

E-LEARNING FOR FUNDAMENTAL OF MICROPROCESSOR

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Power Electronic and Drives

May 2009

“I hereby declared that that I have read through this report and found it has comply the partial fulfillment for awarding the degree of Bachelor of Electrical Engineering (Power Electronics & Drive)”

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This Report Is Submitted In Partial Fulfillment of Requirements for the Degree of
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Faculty of Electrical Engineering
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May 2009

“I hereby declared that this report is a result of my own work except for the excerpts that have been cited clearly in the references.”

Signature :

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Date :

Specially dedicated to my beloved family especially my father Azizan bin Hassan and my mother Rusmawati bte Ab Muluk whose is very concern, understanding, supporting and patient. Thanks for everything. Also, thanks for everything to all my friends especially Al-Amin, Raimi, Ehsan, Fahmi, Majid, Khairul, Vigneswaran, Fidaus and other. This work and success will never be achieved without all of you.

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ABSTRACT.

E-learning is learning through the use of computer and technologies. It is growing at a rapid pace. Today more organizations are taking up e-learning. The E-learning is an education approach that offered using electronic delivery methods such as CD-ROMs, video conferencing, websites and e-mails and often used in distance-learning programs. Organizing the content of the microprocessor subject will be done first before creating storyboard and lastly choose the platforms that will be use are visual basic and flash software. The microprocessor that will be used as teaching material is MC68000 while the visual basic 6 is the software that will be used in this project. The selected topic that will be the main content are architecture of microcomputer, addressing modes, arithmetic command, memory system design and the concept of interfacing. At the end of the program, a complete module of E-learning for fundamental of microprocessor will be produce to enhance the study of microprocessor.

ABSTRAK

E-learning adalah proses pembelajaran menggunakan teknologi terkini dan komputer. E-Learning kini sedang berkembang dengan pesat dan mula digunakan secara meluas. Pada masa ini, banyak organisasi menggunakan E-learning sebagai salah satu cara untuk menyampaikan sesuatu. E-learning adalah pendekatan pendidikan yang menggunakan cara penyampaian secara elektronik seperti cakera padat (CD), persidangan video, laman web dan surat elektronik. Biasanya E-Learning digunakan untuk pembelajaran jarak jauh. Cara untuk mereka E-Learning adalah dengan menyusun semula atau mengolah isi subjek mikropemproses sebelum melakar jalan cerita bagi untuk digabung bersama isi-isi tadi. Akhir sekali gabungan isi adan penyampaian jalan cerita akan dipaparkan di platform perisian Flash dan Visual Basic. Mikropemproses yang akan digunakan adalah Motorola 68000 manakala perisian yang digunakan pula Visual Basic versi 6. Topik mikropemproses yang akan disampaikan dalam projek ini adalah Senibina mikropemproses, mod pengalamatan, arahan aritmetik, rekaan system memori dan konsep pengantaraan. Di akhir projek ini, satu modul E-Learning for fundamental of microprocessor akan dihasilkan untuk meningkatkan kefahaman dalam pembelajaran subjek mikropemproses

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	TITLE PAGE	i
	ADMISSION	ii
	ACKNOWLEDGMENT	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	x
	LIST OF FIGURES	xi
	LIST OF ABBREVIATION	xiii
	LIST OF APPENDICES	xiv
1	INTRODUCTION	
	1.1 Introduction & Problem Statements	1
	1.2 Project Objective	2
	1.3 Project Scope	2
	1.4 Thesis Outline	3
2	LITERATURE REVIEW	
	2.1 Introduction & overview	5
	2.2 What and Why Use E-Learning Method	5
	2.3 The Effectiveness of E-Learning	7
	2.4 The Joy of learning DSP in a Large Class	7
	2.5 Integer Unit User Programming Model	10
	2.6.1 Data Registers (D7 – D0)	11
	2.6.2 Address Registers (A7 – A0)	12
	2.7 Floating-Point Programming Model	13
	2.8 Immediate Data	13

	2.9	Differences between microprocessors	14
	2.10	Some of additional architectural differences	14
	2.11	Memory	15
	2.12	Flip-Flop or Latch as a Storage Element	15
	2.13.	Writes and Reads From Memory	15
	2.14	Input and output device	16
	2.14.1	I/O with 8-bit Addresses	17
	2.15	Seven segment display	17
	2.16	Literature Review Summary	19
3		METHODOLOGY	
	3.1	Introduction / Flow chart	20
		Flow chart description	
		21	
	3.2	Software	22
	3.2.1	Drawing the user interface	22
	3.3	Start the iSpringSDK Code Builder	27
	3.4	Learning Design	30
	3.5	Story boards	32
	3.6	Methodology summary	33
4		RESULT AND DISCUSSION	
	4.1	Overall result of the Project	34
	4.2	Final Product Development	34
	4.3	Addressing mode result (flash)	35
	4.3.1	Direct data addressing mode	35
	4.3.2	Absolute addressing mode	36
	4.3.3	Indirect address register mode	36
	4.3.4	Indirect address registers with post decrement mode	37

4.4	Latch circuit	38
4.4.1	Seven Segment latch cathode (1=ON, 0=OFF)	38
4.5	Arithmetic command	39
4.5.1	EXT command	39
4.6	Visual Basic main menu result	40
4.7.	Analysis of the product	40
4.8	The analysis discussion	45
4.9	Problem and Constraint during Project	47
4.10	Result Summary	48
5	CONCLUSION AND RECOMMENDATION	
5.1	Conclusion	49
5.2	Recommendation	50
	LIST OF REFERENCES	53
	APPENDICES	54

LIST OF TABLES

TABLE	TITLE	PAGE
Table 3.1	Learning design 1	30
Table 3.2	Learning design 2	30
Table 3.3	Learning design 3	31
Table 3.4	Learning design 4	31
Table 3.5	Learning design 5	32

LIST OF FIGURES

FIGURE	TITLE	PAGE
1.1	Scope of project	2
2.1	M68000 Family User Programming Model	11
2.2	Address Register	12
2.3	M68000 Floating-Point Programming Model	13
2.4	Immediate Operand Locations	14
2.5	Memory writes operation	16
2.6	8 Bit Addresses	17
2.7	A typical 7-segment led display component	17
3.1	Process of the methodology	20
3.2	The Form Window	23
3.3	The Toolbox is the selection menu	24
3.4	The Properties Window	25
3.5	The Form Layout Window	25
3.6	The Project Window displays	26
3.7	Selecting the presentation	27
3.8	Setting the general option	27
3.9	Media setting	28
3.10	Setting the Navigation and playback	28
3.11	Generating the Flash	29
3.12	Converting process	29
3.2	Story board for Microprocessor architecture	32

LIST OF FIGURES

FIGURE	TITLE	PAGE
4.1	The operation of Direct Data addressing mode	35
4.2	The operation of Absolute addressing mode	36
4.3	The operation of Indirect address register mode	36
4.4	The operation of Indirect address registers with post decrement mode	37
4.5	Latch to 7 segment process	38
4.6	Alphabet that involve in seven segment	38
4.7	The process of EXT command	39
4.8	The front-page of E-Learning	40
4.9	The overall percentage for question 1 and 2	41
4.10	The overall percentage for question 3 and 4	42
4.11	The overall percentage for question 5 and 6	42
4.12	The overall percentage for question 7 and 8	43
4.13	The overall percentage for question 9 and 10	44

LIST OF ABBREVIATION

MP	-	Microprocessor
VB6	-	Visual Basic 6

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Project Planning	52
B	Questionnaire	53
C	Ispring sdk (flash software)	54
D	Flash	58
E	Visual Basic coding	78

CHAPTER I

INTRODUCTION

1.1 Background of project.

Nowadays teaching in a large class is always a very challenge task for lecture or educator. This is due to many difficulties imposed on the process of teaching and learning. The difficulties are from encouraging attendance, delivering well balanced course contents to keep students interest on subject, getting student participated in the learning process and motivating student. Learning in a large class is often recognized as less effective than in a small class. Besides that, students are not paying attention in the class and always want take a shortcut to understand about a topic in some subject especially when the subjects are boring and difficult to understand. They also want to use the latest technologies that are available around them to keep them up-to date.

With the rapid development in IT technologies, especially the internet, it is possible to address the above difficulties with the help of various existing technologies. The proper use of IT technology not only enhances the student learning experience but also maximize student productivity. A successful integration of IT technology into a curriculum starts with understanding on what is a good teaching and learning practice.

To make good teaching, the first important step is to source technologies that will enhance students understanding and to stimulate their interest on the subject. To archive this goal, the multimedia demonstrations and computer simulations will be good candidates. The second step is to establish a timely feedback loop between educator and learner. The role of

feedback in any learning environment is clearly important to help educators know what difficulties that students may face in their learning process and allows students to find out their weaknesses.

1.2 Objectives of the Project

This project focuses on the following four objectives:

1. To design an e-learning module using Visual Basic 6 and Flash software
2. To help students so that they will have interest and motivation in learning microprocessor subject. (enjoyable)
3. Learn to create effective storyboard learning design in order to enhance the learning process of microprocessor subject.
4. To create an e-learning module to help UTEM students penetrate the microprocessor subject.

1.3 Scopes of the project

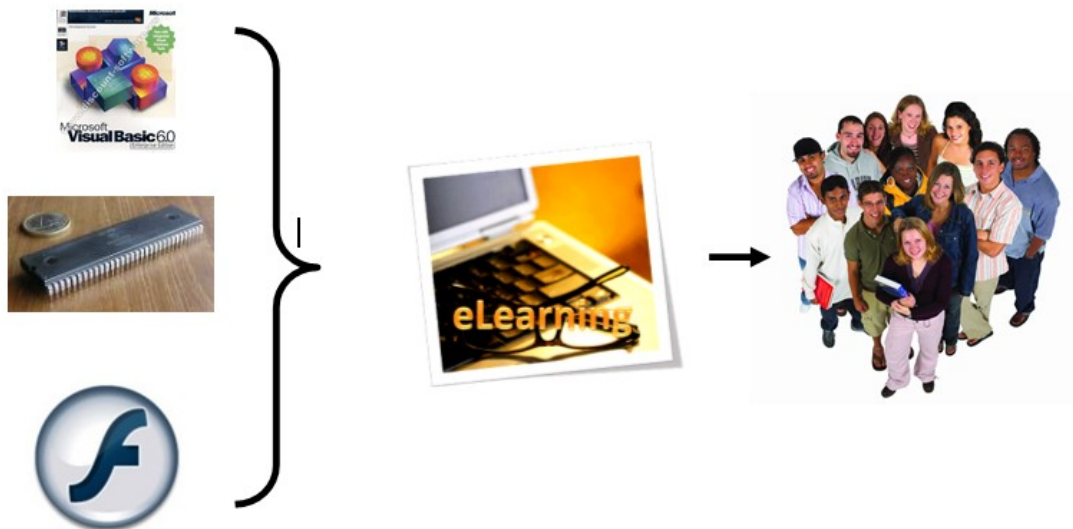


Figure 1.1: Scope of project

The target users for this computer learning are lectures, Diploma students and anyone who has knowledge in this area

The project scopes are:

1. Develop E-learning module by using Visual Basic software.
2. Design effective storyboard and learning design.
3. Develop program for the E-learning module
2. Simulate the program (using Microsoft Visual Basic 6.0).

From the content, notes, and revision of microprocessor subject, a complete module will be form by gathering all of them. All the resource can easily be found in Utem itself. After all the complete content been sorted, the content will be added with animation using the flash software before upload them in Microsoft Visual Basic 6 to make the module perfect. With all of this criteria that have been fulfill, a complete module of E-Learning will be done. The E-Learning module can be use by all student wheatear in Diploma or Degree level, new tutors and lectures even for anyone who has knowledge in this related option. This E-Learning method can be use outside and inside the campus with no time limitation.

1.4 Thesis outline

In this project, I would like to design multiple outputs charger for portable electronic appliance using dc-dc converter. In this report, I will discuss it in detail in five sections. There are introduction, literature review, methodology, results and discussions, and conclusion.

In chapter one (introduction) it discussed about background of the topic, aims and technical background. The problem statement, project objectives, scope and thesis outline are also included in this chapter.

In chapter two (literature review), it divided into four parts. There is introduction, what and Why Use E-Learning Method, the Effectiveness of E-Learning, the Joy of learning DSP in a Large Class and some related microprocessor Motorola 68K notes.

In chapter three (method), the first part about the techniques and consideration that I applied during I carried out my PSM1 and PSM2 which is designing the e-learning module. Beside that discuss about program for the project and Implementation.

In chapter four (results and discussion), explanations about the discussion from the result that have been develop from the project.

In chapter five (conclusion and recommendation), a brief summary, suggestion and conclusion to improve this project are provided. Finally, I have finished all the parts in my project planning according to the objectives and scopes.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction & overview

This chapter reviews existing project created to get an idea about the project design, conception and any information that related to improve the project. There are many creations and innovations of projects that have been done by other people with differences concept and design. This chapter also covers the researches related to the subject. This will provide a clearer understanding of the system and its design. This project is all about the e-learning for fundamental of microprocessor.

2.2 What and Why Use E-Learning Method

Economic, social and technological forces continue to change the global economy, and the way of life in organizations and the world. In specific, these forces have and continue to revolutionize teaching and learning in organizations. Hall [1] defined web-based training as instruction that is delivered over the Internet or over a company's intranet. Accessibility of this training, related [1] is through the use of a web-browser such as Netscape Navigator. Hall and Snider [2] define e-learning as the process of learning via computers over the Internet and intranets. [2] extended that e-learning is also referred to as web-based training, online training, distributed learning or technology for learning. Urdan & Weggen [3] related that technology, the rapid obsolescence of knowledge and training, the need for just-in-time training delivery, and the search for cost-effective ways to meet learning needs of a globally distributed

workforce have redefined the processes that underlie design, development and delivery of training and education in the workplace.

Urdan & Weggen also shared that e-learning covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, and digital collaborations using content via all electronic media, including the Internet, satellite broadcast, audio/video tape, interactive TV, and CD-ROM. Similar also to e-learning and its related terms is technology-based learning [3] shared that e-learning covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, and digital collaborations. For the purpose of their report, they further customized their definition to the delivery of content via all electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM.

According to Cowley and others [5], a successful e-learning course requires taking the following elements into consideration:

- Environment - learners need a certain environment (PC, Connection, software) and some preparation needs to be done to make sure that the student has that.
- Teach skills - learners need to know something about how to use whatever learning system exists.
- Subject matter skills - learners need to have some skills to benefit from the course.
- Support - there has to be a mechanism to get support when learners run into problems.
- Content - must be designed for interaction.
- Instructor - aware of learners' needs/concerns and involvement levels, attempts to draw learners into discussion early, organizes schedule, provides resources for learners in need of additional learning (remedial).
- Technology - should play a servant role.
- Organization - focused on learning, time and resources made available, learners supported through help-desk.

Berge [6] explained the difference between distance education and distance learning. Distance education was seen as the formal process of distance learning, with information being broad in scope, for example, college courses. While, distance learning was seen as the

acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance. This may be why most educational institutions used the term distance education.

2.3 The Effectiveness of E-Learning

According to Neal & Ingram [7] distance learners do not receive the day-today feedback available in traditional classroom settings. Instructor-student feedback is important as it helps the instructor to gauge the level of student satisfaction regarding a topic or an entire course. Because of the loss of traditional classroom feedback in e-learning environments, other methods to assess learner satisfaction need to be administered.

Learner feedback during and after the learning event is important to successfully measure levels of satisfaction. E-learning courses, because of the lack of face-to-face contact between instructor and student, require special efforts in order to obtain information regarding learner satisfaction. For example, e-learning courses don't allow the instructor to gauge levels of learner satisfaction using traditional methods such as facial expressions or body language.

According to Thomas [8], success in technology-based learning programs is based on an orientation to the learner is not the instructor. A strong focus on the learner and the learning environment is a shift from traditional instructional design and development techniques. Norton and Wilburg [9] believed that learner-based tools should be selected based on the way that they help students learn. The most important thing is how well the tool supports the learning process.

2.4 The Joy of learning DSP in a Large Class

This paper discussed about a new teaching method that integrates IT technology into teaching and learning process. Yong Lian [4] reveals that the method is well suited for

engineering subject and contained 3 major components in this method. The methods are conception visualizing, just in time teaching, and knowledge transferring. There are two essential parts in this method; The Innovative Teaching Method and Educator & Learner portal.

A) The Innovative Teaching Method

- **Conceptual visualizing**

Difficult concepts and theories are introduced to students using multimedia visualization demonstrations before detailed mathematic descriptions are presented. This step helps students to overcome the entry barrier so that they are able to understand the concept quickly. This allows students to have a clear picture of the underlying concept for a mathematic description, and stimulates their curiosity and thinking ability.

- **Just in time teaching (JiTT)**

The basic principle behind the JiTT is to establish a timely feedback loop between the students and Educator. A carefully construct tutorial is published on *e-learning Hub* after each lesson to test the student's under standing on the concepts. The progress of students are captured by e-learning Hub and is viewed by Educator before the next class to allow him adjusting the contents to suit the students' needs and maximize the effectiveness of learning.

- **Knowledge transferring**

Virtual simulation tools and virtual laboratory are provided to students in e-Learning Hub to let them verify the concept and to apply the knowledge. This enhances the student's comprehension on the concept. The last step is very important for transfer of learning; it trains our students on how to apply their knowledge to solve the problem.