetings [14]. The only obvious difference is that everybody attending are represented by avatars. Traditional methods used in virtual worlds may bring some added value, or as Jones et al. [5] wrote: "*If 3-dimensional online learning environments can approach face-to-face classroom interaction and learning over low bandwidth Internet connections, then this approach merits serious consideration as a method to support interactive online classrooms and course delivery*". However, the three dimensional and freely modifiable spaces offer possibilities to do so much more. So far we have not seen many great examples where the teaching methods used would have been especially designed for a three dimensional virtual environment. We have mostly seen familiar and traditional methods that have been adapted to virtual worlds. There are only few examples where the three dimensionality of space and sound have been fully used to enhance the learning experience. One of the best examples is the already couple of years old Virtual Hallucinations [10]. Virtual Hallucinations is a space where two researchers have created a reality as two patients with schizophrenia have explained that they experience reality. By entering the space people can through their avatars experience the hallucinations that the two patients experience every day. A visit to this immersive space is definitely more educative than reading an article about the hallucinations experienced by the patients. We need more examples of that kind.

Perhaps it is still too early for us to really understand and be able to imagine all the possibilities virtual worlds have to offer education. Perhaps we are unable to think outside the famous box and create new innovative and participatory teaching methods that would benefit from the full potential of virtual worlds. For virtual worlds to become part of everyday education the next step we take must be to come up with ways to fully utilize the potential of these environments and to come up with innovations that support learning and teaching in virtual worlds. Some educators are becoming frustrated with the lack of development and unless we soon see significant development in that area educators will begin to leave virtual worlds.

Technical problems can also create frustration. Moving around in Second Life is not intuitive for most of the users [14] and the user interface of Second Life does not fit into the philosophy of a user-friendly environment very well as it does require some training to master. This problem will hopefully be solved when Second Life can be accessed with a web browser. This will be a much anticipated step of development that educators have been waiting for and it will lower the barrier to try the virtual world of Second Life in education and it will make educational use of it significantly easier. It will also lower the current equipment requirements that are huge obstacles in many classrooms around the world. Computer classrooms rarely have the latest graphic cards and quite often the computers are not able to draw the graphics Second Life requires. In many schools the computer support may be unwilling to install the software for one reason or the other. The policy of the school may prohibit the installation or the hardware requirements of Second Life are not met. Many educators on EduFinland have run into these kinds of problems in their organizations. Bandwidth is a real concern in many countries where the Internet penetration is still low. There are many obstacles in the way of virtual worlds to become an integrated part of education but many educators around the world are working to find solutions for these obstacles.

There are plenty of papers describing educational solutions and possibilities with virtual worlds, but not many questioning the hype and the actual situation. Second Life may not be the best possible tool for lectures and other teaching activities. According to Gilman et al. [e.g. 20] we experience the presence of others in a virtual world through the avatars, perhaps even in a deeper and closer way than when using e.g. video conference tools or telepresence rooms. We are immersed in the environment and we actually feel the presence of others in the same virtual place and this is something that is difficult to achieve with other learning environments. But is this reason enough to use Second life in education? Are the benefits greater than the efforts required to learn how to use the avatar and the environment to even find the way to the virtual classroom? Does the virtual environment bring some added value to the lectures? In some situations a traditional classroom or other teaching methods may be better [21], so why should we use virtual worlds? What kind of additional benefits do they bring? Is learning more efficient in a virtual world? Every educator should ask themselves these questions before organizing a class in a virtual world. It is important to carefully consider how a virtual world should be used in education and what added value using it may bring to the course at hand [22]. If the virtual world does not bring any added value to the course, then perhaps virtual worlds should not be used for that particular course. After all, the content of the course is the most important thing, not the tool that we are using to deliver the course.

5. Hope for the future

Every educator in Second Life and in other virtual worlds are experimenting with the environment and learning how to use it. We are taking the first steps towards a truly virtual education. We have not yet seen how virtual worlds can be used to their full potential, but we are on our way. We have seen some good examples of how virtual worlds can in some cases bring added value to education, but there is still a lot to be learned. Despite the hype and educational potential of virtual worlds it may take a long time before education will become truly virtual, but every experiment and even the mistakes that we make during our journey take us in the right direction; towards an efficient and innovative use of virtual worlds in education. Everything that we have done has taught us something and prepared us to face the future. Everything that we have done has taken us closer to the real innovations

and new teaching methods that will integrate completely with virtual worlds utilizing their full potential. Tomorrow will be very interesting.

References

[1] Psotka, J. (1995). Immersive training systems: Virtual reality and education and training. Instructional Science, vol. 23, pp. 405-431.
[2] Ota, D., Loftin, B., Saito, T., Lea, R. & Keller, J. (1995). Virtual reality in surgical education. Computers in Biology and Medicine, vol. 25, no. 2, pp. 127-137.
[3] Helsel, S. (1992). Virtual reality and education. Educational Technology, vol. 32, no. 5, pp. 38-42.
[4] Partala, T. (2011). Psychological needs and virtual worlds: Case Second Life. International Journal of Human-Computer Studies, vol. 69, pp. 787-800.
[5] Jones, J.G., Morales, C. & Knezek, G.A. (2005). 3-Dimensional online learning environments: examining attitudes toward information technology between students in Internet-based 3-dimensional and face-to-face classroom interaction. Educational Media International, vol. 42, no. 3, pp. 219-236.
[6] Lucia, de A., Francese, R., Passero, I. & Tortora, G. (2009). Development and evaluation of a virtual campus on Second Life: The case of SecondDMI. Computers & Education, vol. 52, pp. 220-233.
[7] Johnson, C.M., Vorderstrasse, A. & Shaw, R. (2009). Virtual worlds in health case higher education. Journal of Virtual Worlds Research, vol. 2, no. 2.
[8] Esteves, M., Fonseca, B., Morgado, L. & Martins, P. (2011). Improving teaching and learning of computer programming through the use of the Second Life virtual world. British Journal of Educational technology, vol. 42, no. 4, pp. 624-637.
[9] Wehner, A.K., Gump, A.W. & Downey, S. (2011). The effects of Second Life on the motivation of undergraduate students learning a foreign language. Computer Assisted Language Learning, vol. 24, no. 3, pp. 277-289.
[10] Yellowlees, P.M. & Cook, J.N. (2006). Education about hallucinations using and internet virtual reality system: a qualitative survey. Academic Psychiatry, vol. 30, no. 6.
[11] Danforth, D., Procter, M., Heller, R., Chen, R. & Johnson, M. (2009). Development of virtual patient simulations for medical education. Journal of Virtual Worlds Research, vol. 2, no. 2.
[12] Rogers, L. (2011). Developing simulations in multi-user virtual environments to enhance healthcare education. British Journal of Educational Technology, vol. 42, no. 4, pp. 608-615.
[13] Jarmon, L., Traphagan, T., Mayrath, M. & Trivedi, A. (2009). Virtual world teaching, experiental learning, and assessment: An interdisciplinary communication course in Second Life. Computers & Education, vol. 53, no. 1, pp. 169-182.
[14] Calongne, C.M. (2008). Educational frontiers: Learning in a virtual world. Educause, vol. 43, no. 5. Retrieved from http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume43/EducationalFrontiersLearningin/163163 on August 18, 2011.
[15] Holmberg, K. & Huvila, I. (2008). Learning together apart: Distance education in a virtual world. First Monday, vol. 13, no. 10, 6 October 2008.
[16] Ritzema, T. & Harris, B. (2008). The use of Second Life for distance education. Journal of Computing Sciences in Colleges, vol. 23, no. 6.
[17] Boulos, M.N.K., Hetherington, L. & Wheeler, S. (2007). Second Life: an overview of the potential of 3-D virtual worlds in medical and health education. Health Information and Libraries Journal, vol. 24, pp. 233-245.
[18] Warburton, S. (2009). Second Life in higher education: Assessing the potential for and the barriers to deploying virtual worlds in learning and teaching. British Journal of Educational Technology, vol. 40, no. 3, pp. 414-426.
[19] Alrayes, A. & Sutcliffe, A. (2011). Student's attitudes in a virtual environment (Second Life). Journal of Virtual Worlds Research, vol. 4, no. 1.
[20] Gilman, R., Tashner, J., Bronack, S., Riedl, R. & Cheney, A. (2007). A 3-dimensional world builds community across countries and continents. TechLearning, April 1, 2007. Retrieved from http://www.techlearning.com/showArticle.php?articleID=196604336 on July 23, 2011.
[21] Delwiche, A. (2006). Massively multiplayer online games (MMOs) in the new media classroom. Educational Technology & Society, vol. 9, no. 3, pp. 160-172.
[22] Herold, D.K. (2009). Virtual education: Teaching media studies in Second Life. Journal of Virtual Worlds Research, vol. 2, no. 1.

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Using Social Networks for Language Practice

Robert Chartrand[a*]
[a]*Institute of Foreign Language Education, Kurume University, Japan*
*robert_chartrand@kurume-u.ac.jp

Abstract: The Internet has the potential to provide language learners with vast resources of authentic written, audio, and video materials to supplement lessons. Educators can find a vast amount of materials for learners to study during class or for independent learning outside of class to encourage learner autonomy. More recently, however, the immense popularity of social networking websites has created new opportunities for language learners to interact in authentic ways that were previously difficult to achieve. Advances in technology mean that today, learners of a language can easily interact with their peers in meaningful practice that helps foster language acquisition and motivation. That is, tasks that make use of Web 2.0 interactivity can significantly raise students' potential to generate meaningful output and stimulate their interest in language learning.

Keywords: Language learning, social networks, independent learning, meaningful output

Introduction

One of the main reasons for the immense popularity of social networking is the process of potentially maintaining and developing online relationships (Thorne, 2010). It is not only a way to view pictures of friends such as on Facebook, view short messages on Twitter, or post videos on YouTube, it is also of as a form of expression, interaction, and community building. An increasing number of educators and learners are making use of these tools to communicate outside of the classroom. Perhaps it is the emphasis on using the target language as a resource for building interpersonal relationships that differentiates it from traditional approaches to language learning pedagogy and provides an opportunity for success. Innovative and pedagogically effective ways to improve language learning include instructional uses, students' perceived learning gains, instructors' use of the technology, social impact and economic viability for use by the students (Facer and Abdous, 2011). In this workshop, I will introduce some of the pedagogical concepts outlined in this paper and discuss how they can be introduced in a language learning classroom.

1. Language Acquisition

1.1 Language Production

Generating language is an important part of the language acquisition process. Creating student-generated materials such as podcasts or videos is interesting to students and helps them to learn and acquire the language. According to Swain (2007), "The output hypothesis claims that the act of producing language (speaking or writing) constitutes, under certain circumstances, part of the process of second language learning." Thus,

encouraging students to speak and experiment with the language is an integral part of learning.
A Web-based learning environment can promote constructivist learning through authentic activities related to the vast amount of information available on the Internet. Instructors can provide students with access to a substantial variety of tasks available in a combination of formats, such as text, graphics, audio, and video. Moreover, these multimedia resources can contribute to an increase in students' motivation (Woo, Herrington, Agostinho, and Reeves, 2007).

1.2 Learning Constraints

Teachers often feel constrained by the lack of reading and listening materials that students have access to and the acute lack of opportunities in English as a foreign language (EFL) settings for students to practice their English speaking skills in a meaningful way. In Japanese universities, for example, students can commonly take one class (90 minutes) of English conversation per week over a 15-week term. Normally, there are two terms per academic year. Typically, most of the undergraduate students are busy with other classes, part-time jobs, and socializing with their friends. This is scarcely enough time for students to significantly improve their speaking skills. Therefore, it can be challenging to encourage students to practice their English language skills outside of class. To motivate students, it is indispensable to use materials that are relevant to the students' levels and needs. The Internet has helped to alleviate this restriction. More recently, due to the incredible processing power of modern computers and the fast transfer speeds provided through broadband Internet connections, sharing sound and video files has become a reality. Whereas just a few years ago Internet users were limited to reading and writing messages in text, the World Wide Web has come of age, and it is now routinely possible to send and receive the huge amounts of data required for audio and video files. This fact, as well as vast improvement in software development, has made it possible for English for speakers of other languages (ESOL) educators and language learners to make full use of the Internet to assist students with improving language skills.

2. Discussion

2.1 Social Networking Web sites

Social networking Web sites, such as YouTube, Twitter, and Facebook, have become extremely popular among Internet users who wish to share their ideas, videos, and other activities online (Dieu and Stevens, 2007). This contemporary phenomenon has led the World Wide Web in innovation, and the term Web 2.0 specifically applies to these types of services. These Web sites can be accessed easily; they are free and interesting to users. They are new tools for learners of English to express themselves in authentic ways. Teachers can support students with this type of social networking activity by having them practice a speech that they want to record before sharing it with the rest of the online community.

2.1.1 YouTube

A search on YouTube will reveal a number of ESL-related videos posted by teachers and students. These can be shown to students who are not confident about posting their videos on the Internet. The videos can also be used to promote discussions in class. Posting a video is not as difficult as it sounds, especially if computer resources are available to the teacher and students. Before recording the video, learners usually like to practice what they are going to say, thus encouraging language training without forcing the student to conduct repetitive drills. A wide variety of topics can be covered depending on the needs of the learner.

2.1.2 Twitter

Twitter is described as a social networking and microblogging service that users like to use for short messages of 140 characters in length (Tweeternet, 2011). The short format is a unique way of communicating that has captivated the creative minds of millions of users and it is an interesting method for students to keep in touch with each other as well as with the teacher. One possible lesson may start with a teacher telling a story to the learners. Then, the teacher instructs the students to continue the story. Another idea may be for the teacher to ask trivia questions, and the students attempt to answer them in class (ESL Daily, 2011).

2.1.3 Facebook

The most successful social networking site is Facebook. This Web site has hundreds of millions of users and it is an enticing way for students to form an online community. One of the problems, however, is the possibility of privacy infringement as students get more confident in their English writing skills and become more open to talk about their private lives online. It may be necessary for teachers and students to discuss some ground rules for using Facebook before starting to use it. This may save some embarrassment later when photographs are posted online. It is, however, an excellent way to communicate as the content that is posted to the site may motivate learners to share ideas and thoughts that would be very difficult to duplicate in a classroom setting. One way to get around the problem of sharing private information is to create an account with a fictitious name, a drawing of a face instead of a real picture and to develop a pseudonym personality. Using a temporary email account would also alleviate some of the issues of using a current email account that could attract unwanted requests. The character that is presented in the Facebook account could be very realistic and join groups as a real person, thus avoiding some of the privacy issues.

2.2 Podcasting

Developing a podcast is like planning a syllabus (Chartrand, 2009). There are quantitative elements to consider, such as how many lessons, how much time per lesson, and how much material to cover. There are qualitative elements as well: What level of language is appropriate for the learner? What are the goals, objectives, and needs of the learner? Therefore, questions that might be asked when producing a podcast may include: How many podcast episodes will be produced? How long will each episode last? Who will do the recording? These are some of the questions to ask when developing an original podcast for language learning. For example, one can anticipate producing English conversations for beginner, intermediate, and advanced level learners, respectively.

At the beginning level, one can anticipate that the English learner will not have good listening skills, therefore it may be useful to play each conversation three times: the first

time at normal speed, the second time at a slow speed so that the learners can hear each word pronounced clearly, and the third time at normal speed. This may facilitate the learner's understanding before going to the next step. Other levels of learning may need less intervention from natural speech.

Not everyone has the time or technical inclination to embark on the task of creating podcasts. There are, however, a large number of podcasts that could be used in ESOL classes for language input and speaking practice. Here are a few examples that are useful for learning English.

- http://www.breakingnewsenglish.com
  This podcast specializes in current events. It contains excellent materials for use in the classroom, such as warm-up activities, before and after reading-listening activities, a survey, discussion questions, and a writing task. It is read in British English.

- http: / /www.voanews.com/specialenglish
  This Web site from Voice of America contains many news items that are read by a VOA announcer in slow American English, so it is easy to understand for non-English speakers.

- http://a4esl.org/podcasts/
  This is a collection of links to the 30 newest podcasts for ESL learners. It contains a good source of information to see what's new.

3. Conclusion

There are a number of ways to use social networking Web sites to encourage ESOL students to listen and to produce their own materials to share on the Internet. This type of activity used to be very difficult to integrate into ESOL lessons due to costs and technical limitations; however, these barriers have slowly been fading, and it is now possible to use these online tools to improve students' English ability. This is useful, but challenges remain. There is a certain amount of time needed for teachers and students to learn how to use Web 2.0 technology. Even if one is familiar with computers, there is still a need to learn how to use software, to search for podcasts, and set-up accounts with social networking Web sites. Additionally, the privacy issues of using social networking are a cause for concern. The security and privacy requirements of these sites are complicated and not well understood or defined (Ahn, Shehab and Squicciarini, 2011). Thus it may become necessary for teachers to become knowledgeable in security policies on the shared data of students.

A number of students do not enjoy learning with computers and do not attempt to study outside the classroom. But this is likely true no matter what medium is used for instructional delivery. It is sometimes difficult to keep up with all the latest trends and techniques, however, this is a very positive trend for both teachers and students of languages, and learning how to use this technology will allow learners to develop communicative language skills more effectively.

Language learners through new technologies can produce meaningful output. They are easy to use, inexpensive, and readily available through the Internet. Motivational, pedagogical, and affective factors are persuasive arguments for making an effort to

experiment with this technology, and ESOL teachers can contribute significantly to their learners' progress in learning English.

References

[1] Ahn, G., Shehab, M., Squicciarini, A. (2011). Security and Privacy in Social Networks. *IEEE Internet Computing*. 15(3), 10-12.
[2] Chartrand, R. (2009). From podcasting to YouTube: How to make use of Internet 2.0 for Speaking Practice. In Stewart, T. (Ed.), *Insights on Teaching Speaking in TESOL* (pp. 91-106). Alexandria, VA: Teachers of English to Speakers of Other Languages.
[3] Dieu D. & Stevens, V. (2007). Pedagogical affordances of syndication, aggregation, and mash-up of content on the Web. *TESL-EJ, 11*(1), 1-15.
[4] ESL Daily (2011). 10 Tips to use Twitter in the EFL class. [Weblog comment]. Retrieved from http://blog.esldaily.org/2009/07/19/10-tips-to-use-twitter-in-the-efl-class.aspx
[5] Facer, B. R., & Abdous, M. (2011). *Academic Podcasting and Mobile Assisted Language Learning: Applications and Outcomes*. IGI Global.
[6] Swain, M. (2007). The output hypothesis: Its history and its future. Retrieved from http://www.celea.org.cn/2007/keynote/ppt/Merrill%20Swain.pdf
[7] Thorne, S. L. (2010). The 'Intercultural Turn' and Language Learning in the Crucible of New Media. In F. Helm & S. Guth (eds.), *Telecollaboration 2.0 for Language and Intercultural Learning*. Bern: Peter Lang.
[8] Tweeternet (2011). What is Twitter and why does it keep following me around? Retrieved from http://tweeternet.com
[9] Woo, Y., Herrington, J., Agostinho, S., & Reeves, T. C. (2007) Implementing Authentic Tasks in Web-Based Learning Environments. *Educause Quarterly, 30*(3), 36-43.

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Computer-assisted Learning of Chinese Language and Culture: about the National Palace Museum Digital Archives

An-Hsuan WU, Yu-Hsin CHANG, Li-Mei LEE, Yu-Ju LAN & Ya-Hsun TSAI*
Department of Applied Chinese Language and Literature, National Taiwan Normal University, Taipei, Taiwan, R.O.C.
*yahsun@ntnu.edu.tw

Abstract: This study proposes utilizing the extensive Chinese cultural resources available in the digital archives of the National Palace Museum, together with the concepts of indicators of Chinese language proficiency and graded vocabulary, as the basis for preparing cultural teaching materials which integrate the Chinese art in the National Palace Museum into Chinese language education. Investigations will be made into how to connect the Chinese art in the National Palace Museum with everyday activities. Combined with Taiwan's high quality digital technology in teaching, this will aid in developing digital Chinese language and cultural teaching materials.

Keywords: Digital learning; Chinese language teaching; digital teaching material; cultural teaching materials; Chinese art in the National Palace Museum

1. Research Background

In recent years, Chinese expatriates and scholars have been calling for the inclusion of the Chinese art in the National Palace Museum in Chinese language teaching, in the hopes that Chinese language learning could include cultural awareness and Chinese heritage, instead of being limited to language acquisition (Tsai, 2011).

This study proposes using the extensive Chinese cultural resources available in the digital archives of the National Palace Museum, together with the concepts of indicators of Chinese language proficiency and graded vocabulary (Tsai, 2009), as the basis for preparing cultural teaching materials with the incorporation of the Chinese art of the National Palace Museum into Chinese language education. This study will link the National Palace Museum to everyday activities, and integrate it with Taiwan's high quality digital teaching technology to develop digital teaching materials for Chinese language and cultural education, in addition to the application (app) design and operation of smart phones.

2. Research Purpose

The main purposes of this research are to:

1. Integrate data from the National Palace Museum digital archives, and establish classifications for Chinese language by daily activities and cultural topics.
2. Prepare traditional and digital teaching materials for Chinese material life and cultural courses for Levels A2 and B1.
3. Develop a National Palace Museum Chinese language and culture app course.

3. Methodology

In terms of *Classical Conditioning Theory* (Pavlov,1927/1960) and Jerome Bruner's *spiral curriculum for teaching and learning* (Bruner,1960). Accordingly, the connection between dominated materials and meaning would be developed as an approach to help learner's language learning; meanwhile, the theory of spiral curriculum is also being considered in material designing. The description of the learning materials are as follows:

3.1 Digital Chinese Language and Cultural Teaching Materials

The basic structure of the content for digital teaching materials is as below:

1. Beginner level (Level A2) conversations
2. Intermediate level (Level B1) conversations

In the text for the above conversations, there will be new words, sentence structures, and small exercises to follow. Among these conversations, another compilation called "speak Chinese, talk culture" contains content that is aimed at Chinese culture, to allow the learner to be able to familiarize his or herself with the Chinese society and culture.

3. National Palace Museum Happy Go!

The content will include comparisons between cultures, and how culture affects lifestyle. As the main aim of this section is to introduce the learners to relics in the National Palace Museum, the introduction content and level of language will be of a higher standard than the other texts in the teaching material.

4. Practical idioms

For learners to quickly understand the idioms and apply them in everyday life, this section couples the selected themes with relevant idioms, and presents them with supplementary images of the scenario.

Figure 1 shows the paper Chinese language teaching materials.

Figure 1 Table of contents

3.2 Teaching tools-Apps

From the Mac OS X Human Interface Guidelines (Mac OS X Developer Library, 2010), it can be seen that the concept of attaching importance to a product as a whole necessitates three important principles: (1) Having a clear theme; (2) attracting attention; and (3) having only one theme. When designing an educational app, the focus is not in whether

there are sufficient functions to apply to daily activities, but in providing a good learning experience to the learner. To achieve the above requirements, we believe that the educational apps should develop from the perspective of learners and pay attention to three points, “Visual and operational focus”, “The concept of spatial perception”, “The use of custom design”. Figure 2 shows the interface of APPs.

Figure 2 Interface of Apps

3.3 Learning platform: smart phone

In terms of the functions of smart-phone, CSL learners are able to implement learning Chinese whenever and wherever they are available. This study is specifically approach to human interface, which could help users easily to access learning by smart-phone.

4. Conclusion

This study was aimed at developing Chinese language learning in means of Chinese culture. Therefore, the teaching materials of integrating Chinese culture derived from National Palace Museum with digital technology have been produced to benefit further CSL learning.The cultural resources in the National Palace Museum have been analyzed and reorganized, and a curriculum outline has been created. In addition, the research team extends further and reinterprets digital teaching materials to produce portable learning tool via Apps. This allows the content to appear in a simplified and accessible manner, being simultaneously rich with learning content. As the language teaching materials utilize everyday scenarios as the central focus to execute developmental design, when combined with App tools, it is believed that it will more deeply penetrate learners’ lives.

For further stage, this study will implement experimental study in CSL classrooms to investigate whether the material of National Palace app is available and helpful for CSL learners.

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References

[1] Apple Inc.(2008). iPhone Applications.

[2] Apple Inc.(2010), Mac OS X Human Interface Guidelines, Mac OS X Developer Library.

[3] Bai, L.-S., Zhang, L. (2008). "Common European Framework of Reference for Languages (CEFR): New concepts for inspiring and promoting Chinese language teaching- Chinese language at crossroads. *World Chinese Language Education*, 3, p. 58-73.

[4] Bruner, J. (1960) The Process of Education, Cambridge, MA: Harvard University Press.

[5] Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press.

[6] Li, Q. (Ed.). (2006). Research of teaching materials for teaching Chinese language to foreigners (pages 172-173). Beijing: Commercial Press.

[7] Tsai, Y.-H, Chiang, J.－M, Hsu, X.-R., Guo, X.-X., Lai, B.-W., Ruan, W.-N. (May, 2011). Innovative development in the integration of National Palace Museum with Chinese language and cultural teaching materials. Thesis published at the *2011 International Symposium for developing new vision for Chinese language education and Chinese expatriate education*. Holistic Village of Chung Yuan Christian University, International Conference Hall, 4th floor.

[8] Tsai, Y.-H. (2009). The construction of development principles of Chinese language teaching materials. Taipei: Cheng Chung Book Company.

[9] Willis, Nathan.(2008) The iPhone SDK and free software: not a match. Linux.com.

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Can Instant Message Agent Enhance Foreign Language Learning?

Zhi-Hao Chang[a], *Shun-Po Yang[a], Chih-Hung LAI[a], Jhen-Jhen LIU[b] & Jing-San LIANG[c], Ai-Chun Yen[d]

[a]*Department of Computer Science and Information Engineering, National Dong Hwa University, Taiwan*

[b]*Department of Education, National Taitung University, Taiwan*

[c]*Taipei Mandarin Experimental Elementary School, Taiwan*

[d]*Department of English, National Dong Hwa University, Taiwan*

d9921010@ems.ndhu.edu.tw

Abstract: In today's highly globalized society, English is an important language to communicate with others. But English learning can not be sustained. This study developed an instant messaging system of English learning as the agent to help English learning become an ongoing activity. In this study, 98 college students were divided into a total of three groups, experimental A, B and the control group. The students in group A interact with instant messaging agents for real-time online interactive English tests, the students in group B learn English by the one-way instant messaging agents testing materials, and the control group use traditional learning methods. The experiments were conducted four weeks, and the results of the three different groups made no significant difference in learning outcomes. In addition, this study also discusses about the technology acceptance model(TAM) of using the instant messaging agents for the English language learning; the results showed that learners generally considered this system of the instant messaging agent is easy to use and can help learning English.

Keyword: instant messaging, learning English, instant messaging agents.

Introduction

In today's globally internationalized society, English has become an important communicative tool, but students seem to have poor performance in learning English, and the possibility of such result is that most students study English only for tests, students do not use English in their daily life, we do not have an environment of learning English, and the motivation of learning English is low. Masgoret & Gardner in the 2003 study showed that motivation is an important factor affecting learning. Therefore, we consider it necessary to create the external force to maintain the student's motivation of learning English.

Instant messaging software is very popular in recent years, and its value is real-time and low cost. The learner can be real-time to learn English online through the assistance of instant messaging software, even if the learner is offline, because the system can unilaterally send materials to the learner. The study of Herbsleb et al in 2000 told us that in the workplace of using instant messaging software, it can improve learning efficiency, save time and cost less. According to creating inter-city survey in

2010, Microsoft's MSN (Microsoft Network) launching in 1995 is the most popular instant messaging software. IM agents (Instant Message Agent) provide real-time information for the media inquiry service, and this research uses this system to maintain learner's motivation to increase the interaction between agents and learners. In addition, using instant messaging agents, compared with traditional English learning, can also break the restrictions of time and space.
This study uses instant messaging software, MSN, developing an agent system for helping English leaning, to explore the real-time communication, and also uses one-way delivery of learning materials to see whether it can possibly improve students' learning. Also, by using the technology acceptance model (Technology Acceptance Model, TAM) architecture (Davis, 1989) gets better understanding about learners' acceptance and the effectiveness of TAM.

1. Related Research

Instant messaging software provides users with a peer-to-peer written communication environment via the internet (Rebecca and Leysia, 2002). In addition to passing the text, the software also integrates different functions, such as sending emails and transmitting files. In Goldsborough's study in 2000, it was also mentioned that instant messaging software could become an informal communication channel in an organization.
Instant messaging and communications software agents provide real-time information of inquiry service; therefore, what users need to do is to add IM agent's account in the contact list and then they can query timely information though it. This study uses the MSN instant messaging agents systems, used by more people, and the value of real-time and low cost of this system appears.
Hwang, Huang and Wu in their study in 2009 used timely communication of agents in learning. They developed a platform using MSN Agent for the learning communities to promote interaction among students and increase learning. As a result, although such a system did not significantly enhance the learners' learning, it was found that students could accept this system easily because it was easy to use.
Ajzen & Fishbein's study in 1975 put forward the Theory of Reasoned Action (TRA), trying to understand human behavior and predict it. Davis in 1989, adding the modified technology acceptance model (TAM) which was based on the TRA, offered the information systems technology to predict user behavior. The TAM offered two points, including the perceived usefulness and the perceived ease of use: the perceived usefulness is defined as the user in a particular system can save trouble but increase their level of job performance, and the perceived ease of use is defined as the user in a particular system can save efforts but increase effectiveness. Elena & Detmar in 1999 used TAM to discuss about users' acceptance situation of using e-mails. The results showed that users' acceptance of using emails would influence the perceived usefulness, and furthermore, the perceived usefulness would be trading with the perception of the perceived ease of use. The study of Leader et al (2000) found that TAM fit the case of World Wide Web, showing ease of understanding and ease of finding could predict cognitive easy versatility, and the quality of information could predict the perceived usefulness.
According to the above studies, we might find although MSN agent did not obviously benefit the English learning, MSN could possibly increase interactions in Students' English learning because of students' high acceptance of MSN. As a result, MSN could be expected to be a good tool of elevating motivation of students' English leaning.

2. Research Method

2.1 Experimental Design

The purpose of this research is to understand the learning effect If the agent system is used as a platform for English learning. The Experiment adopting quasi- experimental method is divided into three groups, the experimental groups A, B and the control group included. In group A, agents directly interact with students online, sending tests to the users and giving immediate feedback to them. In group B, agents, not interacting with the users directly, send one-way teaching materials, and give answers and feedback regularly. In control group, the users learn English in a traditional way.

2.2 Experimental Subjects

College students with a total of 98 are divided into three groups, 33 in group A, 34 in group B, and 31 in control group.

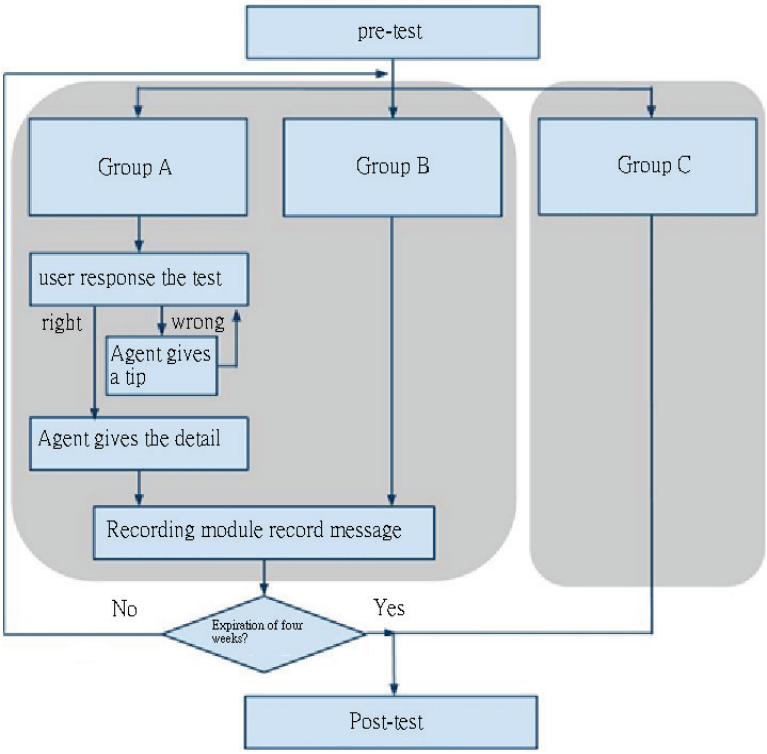

Figure 1, Experimental process

2.3 Research Process

Figure 1 shows the experimental process. We have pre-test before the experiment, then each group take a different learning strategies for English learning. The experiment lasts for four weeks, and we have the post-test later.

2.4 IM Agent English Learning System

This study uses instant messaging agent under C # programming language development system, including three models, messaging, contact management, and conversation recording, shown in Figure 2. The following keeps detailed description of the functions of each module.

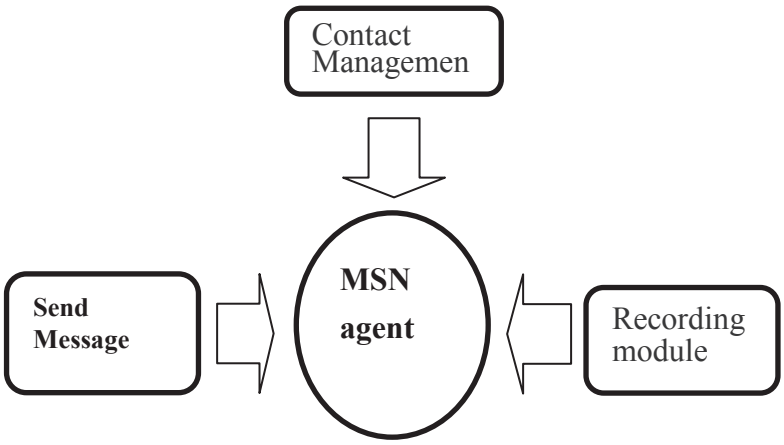

Figure 2, The models of system

The module sends messages in two different ways for the users in group A and B. In group A, the system sends learning materials and tests according to the users' learning status. In group B, the system sends learning materials in a fixed time per day and leaves offline messages to the users if the users are not online. Contact Management module provides a contact list, able to divide users into different groups, make history inquiries of on-line, manage schedule, and add or delete contacts on the list. Dialogue recording module keeps a complete record of the dialogues between the users and the agents for our future reference.

2.5 Technology Acceptance Model

Technology Acceptance Model is divided into four dimensions, including the perceived usefulness, the perceived ease of use, the users' attitude and the users' willingness of using this system. This study adopts Likert scale five-point test and the four dimensions are explored further as following.

First, the Perceived usefulness means the users' feeling of usefulness about English learning after receiving materials and tests sent from agents. This study defines it as "the users think learning materials sent from agents are significantly helpful to their learning." This part of the questionnaire scale is modified from Davis (1989) and Legris et al. (2003).

Secondly, the Perceived ease of use represents the users' feeling of ease to use learning materials sent from this system. In other words, the study defines it as "the learners think learning materials sent from agents are easy to use." This part of the questionnaire is modified from Davis (1989) and Legris et al. (2003).

Thirdly, Users' attitude is about their attitudes toward learning materials sent from agents. This study defines it as "the individual learner preferences of using instant messaging to receive learning materials." This part of the questionnaire is modified from Moon and Kim (2001), and van der Heijden (2003).

Last, users' Willingness of using this system measures the learners' willingness of using this system. This study defines it as "learners are volunteers to use this system for the future further learning. This part of the scale is modified from Moon and Kim (2001), van der Heijden (2003), and Wu and Wang (2005).

3. Results and Discussion

The collected information gets further analysis in this part to verify statistical methods to see whether the results of the experiment proposed hypothesis. Table 1 is about the

average and standard deviation between pre-test and post-test in the experimental group A and B, and control group. Table 2 shows the results of ANCOVA analysis in three groups, A, B and C.
Table 1, compare three results of using different learning strategies in three groups Group N pre-test post-test correction the average standard deviation the average standard deviation

Table 1. average and standard deviation between pre-test and post-test

Category	N	pre-test		post-test		adjust average
		average	SE	average	SE	
Interaction	33	73.4	4.74	84.52	7.85	84.52
One-way	34	71.06	4.31	80.79	7.64	80.79
Traditional	31	73.16	6.86	80.75	7.23	80.75

Table 2. the results of ANCOVA analysis in three groups

source of variation	squared	freedom	average squared	F value	significance
Groups	188.578	2	94.289	1.937	0.15
Error	4235.961	87	48.689		

Table 1 shows the results from three groups of learning. There is no significant difference in scores ($F = 2.89$, $p = 0.093$). Although the post-test scores in the Interactive group ($M = 84.52$) is slightly higher than the one-way ($M = 80.79$) or the traditional ($M = 80.75$), it does not differ significantly. It means that different learning strategies do not promise significantly different learning outcomes. The possible reason of causing this result may be due to the too simple test for students, and therefore we can not tell any difference from the results.
Table 3 shows that the independent variables is divided into two groups, test variables are the perceived usefulness, the perceived ease of use, the users' attitude as well as the users' intention of using this system, and this study uses an independent sample t-test to test the differences. From the point of view of the Perceived usefulness, there are significant differences between the two groups, A and B; that is to say, students in group B think this system is more useful than students in group A. About the perceived ease of use, there is no significant difference in terms of two groups, A and B, but the average is greater than 3.45; it indicates that students generally consider timely communication agent is easy to use. About the learners' Attitude of using this system, there is no significant difference between the two groups, but the average is higher than 3.4, which implies that learners recognize the value of this system. From the point of view of Willingness of using this system, no significant difference is shown between groups A and B.

Table 3. Different learning strategies differences

	Group	N	Average	SD	t value
Perceived usefulness	A	25	3.224	.6071	-2.220*
	B	34	3.541	.4900	
Perceived ease-of-use	A	25	3.4450	.47198	-1.731
	B	34	3.6838	.55837	
attitudes	A	25	3.4750	.53033	0.258
	B	34	3.4375	.56512	

intentions	A	25	3.08000	.639295	-0.445
	B	34	3.15074	.576348	

4. Conclusions and Recommendations

In this study, the aim of using this MSN instant messaging agent is to enhance learners' motivation. From the results of the experiments, it is shown that learners generally keep positive thinking about this system, but there are still many deficiencies in this study, waiting for improvement. In terms of interaction in this system, this system uses a simple command input interface for users, and therefore, the interaction between agents and learners is somewhat weak.
Furthermore, speaking of the services in this agent system, the number of passing words through MSN is inevitably limited owning to the restrictions of the MSN instant messaging software. Also, the users in client-side encounter their difficulties of accessing data. In the future research, we believe that through the appropriate library to develop plug-in, embedded Web pages to show materials, and recording more detailed interactions between agents and users are good ways of obtaining more specific results.

Acknowledgments

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References

[1] Ajzen, I. (1985), "From Intentions to Actions: A Theory of Planned Behavior, Action-Control: From Cognition to Behavior." Heidelberg: Springer.
[2] Cameron, A.F., & Webster, J. (2004). Unintended consequences of emerging communication technologies: Instant messaging in the workplace. Computers in Human Behavior, 12(1), 85–103.
[3] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340.
[4] Elena, K. and Detmar, W. S. (1999).The psychological origins of perceived usefulness and ease-of-use, Information and Management, 35(4), 237-250.
[5] Goldsborough, R. (2001, February 19). Instant messaging becomes big business. Philadelphia News.
[6] Herbsleb, J.D., Atkins, D.L., Boyer, D.G., Handel, M., &Finholt, T.A. (2002).Introducing instant messaging and chat into the workplace.In Proceedings of ACM Conference on computer–human interaction. New York: ACM Press，171–178
[7] Hwang, W. Y., Huang, Y. M., & Wu, S. Y. (2009).The effect of an MSN agent on learning community and achievement. Interactive Learning Environments, 16(1), 1-20.
[8] Lederer A.L., Maupin D.J., Sena M.P., Zhuang Y. (2000). The technology acceptance
[9] Legris, P., Ingham, J., Collerette, P., (2003), Why do people use information technology? Acriticalreview of the technology acceptance model, Information & Management, 40(3), 191-204
[10] 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(1), 167-210.
[11] Moon, J.W. and Y.G. Kim, Extending the TAM for a World-Wide-Web Context, Information & Management, 2001, Vol.38, 217-230
[12] Rebecca E. G. &Palen, L. (2002),Instant Messaging in Teen Life, ACM conference on Computer supported cooperative work, 2002.
[13] van der Heijden, H., 2003, Factors influencing the usage of websites: the case of generic portal in the Netherlands, Information & Management, 40(6), 541-549
[14] Wu, J.H., Wang, S.C., 2005, What drives mobile commerce? An empirical evaluation of the revised technology acceptance model, Information& Management, 42, 719-729

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The Influences of Online Virtual situated environment to Chinese learning community

Joni Tzuchen Tang [a], Yu-Ju Lan*[b], Yao-Ting Sung[c], Kuo-En Chang[d], Hsien-Sheng Hsiao[e], & Tzu-Chien Liu[f]

[a]*National Taipei University of Education, Taiwan.*
[bcde]*National Taiwan Normal University, Taiwan.*
[f]*National Central University, Taiwan.*
*yujulan@gmail.com

Abstract: This research used online virtual environment to create and develop a Chinese learning community. The research wanted to know if the community can help the Chinese learners enhance their oral Chinese communication skills, and if community can influence members' behaviors of their Chinese speaking and teaching. The research used action research to find out that virtual environment can provide a community, and this community can enhance learners' Chinese competence, and future Chinese teachers' instruction and leading skills.

Keywords: Community, Chinese communication skills, virtual environment

Introduction

Graddol [3] has forecasted in the years of 2050 Chinese is still remaining as the world's largest language. Many Chinese learners, outside of Chinese speaking countries, have trouble to obtain learning resources[11], and many language theory believe that learning language should includes, open, epistemic, and scaffolding features[4] [10]. In this case, we have to ask ourselves: How can we embed the language theory belief into the Chinese learning?

According to the demand of Chinese learning market, many online and virtual learning environments have developed. These environments not only can make up the problems of Chinese learners obtaining learning resources outside of Chinese speaking countries, but also learners can adjust their learning progress independently. These environments open an open, epistemic and scaffolding learning space.

This research believe that online and virtual learning environment can provide the needs for Chinese learning market, and the research also study the theory of language acquisition. Many scholars believe that language acquisition is the innate process[1] [4]. If we can input appropriate language in situation, students' language acquisition can be happened[4]. The research believes that language acquisition can be nature and innate, learning can occur in a situational context.

Therefore, the research follow situated learning theory and try to provide an open, epistemic and scaffolding learning community on virtual environment. The purpose of this study showed as followed:

1. The research wanted to see if the community can help the Chinese learners enhance their oral Chinese communication skills.
2. The research wanted to see the community members' behaviors changing of Chinese speaking and teaching.

1. Literature Review

1.1 Language Acquisition

Different theory showed different ideas of language acquisition. The table 1 showed different beliefs in language acquisition.

Table 1 Different belief on Language acquisition

Theory	Belief on language acquisition
Behaviorism	Language can be acquired by stimuli, reinforcement, and operation[7].
Cognitivism	Language acquisition goes through the meaningful inquisition process. Learners would revise their intrinsic language until their oral presentation can fit the external environment [6].
Humanism	Language acquisition is entirely innate. Language learning is the potential of human development; it is a spontaneous progress [1].
Social constructionism	Society itself would provide the language experience; the society can scaffold learners' language and thought [10].

According the statement above, many scholars believe that language acquisition is the innate and social process[1] [10]. Language acquisition is like the concept of i+1. If we can input appropriate language in situation, students' language acquisition can be happened[4]. The research believes language acquisition can be nature and innate, learning can occur in a situational context.

1.2 Situated Learning Theory

According to the belief of language acquisition, the research followed situated learning theory and tried to provide an open, epistemic and scaffolding learning community on virtual environment. Situated learning theory believes that knowledge comes from situation and interaction[5] [8] [9]. The following table showed each scholar's perspective of situated learning.

Table 2 perspectives of situated learning

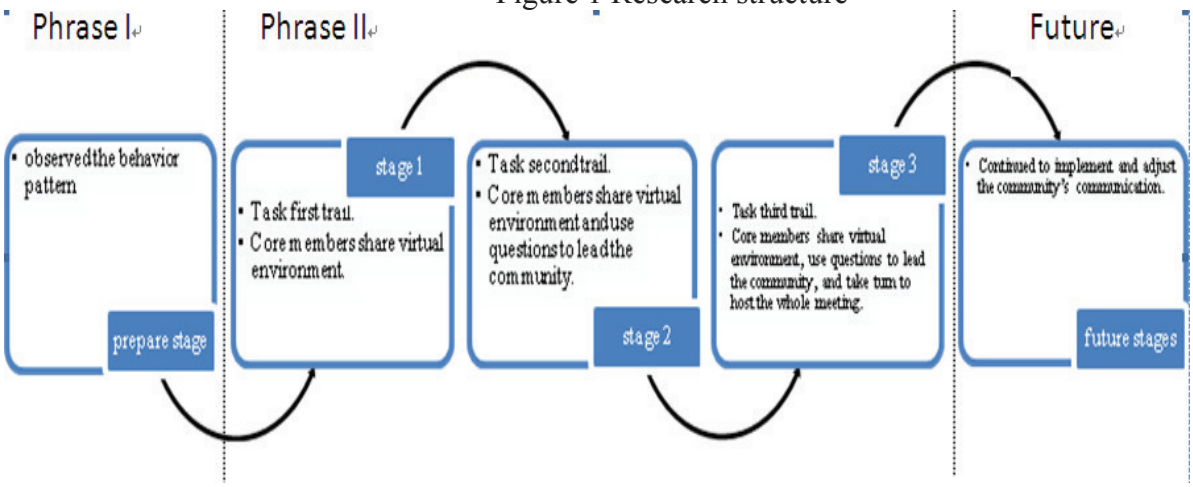
Perspectives	Related terms
Specialized situations have distinctive quality and the instability; therefore, the instructors or educational workers need to make decision in the practical situation [8].	Knowing in action, reflection in action, reflection on action, and reflective practicum [8].
Knowledge cannot occur alone without any situation. If the knowledge is not related to the	Situated action [9]

situation, the knowledge itself would become obscure and lacking details or specifics [9].	
Learning can go through situation to be practical and reflective, but it is more important to have the community in the situation [5].	Community of practice, legitimate peripheral participation, and apprenticeship [5].

2. Research Methodology

This research used action research methodology. The process of action research needs to contain four steps: plans, action, observation, and reflection [2]. According to that, the researcher had developed the structure as followed:

Figure 1 Research structure



The research provided a Chinese learning community, all the conversation is using Chinese to communicate. The community included two groups of people. One group was called core members group. The other group was called peripheral members group. The core members were future Chinese teachers in Taiwan and their background were the universities students who study Chinese language education. The peripheral members were Chinese learners. These learners came from different places, such as Japan, America, and Canada. There were total of five core members and four peripheral members (The researcher is considered the core member and community leader). Before all the peripheral members joined the community, we had tested their Chinese level, most of their Chinese level were considered as Basic to Intermediate level (Test materials followed TOP: http://www.sc-top.org.tw/).

In order to have great communication channel, the community used two technical tools. One is Facebook, the other is Second Life. The Facebook is for asynchronous communication, and Second Life is for synchronous and situational based communication. Each week, the community would have a meeting on Second Life, and the community would have a topic for all of members to interact and communicate.

3. Research results

This research video recorded all the conversation in the Second Life. Each week, the researcher would revise and calculate the frequency of behavior patterns. The behaviors patterns were showed as table 3 and 4.

Table 3 Behaviors patterns for core members

Core members	
Category	Behavior
C1: Explanation	B1: Core members can consider other member's level to explain a topic.
	B2: Core members can listen to others' question and make appropriate explanation.
	B3: Core members can understand members' experience to make a related interaction.
	B4: Core members can adjust other's Chinese grammar mistake.
C2: Assistance	B5: Core members can assist other members to use technology.
	B6: Core members can assist other members who have trouble to finish the whole sentences.
	B7: Core members can assist other members to define the new vocabulary.
C3: Leadership	B8: Core members can prepare a topic to share with others member.
	B9: Core members can care about others.
	B10: Core members can jump in the conversation to open a new related topic.
	B11: Core members can use others' experiences to ask questions

Table 4 Behaviors patterns for Peripheral members

Peripheral members	
Category	Behavior
C4: Expression	B12: Peripheral members can use telegram sentence to talk (only use key words).
	B13: Peripheral members can type Chinese characters.
	B14: Peripheral members can use complex sentences to talk (they combined two or more sentences together).
	B15: Peripheral members can use simple sentence to talk (the sentence has subject, verb, and object).
	B16: Peripheral members can use an adjective.
	B17: Peripheral members can use Chinese to explain the vocabulary.
C5:Listening and Answering	B18: Peripheral members can answer alternative questions.
	B19: Peripheral members can answer the question which only has one correct answer.
	B20: Peripheral members can answer the question to describe experience.
	B21: Peripheral members can answer the question to describe phenomenon.
	B22: Peripheral members can answer the question which needs them to describe thought.
	B23: If peripheral members don't understand the question, they will show they don't understand
	B24: If peripheral members don't understand the question, they will find the problem and ask again.
	B25: If peripheral members don't understand the question, they

Peripheral members	
Category	Behavior
	won't tell until core members found out.
C6: Initiative participation	B26: Peripheral members will ask question initiatively.
	B27: Peripheral members will share information initiatively.
	B28: Peripheral members will share their thoughts initiatively.
	B29: Peripheral members will share their experiences initiatively.

These behavior patterns were observed and calculated the frequency each meeting. According to the behavior patterns' frequency result and the resaercher's observation, the research have found that different phrases and stages have different behaviors and reactions. The table 5 had shown the different phrases and stages' reactions.

Table 5 research results

Phrases	Stages	Members' reactions	Behaviors patterns
I. Pilot study	Prepare	1. Some members got frustrated to the technical problems. *(I am very angry at my computer now!!).* *(I think I will try again next time).* *(I have no idea how to use Second Life).* 2. Peripheral members used Chinese to introduce themselves *(My name is XXX, I learn Chinese for 2 years, I am a OOO's student, it is very nice to see you all).* 3. Core members did not show much sentences when introducing themselves to the community. *(My name is OOO).* *(I am XXX).*	1. Core members showed high frequencies on B5 (around 16-17 times each meeting), however, other behaviors turn out very low (around 0-2 times). 2. Peripheral members showed some frequencies on B12, 13,15, 27 (around 5-6 times each item).
II. Real Experiment	Stage 1	1. Core members shared the virtual setting on related topic, and they used lecture to interact in the community. 2. Peripheral members did not have much chance to interact in the community. *(Core members: The story of Chinese New year is related to…).* *(Core members: It is a building from Greece culture, it has….).* 3. Peripheral members used private message to tell the community leader their	1. Core members showed high frequency on B8 (above 30 times each meeting), but other behaviors turn out zero. 2. Peripheral members showed a little frequency on B18 (around 1-2 times). Most of these behaviors are yes/no answer.

	difficulty to communicate in the community *(I think it is too hard….).* 4. The community leader decided to have a community meeting and discussed the way of interaction. *(In the meeting, leader asked "Do you think it is interested in this community's interaction?" one of core members answered: "No." The leader reflected "Why do you think it is not interested?" core member: "Because the topic is not related to our life, and also we talk too much")* . 5. After the meeting, the community all agreed to use life-related questions to interact.	
Stage 2	1. Core members started to use questions to lead the community's conversation. *(What is your favorite music? Why?)* *(Do you think there is different than the rock music you just listen? What is the difference?)* *(Do you Second Life avatar dress just like you usually dress?)* 2. Peripheral members began to share a lot of experiences and information to our community. *(I don't like to listen techno music, because my ex girl friend love to listen it).* *(My dad is a great guitar player, I am just ok. Do you all want to listen my guitar music?) And he started to get a guitar to play a song for the community.* 3. The community leader and core members discussed and agreed that core members can start to lead and host the meeting, and community leader will become one of the regular core members.	1. Core members began to show frequencies on B1-B4 (around 8-9 times each items) , some frequencies on B6, 7, 11 (around 5 times each meeting) and B9 (one time in one meeting). 2. Peripheral members stared to have a lot of behaviors on B12, 14, 15, 16, 20, 21, 22(around 4-7 times each meeting), B23, 25 shows their needs (around 2-3 times) and shows some initiative participation, such as B27-29 (around 2-3 times).
Stage 3	1. Core members took turn to host and lead the community by themselves.	1. Most core members' behaviors'

		(Welcome to our community, today we are going to talk about lecture time, what did you do for your lecture time?) 2. Peripheral members still keep the same reaction behaviors from stage2. *(I like to play tennis with my classmates, and we usually play at night).*	frequencies still remained the same from stage 2, but B1-4's frequencies grow (around 15-16 times per items per meeting). 2. Peripheral members' behaviors frequencies still remain the same from stage 2.
Future	Future	The meeting will keep continued, and the behavior patterns and their behaviors' frequency will keep calculated in the future.	

Figure 2 Implemented condition for real experiment stage 2

Figure 3 Implemented condition for real experiment stage 3

4. Conclusion

Learning a second language require many aspects, the researchers believe that virtual environment can help Chinese learners and future Chinese instructors to create a community for practice speaking and teaching, therefore, all of the community members are growing and developing. The main purpose of community practice is when all the community members can grow and develop in the same time, and this is the main reason for this research.

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References

[1] Chomsky (1993). *Language and Thought*. Wakefield, RI: Moyer Ball.
[2] Corey, S. M. (1953). *Action Research to improve school practices.* New York: Teachers College Press.
[3] Graddol, D. (2004). The future of language. Science, 303, 1329–1331.
[4] Krashen, S.D. (1985), *The Input Hypothesis: Issues and Implications*, New York: Longman.
[5] Lave, J. & Wenger, E. (1991). *Situated learning legitimate peripheral participation*. NY: Cambridge University Press.
[6] Piaget, J. (1926). The language and thought of the child. Routledge & Kegan Paul: London.
[7] Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review*. 52, 270-277, 290-294.
[8] Schön D (1987) *Educating the Reflective Practitioner*. Jossey-Bass: San Francisco.
[9] Suchmon. (1987). Plans and Situated Actions. *In The Problem of Human-Machine Communication*. New York: Cambridge University Press,
[10] Vygotsky L. (1978). *Mind in society : The development of higher psychological processes*. Cambridge, MA : Harvard UP.
[11] Xin (2001). *The Chinese language reading strategy and research*. Taipei, National Taiwan Normal University.

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Learning in Social Interaction: Two Snapshots in EFL Literature Classes

Ai Chun Yen
National Dong Hwa University, Taiwan
acyen@mail.ndhu.edu.tw

Abstract: This paper is a longitudinal study reporting how learning communities (LCs) and online learning communities (OLCs) can be used to solve Taiwanese EFL students' lack of social interactions (spoken and written) and academic skills (academic writing and reading) in literature classes (N=40) by involving students in a social process to encourage students-students and students-instructor discussion, interpretation, production and negotiation in English. A 5-point Likert scale questionnaire designed by the university was used to assess students' learning performance and satisfaction levels. The paper concludes with a discussion of the relative contribution of social interactions to satisfy students' learning needs.
Keywords: learning communities, online learning communities, social interactions, collaborative learning, learning management system

1. Introduction

With the intention of overcoming the language problems (English) and difficulties in collaborative learning in EFL Literature classes, the researcher set about implementing an alternate "social interaction model" to teach Introduction to Western Literature for English majors at National Dong Hwa University, Taiwan (NDHU, N=40 out of 45/42, 2 semesters) by organising learning communities (LCs) and online learning communities (OLCs) embedded in the university learning management system (LMS). It focused on developing OLCs based on the same principles for developing face-to-face LCs' spoken communication by capitalising on technology's affordance for written communication. This involved students in learning "social interactions (spoken and written)" which can be viewed as a set of process in achieving group work and academic skills (academic writing and reading). This in fact means each student was required to develop approaches to solve the problems in spoken communication in English and implement a solution to the approaches that would result in the production of a concrete written knowledge in language, literature and critical thinking collaboratively. Each single student's performance was traced and recorded by the LMS and was compared to see how LCs and OLCs help students improve their ability in language problem solving, and how they respond to their LC and OLC tasks.

2 Literature Review

2.1 Social Interactions

Dewey's (1987) belief in the power of social interactions in learning still influences many contemporary educational approaches. However, due to the vast change of educational

environment, social interactions are used to question if students can grow personally and learn academically without face-to-face interactions with instructors and peers? Social interaction is defined as participating in social networks, so that higher levels of network participation can be labelled as higher levels of social multiplier. A research by Slevin (2008) indicates that e-Learning and the transformation of social interactions in higher education brought challenges for educators. Despite the difference in the pedagogical mediums, the interactive component and the differences in interactions between the traditional and Web-based pedagogical platforms, a vital need is to assess the effectiveness of interactivity in a web-based course. Students who feel a sense of connectedness and psychological closeness rather than isolation are better prepared to become more actively involved with online learning and the resulting higher order thinking and knowledge building (Baker, 2010; Engstrom, Santo, & Yost, 2008).

2.2 Learning Communities (LCs)

Lave and Wenger (1991) exclaim that learning is a social practice because a learner learns better in social settings and through social interaction which underpins Dewey's (1938) recognition of the importance of the social nature of learning. The growth of interest in learning communities within schools has been accredited to the findings of research in the 1970s and 1980s conducted into "effective schools" and shaped the "concept of school as community" (Larrivee, 2000, p. 18). A learning community not only facilitates the sharing of information or knowledge, but has the potential to create new knowledge that can benefit the community as a whole. However, when emerging research in cognitive science, the importance of the learning context and developing schema permit new learning through making connections with what was previously determined to be valid under specific conditions and contexts. The increased opportunities afforded by learning communities for peer learning and interaction allow for the development of richer, complex ways of thinking and knowing so that students learn at a deeper level (Bransford et al., 2000).

2.3 Online Learning Communities (OLCs)

Rovai (2002) and Carlen and Jobring (2005) suggest that an OLC is based on what groups of people share and do with one another, not how or where they do them. Engestrom (1993) illustrates that an OLC can be seen as a developed activity system in which a group of learners, unified by a common cause and empowered by a virtual environment, engage in collaborative learning within an atmosphere of trust and commitment. Despite an increasing interest and promise in implementing OLCs, a study by Bagherian and Thorngate (2000) show a failure of using OLCs at Carleton University (The *Carleton Hotline for Administration and Teaching*, or CHAT) because they could not recognise any educational values. Between the extremes are several contingent possibilities that different features of the Internet might be pedagogically useful for different combinations of students, course topics, and learning objectives. The challenge educators face first is how to best enable students to communicate, collaborate, and coordinate so as to facilitate knowledge capture and use online. The second issue needs to be taken carefully is the social interactions when the educators look forward to maximise technology integration in education. OLCs are not a network focused on social relationships but on social interactions instead.

3 Context and Methods, Data Source and Instrument, Measures and Discussion

3.1 Context and Methods

In Meyers's (2008) description of best online practices, instructors need to validate student perspectives, as well as acknowledge differing beliefs and biases, and to create a community that helps students become "more engaged and feel more interconnected" (p. 220). In the case of this research, the researcher played a crucial role as proposed by Bonk and Dennen (2003), pedagogical and social managerial, and technological, in developing and engaging students into LCs and OLCs by nurturing the conditions under which they can rise. Socratic seminars and literature circles were the setting for LCs while discussion forums embedded in the LMS were for OLCs. It first dealt with student responses in English of LCs (spoken) and OLCs (written), an exploratory stage to investigate insights of possible development of social interaction within two communities. The second is a confirmatory stage that the researcher investigated (1) if the use of LCs will enhance students' social interactions (spoken); (2) if the use of LCs will help motivate students' interactions in OLCs (written); (3) if the use of the two will meet students' learning achievements (academic reading and writing).

Manski's (1993) social interaction attributes, endogenous, exogenous and correlated social effects were use do answer the research questions. Endogenously, success-seeking learners may try to study hard to gain better grades. Learners may change their learning behaviours as a result of being endowed with their group. That is if a learner cares not only about his outcomes but also about the peer outcomes, he is under the influence of endogenous social effect or interaction because he relies on decisions of others a lot in the same social milieu. If the behaviour of a learner varies with the exogenous peer characteristics (called exogenous social effects), his achievement is related to the background of the reference group. If a learner in the same reference group tends to behave similarly because they are alike, then he is under the influence of correlated effects. Manski concludes that endogenous effects generate social multiplier while exogenous effects or correlated effects do not. The current research, thus, places special focus on students' endogenous engagement for their LCs and OLCs.

3.2 Data Source and Instrument

Data from the LMS was accomplished to investigate students' behaviours and performance on the LCs and OLCs in class. From the raw data the researcher constructed behavioural visualisations and network data sets based on reply relationships. The other data source is a 5-point Likert scale survey designed by NDHU. It was used to assess students' learning performance and learning satisfaction respectively. Since the questionnaire result details are classified, a general discussion is made for discussion instead of a statistical discussion.

3.3 Measures

3.3.1 Finding 1: LC and OLC Bridging and Bonding

Participants were encouraged to share their spoken literary analysis in most literature classes so the LC is something they are used to even though they still suffer from the English language use. Table 1 shows a huge achievement difference LCs and OLCs in two semesters.

Table 1. Total and Average Treads Hit, 2 semesters

	LC Task Hits, Semester 1	OLC Posts, Semester 1	LC Task Hits, Semester 2	OLC Posts, Semester 2
Total /AVG Threads per week	1,056/20	679/13	1,434/28	1,206/23

Since the instructor-researcher emphasised the pedagogical and social managerial aspects of developing OLCs. Students were aware that the LC and OLC tasks needed to be academically fulfilled. High activity participants used the LMS discussion forum both to interact with others (synchronously and asynchronously) and to act as mediators and problem solvers for the OLCs, thus established collaborative learning relationship and encouraged achievement seeking. At the end of the project all of the participants contributed to their LCs and OLCs more than the first semester (see *Table 1* and *Fig 1*). Most participants were positive toward making bonds with other members because they valued the responses from both communities.

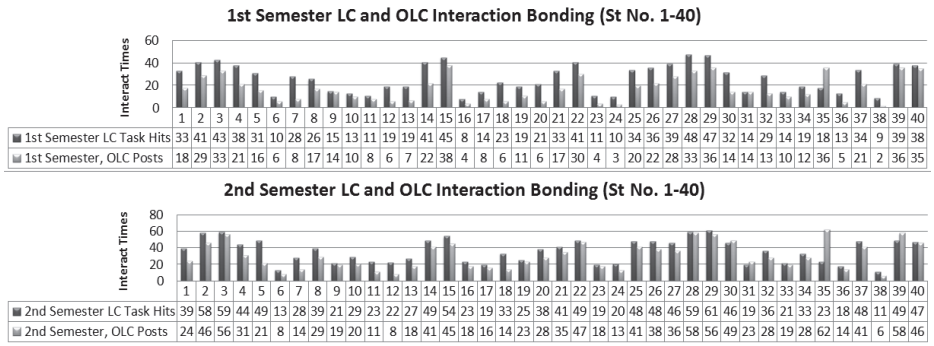

Figure 1. LC and OLC Interaction Bonding, 2 Semesters

It is also found that participants contributed one or a few messages/learning loads to discussion initiated by others, were fairly tied to relative influence of endogenous social effect on time of involving in LCs and OLCs. The R^2 values are 0.9844 and 0.9605 respectively which provide a strongly predictive behaviours correlated with social interactions (see *Fig 2*).

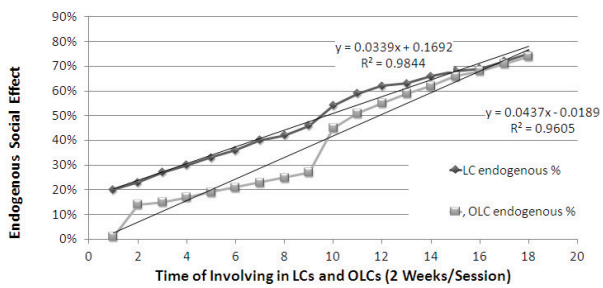

Figure 2. Endogenous Social Effect on Time of Involving in LCs and OLCs, 2 semesters

Because the participants felt a certain amount of unease with the openness of OLC discussion forum due to the reading literacy and language problems (academic reading and writing); therefore, they preferred to work in the LCs instead of OLCs especially in the first semester. The increase of LC and OLC discussion per week supports the ideas of social interactions and endogenous bonding for active learning. By getting used to being involved in both LC and OLC discussion (spoken and written), participants' active post number doubled in the second

semester which means they solved their academic performance problem collaboratively. Their structural and behavioural patterns associated with endogenous social effect showed significant influence for their LCs and OLCs. Exogenous and correlated effects did not vary in this research, so the endogenous effects are identified.

Participants were more confident to work within the community and got some peer corrections either for literary or language purposes due to the psychological sense of community. The more they worked in the LCs, the more they would like to post their polished threads to the OLC discussion forum. When participants considered OLCs in terms of the "third place" (face-to-face classroom, the first place, and LC, the second) to gain specific knowledge, they attempted to find significant "sameness" and "differences" for certain threads. The differential effect along two semesters was slightly larger for LCs (point estimate 0.9844, significant at 95% confidence) than for OLCs (point estimate 0.9605, significant at 95% confidence) (please see *Fig 2*). Similarly, the wiliness of working in the OLCs gradually increased from the end of the first semester. Thus, the research questions 1 and 2 were answered. The use of LCs will enhance students' social interactions and also the use of LCs can help motivate students' interactions in OLCs.

3.3.2 Finding 2: Endogenous Social Effects

An important concern in reading Table 2 and Figure 3 is that the interactions between learners and instructors, other learners, and the course content are very different. 46% and 27% of participants showed they were under influence of endogenous social effects. Weak instruments were not a main concern in the estimation of the endogenous social interaction effects.

Table 2. Average Percentage of Interaction Behaviours

	LC endogenous, Semester 1	LC endogenous, Semester 2	OLC endogenous, Semester 1	OLC endogenous, Semester 2
Interaction Behaviours	46%	75%	27%	74%

Socratic seminars and literature circles used for LCs encouraged students' dialogic exchange and engaged them in intellectual discussion by responding to questions with questions. Students got together to examine issues and principles related to a particular content, and produce different points-of-view. Most of the time participants were weaving their learning attitudes among endogenous, exogenous or correlated effects. With the willingness to their OLC discussion, participants showed their endogenous social effects when dealing with the written posts. There is a strong partial correlation between the face-to-face LC with Socratic seminar and literature circle indicator and the potentially endogenous regressor, the OLC discussion confidence rate. Participants got more influence from endogenous effects when working in LCs and OLCs because the course was a core class for English majors which may determine their social status in the department.

Besides, substantially larger endogenous effects were found from second semester mainly because the participants realised the LMS documented all learning process and journals of each student. The small magnitude of this effect is important both from policy and psychological perspectives, given the importance of educational attainment for students in these literature based communities. LMS discussion forum presented similar opportunities and characters to encounter participants in an informal setting and to use what literary

knowledge they know to discuss with other students. Through the process of negotiation or mediation, participants were able to find "significant others" that would help their language and literary knowledge development. As well as examining the ways in which OLCs could transform learning, it is as equally important to consider how the technologies were also transformed by the participants through social interactions.

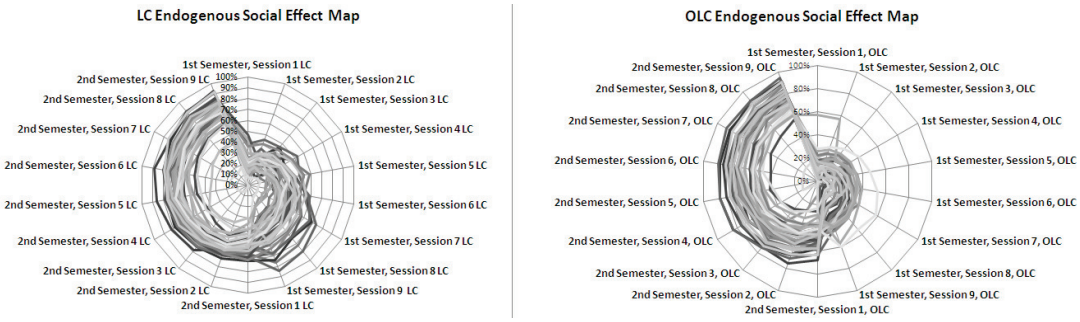

Figure 3. LC and OLC Endogenous Social Effect Map, 2 semesters

3.3.3 Finding 3: Student Performance and Satisfactions

The instructor-researcher was evaluated by the students at the end of both semesters required by the university and was scored 4.60 and 4.83 respectively (please see *Table 3*). The results in Table 3 indicate that students who experience with a learning community and online learning community are associated with higher levels of academic effort, academic integration, and active and collaborative learning (see *Questions 17 and 18*). Similarly, learning communities are positively linked into online learning communities with more frequently interacting with community members, engaging in diversity-related activities, and gaining academic achievement that emphasises higher-order thinking skills (see *Questions 20*.)

Table 3. Survey Designed and Collected by NDHU, TW translated by the researcher

Intro to Western Lit, Annual survey, NDHU, TW (at most 0.04 bonus points will be awarded if the class size is over 40)											
Strongly Agree = SA (5), Agree = A (4), Neutral = N (3), Disagree = D (2), Strongly Disagree = SD (1)											
Measure 1: Teaching and Learning Satisfaction	1st semester						2nd semester				
	SA	A	N	D	SD		SA	A	N	D	SD
1. Provides detailed sequences and scopes of the class.	31	9	3	2	0		34	7	1	0	0
2. Is expert in the subject area and has a cutting-edge grasp of academic development and how students learn.	32	8	4	1	0		36	4	2	0	0
3. Uses materials and displays to maximise student learning of all materials.	29	11	4	1	0		31	6	4	1	0
4. Orchestrates highly effective strategies and materials to motivate students.	33	8	3	1	0		36	4	2	0	0
5. Uses coherence and silky-smooth transitions to get the most out of every minute.	24	13	6	2	0		29	10	2	1	0
6. Designs lessons with clear, measurable goals aligned with unit outcomes.	25	14	4	2	0		33	6	3	0	0
7. Designs lessons that break down tasks and addresses learning needs and interests.	20	11	8	6	0		26	7	8	1	0
8. Clear and consistent evidence that various assessments is used during instruction.	24	13	6	2	0		28	10	3	1	0
9. Designs lessons involving an appropriate mix of top-notch, multicultural materials.	24	13	7	1	0		29	9	4	0	0
10. Has perfect or near-perfect attendance and routines are orderly and efficient and result in minimal time off-task.	27	12	5	1	0		34	6	2	0	0
11. Shows ongoing enthusiasm about teaching and shows a commitment to supporting the development of students.	31	10	3	1	0		35	6	1	0	0
12. Prepares diagnostic and summative assessments to monitor student learning.	27	13	3	2	0		33	6	3	0	0
13. Shows warmth, respect, and fairness for students and builds strong relationships.	27	12	5	1	0		32	5	4	0	0
14. Presents as a consummate professional and observers appropriate boundaries.	28	13	3	1	0		34	6	2	0	0
15. Designs lessons that will motivate students and sweep them up in active learning.	24	14	4	2	1		28	6	4	1	1
	Average Score:4.60						Average Score:4.83				
Measure 2: Self Evaluation	1st semester						2nd semester				
	SA	A	N	D	SD		SA	A	N	D	SD

16. I'll hand in the assignments on time.	22	12	8	3	0		28	16	5	0	0	
17. I always work and collaborate with my team/community for academic achievement.	19	15	8	3	0		28	16	5	0	0	
18. Hours spent to study for this class per week outside the classroom for academic achievement.	**6+**	**4-5**	**2-3**	**0-1**	**X**		**6+**	**4-5**	**2-3**	**0-1**	**X**	
	4	13	19	6	**X**		3	14	19	7	**X**	
19. Times absent from this class.	**5+**	**3-4**	**1-2**	**0**	**X**		**5+**	**3-4**	**1-2**	**0**	**X**	
	0	1	12	32	**X**		2	0	13	34	**X**	
Rote Memory = RM, Comprehensive = C, Utilizable = U, Analytical = An, Appraise= Ap, Creative = C												
20. Skills learned in this class.	**RM**	**C**	**U**	**AN**	**AP**	**C**	**RM**	**C**	**U**	**An**	**Ap**	**C**
	40	36	17	28	11	16	32	39	27	30	24	16

Since the course was run in the computer lab, apart from the assigned readings in the syllabus, some related open resources were set as assigned reading materials, too. Students needed to read 10% more than the regular syllabus and the working load was also higher than other literature classes which worried the teacher-researcher in the first place. However, with the accomplishment of the weekly tasks for LCs and OLCs, students showed their potentiality in managing knowledge in a different way. Both the teacher-researcher and the participants were creating a rich social and literary interaction environment (see *Questions 16, 17 and 18*). Therefore, the course had been evolved, with new technical aspects added over time to meet the needs of the participants. The annual survey confirms the possibilities offered by the e-medium are changing exponentially, yet the nature of the medium itself, as well as its content, profoundly affects any kinds of pedagogical applications as long as the educators use the medium as a tool not a burden in assisting learning.

3.3.4 Discussion

The research lays the foundation for open discussion on literature teaching in terms of students' social interaction as well as of their academic potentiality. Based on the preliminary results, the LCs and OLCs clearly changed participants' learning attitudes. Item-specific or rote-memory learning outcomes could not satisfy their academic achievement any longer, even though it's the foundation of academic knowledge. Therefore, if both teachers and fellow students can provide students with timely and meaningful feedback on their academic progress and with advice to students in academic distress, appropriate social interactions can be initiated as a learning process instead of knowledge sharing only. During the research time, the teacher-researcher and students easily linked work produced via LMS to learning outcomes and evaluated linked items within the tool in which they were produced. To the extent that LCs with Socratic seminars and literature circles, and OLCs could successfully motivate participants to learn both individually and collaboratively, the strategies can be used to evaluate the success of strategies intended to cultivate desired academic learning outcomes.

Conclusion

Like most EFL learners, Taiwanese English majors' stumbling blocks in literature related modules are the language problems and the abstraction of literary knowledge from the reading assignments both of which will influence their critical thinking performance. Major advances in research and practice in LCs and OLCs led to the realisation that it is a need to shift the focus of educational pedagogy from a teacher-centred approach to a student-centred one to solve the learning problems, language and critical thinking, in literature related classes. The paper makes three sorts of contributions in the effort to decrease anxiety and resistance in studying literature in Taiwan. First, it confirms LCs can help students read and think critically

via Socratic seminar and literature circle methods. Second, the specific attention to social interactions between LCs and OLCs distinguishes general discussion from the provisions of endogenous social effects and answered how participants learn through those effects. Last, it provides a foundation for leveraging conceptual resistance and behavioural data to identify possibilities for other learning perspectives.

The research concludes with two general claims: (1) LC is a productive way to encourage social interactions toward learning; and (2) social interactions in LMS settings should be carefully taken care through the intersection of multiple methods. Socrates seminar and literature circles are an important link between LCs and OLCs for the techniques of solving language skill problems and also development of insights and the respects of literary analysis. Those techniques and development can be formalised into rubrics and tested statistically. Not a lot research has brought social interactions into literature classes. The current research might be a new direction and believe that beginning from literary knowledge learning and sharing, item-specific oriented, to literary discussion and analysis learning, collaboration-oriented, that bridges social, information, literary knowledge and computer science. Leveraging the potential of that integration to reveal the hidden learning prospective of social interaction will require both educators and learners' aggressive academic community needs.

References

[1] Bagherian, F., & Thorngate, W. (2000). Horses to Water: Student Use of Course Newsgroups. *First Monday, 5*(8). Retrieved March 27, 2011 from http://www.firstmonday.org/issues/issue5_8/thorngate/index.html

[2] Baker, C. (2010). The impact of instructor immediacy and presence for online student affective learning, cognition, and motivation. *The Journal of Educators online, 7*(1), 1-30. Retrieved from: http://www.thejeo.com/Archives/Volume7Number1/BakerPaper.pdf

[3] Bonk, C. J., & Dennen, V. (2003). Frameworks for research, design, benchmarks, training, and pedagogy in Web-based distance education. In M. G. Moore & B. Anderson (Eds.), *Handbook of distance education* (pp. 331-348). New Jersey: Lawrence Erlbaum.

[4] Bransford, J. D., Brown, A. L., & Cocking, P. R. (Eds). (2000). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Research Council/National Academy Press.

[5] Carlen, U., & Jobring, O. (2005). The rationale of online learning communities. *International Journal of Web Based Communities, 1*(3), 272–295.

[6] Dewey, J. (1897). My pedagogic creed. *School Journal*, *54*, 77-80.

[7] Dewey, J. (1938). *Experience and education*. New York: Macmillan.

[8] Engestrom, Y. (1993). Developmental studies of work as a testbench of activity theory: Analyzing the work of general practitioners. In S. Chaiklin & J. Lave (Eds.), *Understanding practice: Perspectives on activity and context* (pp. 64–103). Cambridge: Cambridge University Press.

[9] Engstrom, M., Santo, S., & Yost, R. (2008). Knowledge building in an online cohort. *The Quarterly Review of Distance Education, 9*(2), 151-167.

[10] Larrivee, B. (2000). Creating caring learning communities. *Contemporary Education*. 71(2), 18-21.

[11] Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

[12] Manski, C. (1993). Identification of endogenous social effects: the reflection problem. *Review of Economic Studies*, *60*(3): 531-542.

[13] Meyers, S. (2008). Using transformative pedagogy when teaching online. College Teaching, 56(4), 219-224.

[14] Rovai, A. (2002). Building sense of community at a distance. *International Review of Research in Open and Distance Learning, 3*(1), 1-16.

[15] Slevin, J. (2008). E-Learning and the transformation of social interaction in higher education. The entity from which ERIC acquires the content, including journal, organization, and conference names, or by means of online submission from the author. *Learning, Media and Technology*, 33(2), 115-126.

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