

EXAMINE THE CURRICULUM COURSE FOR  
ENGINEERING STUDENTS AT MALAYSIA  
HIGHER EDUCATIONAL INSTITUTIONS

MOHAMAD AMIR BIN MOHD ZAKI

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

MOHAMAD AMIR BIN MOHD ZAKI

BTech

2019

UTeM

## **SUPERVISOR'S APPROVAL**

“I hereby acknowledge that this project paper has been accepted as part fulfillment  
for Bachelor Degree of Technopreneurship”

Signature :

Name of Supervisor : EN HASAN BIN SALEH

Date : 15 JAN 2020

Signature :

Name of Panel : PROF. DR. AHMAD ROZELAN YUNUS

Date : 15 JAN 2020

EXAMINE THE CURRICULUM COURSE FOR ENGINEERING STUDENTS AT  
MALAYSIA HIGHER EDUCATIONAL INSTITUTIONS

MOHAMAD AMIR BIN MOHD ZAKI

This Report Submitted In Partial Fulfillment of The Requirements For The Award  
Bachelor of Technopreneurship With Honors

Faculty of Technology Management and Technopreneurship  
Universiti Teknikal Malaysia Melaka

JAN 2020

## DECLARATION

“I declared that this project is the result of my own research except as cited in the references. This research project has not been for any degree and is not concurrently submitted in candidature of any other degree.”

Signature :  
Name : MOHAMAD AMIR BIN MOHD ZAKI  
Date : 15 JAN 2020

## **DEDICATION**

I would like to dedicate the appreciation to my siblings who supported me in terms of spiritual and financial, beloved supervisor and panel who guided me throughout the research and course mates that assisted me through the journey of research

## ACKNOWLEDGEMENT

First of all, I would like to express my thankfulness to Allah SWT because his willing giving me the opportunity to complete this final year project report which is title Examine the Curriculum Course for Engineering Students at Malaysia Higher Educational Institutions. This final year project report was prepared for Faculty of Technology Management and Technopreneurship, University Teknikal Malaysia Melaka (UTeM), basically for student in final year to complete fulfilment for Bachelor of Technopreneurship with Honours (Btech). This report is based on the method given by the university.

Besides that, I would also like to state our gratitude to Mr. Hasan bin Saleh, a lecturer at Faculty of Technology Management and Technopreneurship, University Teknikal Malaysia Melaka (UTeM) and have been assigning as my supervisor that guided me a lot of in order to finish this project report in two semesters in session 2019/2020. My special thanks also dedicate to all the lecturer and staff of Faculty of Technology Management and Technopreneurship, University Teknikal Malaysia Melaka (UTeM) for assist and guide me in producing this final year report.

Here, I would also like to express thankfulness to my family especially my parents and siblings for their advice, moral and financial support in order so that I can complete this Final Year Project Report. All the members, I would like to express a huge thank because had contribute a support to make this report as it is now. Finally, I would like to express my gratitude to any other individual or group whom I have not mention that has play their role in my report.

I hope that my final year report will fulfil the conditions as request for Bachelor of Technopreneurship with Honour. I hopefully, I can successfully stimulate all the experiences that gained while producing this report. Thank you.

## ABSTRACT

The main purpose of this study is to examine the curriculum course for engineering students at Malaysia higher educational institutions. Firstly, the objective of this study is to examine the relationship between behaviourism, pragmatism, essentialism, constructivism and curriculum course for engineering students in Malaysia higher educational institutions. Second objective of this study is to determine the curriculum course that give most impact to engineering students in Malaysia higher educational institutions. Other than that, researcher also studies the relationship between four sub independent and engineering curriculum. The research identifies four independent variable that are behaviourism, essentialism, pragmatism and constructivism. This focus on one faculty in Universiti Teknikal Malaysia Melaka (UTeM). The population of this study consists of 1200 total of engineering students in UTeM. The sample of this study consist 291 of engineering students in UTeM. To collect the data and information needed, the researcher has used quantitative method in this study. The data needed was calculated through questionnaires. The method to accumulate research data was analysed by using Stastitical Package for Social Science (SPSS).

*Keywords: engineering curriculum, behaviourism, essentialism, pragmatism and constructivism, UTeM.*

## ABSTRAK

Tujuan utama kajian ini adalah untuk mengkaji kursus kurikulum untuk pelajar kejuruteraan di institusi pengajian tinggi Malaysia. Pertama, objektif kajian ini adalah untuk mengkaji hubungan antara tingkah laku, pragmatisme, keperluan, konstruktivisme dan kursus kurikulum untuk pelajar kejuruteraan di institusi pengajian tinggi Malaysia. Objektif kedua kajian ini adalah untuk menentukan kursus kurikulum yang paling memberikan kesan kepada pelajar kejuruteraan di institusi pendidikan tinggi Malaysia. Selain itu, penyelidik juga mengkaji hubungan antara empat sub kurikulum bebas dan kejuruteraan kurikulum. Penyelidikan ini mengenal pasti empat pemboleh ubah bebas iaitu sikap berkelakuan, keyakinan, pragmatisme dan konstruktivisme. Fokus ini kepada satu fakulti di Universiti Teknikal Malaysia Melaka (UTeM). Populasi kajian ini terdiri daripada 1200 orang pelajar kejuruteraan di UTeM. Sampel kajian ini terdiri daripada 291 pelajar kejuruteraan di UTeM. Untuk mengumpul data dan maklumat yang diperlukan, penyelidik telah menggunakan kaedah kuantitatif dalam kajian ini. Data yang diperlukan dikira melalui soal selidik. Kaedah untuk mengumpul data penyelidikan dianalisis dengan menggunakan Pakej Stastitical for Social Science (SPSS).

*Kata kunci: kurikulum kejuruteraan, behaviourism, essentialism, pragmatisme dan konstruktivisme, UTeM.*



## Table of Content

<b>CHAPTER</b>	<b>TITLE</b>	<b>PAGE</b>
	<b>APPROVAL</b>	i
	<b>TITLE</b>	ii
	<b>DECLARATION</b>	iii
	<b>DEDICATION</b>	iv
	<b>ACKNOWLEDGEMENT</b>	v
	<b>ABSTRACT</b>	vii
	<b>ABSTRAK</b>	viii
	<b>TABLE OF CONTENT</b>	ix
	<b>LIST OF TABLES</b>	xii
	<b>LIST OF FIGURES</b>	xiii
	<b>LIST OF APPENDIXES</b>	xiv
 <b>Chapter 1</b>	<b>INTRODUCTION</b>	
	1.1 Introduction	1
	1.2 Background of Study	1
	1.3 Problem Statement	2
	1.4 Research Question	3
	1.5 Research Objective	3

1.6	Significant of Study	3
1.7	Scope of Study	4
1.8	Summary	4

## **Chapter 2 LITERATURE REVIEW**

2.1	Introduction	5
2.2	Curriculum	6
2.3	Behaviourism	7-8
2.4	Essentialism	9
2.5	Pragmatism	10-11
2.6	Constructivism	12-13
2.7	Theoretical Framework	14
2.8	Hypothesis	15
2.9	Summary	15

## **Chapter 3 RESEARCH METHODOLOGY**

3.1	Introduction	16
3.2	Research Design	16-17
3.2.1	Explanatory Research	18
3.2.2	Methodological Choices	18
3.2.3	Quantitative Method	19
3.3	Data Collection	19

3.3.1	Primary Data	20
3.3.2	Secondary Data	20
3.4	Survey Instruments	21
3.5	Sampling Method	22
3.6	Data Analysis and Interpretation	23
3.6.1	Pilot Test	24
3.6.2	Validity	25
3.6.3	Reliability	25
3.7	Research Area	26
3.8	Time Horizon	26
3.9	Research Instruments	26
3.10	Summary	27

## **Chapter 4 DATA ANALYSIS**

4.1	Introduction	28
4.2	Frequency Analyses on Respondent Demographic Background	29-33
4.3	Discussion and Analysis	34
4.3.1	Reliability Test	34-43
4.3.2	Pearson's correlation coefficient	44-46
4.3.3	Multiple Regression Analysis	47-48
4.4	Summary	49

**Chapter 5 CONCLUSION AND RECOMENDATION**

5.1	Introduction	50
5.2	Discussion on Respondent Demographic Background	50-51
5.3	Analysis Discussion	52
5.3.1	Discussion Reliability Test	52
5.3.2	Discussion of Research Objective 1	53-57
5.3.3	Discussion of Research Objective 2 and Hypothesis	58-61
5.4	Recommendation	62
5.5	Summary	65
	<b>References</b>	64-65
	<b>Appendixes</b>	66-80

## LIST OF TABLES

<b>TABLE</b>	<b>TITLE</b>	<b>PAGE</b>
3.1	Likert Scale	21
3.2	Data Analysis Method	24
3.3	Reliability Statistics	25
4.2.1	Gender	29
4.2.2	Marital Status	30
4.2.3	Race	31
4.2.4	Age	32
4.2.5	Level of Education	33
4.3.1	Reliability Statistics	34
4.3.2	Pilot Test	34
4.3.2	Actual Test	39
4.3.3	Summary of measurement of strength based on the Correlation coefficient	44
4.3.4	Pearson's correlation coefficient between independent variable and dependent variable	45
5.3.2	Result Pearson Correlation Analysis	53
5.3.3	Result Multiple Regression Analysis	58

**LIST OF FIGURES**

<b>FIGURE</b>	<b>TITLE</b>	<b>PAGE</b>	<b>PAGE</b>
2.6	2.6 Theoretical Frameworks	12	2.6
3.1	3.1 Research Flow of Study	15	3.1
3.2	3.2 Krejchi And Morgan Table	22	3.2

**LIST OF TABLES**

<b>TABLE</b>	<b>TITLE</b>	<b>PAGES</b>
3.1	3.1 Likert Scale	21
3.2	3.2 Data Analysis Method	24
3.3	3.3 Reliability Statistics	25

**LIST OF APPENDIXES**

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
A	Gantt Chart	66
B	Questionnaire Form	68

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

This study focuses on the curriculum course for engineering students at Malaysia higher educational institutions. It focuses on elements that such as behaviourism, essentialism, pragmatism and constructivism. This chapter covers the background of study, problem statement, research objective, research question, scope and significant of this study.

#### 1.2 Background of Study

This chapter will be described in Malaysia's higher education institutions on the curriculum course for engineering students. A curriculum in education is generally defined as the totality of student experiences that occur in the process of education. The word also specifically refers to a predetermined series of lessons or a view of the experiences of the student in relation to the educator's goals or the lesson. Reys, et al. (2003) refer the curriculum consists of a collection of learning goals that are spread across the grades and define the planned math content and execute the goals throughout the collage system at specific times.



According to Barakett and Cleghorn (2000), the curriculum can be described as a course or subject to be taught at each grade level as well as the amount of time to each student. In that case, the program may also integrate the students' intended experiences with educational content, materials, tools, and processes to measure the achievement of educational goals. The curriculum is categorized into several explicit, inferred, secret, omitted, and program groups. In other words, it describes how students may be affected by the learning process. More emphasis in this analysis on engineering students.

The concept of engineering defines the application of knowledge to innovation, design, construction, operation, and maintenance of structures, machines, materials, devices, systems, processes, and organizations in the form of science, mathematics, and empirical evidence. The engineering discipline covers a wide range of related engineering disciplines, concentrating on applied mathematics, applied science, and applications.

### **1.3 Problem Statement**

In this study, researcher have identified issues where students want good education for future employment. The researcher uses the survey or observation instruments to identify the problem that has happen. At present, engineering students must have the right criteria to meet the appropriate job requirements. The problem is engineering student does not have enough standard that what company want. So, the student must have the element like behaviourism, essentialism, pragmatism, and constructivism to fulfil the demand of job market in engineering industry. The going impact curriculum course provides students with the professional skills required by the company.

#### **1.4 Research Question**

Two research question were created from the problem statement described below:

1. What is the relationship between behaviourism, pragmatism, essentialism, constructivism and curriculum course for engineering students in Malaysia higher educational institution?
2. What is the curriculum course that give the most impact to engineering students in the Malaysia higher educational institution?

#### **1.5 Research Objective**

The general objectives of this study are described below:

1. To examine the relationship between behaviourism, pragmatism, essentialism, constructivism and curriculum course for engineering students in Malaysia higher educational institutions.
2. To determine the curriculum course that give most impact to engineering students in Malaysia higher educational institutions.

#### **1.6 Significant of Study**

In this, the research will be examined the relationship between behaviourism, pragmatism, essentialism, constructivism and curriculum course for engineering students in Malaysia higher educational institutions. Then, this study focusses to determine curriculum course that give the most impact to engineering students at Universiti Teknikal Malaysia Melaka (UTeM). From this study also can know that the curriculum course will be influence engineering student in Malaysia educational institutions. Engineering students must have all the element that giving their value to work on the field. The field is not really like what engineering students assume where

they work easy every time. Students need at least a little experience to regain their way of working. In that time, the students must apply their skill and education what they learnt. Furthermore, the researcher finds and match the elements in the curriculum course towards engineering students whereby institutions must have the right curriculum development for students.

### **1.7 Scope of Study**

The purpose of this study is to examine the relationship between behaviourism, pragmatism, essentialism, constructivism and curriculum course for engineering students in Malaysia higher educational institutions. Next, the scope of this study is to determine the curriculum course that give most impact to Malaysia higher educational institutions in UTeM. Part of this, the elements in the curriculum that will be study are behaviourism, essentialism, pragmatism and constructivism. Plus, the study shows how the curriculum course are influents engineering students in Malaysia higher educational institutions in UTeM.

### **1.8 Summary**

From this research that highlighted the relationship between behaviourism, pragmatism, essentialism, constructivism and curriculum course for engineering students in Malaysia higher educational institutions. In this chapter also describes what the most impact of curriculum course to engineering student in Malaysia higher educational in UTeM. The curriculum course most vital to ensure that the students already progress to fulfil the demand job market in the country.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter discussed about the literature review that use in the study. The study begins this chapter by reviewing some journals and article as such as internet sources. At the end of this chapter, the researcher would be able to construct a theoretical framework which contains summarizing this chapter.

#### 2.2 Curriculum

The curriculum is a set of plans and sets of objectives, content and teaching materials and methods used to guide learning organizations to achieve specific educational objectives. Under the impact of globalization and the advent of the Information Age, there is a paradigm shift in the engineering curriculum and academic structure. In addition to creating new programs for the fields that appear in engineering, approach and orientation have also shifted from objective / input-based education to revenue-based education. The criteria for a new generation of quality

engineering graduates has been expanded. Structural engineering programs are under review to facilitate student mobility and are ready to meet global recruitment requirements.

According to (Prihantoro, 2015), researchers have pointed out that the curriculum in 2013 aims to develop the demands, need and requirements of the community in education. This curriculum is designed based on competence, which is a results-based curriculum. Curriculum development is aimed at the achievement of competencies specified in the graduate competency standards. Curriculum learning systems are based on active learning approaches that encourage students to observe, question, combine, experiment, and network. This article discusses the environmental education established in the 2013 curriculum in Indonesia in terms of broad aspects of not only national scope, but its output can meet global challenges. The environmental education perspective in the 2013 curriculum is filled with the expectation that learners will gain awareness and sensitivity, gain a wide range of experience and basic understanding of the environment, and develop character to acquire a set of values from sensitive environments in elementary through secondary education.

According to (Chung, 2011), this study is divided into two sections. The first part deals with general engineering education development and the second describes developments in the European Union, the United States, and Japan. To meet new learning outcomes, approaches to learning, teaching, and assessment are reviewed and reorganized. Not only have graduates to update their professional knowledge, they also have to acquire a wide variety of generic thinking and communication skills, a sense of social responsibility, learning lifelong, foreign language knowledge and authentic research experience.

In conclusion, as engineering education is being internationalized, the government is able to follow international measures community by participating in regional and international cooperation initiatives in engineering education. Students should be encouraged to participate in international research exchange programs.

Higher education institutions need to design new program structures, identify desired learning outcomes, determine ways to align and achieve their outcomes by reviewing course content, providing pedagogical training for faculty, adopting various teaching and learning methods, and designing appropriate assessment criteria and methods.

### **2.3 Behaviourism**

Behaviourism is a psychological approach that focuses on scientific and objective methods of investigation. It deals with the behaviour of visual stimulus response, and states that all behaviours are learned through interaction with the environment. This shows that behaviour is still useful in certain teaching and learning activities in the classroom.

According to (Lenjani, 2016), this study has briefly described the approach of students with special needs. This study provides a summary of constructivist ideologies and behaviours and their impact on scholars with special needs and suggestions for finding use in the classroom. Finding from this research show that students with special needs are particularly challenging to be taught well in environmental settings due to academic processing and deficits. Students with special needs have the opportunity to succeed if teachers are aware of their strengths, weaknesses and aware the principles of good practice. The combined effect of constructivist principles and behaviours will have the best effect on teaching. Teaching will be easier if one method is used in its entirety. Instructions will be most effective if educators are aware of several options and can work together to make decisions for each lesson. The results of this study show that constructivist ideologies and behaviours are very useful in a several of subjects, grade levels and students with or without disabilities.

According to (Budiman, 2017), This study has studied behaviourism methods that are said to have the advantage of learning the language in the classroom. This study also examines the critics of behaviour and its weaknesses in the learning

environment. The findings from this study explain Behavioural theory. This theory explains that human behaviour has come from learning outcomes, which can be altered by manipulating and creating learning conditions. The theory of Behaviourism is more important to behaviour or observable behaviour. This theory emphasizes the role of the environment, the formation of reactions and respond, emphasizing the importance of training, the mechanism of learning outcomes and the role of learning capabilities and outcomes derived from the emergence of desirable behaviours. Learning behaviours are controlled by behavioural responses to stimuli. Teachers think that student behaviour is a response to the environment and that behaviour is a result of learning.

As conclusion, behaviourism is very useful in a several of subjects, grade levels and students with or without disabilities. Learning behaviours are controlled by behavioural responses to stimuli. Most of teachers think that student behaviour is a response to the environment and that behaviour is a result of learning.

## **2.4 Essentialism**

Essentialists have found that the same core knowledge must be transmitted to students in a systematic and disciplined way. Essentialist focuses on intellectual training in the fields of grammar, literature and writing, mathematics, science, history and modern foreign languages.

According to (Zirhlioglu et al, 2016), in this study it has been argued that basic principles of educational philosophy such as perennialism, essentialism, progressivism and reconstructionism have raised many questions. This study has identified the level of student participation. The findings of this study were obtained from students from various departments at Yuzuncu Yil University's faculty of education. To measure the views, ideas, beliefs, behaviors and tendencies of individuals, the Q method was used to analyze the data. The purpose of this study was

to determine how many students of the Faculty of Education at YJU practiced different philosophy of educational perspectives. The majority of students support the philosophy of modern education such as progressivism, and they also practice traditional philosophy. Not only that, they also oppose the view of essentialism. Students also gave negative views on social transformation principles related to reconstruction. This principle belongs to the philosophy of modern education. The results were obtained that learning will be more persistent via learning through the student's experience and activity method, the ability of future teachers to empathize and the individual can use all sensory organs at the same time.

According to (Acquah et al, 2017), the purpose of this study is to examine the school's overall philosophical thinking on educational goals, the role of education and the focus of education. This study examines the important implications of curriculum development and practice. Through the study of different philosophies, educators will gain a clearer picture of what education means in terms of its purpose, role, focus and implications for curriculum development and practice. Without a good principle in the philosophy of education will impact a lack of rationality in curriculum development and practice. A person's ability to be seen by focusing on other non-academic subjects can give rise to one's talents. This shows that it is not just intellectual training that will produce students who are good at paper but even worse. This has caused many problems in the country's development.

As conclusion, it was determined that the students were not adapting to the idea that strict rules of discipline should be applied during the learning process. Instead of a strict understanding of discipline, they think that the environments in which students are motivated and having fun should be established and that strict discipline rules could have negative effects on students' self-esteem.