

## DECLARATION

I declare that this dissertation entitled “A Framework of Games Design for Internet and E-Commerce Subject towards an Effective Learning” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature : .....

Name : .....

Date : .....

## APPROVAL

I hereby declare that I have read this dissertation/report and in my opinion this dissertation/report is sufficient in terms of scope and quality as a partial fulfillment of Master of Computer Science (Internetworking Technology).

Signature : .....

Supervisor Name : .....

Date : .....

## DEDICATION

*I lovingly dedicate my thesis to my beloved husband, Azrul Faidz Amirudin  
who supported me each me step way. To my precious children,  
Ahmad Erfan Qaliff and Nur Erdeena Qhayla,  
who give me passion and strength with their smile.  
You are “ Anugerah Terindah daripada ALLAH”*

## ABSTRACT

This study attempts to develop a framework for the use of gamification in education. Therefore, this paper focuses on students in semester 4 taken Diploma in Business Studies for Internet and E-commerce subject. The main objective of this study was to 1) design framework game for learning activities, 2) to develop a form of learning games of the framework is generated, 3) to evaluate the effectiveness of games for learning activities for the subject of Internet and E-Commerce (ITE 2513) this. MARA Professional College (KPM) interaction between lecturers and students is limited, sometimes it is boring and it can be very challenging for teaching methodology. However, this problem can be solved with a short learning and practice phase. For this reason, we analyze the potential of using gamification approaches to increase learning management for this subject. Based on the analysis of student performance, we have created a framework for the use of gamification in the subject of Internet and e-commerce through Learning Management System (LMS). Through this system it will be able to help improve student performance. This framework allows users to explore the user interface in Learning Management System. By reflecting on the results of the first study with this framework, we present a set of guidelines for designing and evaluating the use of the domain gamified LMS, which can serve as support for the development of the future.

*Keyword: Learning Management System (LMS), Gamification, Internet and E-commerce (ITE2513), MARA Professional College (KPM), Majlis Amanah Rakyat (MARA).*

## ABSTRAK

*Kajian ini bertujuan untuk membangunkan satu rangka kerja bagi penggunaan rekabentuk permainan dalam pendidikan. Oleh itu, kertas kerja ini memberi tumpuan kepada pelajar semester 4 Diploma Pengajian Perniagaan bagi Internet dan E-dagang subjek. Objektif utama kajian ini adalah bertujuan untuk 1) merekabentuk kerangka kerja permainan untuk aktiviti pembelajaran, 2) untuk membangunkan satu bentuk permainan pembelajaran daripada kerangka kerja yang dihasilkan, 3) untuk menilai keberkesanan permainan untuk aktiviti pembelajaran bagi subjek internet dan E-Commerce (ITE 2513) ini. Di Kolej Profesional MARA (KPM) interaksi antara pensyarah dan pelajar adalah terhad, kadangkala ia adalah bosan dan ia boleh menjadi sangat mencabar bagi kaedah pengajaran. Walau bagaimanapun, masalah ini boleh diatasi dengan pembelajaran yang singkat dan fasa mengamalkan. Atas sebab ini, kita menganalisis potensi penggunaan pendekatan gamification untuk meningkatkan pengurusan pembelajaran mata pelajaran ini. Berdasarkan analisis prestasi pelajar, kami telah mencipta satu rangka kerja bagi penggunaan gamification dalam subjek Internet dan e-dagang melalui Sistem Pengurusan Pembelajaran (SPP). Melalui sistem ini, ia akan dapat membantu meningkatkan prestasi pelajar. Rangka kerja ini membolehkan pengguna meneroka antara muka pengguna dalam sistem pengurusan pembelajaran. Oleh itu, hasil kajian pertama dengan rangka kerja ini, kami membentangkan satu set garis panduan untuk mereka bentuk dan menilai penggunaan domain gamified LMS, yang boleh berfungsi sebagai sokongan untuk pembangunan masa depan.*

*Kata-kata: Sistem Pengurusan Pembelajaran (SPP), Gamifikasi, Internet dan E-dagang (ITE 2513), Kolej Profesional MARA (KPM), Majlis Amanah Rakyat (MARA).*

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

This purpose of this study was conducted to find the extent the use of games design approaches in Internet and E-Commerce subject towards an effective learning at MARA Professional College, Ayer Molek Melaka. The specific course are addressing is Internet and E-commerce subject (ITE2513) and it is part of the Diploma in Business Studies (DBS). This is a compulsory subject for students in semester four taken Diploma in Business Studies course. There are three branches MARA Professional College offering this course, namely MARA Professional College Ayer Molek, Melaka, MARA Professional College Beranang, Selangor and MARA Professional College Indera Mahkota, Pahang.

### 1.2 Research Background

This subject seems to be somewhat estrange to the students who find the less focuses and also the performance is a not achieve. In previous years this has led to the slow disengagement of students throughout the semester: as students realize they are either not being able to solve the problems offered by the course or they think “any answer will do” (one of the big problems with uncertainty and ambiguity is that many answers can be acceptable, provided the right context and justification).

However, previous experiences with educational games seem to captivate and motivate these students: small games and group dynamics have been widely accepted and increased the levels of class participation, student engagement and student performance in the past. Since the subject is very much a topic of convergence in the teaching of conventional theory, so the subject is proposed to be granted disclosures to the use of gamification in teaching towards an effective learning. Based on that, we proposed to introduce one interactive game that we named it as *E-Commerce Adventure Games (E-CAG)*. In this chapter, we proposed that (with focus on learning and teaching game for educational purpose) the use of game design patterns could be helpful. The use of game design pattern is a valuable contribution to reducing game design complexity and increasing design efficiency. For that reason, we produced the game design namely; *E-Commerce Adventure Games (E-CAG)*, is an interactive learning game to engage students and give them exposure to the use of teaching the game, especially for subjects that involve teaching the theory. For the selection of the name of this game is based on the step that involves the game itself, which is students need to experience the game; the word of

- i) E-commerce = based on the name of this subject.
- ii) Adventure = while based on the step and the exploring of the game which is involving the planning of profit, loss, income, expenses and so on.

This game is look like the Monopoly, and Saidina games, students have to take their own risk and they should be able to control the games. These current games only for the Internet and E-commerce subject and it's implemented to chapter 1 refer to the syllabus. In these games, students need to understand the situation; students need to be smart while control of the game. In this game, students need to understand their situation where every game is an engaging exploration cost. The beginning of the game the students are provided with capital expenditure of RM5,000.00 and students need capital controls whether they will make a profit or loss on exploration within the game. In general, pre-, in- and post-game guidance and instructions given by a lecturer's have a positive effect on students' motivation and learning performance, ensuring a positive attitude towards the topic of learning. Lecturer has to give instructions to player before start the games.

### **1.3 Problem Statement**

The problem that exists with respect to this research is the problem where students are less focused when the process of teaching and learning. This is because in this subject there are six topics, which the six of these topics are the subject of the theory. It is quite difficult for students to remember and understand the steps and also the important points. This chapter focuses on theoretical topics. Each title is a bit difficult to understand because the topic is beyond the knowledge and unused days. Students also are not from an IT background. Teaching practice is carried out conventionally, lecturers will deliver lectures in the form of a slide display and students use handouts and textbooks for reference.



Moreover, among the activities carried out in the classroom is like group discussions, presentations, sharing ideas and so on. Students lack of concentration in the activities provided, students tend to be easily bored and less focus, and so because of that we propose to develop a framework of gamification to enhance the teaching and learning process to engage students more actively in control subjects, especially for theoretical subjects. So referring to this study, the platform that will control that game will involve the Learning Management System. Assessment will assess the types and have one quiz, 10%; two tests, 20%; two assignments, 20%; one project, 10%; and Final Exam, 40%. Student achievement based on student achievement assessment conducted at the end of each chapter, there was a bit lackluster either during the test or the final exam, especially in parts of the essay.

This study aims to develop a framework for game based learning named it as **E-Commerce Adventure Games (E-CAG)** to help lecturers to improve the teaching and learning process more interesting and effective use of learning management systems. It also helps students acquire a better education.

#### **1.4 Research Objective**

Based on the issues discussed in the background of this research study, there a several objectives of the research derived. The objectives of this study are to;

RO1: to design gamification activities framework for Internet and E-Commerce subject

RO2: to develop a game from the proposed framework.

RO3: to evaluate effectiveness a of games design for Internet and E-Commerce subject towards an effective learning.

## **1.5 Research Questions**

Based on the discussion in 1.4, following research question are developed

RQ1: How to design game based learning activities framework

RQ2: How to develop a framework for the use of these tools to be integrated

RQ3: How to evaluate effectiveness a of games design for Internet and E-Commerce subject towards an effective learning.

## **1.6 Significance of the Study**

The findings of this study provide a significant of developing a games design framework can help facilitate the (developer) users will come in the implementation of games design in improving the level of student engagement in the learning and teaching process, especially for subject theory. Regarding to the findings

- i. it is expected to give contribution to the increase students' performance in internet and e-commerce subject.
- ii. it is expected to help produce globally competitive generation.

## **1.7 Limitation of Study**

The limitation of the study refers to potential weaknesses and the constraints of the study. It is includes the condition such as limitation in the sample size, the coverage of all data, the resources time, energy and finance. In this research study, here are some limitations could be identified prior to the implementation of the study. The limitations are;

- i. The aged group of this research study is limited between ages of 18-25 years.
- ii. The sample will cover in one (1) class (10 Male, 15 Female) of subject's Internet and E-Commerce for semester 4 students, taken Diploma in Business Studies.
- iii. Location will be proposed to be implemented in MARA Professional College Ayer Molek, Melaka.
- iv. This study will focus on the use of gamification framework developed to assist developers in teaching and learning process.

## **1.8 Conclusion**

In this Chapter 1, is about the development of the framework for the research. The framework acts as guidelines for the researcher to ensure the research align with the objective of the research. This chapter comprises the general information about games design. In this chapter also discuss the purpose of conducting research and the expected outcome.

## **CHAPTER 2**

### **LITERATUREREVIEW**

#### **2.1 Introduction**

In this chapter focuses on previous studies carried out by several researchers about integrating technology in the classroom. The discussion revolves around technology in education especially those involving the use of gamification in education as a means to measure the effectiveness of online learning in the subject of Internet and E-commerce. A number of research related to benefits and issues on the use of gamification in the teaching and learning process are also highlighted in this chapter. The chapter also brings to light a few number of similar researches. A conceptual framework ends the chapter.

#### **2.2 Research Problem**

The education system in Malaysia is open to all students irrespective of gender right from the early education to higher education. One way to achieve highest level of quality in higher education system is by discovering knowledge for prediction regarding enrolment of students in a particular course, alienation of traditional classroom teaching model detection of unfair means used in online examination, detection of abnormal values in the result sheets of the students, prediction about students' performance and so on (Akinola et al. 2012).

For this research, it will focus on the semester four students who take Internet and E-Commerce subject for Diploma in Business Studies. This subject will assist the students to explore the environment of online business and to expose the students the platform of online business. These subjects need the best comprehension of students about the real life situation of transaction of online business. They should be able to understand the platform of Internet and E-commerce may do.

### **2.2.1 Student**

Refer to the dictionary; students can be defined is someone who wants to learn who is also known as a student or of the students. In the study, the students in question are young people aged between 18 to 26 years who are learning in a community that MARA Professional College Ayer Molek, Melaka.

### **2.2.2 Lecturer**

The teaching and learning (T&L) process are very important where the students get the knowledge. In this matter, the lecturer plays an important role to make sure that the teaching and learning process is going smoothly and efficiently. With that note, they have to know the level of their students before the T&L process where it easy for them to prepare the teaching materials and also the teaching method. It is difficult to manage and handle the T&L process when facing the different intelligence level and skills in one class. The lecturer needs to use a variety approaches in teaching to make sure all students with different intelligence level and skills can gain the knowledge.

### **2.2.3 Internet and E-Commerce**

Internet and E-commerce subject is introduced with the purpose of exposing students with the concepts of information technology management and electronic commerce from the business management point of view. This course aims to build the foundations for better understanding the digital economy particularly focusing on Internet and the World Wide Web. The course will outline the new competencies and skills required in the E-business environment and technology perspective underlying IT infrastructure for electronic commerce. Mode of delivery for this subject was handling by lecture and practical. Learning outcomes that need to achieve for this subject on completion of the course students should be able to know how to interpreting the concept of E-commerce, using the Internet and web features, services and applications that support E-commerce activities, understand the scope of E-commerce crime, security problems and payment mechanisms, understand E-commerce marketing communication, understand online retailing and services.

### **2.2.4 Increase an effective learning**

In the aspect of this study is to improve the performance here refers to trying to improve the performance of student achievement is through the use of game based learning in order to instill a sense of greater appreciation of subject of internet and e-commerce as well as increasing the percentage of subjects with better achievement.

### 2.2.5 Current Trends of LMSs

A learning management system is a software-based platform that provides infrastructure, framework and tools to facilitate online learning or training. The learning management system manages all administrative aspects of the educational process and provides important services to host and deliver the training content. The educational content is not, however, part of the learning management system. The creation of that content is a separate process, but of course the result must be compatible with the technical standards of the learning management system. The evolution of LMSs began with a simple requirement for file storage and sharing purposes. Over time, the developers of these LMSs started to introduce more features to their system to accommodate the users' requirements. According to researcher, he defined among the biggest names that are currently dominating the LMS market today are Moodle and Blackboard. Table 2.1 below, refer to the comparison of features found within these LMSs (Subramanian et al. 2014), comparing them in terms of their features.

LMS	Discussion Tools	Group Collaboration Tools	Assessment Tools	Social Interaction Tools	File Exchange	Notification	Gamification
Moodle 2.0	Yes	Yes	Yes	Yes	Limited	Limited	Limited
Blackboard 9.1	Yes	Yes	Yes	Limited	Yes	Limited	Limited

Table 2.1: Comparison between two popular LMS available within market

Based on above table, the common features found within these systems include discussion tools, such as discussion forums, assessment tools, which allow the educators to assess users based on their performance, and group collaboration tools, which help users to work together in teams. The primary purpose of LMSs being introduced was for the system to act as a breeding ground for the interaction between students and teachers, for them to discuss educational topics and exchange ideas through the features in the system such as discussion forums and group collaboration tools (Azmi and Singh 2015).

### **2.3 Gamification**

According to (Šćepanović 2015) The essence of gamification is that it occurs in a non-game context therefore it would be applied in such a way that would not change the existing practice of learning and instead focus on making it more engaging and challenging for students. In other hand, as stated by (Figueroa-flores and Este 2016) Gamification involves applying game design thinking to non-game applications to make them more fun and engaging and it can be applied to any industry to create fun and engaging experiences. In education, Gamification is used to motivate and change the learner behavior using fun and engaging game-like environments. It encourages fun, intense focus, competitiveness, collaboration, retention, productivity, and creativity/exploration.

Gamification as a term was mentioned for the first time in 2008 and, from that point on, much work has been done and many papers written on this topic was explain that Gamification is defined as the use of game elements and game design techniques in non-game contexts. It is based in the success of the gaming industry, social media, and decades of research in human psychology. Basically, any task, assignment, process or theoretical context can be gamified (Domínguez et al. 2014).