UNIVERSITI TEKNOLOGI MARA

AN EXPLORATORY STUDY ON PROGRAMMING SKILL COMPETENCY AMONG ICT STUDENTS IN MALAYSIA

NORMASNIZA BINTI MAT GHANI

Report submitted in partial fulfillment of the requirements
for the degree of

Master of Science (Information Technology)

Faculty of Computer and Mathematical Sciences

January 2014

ABSTRACT

This paper presents the perceptions of employers and educators concerning the programming skills, knowledge and characteristics which help undergraduates to be more marketable. And, also gauge the understanding of programming skills and related issues among CS undergraduate students. The results of this survey indicate that undergraduates are agreed with suggestions given which they want many improvements in teaching and learning programming. By asking the perception from employers and education regarding on how to produce a quality graduates and be more marketable, it is possible for educators to enhance the teaching and learning to meet expectations and to make curriculum changes or adjustments to address these problems. While the study does not suggest that any dominant attributes are related to success in programming, there are some interesting outcomes which will have implications for teaching and learning.

ACKNOWLEDGEMENT

I would like to thank Allah SWT, because with His mercy I am able to complete my project paper to fulfill requirements of the IT Project (SYS 798) course. This project could not have been written without the assistance and guidance of Puan Suzana Zambri who not only served as my supervisor but also encouraged and challenged me throughout the academic program.

I also would like to thank all participants who took part in this study. Without the generous help of many people, it would have been very difficult for me to complete this project. I thank them all.

Normasniza Mat Ghani

January 22, 2014
Faculty of Computer Science and Mathematics
Universiti Teknologi MARA

TABLE OF CONTENTS

	Page
STUDENT'S DECLARATION	**i**
ABSTRACT	**ii**
ACKNOWLEDGEMENT	**iii**
TABLE OF CONTENTS	**iv**
LIST OF TABLES	**viii**
LIST OF FIGURES	**ix**
CHAPTER ONE: INTRODUCTION	
1.1 Overview	1
1.2 Research Background	1
1.3 Problem Statement	2
1.4 Research Aim	3
1.5 Research Objectives	3
1.6 Research Questions	3
1.7 Research Significance	4
1.8 Research Scope	5
1.9 Summary	6
CHAPTER TWO: LITERATURE REVIEW	
2.1 Introduction	7
2.2 Definition of Related Terminology	8
2.2.1 Information Communication Technology (ICT) Sector	8
2.2.2 ICT Skills	8
2.2.3 Computer Science (CS)	8
2.2.4 Programming	9
2.2.5 Novice	9
2.2.6 Undergraduate	9
2.3 Unemployment of Graduates in Malaysia	10
2.4 Lacks of Skills among Graduates	11

2.5 Demands for ICT Skills 15
2.6 Mismatch of Perceptions Employers and University 19
2.7 Issues of Seeking Qualified Undergraduates in Programming Skills 20
2.8 Understand the Perception and Perspectives from Three Target Groups 22
2.8.1 Related Research Concerning Undergraduates' Potential in Learning Programming 22
2.8.2 Educator's Perception of Teaching Programming Skills 25
2.8.3 Employer Perspectives 26
2.8.4 Universiti Teknikal Malaysia Melaka (UTeM) as a Case Study 28
2.8.5 Science Computer under Faculty of Information and Communication Technology (FTMK) 28
2.9 Summary 29

CHAPTER THREE: METHODOLOGY

3.1 Introduction 30
3.2 Descriptive Research Methodology 30
3.3 Research Model 32
3.3.1 Quantitative Research 32
3.3.2 Qualitative Research 33
3.4 Research Design 34
3.5 Mixed-Method Triangulation Approach 35
3.6 Planning 36
3.7 Data Collection 37
3.7.1 Primary Data 37
3.7.1.1 Questionnaire for Undergraduates 37
3.7.1.2 Interview with Employer and Educator 39
3.7.1.3 Interviews with Employers 40
3.7.1.4 Interview with Educators in UTeM 42
3.7.2 Secondary Data 43
3.7.2.1 Online Research 43
3.7.2.2 Offline Research 43
3.8 Data Analysis 44
3.8.1 Techniques for Data Analysis 44