

A Study of the Second Life (a 3D virtual world) and Its Application in Thai Higher Education

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Abstract

Nowadays, social media has become one of the most popular ways of communication, especially among teenagers. It has been developed and used as learning and teaching tool because it is easy to use, fast, cheap and accurate. However, there is some limitation in doing some class activities such as class interactive activities between students and students, and between the lecturer and students. Thus, Second Life, which is a popular multi-user virtual environment (MUVE) program, should become an alternative tool to solve this problem. This study is intended to discover the potential usage of MUVE programs and to fulfill missing steps of work that could be a great support of the progress of local education especially, at the higher education level. This research studies the basic information about Second Life. The program features are taken into consideration when adopting Second Life technology for higher education. A questionnaire is carried out from a focus group of students at Rangsit University in order to evaluate the readiness of the university students to study via Second life. The synthesis of information provides guidelines and recommendations on how to use Second Life in higher education. Second Life program has a potential to be used in Higher Education. Also, a survey on a focus group amongst first year students at RSU was carried out. It revealed that the students are ready to use this kind of technology in learning. However, special care has to be taken in consideration when designing a class in a 3D virtual world. Therefore, guidelines are provided for designing the lessons and classes. Also, recommendations for and the patterns of using in Thai higher educations are made. This research provides a comprehensive study of how Second Life has been used in various fields of study and disciplines. It also provides a guideline of how it can be implemented in classes in the context of Thai universities. However, the success depends on readiness in terms of personnel, expertise, and policy in order to push this technology to become a part of the learning environment as it is the case with many renowned universities worldwide.

Keywords: *Second Life, virtual world, online education, virtual class, MUVE education*

บทคัดย่อ

ปัจจุบันความก้าวหน้าทางเทคโนโลยีด้านการสื่อสารผ่านอินเทอร์เน็ตมีการพัฒนาขึ้นอย่างมาก ทั้งรวดเร็ว ประหยัด และมีความถูกต้องแม่นยำในการส่งข้อมูล ส่งผลให้มีการพัฒนารูปแบบการเรียนการสอน online ผ่านทาง social media และมีความนิยมเพิ่มขึ้นเรื่อยๆ แต่การเรียนการสอนในรูปแบบนี้นั้นยังมีข้อจำกัดในส่วนของ การปฏิสัมพันธ์ระหว่างผู้เรียนด้วยกันและระหว่างผู้เรียนและผู้สอนอยู่ ดังนั้น โลกเสมือนสามมิติ จึงน่าจะเป็นช่องทางหนึ่งที่สามารถจะนำมาประยุกต์ใช้ในการเรียนการสอนและช่วยลดปัญหาในเรื่องของการปฏิสัมพันธ์ต่างๆ ในชั้นเรียนที่การเรียนการสอน online แบบอื่นๆ ไม่สามารถทำได้ และในงานวิจัยชิ้นนี้มีวัตถุประสงค์ดังนี้ เพื่อศึกษาจิตความสามารถและการใช้งาน โลกเสมือนสามมิติทางการศึกษา ผ่านการรวบรวมข้อมูลจากมหาวิทยาลัยชั้นนำระดับโลกที่มีการใช้งาน *Second Life* โลกเสมือนสามมิติที่มีความนิยมสูงสุด ที่ปัจจุบันมีผู้รวบรวมไว้ค่อนข้างจำกัด เพื่อหาแนวทางการนำมาประยุกต์ใช้งานในบริบทของมหาวิทยาลัยภายในประเทศไทย โดยได้ทำการศึกษารวบรวมข้อมูลพื้นฐานของโปรแกรม และทำการวิเคราะห์ หาข้อควรระวังในการใช้โปรแกรม *Second Life* อีกมีการเก็บข้อมูลจากแบบสอบถามและจากการสนทนากลุ่มกับนักศึกษากลุ่มตัวอย่างในมหาวิทยาลัยรังสิต ตลอดจนสังเคราะห์ข้อมูลเพื่อนำเสนอข้อเสนอแนะในการใช้โปรแกรมเพื่อการศึกษาในระดับมหาวิทยาลัย ผลการวิจัยพบว่า *Second Life* มีศักยภาพเพียงพอที่จะนำไปประยุกต์ใช้เสริมการเรียนการสอนในระดับมหาวิทยาลัยได้ ผลสำรวจพบว่า นักศึกษามีความพร้อมที่จะใช้งานโปรแกรม โลกเสมือนในลักษณะนี้ หากแต่ต้องมีข้อควรระวังและมีความชำนาญในการใช้โปรแกรมเพื่อสามารถวางแผนการเรียนได้อย่างเหมาะสม ดังนั้นผู้วิจัยจึงได้เสนอแนะแนวทางการออกแบบบทเรียนและรายวิชาใน โลกเสมือนสามมิติ ตลอดจนคำแนะนำและการใช้งาน โลกเสมือนสามมิติในรูปแบบต่างๆ เพื่อการเรียนการสอนในระดับอุดมศึกษาของไทยอีกด้วย อย่างไรก็ตาม เงื่อนไขสำคัญของความสำเร็จนั้น ต้องขึ้นอยู่กับความพร้อมต่างๆ ทั้งในเรื่องบุคลากรที่เกี่ยวข้อง ความชำนาญในการใช้งาน ตลอดจนนโยบายจากผู้บริหารที่จะผลักดันให้เทคโนโลยีใหม่นี้เข้ามาเป็นส่วนหนึ่งของการเรียนการสอนเช่นเดียวกับสถาบันการศึกษาที่มีชื่อเสียงในต่างประเทศที่ได้ดำเนินการในปัจจุบัน

คำสำคัญ: *โลกเสมือนสามมิติ การเรียนการสอนทางไกล ห้องเรียนจำลอง เรียนผ่านคอมพิวเตอร์*

1. Introduction

Online education seems to be common nowadays. Many schools use it because their students can get information 24 hours and it can make long distance learning possible. Since the internet network has been developed to be faster and more stable, many real time communication programs known as social media such as Facebook, Twitter, YouTube, etc. have been used as a medium for learning and teaching such as videos or lectures so that their students are able to watch them anywhere at any time. Also, learning materials can be downloaded at all time. Furthermore, these programs are fast, easy to use, and require less money than the traditional ways of communication. They are also popular especially among students. However, almost all kinds of social media programs have some limitation. For example, some class interactive activities need real time reaction. Therefore, the Multi-User Virtual Environment (MUVE) program was developed to support users who want to do real time online activities. The program was developed, based on online games, but do not have any rules or aims like normal online games. For this reason, many schools and institutes especially the ones in the United Kingdom and the USA have applied this kind of programs to education. One of the most popular MUVE programs is called Second Life (SL) as can be seen the logo from figure 1. This program was invented for more than 10 years ago and has gained around 36 million accounts (Linden Lab, 2013). It seems like this kind of learning and teaching environment has become a trend in education for the future because it provides an opportunity for people to choose their school or university quickly and easily from anywhere in the world. Recently, big tech companies have invested in virtual reality technology. Facebook has purchased Oculus Rift, a leading company (Zuckerberg, 2014). Apple is rumored to have a secret team of hundreds of employees working on virtual and augmented reality projects (Apple, 2016).

In Thailand now, providing education via virtual environment programs has not been carried out extensively. The first virtual university campus program was ABAC Charming Island, and the second was RSU Virtual Campus, and Ram Khamheang University (RU) was the third. Moreover, this kind of programs is quite new and still lacks academic information so, may be this is why this kind of programs is not popular in Thailand. Thus, this study is trying to find the way to use Second Life program as a tool for education in Thailand at the higher level, and guidelines for designing classes and lessons in Second Life and some recommendations will be provided.



Figure 1 Second Life logo (for introduction)

2. Objectives and Scope of Work

2.1 Objectives

In this research aim we have rendered:

1. Things to be considered when adopting Second Life technology for higher education,
2. Guidelines for designing lessons and classes using Second Life,
3. Recommendations for and patterns of using Second Life Program in higher education.

2.2 Scope of work and Contribution

The scope of this research tends to be rather broad than focusing on the use of Second Life in a specific discipline. Actually, the research aims to provide general guideline for designing the lessons and classes in the context of Thai higher education. The main contribution of the research is to serve as a basic information for educators who are looking for using this virtual reality technology in their classes. Hopefully, it can generate many other related researches that will be focusing on the use of Second Life in a specific field in the future.

3. Methodology

Methodology of this research is going to start with:

1. Data collection: general information about the use of Second Life is gathered from secondary sources. Primary data is collected using questionnaire provided for the focus group in order to find out about the students' learning behavior and whether or not they are ready to learn in virtual world.
2. Analysis: the data collected at the first step will be analyzed and compared.
3. Synthesis: after analyzing the data, the guidelines for designing classes and recommendations will be synthesized to make it appropriate for the program used in an academic field in Thailand
4. Conclusion will be made in 3 areas:
 - 1) The things to be taken into consideration when using Second Life for Thai education at a higher level,
 - 2) Guidelines for designing lessons and classes for Second Life,
 - 3) Recommendations for and patterns of using Second Life program in Thai higher education.

4. Literature Review of Second Life in Higher Education

4.1 What is Second Life?

Second Life (SL) is a program of 3 dimensional real time environment technology or MUVE (multi-user virtual environment; Wikipedia, 2010). It will enable users, as represented by avatar, to go through the program on the internet network, to socialize, participate in individual and group activities as well as to create and trade objects like one does in the real life. Second Life program was developed by a company named Linden Lab and was officially launched on June 23rd, 2003. In terms of use, the program has been divided into two parts: first, an application called Second Life Viewer (Figure 2). It is, like the window for seeing through the virtual world and users have to install it on their pc. Second, the server which is the storage of all users' data and it is operated by Linden Lab. Then, when users login to broadband internet, the user, called resident in the program, can meet and do an activity with other residents in real time. In the virtual world, user can create their own character of avatar and can build a 3d geometry form in order to construct a building or decorate their own place. Moreover, all residents have freedom to explore any place in the virtual world except some places that are blocked by other residents who are the owners of those places. With Second Life, users can create their private social group and can buy or sell virtual properties and services using Second Life virtual money called Linden dollar. Linden Labs has made Second Life's viewer open source, so user can develop a viewer interface by themselves (Linden Lab, 2016). For this reason, there are many third parties who create their own features such as ability to create objects larger than Second Life's limit, ability to connect to other grids other than Second Life, and new type of user interface in Second Life viewer.



Figure 2 Second Life viewer interface

With all these features, Second Life can be used for a variety of purposes. The program itself allows user to create and develop their own character and virtual objects to be used for various purposes. Furthermore, residents of Second Life have freedom to communicate and do activities with other people without a border. Thus, Second Life has a potential of being used as an education tool in Thai education system as we can see from the success of many virtual university campuses such as Open University (UK) (Figure 3), NUS Second Life (National University of Singapore), Edinburgh University (UK) (Figure 4), Evergreen (Tacoma Community College, USA) (Figure 5), etc. Moreover, most of the university virtual campuses do not just use the program as a virtual class but have also used it as the way to promote their university because all of the Second Life residents around the world can visit their university via this program.



Figure 3 Open University (UK) virtual campus in Second Life



Figure 4 Map and building of Edinburgh University (UK) in Second Life

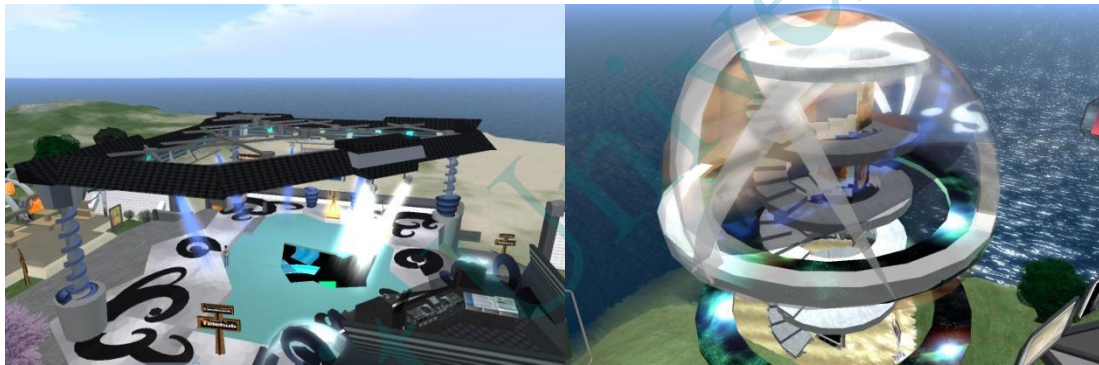


Figure 5 Activity area of Evergreen (Tacoma Community College, USA)

4.2 Strong Points and Weak Points of Second Life in Academic Field.

While Second Life program seems to have potential in terms of use in an academic field, there are some weak points to be concerned when applying it. One of the strongest points is that it is a user friendly program like a chat program that most of students are quite familiar with. Another good point is that, avatar is used as user representative that makes people able to have face to face communication, exchanging culture and have their own community like they do in the real world (MacCaw, 2008). Thus, residents in Second Life can join and do activities together as well as create their own virtual environment. Moreover, this program is quite suitable for long distance learning because there is no need for students to visit the university; they can just attend the class on their PC at home.

Meanwhile, Cote, Kraemer, Nahl, and Ashford (2012) stated that the things that have to be concerned when using virtual campus in Second Life program are the hardware and software because nowadays the software is developed very fast so it is quite difficult to maintain the hardware for long term operation. Moreover, the university has to prepare and train university staffs to operate their virtual campus in Second Life and this can lead to having higher operation cost. Furthermore, one of the most important issue is the server; Second Life is quite popular that sometimes there are more than 800,000 residents on line at the same time, causing a server down problem. Another weak point of Second Life is the freedom of using because in there is no rule; sometimes it is quite difficult to control students in class, or some may do something considered inappropriate in different culture.

The strong and weak points mentioned above can be used in designing virtual classes and lessons guidelines.

4.3 Second Life and Education

In 2007, Jo Kay and Sean FitzGerald divided the subjects taught in Second Life into 8 groups as follows (Kay and FitzGerald, 2007):

1. Medical and healthcare,
2. Hospitality and tourism,
3. Language acquisition,
4. Business,
5. Science and technology,
6. Architecture and interior design
7. Literature and creative arts,
8. Training and skills development.

These are just initial groups divided at the early stage. In 2010, Jo Kay re-divided groups of occupation subjects into 43 categories. From this point, we can see that the education field in Second Life program has expanded quickly and has become more popular.

4.4 Levels of using Second Life in Academic Field

Mr. Parinya Rungrojsuwan who is the webmaster of Thaisecondlife.net suggests that the levels of using Second Life program for academic purpose can be divided into 5 levels as follows:

- First level: using Second Life program to create a symbol of the university which the main purpose is to promote their university only,
- Second level: using it as a virtual place to hold student and staff activities such as registrations, long distance meeting and communicating with other people in the university but will not use it for learning and teaching,
- Third level: using it as a teaching tool such as virtual hospital, virtual hotel, etc.,
- Fourth level: using it to create virtual classes which include lecturer and students in real time,
- Fifth level: creating innovative course that relates with the job in virtual world. Then, when they finish the course they can find a job in virtual world such as working in a shop that makes customize avatar for other residents.

From the levels of using Second Life, it is quite clear that the university policy is important in designing which level is suitable for the students and which level is the next step to take in the future.

5. Results

5.1 Questionnaire

In this study, data were collected from questionnaires in order to evaluate the readiness of the university students to study via Second life. From the questionnaires, the answer from the sample group from 1st year architect students at Rangsit University, shows that most students have the ability to study with the group and they already have self-study skills. Moreover, almost all students have their own computer and have good skills at, especially, online communication skills. From this finding, we can assume that students now are able to study through online virtual environment classes.

In conclusion, Second Life can be used for various purposes. There seems to be a high potential of using it in the academic field. There are many virtual campuses in Second Life program especially in Europe and America. One of the most successful key is that Second Life makes people more relaxed than taking the real classes in a university because it is like playing online games via communicating through social media. Moreover, today students are familiar with this kind of programs because they use it in their daily life. However, there are some weak points that we have to think about before applying the program for educational purposes at a higher level in Thailand. A special care has to be taken in consideration when designing a class in a 3D virtual world. Therefore, guidelines are provided for designing the lessons and classes. Also, recommendations for and the patterns of using in Thai higher education were made.

5.2 Guideline for Designing Lessons and Classes for Second Life

Second Life is quite a proper program for group learning and simulation, role playing, constructing at building or mass communication and event, or for long distance conference in real time. Thus, the virtual

class or lessons are designed from this kind of this basic function as can be seen from Figure 6. Then, lecturer has to choose specific virtual place to hold the class and build it. There are some concepts that can be used in order to build virtual environment for studying such as build like in the real or imitate, ideal environment, abstract environment or mixing them together. Furthermore, the course outline and educational theories have to be considered in order to choose the subject objectives that are related to the program feature and apply them to class activities. However, the class efficiency still depends on the teacher's and the students' skills.



Figure 6 Classes in Second Life

5.3 Recommendations and Patterns of Using Second Life in Education in Thailand

- The type of subjects provided for Second Life program depends on 2 conditions. First, learning and teaching method, and second, the imagination of the class conductor,
- At the starting point, the area to experiment the class should be at least 250x250 square meters which is called an island in the virtual world,
- During the class, lecturer may need a teacher's assistance who is an expert in creating 3D models in Second Life. Although building a class in virtual world is a lot easier than doing it in the real world, long preparation time is still needed,
- Budget, in order to rent an island, in 2016 the rental fee is 600 US dollar (onetime payment for full region/undeveloped) and the operation cost is 1,770 US dollar per year (educational price),
- At the same time, various activities can happen in a virtual campus such as interesting meeting, welcome week open house, undergraduate conference, workshop, etc. (Jones, 2010).

From the information given above, the issues to be taken into consideration when applying Second Life technology for higher level of education in Thailand can be divided into 3 categories as follows:

- **Hardware:** Second Life program required quite high performance computer because the program is real time 3d simulator environment and is developed quite fast. Thus, a user or an organization has

to consider the computer specification that can support the program for at least 2-4 years. Beside the computer performance, the server needs to be taken into account for the storage of all user's data especially if the university wants to use it as a closed system in their own university. This can lead to higher operation cost. Another point is the broadband internet. Not only the speed of the broadband internet, but also the bandwidth and the security control that need to be planned. Second Life users data have to be secured. Also, the administrator should make a request to Linden Lab for IP whitelisting. This will be useful for registering many students in the classroom at the same time, otherwise the registration maybe blocked.

- Software: Interaction between avatars/objects in Second Life can be done using Linden Scripting Language (LSL). If the university needs some specific use, such as having an interactive patient bed in a hospital or an interactive display screen (cf. figure 7), they can either purchase a readymade one or develop one.
- Users: The users of Second Life when being used in academic fields can be divided into 5 groups:
 1. General users which may include alumni and other people,
 2. Students,
 3. Lecturers,
 4. Executives,
 5. University staff.

All these users have to practice how to use the viewer program of Second Life such as basic avatar control, communication, shortcut key, and object building before adopting Second Life in the real course. Moreover, policy makers have to support the project in terms of policy and budget. However, if this was not possible at the beginning of the project, which is the case with many Thai institutes, the teacher can also opt for a no budget scheme, which consists of having the students on someone else's place without having an island of their own.

- Support: Super users and experts can be found in Thai Second Life community (www.thaisecondlife.net). This group of people is friendly and is eager to help with the university's project.

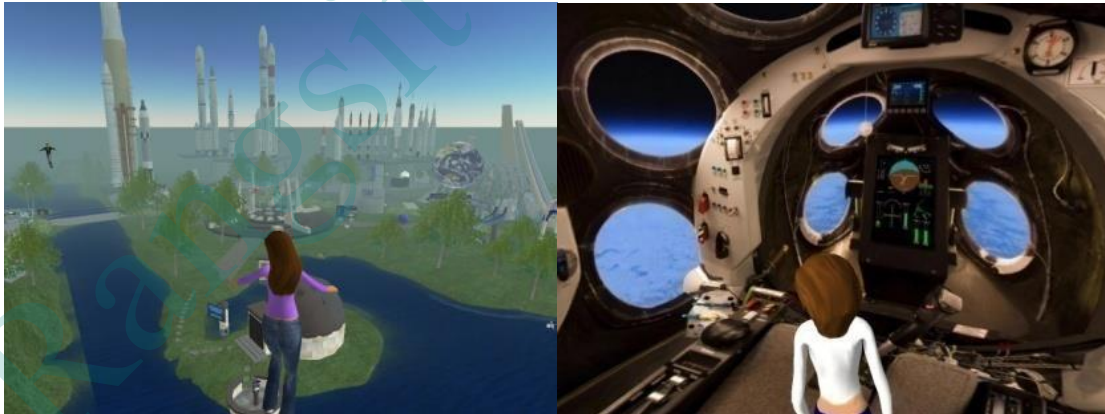




Figure 7 Simulation classes in Second Life

6. Conclusion and Discussion

To sum up, Second Life is widely used for educational purposes in many countries. Thus, when applying it to the Thai context, the most important things that has to be taken into consideration is users' skills. If users can use the program efficiently, it could be more fun and successful. The second thing is the university policy to support the project because there is some budget and specific staff needed. Also, the guideline for designing lessons and classes need to be concerned about the educational theories and the program feature in order to create successful class activities. Moreover, the class virtual environment needs to be designed and prepared before the class begins. Finally, teaching assistance may be required to help lecturer for some technical issues. Besides holding normal classes, special activities such as interesting meeting and welcome week open house are recommended.

The result of this research shows that, Second Life has a potential to be applied to the education field at a higher level in Thailand. The program has many features that can be used and developed for proper virtual courses and can create suitable virtual environment. Although, some features still need to be taken into considerations such as users' skills, budget and course syllabus. Moreover, one of the most important keys to successes is the support of the university policy and the vision of the policy maker, so most of virtual campuses are just an experimental project and most of them are still waiting for new development before taking the next steps. Thus, this should be a good opportunity for Thai universities to prepare and practice the skills needed in order to use this kind of programs fluently and can apply it to the teaching – learning process when it is ready like it was done in the US or in the European countries.

The limitation of this research is that most of the information used as the data were obtained via the internet because there are quite limited numbers of published academic papers on this topic. Hopefully, findings from this research may contain useful information that can be used for further research about applying Second Life to various subjects in the future.

7. Acknowledgement

This research was supported by Research Institute, Rangsit University. The completion of this research could not have been possible without the participation and assistance of Dr.Walaiporn Nakapan. We are thankful to our colleagues Mr.Prajak Wongkam as well as Mr.Theerayu Cheatphakdee who provided technical support and assistance. We are also grateful to Mr.Parinya Rungrojsuwan, who is the webmaster of Thaisecondlife.net for sharing very useful information for this paper. We are also thankful to Dr.Srisak Jamornman for great advise on program practicing.

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