DEVELOPMENT OF INSTRUCTIONAL MATERIALS FOR AN ONLINE LEARNING MODULE ON IMAGE EDITING

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ABSTRACT

DEVELOPMENT OF INSTRUCTIONAL MATERIALS FOR AN ONLINE LEARNING MODULE ON IMAGE EDITING

Melissa Keong Wei Yin

The online learning module of this project was developed to equip academic members in Universiti Malaysia Sarawak (UNIMAS) with the basic skills and knowledge on image editing. GNU Image Manipulation Program (GIMP) was selected to be the most suitable image editing tool to be taught to the academic members. Hence, an online learning module on GIMP was created. This project reports on the development of the instructional materials for the GIMP learning module. Instructional materials were created in the form of demonstration video. In the process of developing the videos, software applications such as Adobe Captivate CS3, iWisoft Flash/SWF to Video converter and Format Factory were used. A prototyping life cycle model and an instructional design were used to guide the development of the videos. The video prototypes went through two rounds of refinement before the final videos were developed. Finally, all videos were integrated into the GIMP learning module on UNIMAS online learning system, Morpheus.

ABSTRAK

PEMBANGUNAN BAHAN PENGAJARAN UNTUK MODUL PEMBELAJARAN DALAM TALIAN BAGI PENYUNTINGAN GAMBAR

Melissa Keong Wei Yin

Modul pembelajaran dalam talian untuk projek ini dihasilkan untuk melengkapi staf akademik di Universiti Malaysia Sarawak (UNIMAS) dengan pengetahuan dan kemahiran asas dalam penyuntingan gambar. GNU Image Manipulation Program (GIMP) telah dipilih sebagai perisian penyuntingan gambar yang paling sesuai untuk diajar kepada staf akademik. Justeru, satu modul pembelajaran sistem untuk GIMP telah dihasilkan. Projek ini hanya melaporkan tentang bahan arahan untuk modul pembelajaran GIMP. Bahan pengajaran ini telah dihasilkan dalam bentuk demonstrasi video. Dalam proses menghasilkan video, perisian seperti Adobe Captivate CS3, iWisoft Flash/SWF to Video converter dan Format Factory telah digunakan. Satu prototaip model kitaran hidup dan satu model rekaan pengajaran telah digunakan sebagai panduan dalam penghasilan semua video. Prototaip video melalui dua pusingan penghalusan sebelum video terakhir dihasilkan. Akhirnya, semua video diintegrasikan dalam modul pembelajaran GIMP dalam talian UNIMAS, iaitu Morpheus.

CHAPTER 1
INTRODUCTION

1.0 Overview

This chapter discusses the background of the study, problem statement, general and specific objectives, scope and significance of the project. The background of study covers the growth and advancement of integrating technology into the traditional classroom and using it as a tool of teaching and learning. The problem statement highlights the difficulty faced by academic members in UNIMAS and the necessity for this project to be executed. The general and specific objectives describe the achievable tasks at the end of the project. The scope defines the population and the content of this project while the significance of the project explains why this project is necessary to be carried out.

1.1 Background of the study

Standing at the age of modernization, there is no doubt that technology has become one of the most efficient tools in many aspects. According to Kinnaman (1990), the world has now reached the information era hence the educational use of computer will continue to develop. This forecast by Kinnaman was seen to have

happened as the use of computers for the educational field was warmly welcomed by educators, parents, researchers and legislators (Cotton, 1991). The technology device known as the computer allows educators to have a wider access to resources and content material. Subsequently, this will enhance educators' teaching delivery process to receivers or learners can capture and absorb the lessons in a better way.

Computer-based instruction approach has provided a new way for accessing knowledge and learning. Teaching and learning have evolved in accordance to the development of technology which is becoming more and more prevalent today (Ting, 2009). The invention of the World Wide Web in 1992 has made online education increasingly accessible and allowed new educational models to emerge (Harasim, 2000). Educators begin to recognize the multi functions of a cyberspace as computers and networks continue to grow. They also realized that online education could enable students to socialize in this new space. In this new paradigm of learning, Harasim (2000) further elaborated how online education has resulted in new modes of educational delivery.

Three modes of delivery distinguish online education namely the adjunct mode, mixed mode and totally online mode. The adjunct mode uses networking to improve traditional face-to-face or distance education (Harasim, 2000). It was originated with the introduction of email and computer conferencing by scientists and academics for expanding of opportunities for class discussions (Quinn, Mehan, Levin & Black, 1983). Email and computer conferencing were used for administrative procedures such as distributing class outlines, notes, instructions, assignments and even administering tests and quizzes. Harasim (2000) continues to state that classroom management tools may also be available on the network. The mixed mode uses networking as a major portion of a traditional classroom or distance course, where networking is fully integrated into the curriculum. An example of a common application of mixed mode delivery is the online seminars in a face-to-face classroom. Online seminars enable all the students to participate, whether small or

big numbers in a classroom which is usually impossible in a face-to-face classroom. According to Harasim (2000), totally online mode employs the Web or computer networks as the primary environment for course discussion and interaction. The use of computer networking for course delivery is growing for both university and training courses. Many course activities such as presentation of information, discussion, and also group work are done online (Harasim, 2000).

Harasim (2000) further identifies five benefits of online learning. The first is that online learning encourages many-to-many or group communication. This cultivates the motivational benefits of working through problems with peers where active exchange of ideas takes place. Online learning is also time independence because it is accessible twenty-four-hours which allow users to respond immediately or reflect before giving a respond. In addition to that, online learning is a place to access to Web resources that are rich with unlimited information and resources. Harasim (2000) stated that online learning is text-based where it contributes to verbalization and articulation of ideas, clear expression of opinions and rich database. The fifth benefit of online learning is that it is computer mediated environment which makes database searchable, transmissible and modifiable.

The Academic Support System (ASSIST) is the system that supports the online teaching-learning initiative in Universiti Malaysia Sarawak (UNIMAS). The current online learning management system in UNIMAS, Morpheus was introduced in 2006, and is powered by Moodle (Chen, 2009). Chen (2009) further mentioned that Morpheus is a free learning management system which allows one to create powerful, flexible, and engaging online learning experience. It runs as an interactive web site that enables different types of learning resources and activities to be included in making learning environment more engaging, collaborative and student-centred (Chen, 2009).

UNIMAS practices 'blended learning' (Chen, 2009). Blended learning is a technique to enhance the teaching and learning processes in a classroom where it is a combination of face-to-face and online learning so that the online component becomes a natural extension of the face-to-face learning (Chen, 2009). According to Chen (2009), lecturers are expected to give a well-structured lesson during the time allocated for class and subsequently provide follow-up online materials and activities that will help to enhance and enrich the learning experience of students. It is vital to make sure that lecturers are well verse with the available tools in Morpheus in order for them to completely utilize the functions of this learning management system for the benefits of the students and also themselves.

1.2 Problem statement

Instructors' abilities to teach online are important in order to produce quality online education to students (Kyong & Curtis, 2006). The most important skill for an online instructor for the next few years will be how to moderate or facilitate learning and how to develop for high quality online courses. According to Kyong and Curtis (2006), being a subject-matter expert is the next important skill compared to planning and moderating skills in online courses.

At large, Morpheus was introduced as an online platform for the purpose of learning outside the four cornered walls of a classroom. The content of the subject is important in learning but the way of presenting it also plays a major role when it comes to online learning. Often it is said that picture is worth a thousand words and sometimes they are better remembered than words. The positive benefits of learning from concrete materials have been well established by Paivio (1971). Concrete words are categorized as those that can readily create a mental image for the learner when reading a text (Morrison, Ross, & Kemp, 2007). According to Slavin (2006) the computer-based instruction approach in the traditional classroom is known to be able

to enhance and improve the learning process as long as the text and visuals are in coherent and supporting the similar context.

Learners find themselves facing problems in understanding ideas from authors because text materials are often abstract (Morrison, Ross, & Kemp, 2007). The picture superiority effect is known to improve the recognition and recall of key information. By using words and pictures which reinforces the same information, it will produce a more optimal effect in terms of remembering what has been seen and read. Researchers suggest that a mixture of abstract and concrete information helps to increase both learner's interest and recall of information (Sadoski, Goets, & Fritz, 1993).

A preliminary survey was carried out for the purpose of knowing the knowledge and skills of UNIMAS academic members have on image editing. This survey took place on the 11th and 17th of August 2010. A total of ten lecturers were interviewed on the basic skills in image editing. Based on the preliminary survey conducted, it was found that most lecturers in UNIMAS who use Morpheus as a teaching tool incorporates images or pictures in their online courses. These lecturers gather their pictures from various sources mainly from the World Wide Web and also scan pictures from academic books. Most lecturers who include pictures in their notes clarified that they do little or no editing at all to the pictures and use them as they are. In addition to that, we also learnt that there are still lecturers who do not have any image editing skills therefore making it more difficult to even incorporate pictures in their online courses.

The Centre of Applied Learning and Multimedia (CALM) is an entity in UNIMAS that holds the responsibility to provide training to academic staff members on how to utilize Morpheus system. In this particular context, there is a need for lecturers to be exposed to the basic skills on image editing so that they are able to make use of this knowledge in developing online materials in Morpheus. CALM has

identified GNU Image Manipulation Program (GIMP) to be the most suitable image editing tool for academic staff to master (Sharifah Norizan bt Wan Zain, personal communication, September 20, 2010). However, it is often an issue to arrange an available time and date slot that will enable all lecturers to attend and benefit from a face-to-face training. In addition, it is also not feasible financially if a one-on-one session is conducted with every lecturer as too many training sessions will be needed (Chen, C.J., personal communication, September 30, 2010). Due to the limitations faced in conducting training for the lecturers, an alternative solution to the matter needs to be sought.

1.3 General objectives

The general objective of this project is to develop the instructional materials of an online learning module for equipping the academic members in UNIMAS with the basic knowledge and skills on image editing.

1.3.1 Specific objectives

The specific objective is to use appropriate software developmental tools to create instructional materials such as recorded lectures, on-screen capture on the procedures to perform various GIMP functions, quizzes and tutorials.

1.4 Project scope

The population for this project is meant for all the academic members in UNIMAS who are engaged with the learning management system known as Morpheus. The project will develop a specific online learning module for GIMP, an open source image editing tool. This project only reports on the development of the instructional materials of the online learning module. The development of this project will use the prototyping life cycle model by Galin (2004) and the underlying concept

of the development of instructional materials will be based on the instructional design model proposed by Morrison, Ross and Kemp (2007).

1.5 Significance of the project

Upon completion of this project, the online learning module will allow the academic members to self-learn the basic skills of image editing at any time and any place convenient to them provided they are logged in to the Morpheus system. Academic members can also learn this learning module at their own pace, and they are able to repeat the online lessons until they can fully master the tool. Academic members will be able to participate interactively with the developed learning module in order to give them a better understanding of the subject. This additional skill can help them to create and moderate more interesting and engaging online course for students in their learning process.

CHAPTER 2
LITERATURE REVIEW

2.0 Overview

This chapter focuses on the system development life cycle that was used for this particular project. It also highlights the development of instruction component of the instructional design plan proposed by Morrison, Ross and Kemp (2007). The potential developmental tools that will be used throughout the project are also introduced and the selected image editing tool is also discussed here.

2.1 System development life cycle

Software system development as seen from the historical perspective view is considered a young profession. Grace Hopper is probably one of the earliest official programmers in the mid-1940s who was then working for the Navy (Bender RBT Inc., 1984). Commercial applications development came along in the early 1960s with a craftsman-like approach which was generally based on a programmer's intuition, but towards the late 1960s it became apparent that a more disciplined and organized approach was needed (Bender RBT Inc., 1984). This gave birth to the

software engineering techniques which finally led into the System Development Life Cycle (SDLC).

Generally, in order to come up with an effective SDLC, it is crucial to ensure that the SDLC can achieve three primary objectives (Bender RBT Inc., 1984). Firstly, the SDLC should ensure that at the end of the development process, high quality systems are delivered. The second objective of the SDLC is to provide strong management controls over the projects that are currently being worked on and the third objective is in maximizing the productivity of the system staff. The SDLC must be able to reflect on the nature of the system that is in the process of being created so that is works as a guide for the project team (Bender RBT Inc., 1984).

According to Adi (2008), there are four main phases in a system development life cycle: namely planning, analysis, design and implementation. Planning is the process where there should be understanding of why the system should be built and defining system requirements. The planning phase also includes feasibility study from several different perspectives, technical, economic and organization feasibility aspects (Adi, 2008). The analysis phase includes activities such as problem identifying and analysis and predicting potential problems which may arise in the future regarding the system (Adi, 2008). The results of this phase will drive how the system will be built and guide the developer's works. The subsequent phase as elaborated by Adi (2008) is the design decision phase, which determines how the system operates in different aspects like process, data, hardware, network, infrastructure, and user interface in the system environment. The final phase of the SDLC is the implementation phase where it consumes most resources, cost and time compared to other phases. This is when the desired system is actually built, tested and installed. It also includes other activities like training and system maintenance (Adi, 2008).

There are many types of SDLC models which have been used as a guideline to monitor the progress of a project. The few common types of SDLC are waterfall model, spiral model, iterative and also the prototyping life cycle model. For the purpose of this project, the prototyping life cycle model was used in order to monitor the beginning of the project until completion.

2.2 Prototyping life cycle model

Prototypes are not complete systems and many details are not built in yet. The core goal is to provide a system with overall functionality (Freetutes.com, 2007). The main phases in a prototype model are design, coding and testing. The existence of a prototype allows the client to get an "actual feel" of the system as the interaction with a prototype enable the client to have a deeper understanding of the requirements before the desired system is built to completion (Freetutes.com, 2007). The prototyping model mostly caters for complicated and large systems for which there is no manual process or existing system to help determine the requirements (Freetutes.com, 2007). When such situations occur, allowing the client to plan with the prototype provides invaluable and intangible inputs which give assistance in determining the requirements for the desired system (Freetutes.com, 2007). The prototype is an effective method to demonstrate the feasibility of a certain approach.

The prototype life cycle model provides a long list of advantages to the system, users, and developers. Some argued that the cost involved for prototyping is high because it uses built-it-twice approach (Freetutes.com, 2007). However, others differ and state that the prototype need not be costly and can actually reduce the overall development cost. Due to the fact that prototypes are not complete systems, the cost of testing and writing detailed documents are reduced (Freetutes.com, 2007). These factors tend to reduce the cost of the development of a prototype. Prototypes encourage the involvement of users hence it is able to provide a better system for

them. As users have a natural tendency to change their mind in requirements specifications, this method explicitly supports this natural habit of users and develops a system that fits their requirements (Freetutes.com, 2007). Users are able to grasp better and fast in comprehending before the actual system is developed as they are provided with a working model of the system (Galin, 2004). The prototype model also reduce the risk of system failures as errors can be detected at early stage of development and quicker user feedback is available which leads to better solutions of the system (Galin, 2004).

Despite the many advantages, the prototype life cycle also has its disadvantages. Galin (2004) stated that the prototype diminished the flexibility and adaptability to changes. This methodology can also increase the complexity of the original system requirements as the scope of system may expand beyond the predefined plans (Freetutes.com, 2007). Hence, it made the development difficult in estimating how long the looping process of design, coding and testing would take (KoolKampus, 2006). Furthermore, it also requires extensive user collaboration which can be quite tedious in the development process (KoolKampus, 2006).

The prototype model below is not seen as a linear system but as iterative as the model loops the design, implementation and evaluation phase until it has reached the desired system (Galin, 2004). The prototype is developed on the basis of the requirements gathering from the preceding activities. In the design and implementation phase the prototype of the user interface is developed that includes all significant parts of the functional requirements on the desired system. Galin (2004) elaborated that the requirements of the client are to check through the evaluation phase where experiments are conducted on the developed prototype to make sure that it reflects on the real conditions of actual use of the system.

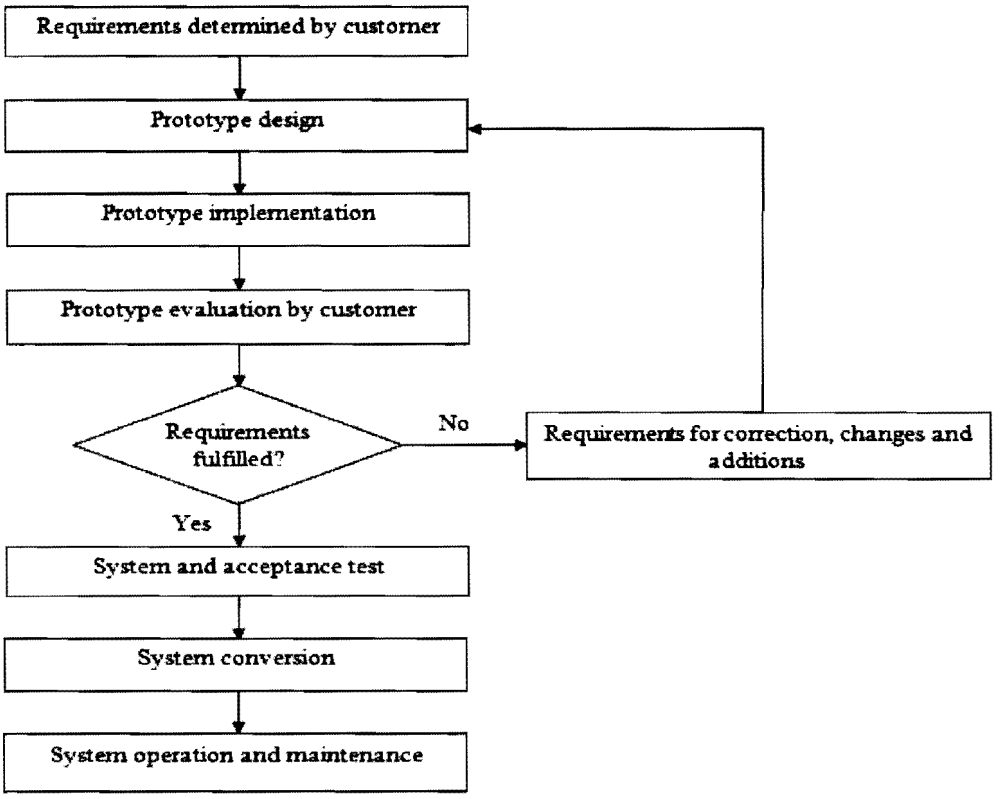

Figure 2.1 Prototyping Life Cycle Model by Galin (2004)

According to Galin (2004) under conditions close to reality, software developers and users can put the prototype to test whether it contains error as well as meeting the client's preconceptions. This is an advantage as it reduces the risk of erroneous or incomplete system specification hence creates a significantly better starting point for the subsequent activities. Modifications to the prototype are strongly required when the evaluation phase shows that there are unfulfilled requirements of the prototype by the clients. The prototype will go through a looping process for changes, correction or even additions in order to refine and produce a new prototype. This looping process continues until a prototype has fulfilled the necessary requirements of the desired system (Galin, 2004).