

**DEVELOPMENT AND EVALUATION OF AN ONLINE LEARNING
MODULE ON IMAGE EDITING**

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ABSTRACT

DEVELOPMENT AND EVALUATION OF AN ONLINE LEARNING MODULE ON IMAGE EDITING

Dorainah Labing

This study aimed to develop an online learning module for academic staff of Universiti Malaysia Sarawak (UNIMAS), particularly the lecturers, to obtain basic knowledge and skill on image editing using the GIMP software. The objectives of the project were to develop an online learning module by integrating instructional materials such as relevant text, quiz, images, pdf files, and videos into Morpheus, the UNIMAS online learning system. Prototyping life cycle model was used to guide the development process of this online learning module. In the process of developing this online learning module, the prototype of this online learning module was evaluated using the Cooperative Evaluation method. This online learning module had been evaluated by six participants from various faculties (UNIMAS lecturers). The module was revised after every evaluation session. Finally, a functional final learning module was developed.

ABSTRAK

PEMBANGUNAN DAN PENILAIAN MODUL PEMBELAJARAN ATAS TALIAN UNTUK PENYUNTINGAN IMEJ

Dorainah Labing

Kajian ini bertujuan untuk membangunkan modul pembelajaran atas talian untuk staf akademik Universiti Malaysia Sarawak (UNIMAS), khususnya pensyarah untuk memperolehi pengetahuan dan kemahiran tentang cara mengedit gambar menggunakan program GIMP. Objektif projek ini ialah untuk membina modul pembelajaran atas talian dengan mengintegrasikan bahan-bahan pembelajaran seperti teks, kuiz, gambar, fail pdf, dan video yang sesuai ke dalam Morpheus iaitu sistem pembelajaran dalam talian UNIMAS. Model prototaip kitaran hidup digunakan sebagai garis panduan dalam proses pembangunan modul pembelajaran atas talian ini. Dalam proses pembangunan modul pembelajaran atas talian ini, prototaip yang telah dihasilkan dinilai menggunakan kaedah Cooperative Evaluation. Modul pembelajaran atas talian ini telah dinilai oleh enam orang pensyarah dari pelbagai fakulti dalam UNIMAS. Sistem ini kemudiannya diubahsuai setiap kali ianya dinilai oleh pensyarah. Akhirnya, modul pembelajaran yang berfungsi telah dihasilkan.

CHAPTER 1

INTRODUCTION

1.0 Overview

This chapter discusses the background, problem statement, objectives and scope of this study. The definitions of terms in this study are also included in this chapter.

1.1 Background of the study

In this modern era, technology is growing rapidly and this affects the use of the internet among student. The advances of technology lead to the uses of the internet in education. "Online learning is one of the methods for accessing education these days. Online learning has been used for primary school, secondary school, and also higher education. Most Malaysian universities provide internet connection in their campuses for their student in order to retrieve information from the internet," (Allen, 2006). Therefore, online learning becomes an important element for students in their studies.

According to Ebojoh and Xu (2007), “online learning has become a popular tool in addition to traditional learning methods”. They find that the design delivery plays a major role in the evaluation of the effectiveness of online programme. Therefore, design delivery of the information needs to be attractive so that the online learning becomes more effective.

Morpheus is the official learning platform in UNIMAS. Morpheus is based on Moodle which is an open source learning management system (LMS). Most lecturers use this online learning system to deliver their lecture notes, information, schedules for their teaching course and include various online learning activities. Furthermore, Morpheus also supports multimedia contents such as images and video.

A survey that was conducted by the Centre for Applied Language and Multimedia (CALM) has indicated that many lecturers would like to be provided with more knowledge and skills on how to edit image for online learning purposes, (Chen, personal communication, October 6, 2010). CALM has identified GIMP as the image editing tool for the lecturers UNIMAS to create instructional materials for their online courses, (Sh Norizan Bt Wan Zain, personal communication, 2010). GIMP is “an acronym for GNU Image Manipulation Program. It is a freely distributed programme for tasks such as photo retouching, image composition and image authoring. It has many capabilities. It can be used as a simple paint programme, an expert quality photo retouching programme, an online batch processing system, a mass production image renderer, an image format converter, etc. GIMP is expandable and extensible. It is designed to be augmented with plug-ins and extensions. The advanced scripting interface allows image manipulation procedures to be easily scripted” (GIMP, 2010).

1.2 Statement of Problem

Most lecturers use this online learning system to deliver lecture notes, information, schedules for their teaching course and include various online learning activities. Based on a survey that was conducted by the Centre for Applied Learning and Multimedia (CALM), lecturers would like to have more knowledge and skills on how to edit image for creating online learning activities, (Chen, personal communication, October 6, 2010). Based on the quick interview with a few lecturers from the Faculty of Resource Science and Technology and Faculty of Economics and Business, we found that many lecturers do not have the knowledge and skills to edit image for creating online learning content. Chen (personal communication, October 6, 2010) has also stated that it is often difficult to gather all lecturers for face-to-face training session at a set time in specific venue. Thus, delivery methods that can overcome the current face-to-face training need to be sought. The lecturers in UNIMAS also may retrieve all the information of image editing via Morpheus and learned it by themselves at anytime and anyplace as long as they are connected to the internet.

1.3 Objectives of the study

1.3.1 General Objective

The general objective of this research is to develop a usable online learning module on image editing for UNIMAS academic staff.

1.3.2 Specific Objective

There are two specific objectives in this research:

- i) To develop an online learning module on image editing by integrating various instructional materials.
- ii) To evaluate the usability of the online learning module.

1.4 Project scope

The online learning module is meant to give necessary knowledge and skills for UNIMAS lecturers to edit images for their online courses purposes. Usability testing will only be conducted using representatives of this targeted population.

1.5 Significance of the project

The online learning module will allow the lecturers to learn the basic image editing functions at anytime and anywhere as an opposed to face-to-face training session that requires all lecturers to be available at a set time in specific venue. The usability evaluation will also help to create a usable learning module.

CHAPTER 2

LITERATURE REVIEW

2.0 Overview

This chapter review of the use of online learning in higher education, learning management system, Moodle, usability, rapid application development method and cooperative evaluation technique.

2.1 Online learning in higher education

According to Wallace (2003) the online university courses have become increasingly popular since 1990s. He added that “online learning has become a widespread method for providing education at the graduate and undergraduate level”. Harasim (as cited in Wallace, 2003, p. 2) found that the first entirely online course was offered in 1981.

“ICT is being recommended increasingly within the university environment”, (Curtin, as cited in Allen, 2006, p. 17). Hara, Bonk and Angeli, (as cited in Allen,

2006) states that the advantage of the online learning enables the permanent records of the students' thoughts for the students' reflection and discussions.

Another benefit of online learning for higher education is that students may retrieve all the information of their courses anytime and anywhere as long as they are connected to the internet. Neumann, (as cited in Ebojoh and Xu, 2007), states that online learning allows students to schedule their studies at their convenience. Furthermore, the faculty or lecturer themselves also can reuse the prepared course materials.

2.2 Learning management system

A Learning Management System (LMS) is “an information system that administers instructor-led and e-learning courses and keeps track of student progress. It is used internally by large enterprises for their employees. An LMS also can be used to monitor the effectiveness of the organization's education and training. It is also beneficial in ensuring state-and federal-mandated courses are delivered in a timely manner”, (Encyclopaedia, as cited in Brown, and Johnson, 2007). The LMS ensures consistency in delivery and evaluation since each user sees the exact same material in the exact same manner (Brown and Johnson, 2007). Moreover, they found the LMS allows users to easily design and deploy customized training modules. This feature is important especially when the notes, announcement, forum, discussion and updated due date for assignment are significantly modified. The students can no longer give a reason for being late in submitting their assignment as they were not told about the new due date for the assignment. Brown and Johnson (2007) also assert that the LMS allows the users to view a required learning path, track progress against the learning path, review records of success, and register for additional courses.

ADL study (as cited in Buendia et. al., 2003, p. 55) states that learning management system (LMS) as a suite of services designed to delivered, track, and report on administer learning content, student progress and student interactions. Buendia et. al., (2003, p. 55) found that “the importance of these systems is growing as far as terms such as “Internet-based Educational Systems”, “Educational Service Providers”, and “Distance-learning“ or “On-demand Education” is becoming popular”. They say that the “information and communication technologies (ICT) such as Internet and the Web provide the perfect framework for current LMS. They are mostly based on courseware tools either commercial or coming from university research groups”.

According to Kakasevski et. al.,(2008), LMS allows students to view multimedia lectures, communicate with their instructors and others in learning groups, download course materials, take online quizzes and submit their homework and class work assignments.

2.2.1 Moodle

“Moodle is a software package for producing Internet-based courses and web sites. It is a global development project designed to support a social constructionist framework of education”, (Moodle, 2010).

Cole and Foster (2008) states that Moodle is an open source Course Management System that can be used by universities, community colleges, K-12 schools, businesses, and even individual instructors to add web technology to their course.

2.3 Rapid Application Development

Rapid application development (RAD) is a series of development steps that move quickly from initial prototypes to a fully developed product (Galitz, as cited in Lohr, et. al., 2003, p. 41). “RAD can be applied in the production of both software and training products. By using RAD, a prototype of the product is quickly created, tested for usability, and then revised”, (Lohr, et. al., 2003). Cruithirds and Hanna (as cited in Lohr, et. al., 2003) mention that the combination of RAD methods and the evolution of the World Wide Web (WWW) enable the creation of fully interactive and easily accessible self-paced instruction. Following is the RAD prototyping life cycle model as proposed by Galin (2004).

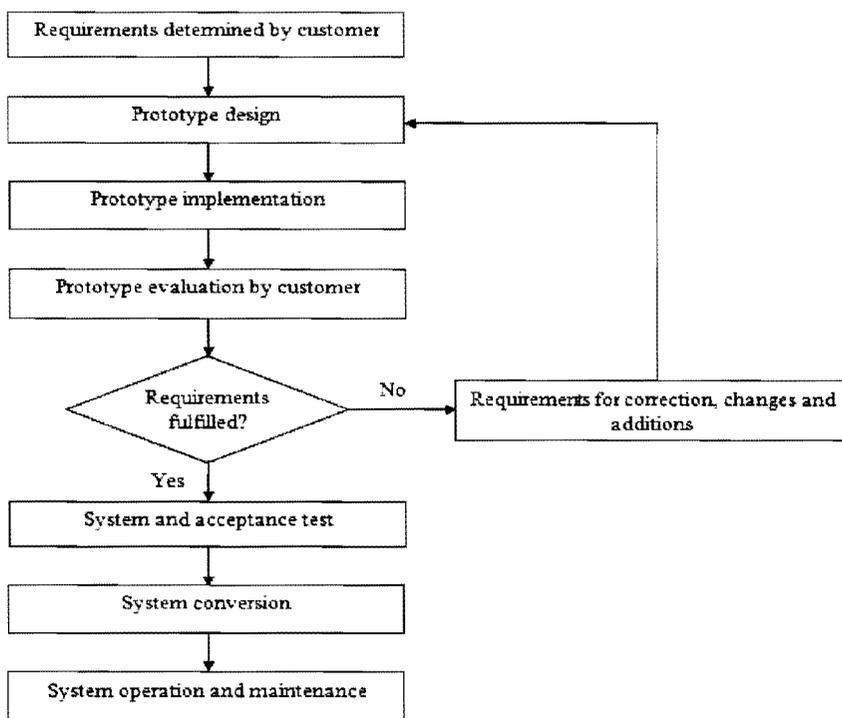


Figure 2.3: Prototyping Life Cycle Model by Galin (2004)

2.4 Usability

According to Bevan, Kirakowski and Maissel (1991), the term usability was coined in order to replace the term “user friendly” which by the early 1980s had acquired a host of undesirably vague and subjective connotations. However, they stated that in the intervening years, the word “usability” itself has become almost as devalued as the term it was meant to supersede and replace. They also assert that there are three views related to how usability should be measured:

- i) The product-oriented view, that usability can be measured in terms of the ergonomic attributes of the product;
- ii) The user-oriented view, that usability can be measured in terms of the mental effort and attitude of the user;
- iii) The user performance view, that usability can be measured by examining how the user interacts with the product, with particular emphasis on either ease-of-use: how easy the product is to employ, or acceptability: whether the product will be used in the real world.

Standard ISO 9241 (as cited in Abran, et. al., 2003) define a usable software is when it allows the user to execute his/her task effectively, efficiently and with satisfaction in the specified context of use as follows:

- i) Effectiveness: How well do the users achieve their goals using the system?
- ii) Efficiency: What resources are consumed in order to achieve their goals?
- iii) Satisfaction: How do the users feel about their use of the system?
(Wixon and Wilson, as cited in Abran, Khelifi, Suryan, and Seffah, 2003)

They also added that this standard presents usability guidelines and is used for evaluating usability according to the context of use of the software.

According to Nielsen, usability is a quality attribute that assesses how easy user interfaces are to use. The word “usability” also refers to methods for improving the ease-of-use during the design process. He defined five usability quality components as follows:

- **Learnability:** The ease of learning for users to accomplish basic tasks when encounter the design for the first time.
- **Efficiency:** The time spent by the users to perform the tasks once they have learned the system.
- **Memorability:** Easier to memorize when users return to the design after a period of not using it and can re-establish the proficiency.
- **Errors:** The low rate of errors that users possibly make and help them easily to recover from the errors.
- **User’s satisfaction:** Measure how much users find the system are pleasant to use.

2.5 Cooperative Evaluation

Monk et. al., (1993) says that cooperative evaluation is a technique for getting feedback to identify points where a prototype design could be changed to make it more usable. In addition, they found cooperative evaluation involves users in design by having them complete tasks set by the designer which is at the same time they are encouraged to explain what they are doing and any difficulties they once facing.

“Cooperative evaluation is primarily to refine the specification so that it meets the requirements for usability”, (Monk et. al., 1993). They say that cooperative evaluation usually at the end of the design process when there is an initial prototype to test. Moreover, they found the technique such as cooperative evaluation that involve observing users performing tasks set by the designer are most suitable for testing the specification.

2.6 Procedure for Cooperative Evaluation

According to Monk et. al., (1993), the cooperative evaluation method consists of four essential steps as follows:

- i) Recruit users
- ii) Prepare tasks
- iii) Interact and take note
- iv) Summarise the observations

The steps above will be described in the following sections based on the explanation from Monk et. al., (1993).

2.6.1 Recruit Users

2.6.1.1 Define the target user population

This step is to give a name to and write down the target user population.

2.6.1.2 Recruit users who areas similar to the target user population

Decide how many potential users to be evaluated. The designer recruits more than one user which can represent the whole range of the target user population.

2.6.2 Prepare tasks

Cooperative evaluation depends on the tasks that user have to do. Firstly, the tasks must be representative of the work that the product will support. This method assumes that the ground work necessary for this has already been done. Secondly, they should limit the user to the part of the system that designer will setting out to evaluate.

2.6.2.1 Write the task instructions for the user

Write down the tasks in a form suitable for presentation to the users.

2.6.2.2 Estimate the time it will take to complete each task

Allow for the time it takes to introduce the users to the system and the time they spent explaining their experiences. Any tendency to rush the users through the tasks needs to be avoided and the most important functions should be examined early in the session and again later.

2.6.2.3 Try out the instruments and task sheet

It is useful to have a dry run of the session with a friend or colleague to check that the instructions and task sheet will be understandable to the user.

2.6.3 Interact and take note

For this procedure, the user perform the tasks with the system and the designer take note the problems they have in order to help them verbalize the problems that users experience through think aloud. Apart from that, the users and the designer

probably not know each other before so, this factor might cause meagre exchange of information. There are five that need to be done before the users arrive, when the users arrive, and while the users are using the system and debriefing.

2.6.3.1 Before the user arrive

Designer will need:

- The prototype is ready to use in a reasonably quiet environment.
- A sheet containing the tasks for the users to carry out.
- A colleague sits behind the designer and takes notes on what happens. Alternatively, jot what the user says and observes of what they do.
- A form for jot a problems as they arise.
- A list of questions to ask at the end of the session.

2.6.3.2 When the users arrive

When the user arrives;

- i) Put the users at their ease. Remind them that it is the system that is being tested.
- ii) Start jotting whenever the session start.
- iii) Introduce yourself by name and describe what the session is about in general terms.
- iv) Describe the technique of Cooperative Evaluation.
- v) Introduce the task sheet to the user to give a general idea of what they will be doing.