

UNIVERSITI TEKNOLOGI MARA

**WEB-BASED EXERCISE PROGRAM
FOR ELDERLIES WITH MOBILITY
LIMITATION USING USER-
CENTERED DESIGN (UCD)
PRINCIPLE**

NUR FARAH ATIKAH BINTI JAMAL

2012632466

**BACHELOR OF SCIENCE (Hons.)
INFORMATION SYSTEMS ENGINEERING**

JULY 2015

ACKNOWLEDGEMENT

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this research within the time duration given. I would like to express my special appreciation and thanks to my supervisor Miss Fadzlin bt Ahmadon for being a mentor to me. I would like to thank you for encouraging my research. Your advice on my research has been priceless. A special thanks to my parents, Jamal bin Othman and Mislina bt Haji Dahlan for all the sacrifices that you have made on my behalf. Your prayer for me was what sustained me thus far. At the end, I would like to give my gratitude to my friends which keep giving their opinion, help and moral support throughout the period of my research work

ABSTRACT

World nowadays are having ageing process. In Malaysia, population of elderlies has increases tremendously from time to time. Increases in age caused limitation among the elderlies. Mobility limitations are one of the limitations faced by the elderly. In Malaysia, the elderly with mobility limitation have problem to do exercise in their daily life. This is because the elderly are lack of knowledge on what exercise they can do as there is lack of places that they can go to exercise and current web-based program are using English as their delivery language. This research has used Norman's Principle and User Centered Design Principle. While during design and development process, ADDIE methodology has been used which reflected to the objectives of this research. Few interviews session has been done in order to get feedback from the users regarding to the designed prototypes and changes has been made according to the user's needs. After the web-based program has been fully developed usability testing has been done to see the usability of the developed web-based program. This research help to develop a web-based program on exercise program for elderly with mobility limitation.

TABLE OF CONTENT

| CONTENTS | PAGE |
|----------------------------------|-------------|
| SUPERVISOR'S APPROVAL | i |
| STUDENT'S DECLARATION | ii |
| ACKNOWLEDGEMENT | iii |
| ABSTRACT | iv |
| TABLE OF CONTENT | v |
| LIST OF FIGURES | ix |
| LIST OF TABLES | xi |
| LIST OF ABBREVIATIONS | xii |
| | |
| CHAPTER ONE: INTRODUCTION | 1 |
| | |
| 1.1 Background of study | 1 |
| 1.2 Problem Statement | 3 |
| 1.3 Aim | 3 |
| 1.4 Project Objectives | 3 |
| 1.5 Research scope | 4 |
| 1.5.1 User | 4 |
| 1.5.2 Content | 4 |
| 1.5.3 Technology | 4 |
| 1.6 Research significance | 5 |
| 1.7 Research element | 5 |
| 1.7.1 User-Centered Design (UCD) | 5 |
| 1.7.2 Web-Based Program | 6 |
| 1.7.3 Usability | 6 |

| | |
|---|----------|
| CHAPTER TWO: LITERATURE REVIEW | 7 |
| 2.1 Elderlies | 7 |
| 2.2 Mobility Limitation | 8 |
| 2.3 Types of exercises | 9 |
| 2.3.1 Step-ups | 9 |
| 2.3.2 Gaining grip strength | 9 |
| 2.3.3 Biceps curl | 10 |
| 2.3.4 Calf muscles strengthening | 10 |
| 2.3.5 Gait walking | 10 |
| 2.4 Usage of Internet among Elderlies | 10 |
| 2.5 Web-Based Program | 11 |
| 2.6 Elderlies with Limited Mobility on web | 13 |
| 2.7 Access Key on Web | 13 |
| 2.8 Existing Web-Based Program for Elderly Exercise Program | 14 |
| 2.8.1 Senior Exercise Online | 14 |
| 2.8.2 Stronger Seniors | 16 |
| 2.8.3 Elderly Gym | 18 |
| 2.8.4 Discussion | 20 |
| 2.9 Design Principles and guidelines | 21 |
| 2.9.1 Nielsen's principle | 21 |
| 2.9.2 Shneiderman's "Eight Golden Rules" | 23 |
| 2.9.3 Norman's principle | 24 |
| 2.9.4 User-Centered Design (UCD) Principle | 25 |
| 2.10 ADDIE Model | 28 |
| 2.11 Usability evaluation | 29 |
| 2.12 Summary | 30 |