

BORANG PENGESAHAN STATUS TESIS*

JUDUL: SCIENCE LAB COURSEWARE FOR FORM 3 CHAPTER 7: ELECTRICITY
(PARALLEL AND SERIES CIRCUIT)

SESI PENGAJIAN: 2008/2009

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**SCIENCE LAB COURSEWARE FOR FORM 3
CHAPTER 7 : ELECTRICITY (PARALLEL AND SERIES CIRCUIT)**

NORSHAHIDATUL HASANA BT ISHAK

**This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Media Interactive)**

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2009**

DECLARATION

I hereby declare that this project report entitled
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CHAPTER 7 : ELECTRICITY (PARALLEL AND SERIES CIRCUIT)

is written by me and my own effort and that no part has been plagiarized without
citations.

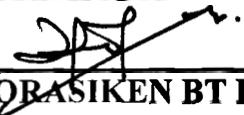
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DEDICATION

This project is my first big project, so I like to dedicate this project to my family who always give full of support to me. To my dad, Hj. Ishak b. Che Hassan, my mom, Zaniah bt. Che Wan, and my sister, Norshahida bt. Ishak, thank you so much for your support.

ACKNOWLEDGEMENTS

Thanks to Allah swt because with HIS grateful, this project has successfully finished in a given time. To my beloved family, thank you so much for their supporting and encouragement to me so I am not giving up to do my project. Not to be forget, a big thanks to my supervisor, Dr. Hjh. Norasiken Bt. Bakar, as she gave a lot of idea while developing this courseware and always giving advices to make this project proceed smoothly. Next to my friends, who not boring on giving ideas and also encouraging me to go on with the project. Especially to Azila, Azlia and Aziera who keep punching me to finish this project. Next to students from Sekolah Menengah Kebangsaan Ayer Keroh Melaka who had gave cooperation while doing my work at that school. Last but not least, thanks to all who had helped me on doing this project.

ABSTRACT

This report is about an e-learning courseware that was setup for laboratory session. This courseware will be used by the educational industry, which will be focus on the form three students for science subject. It can be used by the whole secondary school in Malaysia as it follows the ministry of education syllabus. The objectives for this courseware are development of courseware for from three students in science subject, to improve student's performance in learning, to provide information technology exposure, more interesting with the multimedia elements added and finally as a tool for teaching and learning process. The purpose of the lab courseware also is to attract students using technology and implement it in their life. There are six modules in this courseware which are experiments, quiz, game, terminology, help and mind map. The methodology has been used for this courseware is ASSURE model. ASSURE model is suitable for the courseware development because it is suitable with the learning and study style. Analysis phase will cover about the whole analysis to develop the system, such as the usage of hardware and software, collecting data from user, and analyze previous system. Besides that, it also examine the end user on how they will be used this courseware in their learning skill. The software that has been used to develop this courseware are Adobe Flash with action script 2.0, Adobe Photoshop, Window XP, and Sound Forge. Pre and Post test has been done to test the courseware to the end user and person who are expert in multimedia. The pre test done before user used the courseware to answer the question, while the post test has been done while using the courseware. As a result, there are big differences between pre and post test. Student can answer almost the entire question when using the courseware compared on using book, time taken to answer the question also small to answer the question. So, this courseware is really suitable for the lab usage as it can make student feel happy and they will attracted on using technology in their learning style.

ABSTRAK

Laporan ini adalah mengenai pembelajaran elektronik yang dikhaskan untuk penggunaan makmal. Tajuk yang telah dipilih adalah mengikut silbus daripada kementerian pendidikan untuk subjek sains tingkatan tiga. Objectives bagi sistem ini ialah untuk meningkatkan prestasi pembelajaran pelajar, untuk pendedahan penggunaan teknologi, lebih menarik dengan elemen multimedia, dan juga sebagai alat bantuan pengajaran. Kegunaan system ini ialah untuk menarik minat pelajar dalam penggunaan teknologi didalam hidup mereka. Terdapat enam modul didalam sistem ini iaitu eksperimen, peta minda, kuiz, permainan, terminology, dan bantuan. Methodology yang digunakan ialah penggunaan model ASSURE kerana model ini sesuai untuk pembinaan sistem pembelajaran. Didalam fasa analisis merangkumi tentang analisa pembangunan system, seperti penggunaan perkakasan dan perisian, pengumpulan data daripada pengguna, dan analisa system yang sedia ada. Perisian yang digunakan ialah Adobe Flash with action script 2.0, Adobe Photoshop, Window XP, dan Sound Forge. Pre and Post test dijalankan kepada pengguna dan mereka yang pakar didalam multimedia. Pre test dilakukan sebelum penggunaan sistem manakala post test dilakukan semasa penggunaan sistem. Keputusan yang diperolehi amat memberangsangkan kerana perbezaan antara penggunaan sistem dan tidak dapat dilihat dengan ketara. Oleh sebab itu, sistem ini sesuai digunakan untuk makmal kerana ia mampu untuk mewujudkan perasaan gembira and menarik minat pelajar untuk menggunakan teknologi didalam cara pembelajaran mereka.

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CHAPTER I

INTRODUCTION

1.1 Project Background

This courseware will be used by the educational industry, which will be focus on the form three students for science subject. As we all know, in the educational industry, they still not provide a lab e-learning courseware for lower form, they only provide a courseware for the theory of the subject without any animating on the lab, hence student only can learn the theory but cannot practice it by their own, because there is no practical courseware has been produce for lab. This courseware will proposed the way to do the experiments which they have to work by their own event it is not in the lab which they can feel as in the lab, expected result, material and apparatus, quiz, terminology and also voice of coordinator so the student will feel friendly when using it. This lab courseware is more to the lab assessment, they can try and error while doing the experiment. The experiment that will be cover on this courseware is from the chapter seven, electricity, to differentiate between parallel and series circuit which is taken from form three syllabuses.

This standalone e-learning courseware can be use to the whole school in Malaysia as it is follow the syllabus from the ministry of education. Besides that, the urban student also will get the same level of study as a boarding school as this courseware needs to play with a technology properties to work. So, all the form three student and science teacher can implement this method to make them easy and more understand about the topic that will be cover. This courseware was developed to help students more understand about the concept of science as it is presented in interactive animation, games and quizzes as it follows the Teaching and Learning of Science and Mathematics in English Programmed, (PPSMI) introduced by Ministry of Education Malaysia. It will deliver in the Compact Disc (CD) so it will easy to carry everywhere. The score for every assessment that have been done also will be recorded for the students and also references.

Student will get to know to do the science experiment by following the instruction and the animation that will be included in the courseware, plus they will try to find out the result by their own way, which means they will learn more, easily catch up the expected result from the experiment, they will learn about lab material and apparatus, and also quiz to challenge their understanding of the experiment. This courseware provided by the voice of the coordinator to make student feel like they learn with a teacher beside them.

By using the courseware, it is more interactive, and research has been done by Gregory L.A. (1995), the result of the research is as shows in figure 1.1, which is the research on interactive videodisc versus live instruction.

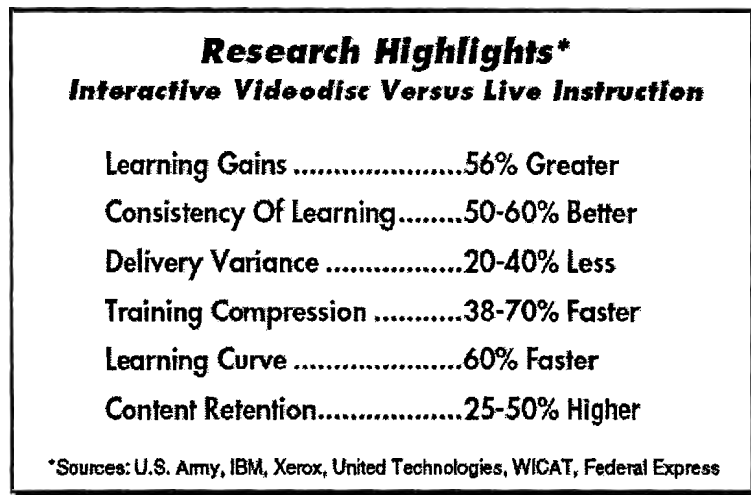


Figure 1.1: Research Highlight Interactive Videodisc Versus Live Instruction (Gregory, 1995)

According to Gregory (1995), we can see that in the field of learning gains, students will gain knowledge better than using traditional approach, which means knowledge can get more by using courseware. Consistency of learning also will be increases to 50 -60 % better than traditional approach. Delivery variance is to measure how consistently the delivery media presented the content from learner to learner or class to class. That is mean, student can understand better when using courseware as they will less asking for misunderstand. Training compression and learning curve is to show that how much faster user done their work using courseware and now it provided the work can be done and understand faster than usual approach. And the last one is, content retention is to show how long the memory of the study can be saved, and now it shows that long term memory can be used when using the interactive assessment courseware.

From the research that have done, from interviewing with two teachers from Sekolah Menengah Kebangsaan Ayer Keroh, Melaka, they also

saying the same thing, which are these courseware or e-learning study skill can make student feel enjoy to learn and they will easily understand when using it. It is because, the elements included in the courseware really make them interested to explore it.

1.2 Problem Statements

As we all knew, the courseware that provide nowadays is not developed for the lower form in terms of lab experiment. From the research that have been done, three teachers from the secondary school who had teach for lower form student, result of the interview is student needs courseware that illustrate the experiments environment. So, the development of this courseware really hope can help these students to make better performance for their examination, and more understand in their study. This lab courseware will be provided with the lab assessment so that, student can try and error while doing the experiment in the courseware. They also will get additional information about what those have been done. Digital educational technologies promise increased power of investigation, but are likely to do little more than compound the confusion unless critically understood and distinguished from their subjects of investigation. These descriptions and explanations are used to examine and raise concerns about the application of current educational technologies, all the while exposing several epistemological fallacies about those technologies. Recommendations are made to aid students and teachers in distinguishing tools from tasks an epistemological discipline so that tools or technologies will appropriately serve as "means" to a subject's investigation, not as ends (Beatham, 2009).

Most of the study style nowadays is too bored, there is no interesting interactivity between students, so a learning courseware will try to build up

the interesting in the student feel. As this courseware will provide with the game and assessment, student will feel more interesting to study as they can do everything by their own even without the guide from teachers, they can play with all the apparatus and material that provided in the courseware. This is also to make students familiar with the technology, as not all the students always play with computer, so the development of interactive courseware can make them used and apply technology in their life especially in their study. The concept of fun and interactive is provided can give a better effect to physiological and psychological to people event children or adult. They will learn and understand something more faster (Lloyd , 1996).

1.3 Objectives

There are several ideas on the reason of developing this courseware. The objectives that included are:

- **Development of courseware for from three students in science subject.**

Current style of study is oldie as they need teacher to monitor the experiment, via this courseware the experiment can be done alone. So student can be independent and they will try something new connection as this courseware is more to lab assessment. They will find new result and they will learn more than supposed to be learning in the actual lab.

- **To improve student's performance in learning**

Lab session will be done once for each experiment, so student cannot easily remember the result from the experiment especially for those who are failed when doing their experiment. Besides that, for weak student, maybe the time given on completing the experiment in the lab is not enough for them. Using this courseware, they will easily remember the way to do the experiment and also got result with illustration of animation. They will also not need to rush on doing the assessment and do it repeatedly, and it will show the result at the end of the assessment result from what that they have been done.

- **To provide information technology exposure**

Not all students know the current technology use, especially from urban, so using this product can produce children that familiar with e-learning concept so they will love working with technology. It will also follow the government mission 2020, to produce generation with technology mind.

- **More interesting with the multimedia elements added.**

Apart from using book, it is not animated and look boring, but courseware will provide with the animation to entertain them doing experiment. They will feel more interesting to do the assessment as they can try and error without effecting true life. It is also not danger to be used compared on playing with the actual apparatus that might be danger to them.

- **As a tool for teaching and learning process.**

To help Science teacher easily teaching their student by using this courseware so student can easily understand the experiment. They also can try more that should be learning by using this courseware.

1.4 Scope

The scope of this courseware project can be divided by two which are consumer scope and system scope. In the field of the consumer scope, the target user of this courseware is for form 3 student that follows the Ministry Education Malaysia syllabus, science teacher, and educational industry. This courseware will only cover the experiment for chapter seven in Science subject which is electricity. The main focus is to differentiate between parallel and series circuit. It is only focus on this chapter because from the research that have been done, with the interviewed of form three teacher, it shows that student is too difficult on differentiate between parallel and series circuit.

In the field of the system scope, the courseware will cover assessment of lab module for parallel and series circuit on this chapter, quiz at the end of the lab, game and teacher's voice as a guide to student. There is also a link for the student to get more information about their study in the internet as if they have an internet connection. Sound also will be provided for the user, so that they can listen to the teachers voice, so it will not make them feel boring while using the system. Buttons provided will help user navigate to use the courseware. The result for the quiz also can be saved in the database. This courseware will be delivered via Compact Disk (CD) so it easy to be used and can bring everywhere.

1.5 Project Significant

Students will get benefits from this courseware, as it also can be used by other lower form not just form three student. They can make an early study before reaching the next level by using this courseware. Besides that, they can make fast study, before entering the lab. Hence, they will get more information about what they have learned. Moreover, it will helps science teacher to teach their student more easily. If the lab apparatus is not enough, the can used this courseware to do the lab experiment. Education industry also will get benefits, as the mission of PPSMI. It also will reduce the cost for material and equipment, as student can use the courseware that completed with lab assessment, they will feel like they are in real laboratory.

If the development of this courseware has reach the successful, it will give advantages to students, teacher and education industry. Student also will not be boring in their study, and they would not feel frustrated if the experiment they done do not get the good result, but using this courseware they still can do the experiment, and can see the result. Plus, they will get more result, which can be implementing in their examination. Teacher also, will find out that teaching learning will become easier, as students can do the assessment before entering the lab session.

1.6 Conclusion

As a conclusion here, this lab courseware which provided with the lab assessment will help student to make their own experiment. They will find out, what will happen if they do by their own experiment. Besides they will

learn more, plus it will built the feel to be interested on trying something new and make the scientific skills be better. This courseware will also provided with the quiz, to test students understanding, game to make them feel enjoy while using the courseware, and voice of teacher as they will feel teachers beside them. It will be delivered via CD as it easily to bring everywhere and ease to use. The purpose of the lab courseware also is to attract students using technology and implement it in their life. Next task is about the methodology that will be used.