

# Building a Final Year Project on Social Network Platform: Challenges and Opportunities

Gary K. W. Wong, Wing-Yi Hui, and Sze-Wing Yuk

**Abstract**—Virtual classroom is a classroom that connects to the Internet in order to provide online collaborative learning environment. Virtual classroom offers classes at any time and in any place where students can participate in the class through many different feasible ways, such as video instruction, assignments, and communication tools. With all these features, learning can become exciting and dynamic. In addition, online social networks such as Facebook attract large number of students nowadays. Yet, existing social network applications have not yet been targeted on student learning. Since most students are already connected via social networks, building virtual classroom with some gaming elements can benefit the teaching and learning. In this paper, it aims to share the teaching and learning experience on conducting a final year project (FYP) for the higher diploma students, which requires them to build the Virtual Classroom Game (VCG) on the online social network platform, Facebook. The challenges and opportunities are discussed and provided in this work targeting for sub-degree colleges particularly. Based on this experience, FYP continues to be recommended and conducted even for sub-degree students as long as the instructors can evaluate and observe the proposed guidelines in this paper.

**Index Terms**—Capstone projects, curriculum design, online/e-learning and blended learning, educational games and simulations, sub-degree programmes.

## I. INTRODUCTION

In recent years, online social networks has been grown and spread significantly, particularly among the college students. According to the research findings, near 90% of undergraduate students in the United States using at least one social network platform on a regular basis [1]. Social networks such as Facebook and MySpace are now among the top ten visited websites on the Internet [1].

Obviously, students have now taken their real-world social networks to the virtual world. Furthermore, these major platforms offer developers sources and tools to create applications by leveraging the underlying social graphs. With the introduction of these third-party applications, an increase in the social network traffic has been observed [1]. Given the increasing of penetration rate among users, applications running on these social platforms will continue to serve as one major reason of people using the networks.

On the other hand, virtual learning environments have received great attention. Classrooms and laboratories of

tomorrow are most likely enhanced with virtual presence in cyberspace allowing students and teachers to participate in the learning sessions called Virtual Classroom [2]. Although challenges in developing and delivering lessons in this virtual environment are inevitable [3], research concludes that students report better understanding of subject matter and providing structure to study regularly as the main benefits of attending virtual classes [4]. Other advantages such as flexibility in frequency and duration of the sessions, possibility in replaying recorded sessions, and features for hand raising and feedback can fill up the gaps where face-to-face context is hard to implement [4].

No doubt, final year project has been one of the most important components in the study of computer science in general [5]-[8]. With the projects, students are able to combine what they have learned and apply all the skills together. Given the goodness of social network platform and the virtual classroom mentioned previously, we came up an idea to combine them together to form a virtual classroom through a social network. Thus, we proposed a new final year project called Virtual Classroom Game (VCG) for one group of students in the Higher Diploma in Computer Studies (PC System and Network Administration) in the college this year. This paper aims to summarize the experience and challenges facing in this project. Yet, this has set a future direction of how this project can grow further.

Through this Virtual Classroom Game (VCG) project, the students have developed and implemented the following goals:

- To allow students to extend classroom learning to online social network platform;
- To provide basic course management system functionalities to support teaching and learning;
- To enhance the learning motivation by integrating gaming elements into virtual classroom; and
- To introduce direct alternative for peer students to commute and discuss online.

The paper is organized as follows. Section II describes related works to the effectiveness of conducting FYP issue using the virtual classroom concept. Section III presents the course structures and outcomes offered in our college. Then, we will introduce the VCG and share the challenges and opportunity in Section IV and V. In Section VI, it will explain the teaching and learning evaluations report to confirm the teaching and learning effective. We summarize the paper contributions and the conclusions in Section VII.

## II. RELATED WORKS

Some existing virtual classrooms have been built with

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G. Wong is with the Department of Mathematics and Information Technology, The Hong Kong Institute of Education, Hong Kong, China (e-mail: wongkawai@ied.edu.hk).

W. Hui and S. Yuk were with the Community College at Lingnan University, Hong Kong, China.

specific purposes. For example, The Global Virtual Classroom [9] and eLecta Live [10] are related existing product of virtual classroom on the Internet.

The “Global Virtual Classroom” (GVC) [9] is a collection of free, online educational activities and resources. It aims to complement the efforts of governments and education departments around the world to integrate technology into their classrooms and curricula and to link their schools to the Internet. The major projects of the GVC are the annual Contest and the Clubhouse Program. During the Contest, teams from schools around the world compete to build web sites that best meet contest objectives. Each team is made up of students from schools in different countries working together. The web sites are then judged on the quality of their content and presentation, effective team work, and the collaborative skills with others through knowledge sharing in activities. The contest runs from October through April, with winners announced and cash prizes awarded in May. “eLecta Live” is also a virtual classroom and Web conferences real-time environment for live teaching and training over the Internet [10]. This allows users to arrange live classes, online meetings and webinars - all taking place over the Web in real time. eLecta Live supports live video and audio, interactive white boards, markup and annotation tools, file and document sharing, and screen sharing. To the best of our knowledge, however, virtual classroom in social network has not been considered and proposed. To motivate our students, this topic seems to catch their attention in this year. Given the limited time, we have only built a prototype that sets a future direction in this application.

### III. COURSE STRUCTURE AND OUTCOMES

In this section, we present and share the two-term FYP course under the Higher Diploma of Computer Studies (PC System and Network Administration) with its structure and learning outcomes.

#### A. Brief Course Description

This course is designed to acquaint students with the ability to apply in-depth problem solving by applying what they learned from the programme. The project can be the development of a small computer system and/or feasibility study of IT solution for practical problems.

#### B. Aims

This course aims at providing the opportunity for students to link material from different courses in the programme and to develop, in detail, an area of their own interest.

#### C. Learning Outcomes

It is intended that this course will enable students to:

- 1) follow up an area of interest;
- 2) summarize their previous studies;
- 3) identify and define problems;
- 4) analyse and design the solution;
- 5) implement the solution;
- 6) demonstrate their understanding in the systems development cycle;
- 7) further develop project management and organization skills.

#### D. Indicative Content

The course is centered on an individual/small group project, chosen by a student or a student group, which solves a business or technical problem. The project essentially reinforce the use of a variety of software tools and hardware platforms in a problem solving context, as well as further developing the students’ problem solving abilities.

#### E. Teaching Method

Project specifications are normally developed by students, with the assistance of their supervisors. Projects can be implementation based and/or feasibility study type. It should address a significant business or technical problem and students are expected to develop a commercially realistic solution. Projects can be carried out on an individual basis or by small groups, provided the level of complexity warrants it and the group can demonstrate cohesiveness. Each project is allocated a supervisor, who is timetabled to meet the student(s) once every week. In addition, students are timetabled for laboratory work every week, during which a tutor will be available for advice and assistance, and students are expected to carry out their project work in this and their private study time. Students are required to present and submit their project report at the end of the course for assessment.

#### F. Measurement of Learning Outcomes

- 1) Students take part in projects to apply and integrate the knowledge they have learned from the courses. Students will learn that careful preparation is necessary to have satisfactory results. Moreover, presentation will be required to ensure that the specified objectives have been met.
- 2) Problem-solving skills are developed through applying a range of techniques and ideas in handling real-life problems. Students are encouraged to think independently, and to apply appropriate control measures in accomplishing specific tasks.
- 3) The teaching / learning methods enumerated above will create a learning environment in which the students play an active role. To achieve this, students will be encouraged to adopt an active knowledge-seeking attitude and to build up confidence in their own ability to communicate and work with others.

Below is a list of grading breakdown for each component,

- 1) Project proposal (5%)
- 2) Interim report and Presentation (15%)
- 3) Final Project Report (70%)
- 4) Final Oral Presentation (10%)

### IV. VIRTUAL CLASSROOM GAME (VCG)

Based on the course structure and learning outcomes, it is appropriate to design a project that can first attract the students to choose, and motivate them to complete a project within their trained skills and knowledge. To consider attraction, we recognize that many students have a social connection in a selected online social network in today’s world. From observation, students have already found themselves a virtual connected online network such that they

can share information and interest. Naturally, we can build an application integrated with a social network to enhance teaching and learning. Thus, the concept of VCG has been proposed and was chosen by a group of students.

**A. Objectives**

The objective of this project is to build a virtual classroom game (VCG) on the Facebook to simulate the learning environment as in classroom. Teacher can deliver both synchronous and asynchronous instructions to students on the platform. Students come to the school and choose which class they want to attend. Student can interact with each other on the virtual classroom to carry out regular teaching and learning activities such as group discussion, quiz, timed competitions, and collaboration on tasks. Within the VCG, students can choose to participate in "outside classroom" games. Frequent participation can generate higher points on student records. In addition, they may come into teacher's office and discuss matters individually with advices.

**B. System Design and Development Tools**

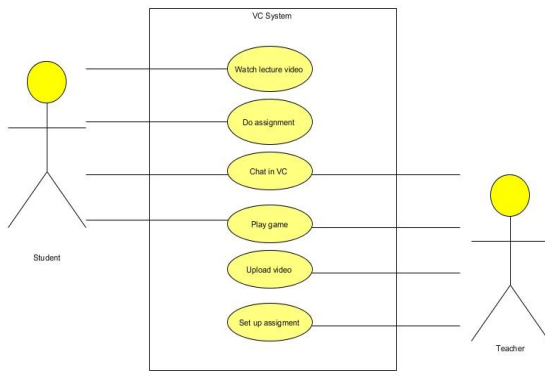


Fig. 1. Users case diagram for the VCG.

The users case diagram in Fig. 1 illustrates the roles between the "Student" and the "Teacher" in the system. Teacher is able to upload the video in the page of classroom. Teacher will make the assignment, quiz and timed competition etc. in the virtual classroom. Teachers have a virtual character in the VCG, but unlike student, teacher cannot gain any score. Teacher can view and download the file of assignment and quiz of all students submitted in the VCG, and then give a score to the work of the student in the VCG. In addition, the VCG allows student create a virtual character of themselves. If the score that student gets is higher, the level of the character will also be higher. In different level, the VCG provides different clothes for student to select. It is sure that higher level with more choices. Students can gain score through frequent participation in outside classroom game, do the assignment and quiz well and be an active member in the group discussion etc. Having this function can motivate student use this VCG more frequent since they might want to have higher level. Students only allow viewing and changing the file which they submitted. They cannot view the others.

Software Development Life Cycle is a necessary process for the development of software products. The basic classification of the whole process is the following. They included Planning, Analysis, Design, Development,

Implementation, Testing, Deployment and Maintenance. Each of them has its own importance and plays a significant role in the product development. There are several models with different advantages, they are agile model, spiral model, waterfall model and modified waterfall model. And we will adopt modified waterfall model as development process, just like the figure shown in Fig. 2.

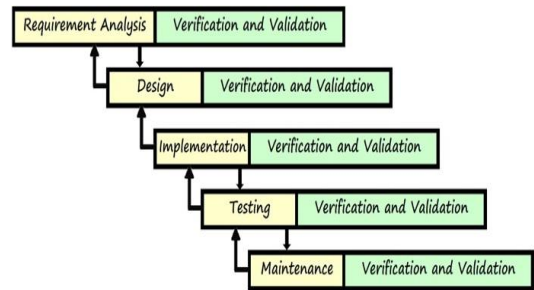


Fig. 2. Modified waterfall diagrams used for the VCG development.

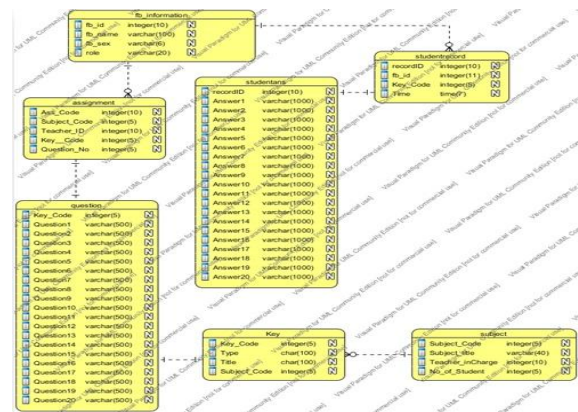


Fig. 3. Database diagram of entity relationship model for the VCG.

We select modified waterfall model instead of the waterfall model because of the follow reasons. Waterfall model has a one big disadvantage is that developer cannot go back to the previous stage. If there is any change in the design stage, developers are needed to redevelop the VCG from the first stage. It is the main different among tradition waterfall model and modified waterfall model. Modified waterfall model allow overlap of the phrase. This permission of the overlap increases the flexibility in developing the VCG. Moreover, developers can make a number of tasks concurrently. It ensures any defects in the VCG are being removed in the development and implementation stage. In other words, any change to the basic design is possible since several phases can be active at same point of time. This can reduce any oversight issues. However, disadvantages also exist in this model. In modified waterfall model has a drawback. It becomes difficult to trace the progress in all stage. The timeline would turn to be more complex. This is the awareness for the developers when they adopted the modified waterfall model. In terms of the development tools, we have selected to build the Facebook application using Flash Action Scripts and PHP with the help of the Facebook API.

**C. Functional Requirements**

In our VCG, we provide the following major functionalities. Due to the time limitation and the group size

issue, we have built this VCG with only a prototype application with functions less than the original concept. To preview, Fig. 4 shows the sample of the first screen.



Fig. 4. Sample User Interface (UI) screen on the first page.

**Lectures:** The VCG provides lessons for students to take anytime. The lessons are in the form of video which is recorded and uploaded by teachers. Teachers upload the video to the server use upload mode. Students can select the class they liked. Also it is able to review at any time. The page of the class selection is designed as a book.

**Assignments:** The assignment is in the form of question. Teachers can create assignments for students to submit in the upload mode. Students choose the assignment which they need to do, and then VCG will pop up a new page for student to do assignment. After students click the submit button, the browser will show "The assignment is submitted".

**Upload:** This function like as a teacher mode. Teachers must go to this mode with an access name and password. After that teachers can choose to upload lecture, assignment and view the student assignment answer. In lecture, teachers must upload the video format in flv and use an English title. In assignment, it needs to choose the subject of assignment. The subjects are classified to Chinese, English, Maths and General Education. The VCG will show "The Question is successfully inserted into database." After teachers click the submit button. Teacher also can check the students' answer by a table.

**Game:** The VCG is not purely for the teaching purpose. Students and teachers can relax by joining the game. The VCG is developed with bubble shooting game for students in one minute and player cannot cancel until they finish the game.

**Others:** Users profiles, general system settings, digital clock, and chat room are provided supplementary functions to enhance student's communication.

## V. CHALLENGES AND OPPORTUNITIES

Although we have only built a prototype, our two students were successfully to build up the VCG and give an organized presentation as well as demonstration with satisfaction. However, our students have encountered several issues during this project. First, the development tools are provided without a well organized manual or user guides to get the implementation started easily. Some third-party books offer a good tutorial based resources. Yet, some unexpected outcomes stood in the way during the development cycle. In addition, Facebook changes quite frequently during the

period. For example, the new applications running on Facebook require to use the SSL secure connection. Our students took some time to readjust the codes to make the application run smoothly. More importantly, this particular project may be too difficult for students at the sub-degree levels when the programming skills are yet to be polished and trained. Thus, developing applications in the Facebook platform is more challenging than what they expected previously when they chose to accept the challenges. Nevertheless, the students were still able to manage to accomplish the objectives with good performance. At the end, the students reported that they enjoyed building an interesting application on a popular social platform. The motivation is what they have taken to resolve all the issues independently.

## VI. CONCLUSION

In this paper, we summarize the final year project teaching and development experience in the sub-degree levels. Building the Virtual Classroom Game (VCG) on the Facebook is fun but challenging. The challenges and opportunities are discussed and provided in this work targeting for sub-degree colleges particularly. Based on this experience, FYP continues to be recommended and conducted even for sub-degree students as long as the instructors can evaluate and observe the proposed guidelines in this paper.

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**Gary K. W. Wong** received the B.Sc. degree, *Magna Cum Laude*, in Computer Science and Mathematics (Double Majors) from Brigham Young University Hawaii, the United States, in 2006. He also received the M.Phil. degree in Electronic and Computer Engineering, Department of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Hong Kong, China, in 2009. He received his Ph.D. in Computer Science in 2012. He is now a Lecturer in the Department of Mathematics and Information Technology, The Hong Kong Institute of Education. His research interests include mobile and pervasive

computing, wireless communication and networks, wireless multimedia sensor networks (WMSN), wireless network coding, wireless quality-of-service (QoS) provisioning for mobile multimedia networks, energy efficiency optimization, and mobile IPTV.



**Wing-Yi Hui** was a Higher Diploma student in the Community College at Lingnan University. Currently, she is a full-time undergraduate in the Department of Computing at the Hong Kong Polytechnic University.



**Sze-Wing Yuk** was a Higher Diploma student in the Community College at Lingnan University.