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JUDUL: The Development Of Massive Open Online Course For Critical And Creative Thinking Subject: Series 2

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THE DEVELOPMENT OF MASSIVE OPEN ONLINE COURSE FOR CRITICAL AND CREATIVE THINKING SUBJECT: SERIES 2

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This report is submitted in partial fulfilment of the requirements for the Bachelor of Computer Science (Interactive Media)

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2015

DECLARATION

I hereby declare that this project report entitled

THE DEVELOPMENT OF MASSIVE OPEN ONLINE COURSE FOR CRITICAL AND CREATIVE THINKING SUBJECT: SERIES 2

is written by me and is my own effort and that no part had been plagiarized without citations

STUDENT : _____ Date: AUGUST 28th 2015

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SUPERVISOR : _____ Date: AUGUST 28th 2015

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DEDICATION

First of all, I would like to thank my beloved parents of whom this whole project is dedicated to, for their endless support and helps whenever I need it no matter in what aspect it would be, for always praying for my best other than keeping on believing in me as well as giving me lots of advices on whatever I am producing.

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ABSTRACT

The Massive Open Online Course (MOOC) is an open-learning website that is starting to get its place and be used by millions of people worldwide. Therefore, this project embarks on the development of contents for a course of Critical and Creative Thinking subject for UTeM MOOC, which aims at producing more interesting lecture videos and other contents for the course. The contents in this project are developed using many software like Sony Vegas Pro, Adobe After Effect, iStudio platform, GoAnimate, PowToon, VideoScribe, iSpring, Adobe Flash and Adobe Photoshop. The main objective of this project is to develop interactive multimedia elements including animations and video for this online course. By developing this project, research found that students enjoy 6-8 minutes videos better with variations of visual effects. However, the products still need a few improvements with consultation from more experts. This project development involves ADDIE model for its development process, reliability testing through questionnaire data collection and also partial experiment to test the product's usability by conducting a pre-test and post-test to two groups of students named the control and experiment groups. The sample involves 20 students, 7 lecturers from Universiti Teknikal Malaysia Melaka (UTeM) where the testing were conducted in Taman Bunga Raya, Bukit Beruang, Melaka on August 19th 2015. The result found that the use of the course in MOOC helps the students to get better score and understanding compared to the conventional materials.

ABSTRAK

Massive Open Online Course (MOOC) adalah sebuah laman web e-pembelajaran yang mula mendapat tempat dan digunakan oleh berjuta-juta orang di seluruh dunia. Oleh itu, projek ini memulakan pembangunan kandungan untuk subjek Pemikiran Kritis dan Kreatif untuk MOOC UTeM, yang bertujuan untuk menghasilkan video kuliah lebih menarik dan kandungan lain untuk kursus. Kandungan dalam projek ini dibangunkan menggunakan perisian banyak seperti *Sony Vegas Pro*, *Adobe After Effect, iStudio Platform, GoAnimate, PowToon, VideoScribe, iSpring, Adobe Flash* dan *Adobe Photoshop*. Tujuan utama projek ini adalah untuk membangunkan elemen multimedia interaktif termasuk animasi dan video sebagai konten di dalam kursus atas talian ini. Dalam pembangunan projek ini, kajian mendapati bahawa pelajar menonton 6-8 minit video dengan lebih baik dengan variasi kesan visual. Walaubagaimanapun, produk masih memerlukan penambahbaikan beberapa perundingan dengan pakar-pakar. Projek ini melibatkan model ADDIE dalam proses pembangunannya, pengujian kebolehpercayaan melalui soal selidik untuk pengumpulan data serta eksperimen separa untuk menguji kepenggunaan produk dengan menjalankan *'pre-test'* dan *'post-test'* kepada dua kumpulan yang dinamakan kumpulan kontrol dan eksperimen. Sampel pengujian melibatkan seramai 20 orang pelajar beserta 7 orang pensyarah daripada Universiti Teknikal Malaysia Melaka. Pengujian diadakan di Taman Bunga Raya, Bukit Beruang, Melaka pada 19 Ogos 2015. Keputusan pengujian mendapati bahawa penggunaan kursus di dalam MOOC telah membantu pelajar untuk mendapat markah dan pemahaman yang lebih berbanding penggunaan bahan konvensional.

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CHAPTER I

INTRODUCTION

1.1 Introduction

In this era of technology-based nation, kids grow into a world that has so many progressive innovation and improvement of countless creation in computerized devices, pretty impressive ICT revolution and those cannot keep everybody to resist against the thing we call technology (Namik K. Pak, 2001). Everything just keep growing so rapidly starting a few years back and the human nation cannot help but to get in the flow of the advanced technology. And the mean time the education system that has been practiced yet is still the same for such a long time now and the newer generations surely need a more advanced education system (Kathryn Moyle, 2010). The students nowadays are already too used to using devices with advanced technology such as tablets, iPads and PlayStation4 which in some cases, playing video games using those devices had already became their daily leisure-filling activity (Norasiken & Halimah, 2008). Then again, they would have to read books and attend lectures to fulfil the course requirement. That alone will not be able to help them to obtain all learning inputs they might need just with the classes and additional readings in the library. They need additional materials that are a lot more interesting and fun for them to enjoy the learning process and in the same time making the most out of it (Michael Sankey, 2010; Norasiken & Halimah, 2007).

They would not hesitate too much to be having to cram on courses with such interactivity that would be provided in a system they already used to. Hence, a new alternative to the learning process had been created to assist the students in achieving better grades and it is called Massive Open Online Course (MOOC). MOOC is open-learning website that is starting to get its place and be used by millions of people worldwide. In MOOC website, there are a lot of course materials provided such as filmed lectures, readings, problem sets as well as interactive user forums which support interactions between students, professors and teaching assistants. MOOCs are also a recent and widely researched development in distance education and were first introduced in 2008 and then in 2012, it was emerged as a popular mode of learning (Liyanagunawardena, 2013). Even though it was earlier emphasizing open-access features including open licensing of content in order to promote the reuse and remixing of sources, MOOCs later use closed licenses for their course materials but still maintaining free access for students, which in a way will be the main reason on why students should be enrolled in MOOCs courses. Well, many view the videos and other materials produced by the MOOC as the next form of the textbook and this surely is befitting the rapid growth of technology todays. Other than providing materials, MOOC also provide the approaches of peer-review, group collaboration, automated feedback through learning objective, online assessments including quizzes, assignments and exams as well as suggested books and links to further reading materials.

1.2 Project Background

In continuance to the topic introduced above, hence the focus of this project is education, which is indeed a very important yet a good practice of it is so challenging to be instilled in any human called students. As most MOOCs use lecture videos recorded by using individually-preferred new technology, this project proposed an approach of using multiple multimedia elements in a video to be MOOCs material. The video will be integrated with the some other multimedia elements including animations, audio, texts and graphics. In short, this project focuses on whether or not

a video with multiple multimedia elements will improve the effectiveness of the learning process using video lecture compared to a linear lecture video.

1.3 Problem Statement

As stated earlier, most MOOCs use linear lecture videos as their main course material. The reality shows that school systems cannot hold back every student who falls behind. Based on meta-analysis, when an average student is engaged in higher-order thinking using multimedia in interactive situations, that student's skills increased by 32 percentile points over what would have been accomplished with traditional learning. This somewhat agrees that multimedia elements is a lot more effective to be used in a learning process (Meris Stansbury, 2008). Along with that, multimedia elements will be a good integration medium to make a lot better video for MOOCs material. Students won't be able to stay focused for too long and it is proven right through a study of edX student habits which found that certificate-earning students generally stop watching videos longer than 6 to 9 minutes. They viewed the first 4.4 minutes (median) of a 12 to 15 minutes video. So the problem of the videos usually provided on MOOCs is that they are usually too straight-forward, linear and might be boring for most students. So to conclude, this project emphasizes on the integration of videos by adding in multiple multimedia elements in a way of improving students' retention outside of the classroom.

1.4 Objective

This project embarks on the following objectives:

i) To study and identify what are the most suitable multimedia elements to be used in a learning video integration.

ii) To design interactive multimedia elements including animations as well as videos.

iii) To develop interactive multimedia elements including animations as well as videos.

iv) To test and evaluate on how successful this integrated video will help the users in understanding the lesson portrayed through the video.

1.5 Scope

i) This project will produce videos covering 7 topics out of 14 altogether in Critical & Creative Thinking subject which will be presented in English language which are Week 5: Creative Thinking, Week 6: Managing Performance, Week 7: Mind Map, Week 10: Problem-Based Learning(PBL) in CCT, Week 11: PBL Ladder 1, Week 13: PBL Ladder 4 and Week 14: PBL Ladder 5.

ii) The target user of this learning material is all students taking that particular subject to make most out of it.

iii) This learning material will be designed and further developed by using a few software including iStudio video recording platform, Articulate Storyline, Adobe CS5 Flash, Photoshop and Illustrator, before finally be uploaded to the web.

iv) The elements of multimedia to be used in this project development include texts, graphics, animations, videos as well as audio.

v) In the MOOC website, the side-tabs included are the Home, Student Guidelines, Modules & Activities, Peer Content, Groups, The Team Profile, UTeM Portal and UTeM MOOC.

1.6 Expected Output

- Improvement of the existing system – this course would contain better learning contents compared to existing ones.

1.7 Project Significance

i) The ones that will gain the most benefit from the production of this video will be every single student taking the subject (Critical and Creative Thinking).

ii) When this project is successfully developed and evaluated, this video will contribute quite a lot in improving students' understanding and absolutely help improving their grades in that particular subject.

1.8 Summary

The product of this project would be a beneficial educational product because this video can be a tool to be used by students and lecturers before or after learning and teaching process. Hence, it has some kind of commercial value and ready to be delivered to the user. Other than that, this product is expected to improve the existing method of learning where the students use printed books to study. And so will be better improved by the using of this interactive video instead of a linear recorded lecture video. In conclusion, this chapter generally describes that this project will develop videos for Critical and Creative Thinking subject to be used by students enrolled in that subject whenever appropriate. The multimedia elements to be developed and produced in this project will be next continued to the further step of data collecting and designing phase. To summarize, this chapter covers the introduction, background, problem statement, objectives, expected output and significance of this project development.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This chapter documents the review of literatures and the methodologies in this project. Since MOOCs is a quite new approach for education and have been massively used by the worldwide community, there are a lot of researches done in order to maintain its quality and effectiveness. In order to make sure the percentage of this project's success reaches the expectation, numbers of research papers related to this project have been looked through and studied over, before picking out the best to be a good reference as well as to be the benchmark that can be made comparison with. Other than the explanation on the existing systems, this chapter will also describe the selected approach used for the project completion before finally listing out what this project's requirements are.

2.2 Domain

The use of multimedia in education is absolutely not a new thing. The report of inaugural State of Video in Education which more than 500 educational professionals from across 300 institutions unanimously agreed that video has great potential to create a real impact on education (Kaltura, 2013). The respondents noted that video

is capable in changing the way students learn, boosting attendance, creating stronger alumni relations, increasing the success chances and also in increasing learning outcomes and the overall student experience. This research which is conducted by Kaltura company, also found that 81 percent of respondents agree that online learning will grow in prominence and underpin the award of a large number of degrees going forward, 52 percent of the respondents state that video use has been driven from the 'bottom up' by faculty while 49 percent of respondents estimate that a typical student watches six to 20 education videos per month. These findings show that online learning and video have been used quite regularly by today's community. But the effectiveness of materials provided for the online courses should possess great quality assurance.

2.3 Education in 21st Century

Previous studies show that education in this century is no longer the same as before (Raja R. S., 1991). The use of technology nowadays almost replaces the use of paper in many areas including teaching, learning and information distribution. People would rather read news online than having to go and buy the newspapers in the streets. The same situation happens in students' life. It is a lot easier to retrieve information and resources from researches online rather than reading through a printed research paper. The internet and cloud storing technology help a lot in data retrieval process for students this century. Hence, people nowadays are too used to digital data and advanced multimedia medium. This in a way makes the conventional way of teaching and learning to be more boring as the time goes by. The process of learning should have been better with the use of more advanced and interesting technology in classes (Lynn H. N., 2014).

2.3.1 Characteristic of Y-Generation

As mentioned above, technology keeps advancing day by day and this result in changes in learning and information consumptions amongst people in this century.

There are three mostly mentioned generations which are the Baby Boomers Generation, X-Generation and Y-Generation. There are quite large barriers among all three generations especially those regarding commitments, leadership, power, opinion, work ethics as well as technology use (Shahhanim Yahya, 2012). The juvenility that is also known as the millennium generation is those who are teens to early thirties which include people that were born in early 1980 to early 2000. In the workplace, they are the generation of reliable, for being full of surprises with brilliant idea spawns. Other than that, the Y-Gens grow up along with the technology making them so awkward to be living without it. They are connected for almost 24/7 non-stop. They prefer to be communicating through e-mails, fax and especially social network sites rather than a face-to-face contact. This matter covers their very own life including education, school, lectures and even their working style. In short, this generation's daily life is very close to the technology and every single thing becomes easy when they possess the facilities of Internet, smartphone, laptop and numbers of applications in it. This generation is also said to be ambitious and attention-craving, other than a good ability to multi-tasking and to be broad-minded. Besides, they are also very good in making money without working in an office such as being a blogger, fashion designer, writer, online business and so forth.

2.4 Multimedia Elements

2.4.1 Video

The use of audio in learning is best for auditory learners and for the other students as well. Besides, video is capable of engaging multiple senses including visual, auditory other than its ability to generate excitement about a subject or concept that particular video is showing. Experience and information retainment are also more enjoyable through audio and video use. Video is also clearly the perfect medium for auditory and visual learners (G. Lori, 2015).

2.4.2 Graphic

Plain texts on a piece of paper as well as a video with text only are not as interesting and captivating as those with fair use of images. Images also help in better understanding, especially for those who are visual learners. A story explained in a long paragraph can be comprehended in a single graphic. Graphic also can enhance the learners' creativity because different people will interpret a single picture differently, making that particular picture to be able to be interpreted in thousands of ways (Ellen S., 2001).

2.4.3 Text

The use of texts in education is the most common and it is used since education first started long ago. Text is the best element to be used in data recording because it contains detailed explanation to the concept it is portraying in the title. Text can be used to record some stories or incidents in a complex and detailed construction according to its events. By using text, a story to be foretold is much more understandable compared to other medium which can be easily misinterpreted by the user (Allison W., 2002).

2.4.4 Audio

Hearing is the primary channel for learning. The more children hear, the better they learn (Mark Ross, 1999). The use of audio in learning improves the learner's gain from an education. Other than its ability to lighten up the feel of a situation, audio has an ability of making a graphic, video or even a scene a lot more lively and alive. It becomes more real if it has an audio playing behind it. Audio has been in use in education for really long time- either in the form of audio cassettes as it was during the 1970s or as accompaniment in video recordings. Audio has really been an important element in learning and education for long (Foradian, 2014).

2.4.5 Animation

By using animation, students especially kids can develop skill competencies in many things including storytelling, visual communication, observation, sensory aspects, concentration as well as problem solving which are all important in their upbringing (A. Sharon, 2008). An animation video can increase students retention by a high rate compared to understanding some concepts in texts. Explanation through animations is more fun and easy to understand.

2.4.6 Implication of Multimedia to Research

According to the researches that had been done about the elements of multimedia, this project will involve the integration of elements including video, animation and graphics. These will be integrated into suitable contents for the course. With the use of these elements, contents developed for this project will be a lot better.

2.5 E-Learning in Education

It is estimated that about 46 percent college students are taking at least one course online. However, by 2019, roughly half of all college classes will be eLearning-based. E-Learning is also Eco-friendly as it does not use paper at any cost. Recent studies conducted by Britain's Open University have found that e-Learning consumes 90% less energy than traditional courses (P. Christopher, 2013). Malaysia and Vietnam are the world's most rapidly growing e-Learning markets. In fact, the estimated 5 year annual growth rate for the Asian e-Learning market is 17.3%, which is the highest compound annual growth rate for any global region. According to a recent study conducted by The Research Institute of America, e-Learning has the