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DEVELOPMENT OF COMMERCIAL WEB PORTAL: UI/UX MODULE FOR XCELEARN E-LEARNING PLATFORM

NOEL CHRISLEY EDWIN



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**FAKULTI OF ARTS, COMPUTING AND CREATIVE INDUSTRY
UNIVERSITI PENDIDIKAN SULTAN IDRIS**

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REPORT SUBMITTED IN FULFILLMENT OF THE REQUIREMENT FOR THE
BACHELOR OF SOFTWARE ENGINEERING (EDUCATION) WITH HONOURS

FACULTY OF ART, COMPUTING AND CREATIVE INDUSTRY
UNIVERSITI PENDIDIKAN SULTAN IDRIS

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**FACULTY OF ART, COMPUTING AND
CREATIVE INDUSTRY****CERTIFICATE OF AUTHENTICITY OF WRITING**

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Area of Specialization: Software Engineering

Project Title: Development of Commercial Web Portal: UI/UX Module for Xcelearn
E-Learning Platform

I confirm that all the materials contained in this final year project report are the result of my own efforts. If there is a result of the work of another person or other party whether published or not (such as books, articles, papers, or materials in other forms such as audio and video recordings, electronic publications or the Internet) that have been used, I have already recorded recognition of their contributions through appropriate academic conventions. I also acknowledge that the material contained in this final year's project report has not yet been published or submitted for other programs or diplomas/degrees at any university.

23/02/2023

Date

Student Signature

Supervisor Certificate:

I admit that I have read this work and in my opinion this work is sufficient in terms of scope and quality for the purpose of awarding a Bachelor of Education (Information Technology / Multimedia / Computerized Design) with Honors.

23/2/2023

Date

Supervisor Signature

(Assoc. Prof. Ts. Dr. Muhammad Modi bin Lakulu)





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I would also like to take this opportunity to apologise for any shortcomings or mistakes before, during and after the publication of this paper. Any inconvenience is highly regretted, and please contact me directly if there is any copyright violation or corrections that need to be made right away.

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ABSTRACT

The user interface plays a significant role to ensure a good user experience and attract more users to use any system that is made available in the market. Previous research has demonstrated the significance of appropriate User Interface/ User Experience (UI/UX) techniques in the development of any system. The goal of this article is to look at the key features and best practices for creating a website with effective UI/UX design. The information obtained was subsequently used to create the Commercial web portal user interfaces module for the Xcelearn E-Learning platform. The Evolutionary Prototyping (EP) methodology was used for this project. It is used to create a detailed prototype that will assure user and stakeholder satisfaction. The System Usability Scale method has been used in this article to assess the quality of the final product. The survey approach is used to collect feedback from users during the test, with a total of 15 respondents chosen at random. As a consequence, the developed product receives a total of 76.33% of SUS scores, indicating that the project is "Good" in terms of product usability. Due to the numerous inadequacies and problems encountered while carrying out this study, ideas for future improvements are also presented in this article for future researchers to continue investigating on this issue.

Keyword: user interface, user experience, commercial web portal, Xcelearn, e-learning platform, evolutionary prototyping, system usability scale





PEMBANGUNAN PORTAL WEB KOMERSIAL: MODUL ANTARAMUKA PENGGUNA UNTUK PLATFORM E-LEARNING XCLEARN

ABSTRAK

Antara muka pengguna memainkan peranan penting untuk memastikan pengalaman pengguna yang baik dan menarik lebih ramai pengguna untuk menggunakan mana-mana sistem yang tersedia di pasaran. Penyelidikan terdahulu telah menunjukkan kepentingan teknik Antara Muka Pengguna/Pengalaman Pengguna (UI/UX) yang sesuai dalam pembangunan mana-mana sistem. Matlamat artikel ini adalah untuk mengkaji ciri utama dan amalan terbaik untuk membangunkan laman web dengan reka bentuk UI/UX yang berkesan. Maklumat yang diperolehi kemudiannya digunakan untuk membangunkan modul antara muka pengguna portal web komersial untuk platform E-Pembelajaran Xcelearn. Metodologi Prototaip Evolusi (EP) telah digunakan untuk projek ini. Ia digunakan untuk mencipta prototaip terperinci yang akan memastikan kepuasan pengguna dan pihak berkepentingan. Kaedah Skala Kebolegunaan Sistem atau *System Usability Scale (SUS)* telah digunakan dalam artikel ini untuk menilai kualiti produk akhir. Pendekatan tinjauan digunakan untuk mengumpul maklum balas daripada pengguna semasa ujian, dengan seramai 15 responden dipilih secara rawak. Akibatnya, produk yang dibangunkan menerima sejumlah 76.33% markah SUS, menunjukkan bahawa projek itu "Baik" dari segi kebolegunaan produk. Disebabkan oleh banyak kekurangan dan masalah yang dihadapi semasa menjalankan kajian ini, idea-idea untuk cadangan penambahbaikan akan datang turut dikemukakan dalam artikel ini untuk penyelidik akan datang meneruskan penyiasatan mengenai isu ini.

Kata kunci: antara muka pengguna, pengalaman pengguna, portal web komersial, Xcelearn, platform e-pembelajaran, prototaip evolusi, skala kebolegunaan sistem



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LIST OF ABBREVIATIONS

SRS	Software Requirement Specifications
SDD	Software Design Description Document
STD	Software Testing Description Document
FAQ	Frequently Asked Questions
UI	User Interface
UX	User Experience
SDLC	Software Development Life Cycle
EP	Evolutionary Prototyping
SUS	System Usability Scale
SUT	System Usability Testing





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CHAPTER 1

INTRODUCTION



1.1



Introduction



Online learning has become a trend and growing significantly since the COVID-19 outbreak last time, where it forced businesses, universities, and schools to work remotely, which has increased demand for online education. COVID-19, like many other parts of daily life, has undoubtedly had a significant influence on students, educators, and educational institutions all across the world (Mailizar, Almanthari, Maulina, & Bruce, 2020). Online learning is the combination of internet and education where it gives people the chance to learn new knowledge and skills wherever and whenever they are. Many countries have used this way of teaching and learning in order to maintain the progression of education. Electronic learning (e-learning) has been identified as the most effective method for continuing the teaching and learning process during the epidemic (Mailizar, Almanthari, Maulina, & Bruce, 2020).





Commercial web portal is considered as an e-commerce website that encourages users to shop online. The most common types of online platforms include electronic markets, e-commerce specialist websites, smartphone applications, and online auctions. Books, digital audio files, and high-tech items have long been the most widely available products on internet platforms throughout the world (Rafiq et al., 2013). Competition among various forms of e-commerce has led to e-commerce players aggressively adopting a strategy to entice the public to pick and utilise their e-commerce (Erlinda et al., 2019). Therefore, the urgency of improving user interface and user experience (UI/UX) is demanding in order for e-commerce to stand out to many users.



Figure 1.1: Xcelearn E-learning Platform and Xplode Media Sdn. Bhd. Logo

This project is conducted to create a Commercial Web Portal to commercialize an upcoming e-learning website from our partner (Xplode Media Sdn. Bhd.) named Xcelearn. Xcelearn is an e-learning platform where learners can learn various courses provided by teachers in the system. They can learn by watching tutorial videos, reading notes, doing exercise as well as entering conference meetings and forums.





This system strives to enhance the quality of education where everyone can learn anywhere and at any time. This website also allows any teachers or educator all around the world to teach courses on the website while getting paid at the same time. As for parents, the Xcelearn website helps parents to monitor their child's learning progress, get real-time course results and can contact the teachers regarding their child's performance. This will help parents to engage in their child's education and provide additional support needed by students.

This project will be done by 6 students under the same supervisor and each student will be responsible to develop their own module. I am the one that in charge of creating the user interfaces for the whole system, where it includes, the homepage, product and company description, registration and login page, frequently asked question (FAQ), contact us as well as the user interfaces for the admin; the one who provide additional support within the system. The project will be done within two semesters (semester 2 2021/2022 and semester 1 2022/2023) as our final year project.

What I am aiming while doing this project is to create an engaging and user-friendly interface where it can be used by any type of users despite their ages, countries and background studies. The outcome of this project later will be given to our partner for their feedback and improvement.

1.3 Problem Statement

User interface is one of the most important things in developing a good website or any other system. Ted Nelson, a pioneer of information technology once quoted *“A user interface should be so simple that a beginner in an emergency can understand it*





within ten seconds.”. But some websites are unable to apply this in their website, which causes them to lose more users than they can imagine day by day. User interface is very crucial in order to make sure users have the best user experience while using any system provided to them. In fact, 79% of people who do not like what they find on one website will go back and search for another website (Kumar, 2019). Other than that, Kumar (2019) also describes “*one in three people will abandon a purchase because they cannot find the right information*”. This shows how important it is to create a simple and straight-forward website where users can find the information they need in the quickest time.

Another problem that will arise as a result of the complicated UI/UX of a website is the website will be unable to reach a wide range of users that includes both younger and older generations. Elderly people are often being left out in consideration while developing any system or website. Phiriyapokanon (2011) in his thesis said that other than their age-related issues; physical and mental decline make it difficult for them to learn new items, in terms of software design; designers do not take into account the peculiarities of elderly users. When most people think of software for the elderly, they envision a simple interface with larger-sized buttons. This is insufficient to allow elderly people to utilize software efficiently. There are several qualities of software that can improve the performance of older users. The neglect of considering a wide range of users from different generations can cause a website to lose many users without them realizing it, especially in e-learning websites where usually the children below 18 years old need the approval of their parents before they can register to the website.





1.4 Research Objective

This research is conducted:

- a) To identify many ways of attracting and providing a user-friendly commercial web platform that suits learners, parents and teachers all around the world.
- b) To develop a UI/UX prototype that will achieve 01.
- c) To test the UI/UX and review the document in 02 with the stakeholder including our partner (Xplode Media Sdn. Bhd.).



The research is conducted to answer the following research question:

- a) How to design a good UI/UX of a website?
- b) How good UI/UX lead to successful a commercial portal?
- c) What is the most important thing to consider while developing a commercial portal?

1.6 Research Hypothesis

The hypothesis of the research is as follow:



H01: The user interface design of a website needs to be simple, unique and user-friendly for a good user experience.

H02: When any commercial website has good user interfaces (UI) and user experience (UX) it will attract more users to use or visit the website, therefore this will give many benefits to the website that later will bring successful results.

H03: User Interface and User Experience (UI/UX) should be the most important thing while developing any commercial website. User interface is important as it will give the user first impression of the website; if the user interfaces are good, then they are most likely to keep on using and exploring the website and user experience is the overall process of making the website user-friendly and easy-to-use this will include user interface transition between pages.

1.7 Research Learning Theory

Learning theories are a collection of ideas that explain how people learn, retain, and recall information. The theories' principles may be used as a guideline to assist choose tactics, tools, and strategies that improve learning. The researcher will select cognitive learning theory among the main three learning theories.

Tennyson and Rasch (1988) define cognitive learning theory abilities as follow:



“The retrieval system employs the cognitive abilities of differentiation (i.e., selecting knowledge), integration (i.e., restructuring knowledge), and creation (i.e., creating knowledge) in the service of the basic thinking processes of recall, problem solving, and creativity. The operational term for the retrieval system functions of differentiation and integration is cognitive complexity (Schroder, 1971). Differentiation is defined as follows: (a) the ability to understand a given situation; and (b) the ability to apply appropriately selected knowledge. Integration is the ability to elaborate or restructure existing knowledge in the service of the given problem situation. Creation is the ability to form new declarative and procedural knowledge as well as contextual knowledge by using the total cognitive system.”



Other than that, Winn et al. (2019) in their journal define cognitive learning strategies as techniques that increase a learner's capacity to comprehend knowledge more thoroughly, transfer and apply information to new settings, and result in improved and better-retained learning.

This learning theory is applied as this theory lets the users learn everything they need to know on the website on their own. While using the website they will try to understand the process with the use of thought process, where a new information can lead to another information, so with this they can gain knowledge more effectively while visiting the Commercial Web Portal.





1.8 Significance of the Study

The aim of this study is to identify the best user interface and user experience practices that include a wide range of users by considering many qualities and factors that lead to a successful implementation of the Commercial Web Portal for Xcelearn e-learning platform. Therefore, this paper will describe what needs to be considered while developing a good UI/UX of a website that can attract many users.

All the information gathered then will be applied in the development of The Commercial Web Portal. A UI/UX portal will be developed and proposed to our partner which is Xplode Media Sdn. Bhd. (the developer of Xcelearn e-learning platform) and their feedback should be discussed in this paper later in the next



1.9 Limitations of the Study

This paper is focusing on the user interface of the Commercial Web Portal for commercializing the Xcelearn e-learning platform. Therefore, most of the limitations come when developing the user interfaces.

One of the limitations of the study is developing good user interfaces for the system because it requires critical and creative thinking, experiences and user feedback. Sharma and Kumar Tiwari (2021) in their paper said that the graphic or design is everything, and creativity is not something that can be learnt by attending any institute or taking a course at a certain educational platform.





1.10 Operational Definition

a) Commercial web portal

E-commerce can be defined as the digital enablement of commercial transactions between and among organizations and individuals, where all the transactions are mediated by digital technology (Wigand, 1997). Commercial web portal or can also be called e-commerce portal is an electronic or web-based medium where buyers and sellers gather to buy or sell things. It is the acquisition, sale, marketing, maintenance, delivery, and payment of products and services using computer networks such as the Internet (Zenith Webtech).



b) User Interface and User Experience (UI/UX)

User interface is the iterative set of decisions leading to a successful implementation of an interactive tool (Roth, 2017). User experience is defined as an iterative set of decisions leading to a successful outcome with an interactive tool, as well as a productive and satisfying process while arriving at this outcome (Roth, 2017). UI (user interface) / UX (user experience) describes a set of concepts, guidelines, and workflows for critically thinking about the design and use of an interactive product, map-based or otherwise (Roth, 2017).





1.11 Conclusion

To sum up, this chapter explains all the introductions for the Commercial Web Portal: User Interfaces Module for Xcelearn e-Learning platform. The goal of this paper is to create user interfaces for the Commercial Web Portal to commercialize the upcoming e-learning platform Xcelearn developed by our partner Xplode Media Sdn. Bhd. The user interfaces of the portal need to be developed carefully and thoroughly in order to attract many users to use the website and leave good feedback.

