



Faculty of Engineering

**OUTCOME BASED-EDUCATION (OBE) QUALITY
MANAGEMENT SYSTEM**

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**Bachelor of Engineering (Hons) in
Electronics (Telecommunications)**

2018

UNIVERSITI MALAYSIA SARAWAK

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Final Year Project Report

Masters

PhD

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OUTCOME BASED-EDUCATION (OBE) QUALITY MANAGEMENT
SYSTEM

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A dissertation submitted in partial fulfilment of
the requirements for the degree of
Bachelor of Engineering with Honours
(Electronics in Telecommunication Engineering)

Faculty of Engineering
Universiti Malaysia Sarawak

2018

Dedicated to my beloved parents who always bestow me sustainable motivations and encouragements for success in my life

ACKNOWLEDGEMENTS

At first, I wish to dedicate my sincerest appreciation toward my supportive final year project supervisor, Madam Kasumawati binti Lias throughout the course of the project. I am thankful for her guidance, knowledge, encouragement, necessary advice and comments for my final year project report progress. Your sincere guidance will not be forgotten. My grateful gratitude also dedicates to the staffs from Faculty of Engineering, UNIMAS for helping me directly and indirectly throughout my final year project.

Special gratitude towards my beloved parents who always give me their moral and financial support as well as always praying for my success. Thank you towards another member of my family who also gives their encouragement and advice throughout my final year project.

Lastly, I wish to thank my friends for discussing the problem and sharing the useful information together. They also help in giving the useful advice and motivating me in order to finish the report within the time frame successfully.

ABSTRACT

This project is basically focused on the development of web application software for managing the quality of education process basis on the education outcome (OBE). The web application software is designed and implemented for the use of academic staffs of Faculty of Engineering in UNIMAS. With the use of this software, the faculty can easily assess the contents of the OBE implementation and improve its effectiveness by monitoring the students' performances. The significant of the project is not only to assist in facilitating the users but to ensure the standardization of OBE implementation in Faculty of Engineering, UNIMAS.

ABSTRAK

Projek ini pada asasnya memberi tumpuan kepada pembangunan perisian aplikasi web untuk menguruskan kualiti proses pendidikan berdasarkan hasil pendidikan (OBE). Perisian aplikasi web direka dan dilaksanakan untuk penggunaan staf akademik Fakulti Kejuruteraan di UNIMAS. Dengan menggunakan perisian ini, fakulti dapat dengan mudah menilai kandungan pelaksanaan OBE dan meningkatkan keberkesanannya dengan memantau prestasi pelajar. Ketara projek ini bukan sahaja membantu memudahkan pengguna tetapi untuk memastikan penyeragaman pelaksanaan OBE yang akan digunakan untuk Fakulti Kejuruteraan, UNIMAS.

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LIST OF ABBREVIATION

ASEP	-	Accreditation Software for Higher Education
BEM	-	Board of Engineers Malaysia
BENG	-	Bachelor in Engineering
CC	-	Creative Cloud
CLO	-	Course Learning Outcome
CO	-	Course Outcome
CQI	-	Continuous Quality Improvement
CSS	-	Cascading Style Sheets
EAC	-	Engineering Accreditation Council
ESR	-	End Semester Report
EE	-	External Examiner
FTP	-	File Transfer Protocol
FYP	-	Final Year Project
HONS	-	Honors
HTML	-	Hypertext Markup Language
IAP	-	Industrial Advisory Panel
ID	-	Identification
IDE	-	Integrated Development Software
ISO	-	International Standards Organization
LI	-	Industrial Training
OBE	-	Outcome-Based Education
PEO	-	Program Educational Objective
PDF	-	Portable Document Format
PHP	-	Hypertext Preprocessor
PLO	-	Program Learning Outcome
PO	-	Program Outcome
QMS	-	Quality Management System
QR	-	Quick Response
SFTP-SSH	-	Secure File Transfer Protocol-Secure Shell
SQL	-	Structured Query Language

SO	-	Student Outcome
SSL	-	Secure Sockets Layer
TLS	-	Transport Layer Security
TQM	-	Total Quality Management
UNIMAS	-	Univeriti Malaysia Sarawak
URL	-	Uniform Resource Locator
XAMPP	-	Cross-Platform for Apache, MySQL, PHP and Perl

CHAPTER 1

INTRODUCTION

1.0 Introduction

The introduction introduces the overview of the project. It also presents the project motivation, problem statement, research objective, the scope of the project, and significant of the project. Finally, the thesis outline is also being discussed.

1.1 Project overview

Quality management is a part of management intended for attaining quality goals through planning, monitoring, assuring and improving quality[1]. In today's era, quality management becomes a business function as well as any other function, involving of all profiles and from all the departments of the organization.

This project is basically focused on the development of web application software for managing the quality of education process basis on the education outcome (OBE). The web application software is designed and implemented for the use of lecturer of Faculty of Engineering in UNIMAS. With the use of this software, the faculty can easily assess the contents of the OBE implementation and improve its effectiveness by monitoring the students' performances.

The outcome-based education (OBE) theoretical concept, which includes the Program Educational Objectives (PEOs), the Course Outcomes (COs) and the Program Outcomes (POs). PEOs are broad statements that define the career and professional

attainments in five years after graduation where the program is equipping graduates to achieve[2][3]. POs represent the knowledge, skills, and attitudes that the students should have at the end of a four-year engineering program in Malaysia and the COs are the resultant knowledge skills the student gains at the end of a course. It defines the cognitive processes a course provides. The outcome-based education (OBE) which is normalized based on the quality management system is important in order to suit the nature of the engineering courses and to meet the requirements of the national accreditation.

Four main components of this system are the OBE Introduction, OBE Material, Measurement Tools and CQI. The OBE Introduction enlisted the Program Educational Outcome (PEOs) and Program Outcome (POs). The OBE Material is the rubrics, online forms and course syllabus. The rubric of any course assessment and required form from Bloom Taxonomy, Moderation form, Industrial Training (LI), and Final Year Project (FYP) form are to be filled online. The course syllabus is a course plan or teaching plan to guide the academic staff and student on the course outcome of each course in each department.

Measurement Tools is mainly for assessment and evidence of the students' performance. The direct links to the End Semester Report (ESR), PO Analysis, Survey and iClass are also included. Different assessment reports can be obtained through the link of the system. From this tools, the academics staff can identify their students' performance whether they achieve the POs and COs. If the student does not achieve the learning outcome, the academic staffs perform the CQI. The CQI is where all the feedback surveys are included. The feedback will explain the reflects and reasons for any changes in results of COs and POs or suggestions for the changes. The feedback mechanisms can be obtained from External Examiner, Industrial Advisory input, and Students.

1.2 Motivation of the project

From project overview, this system enlisted four main components which are OBE Introduction, OBE Material, Measurement Tools and CQI. All of these

components of OBE implementation are the motivations to build and develop the OBE Quality Management System. All of the material including rubrics, course syllabus, and feedback survey are collected into one system which is OBE QMS and it facilitates the management of these materials. The students' part is student survey which is to fill the online survey form which indirectly reduces paperwork. Since the system is an online-based web application, the academic staffs can access the system directly from their home as long as they have an internet connection. This solves the drawback of using offline software application which only can be installed and used on office's computer.

1.3 Problem statement

Outcome-Based Education has many materials. The materials are used for teaching, learning and activities purposes. Other material is as measurement tools for achieving and evidence of the educational outcome and lastly for Continuous Quality Improvement which is also known as CQI.

1.4 Research objectives

The main objectives of this project are:

- i. To develop an Outcome-Based Education (OBE) Quality Management System (QMS).
- ii. To investigate, explore and utilize Adobe Dreamweaver CC 2015 to be used for developing Outcome-Based Education (OBE) Quality Management System (QMS).

1.5 Scope of the project

The scope of this project is to develop basic Outcome-Based Education (OBE) Quality Management System which will regularly be used by the academic staff in

Faculty of Engineering in University of Malaysia Sarawak. However, the system also includes the student part.

1.6 Significant of the project

The requirement of Quality Management System is significant in order to manage the material of Outcome-Based Education. This system ensures the standardization of OBE implementation in Faculty of Engineering, UNIMAS. Apart from that, OBE QMS assists in facilitating the academic staffs from Faculty of Engineering, UNIMAS.

1.7 Thesis Outline

For thesis outline, it will include the summarization of the chapters will be provided in thesis Final Year Project report. There are five chapters in this course throughout the report. Five chapters are Introduction, Quality Management System, Methodology, Results and Discussion, and Conclusion.

Chapter 1 briefly explains on the introduction of this project. The introduction consists of the project overview, research objective, motivation and significance of the project. Next, Chapter 2 presents the detail explanation of a literature review of the quality management system. The literature review is based on a comparison of previous research on the quality management system.

Then, Chapter 3 outlines the methodology of the studies. The methodologies were listed step by step to produce results as in the next chapter. Chapter 4 discusses in detail the results of the study.

Lastly for Chapter 5 concludes all the outcome of this project based on the results and discussion of the previous chapter. A further recommendation from this project also is included.

1.8 Conclusion

This introduction is mainly introduced the Outcome-Based Education Quality Management System which includes the project overview of the thesis, project motivation, problem statement, research objective, the scope of the project, and project significant.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

The literature review of this research project is based on the concept of Quality Management System (QMS), Quality Management in Higher Education, Implementation of Outcome-Based Education and Outcome-Based Education Quality Management System.

2.1 Quality Management System

The quality management system is defined as a series of coordinated activities undertaken in an organization to improve efficiency and effectiveness of its performance [4], part of management aimed at achieving quality goals through planning, monitoring, assuring and improving quality [1]. According to [5], a quality management system is a management technique used to communicate with employees based on the requirement to produce the desired quality of product or services and influence employee actions to complete tasks according to the quality specifications. In modern conditions, quality management turns into a business work as well as any other function, involving individual of all profiles and from all the departments of the association. A complete ISO 9001 Quality Management System must address all the requirements of ISO 9001, including the ISO 9001 documentation requirements.

There are varieties of the general definition of the quality management system. Most of them emphasize the use of some type of system that is repeatable, measurable and constantly improving. In an ISO 9001 quality system, this structured way of delivering a better service or product is supported by documented information such as procedures, work instructions, policies, and forms [6]. The important thing is to ensure that one should implement the quality system with documented, understandable and workable instructions which define expectations, responsibilities, and actions to achieve the stated quality goals.

A quality management system act as the centralizing element in various aspect of an organization to deliver services in the best form. Although the system is costly, the quality management system is seen as a key to success. Quality management systems focus on [6]:

1. Being centered or consumer of the good or service, actively providing that customer with the best value possible.
2. Some type of continuous improvement program, which implies that there is not a “perfect” state where all processes can be continually improved upon.
3. An efficiency imperative that says waste must be reduced and all resources maximized.
4. Top management is to support and provide adequate resources to achieve goals.
5. It aids or facilitates a clear understanding of expectations between all participants.
6. Measurement and accurate data collection are incorporated to support data-driven decision making.
7. Documentation of QMS processes is maintained and controlled.

The ISO 9000 family addresses various aspects of quality management and contains some of ISO’s best-known standards. In order to ensure that the products and services to be met the requirements of the customer as well as consistently improve the quality, the standards provide the tools and guidance for organization and company. The ISO 9001:2015 is the only standard in the family that can be certified and it sets out the criteria for a quality management system [7]. It can be used by any organization in any