DEVELOPMENT OF PROTOTYPE MOBILE PHYSIC APPROACH – COMPARISON BETWEEN TRANSVERSE WAVES AND LONGITUDINAL WAVES

NORAMIRAH BINTI ZAINAL ABIDIN @ JAAFAR

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Saya : NORAMIRAH BINTI ZAINAL ABIDIN @ JAAFAR

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Alamat tetap : NO 4716, Kg Baru Buluh Gading, Manir 21200 Kuala Terengganu,

Tarikh : 23/6/08

(TANDATANGAN PENYELIA)

En. Ibrahim bin Ahmad
Nama Penyelia

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Development of Prototype in Mobile Physics Approach of comparison between transverse waves and longitudinal waves

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

STUDENT: _____ Date: 23/06/08

(NORAMIRAH BINTI ZAINAL ABIDIN @ JAAFAR)

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(EN. IBRAHIM BIN AHMAD)

DEDICATION

This thesis is dedicated to my parents, who gave me endless support throughout my whole life in no matter what I do. It is also dedicated to my friends.

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ABSTRACT

The thesis of Mobile Physic approach of comparison between transverse waves and longitudinal waves is to fulfill the requirement for final year student of session 2007/ 2008. This project is mobile learning for educate physic term of momentum and collision among secondary student between 16-17 years old. The main purpose to develop this mobile physic is to make learning in anytime and anywhere. This report concludes for the topic of introduction of the project, the literature review, and project methodology, analysis of the project, prototype design and detailed design, implementation, testing, observation on weaknesses and strengths of the project and lastly project conclusion. Research is made in early stages of the project. It involves research about the current system scenario of learning physic. Analysis had been done by making observation on internet of existing market. Main software used to build this mobile physic is Adobe Flash CS3 Professional and Flash Lite player. There are lots of experience and knowledge gained in developing this project. As a conclusion, this report show all the researches and developing that achieve by student.

ABSTRAK

Tesis bagi fizik mobile perbandingan antara gelombang membujur dan gelombang melintang dibangunkan bagi tujuan memenuhi syarat pengajian untuk pelajar tahun akhir sesi 2007/ 2008. Projek berasaskan pembelajaran mobile perbandingan antara gelombang membujur dan gelombang melintang dibangunkan khusus kepada para pelajar menengah yang berada dalam lingkunan umur 16 hingga 17 tahun. Tujuan utama projek ini dibangunkan adalah supaya para pelajar dapat belajar fizik pada bila-bila waktu dan tidak kira berada di mana jua. Laporan ini merangkumi semua bab yang terlibat iaitu pengenalan projek, kajian literasi dan metadologi projek, kajian analisis, rekabentuk awalan dan prototaip, implementasi dan ujian, kekuatan dan kelemahan hasil kerja serta kesimpulan dan cadangan bagi keseluruhan projek. Kajian telah dilakukan semasa peringkat awal projek ini dibangunkan. Ia melibatkan kajian terhadap perjalanan sistem semasa untuk pembelajaran fizik. Analisis dilakukan berdasarkan kaedah pemerhatian dan soal selidik terhadap pasaran terkini. Perisian utama yang digunakan untuk membangunkan projek ini adalah Adobe Flash CS3 Professional dan Macromedia Flash Lite. Pelbagai pengetahuan serta pengalaman dapat ditimba semasa membangunkan projek ini. Kesimpulannya, laporan ini memaparkan keseluruhan kajian dan pembangunan projek yang telah dikecapi oleh pelajar.

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CHAPTER I

INTRODUCTION

1.1 Project Background

Information technology (IT), as defined by the Information Technology Association of America (ITAA), is "the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware." IT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit and retrieve information, securely.

Figure 1.1 Multimedia Super Corridor logo

In Phase 1 (1996-2003), MSC Malaysia was successfully created. Every milestone set for Phase 1 was surpassed. In Phase 2, a web of similar corridors will be established in Malaysia, and a global framework of cyberlaws will be passed; furthermore at least four of five intelligent cities will be linked to other global cities worldwide. In Phase 3, Malaysia will evolve into one Multimedia Super Corridor. An International Cybercourt of Justice will be established in MSC Malaysia and 12 intelligent cities will be linked to the global information highway.

Mandated to oversee the development of MSC Malaysia is the Multimedia Development Corporation (MDeC) based in Cyberjaya. Initially a Government-owned corporation but now incorporated under the Companies Act, MDeC facilitates applications by multinational and local companies to re-locate to MSC Malaysia. It globally markets MSC Malaysia, shapes MSC Malaysia-specific laws, policies and practices by advising Malaysian Government and standardises MSC Malaysia's information infrastructure and urban development.

Mobile learning, or M-learning as it is often called, is a relatively new tool in the pedagogical arsenal to assist students and teachers as they navigate the options available in the expanding world of distance learning. M-Learning is defined as "the delivery of training by means of mobile devices such as Mobile Phones, PDAs and digital audio players, as well as digital cameras and voice recorders, pen scanners" and other mobile device.

The availability of mobile and wireless devices is enabling different ways of communicating. Mobile communications are no longer restricted to companies that can afford large investment in hardware or specialised software. Individuals now have easy and inexpensive access to mobile telephony, and the cost of mobile access to the Internet is steadily reducing. Mobile technologies have enabled a new way of communicating, typified by young people, for whom mobile communications are part of normal daily interaction, who are 'always on' and connected to geographically-dispersed friendship groups in 'tribal' communities of interest.

This research aimed to test the validity of news and information media comment on mobile communications, which indicated that the 'always on' generation is, to a large degree, driving development of consumer communication technologies – as can be seen from the rapid adoption of Short Message Service (SMS). SMS is texting via mobile phones – also known in some countries as 'cell phones' – which was unexpectedly adopted by the 'text' generation, and became a pervasive communication tool in its own right. The popular and business press also reported that mobile and professional employees are driving the convergence of Personal Data Assistants (PDAs) and telephony, and of 'smart' phones (that provide both telephone and Internet services) through their demand for greater integration of online information, data management, and voice, image, and text communications. The same source shows that industries with specialist needs (such as mobile barcode readers in supermarkets and electronic courier delivery confirmations) are another significant driver of mobile product development.

The three drivers described above – consumers (particularly young consumers), mobile professionals, and specialist industries – have created strong demand, which is reflected in the increasing rapidity of development of new mobile communication and data management technologies. The trend toward convergence of applications, the ubiquitous ness of mobile phones, and the continuing demand for smaller, more powerful devices indicates that mobile technologies are, indeed, mainstream.

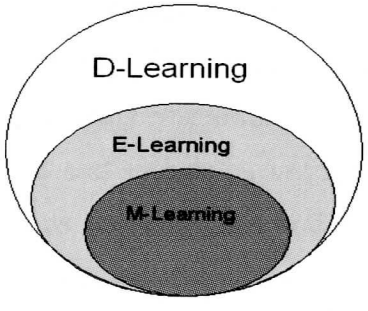

Figure 1.2 The of mobile learning is the part of e-learning and d-learning

Source: m-Learning: Positioning educators for a mobile, connected future, Kristine Peters, Flinders University, Australia

This project is about developing a multimedia m-learning application that demonstrate and promote the use of various multimedia learning applications through affordable mobile device. The target users of this project are student form 4 and 5. Elements of audio, graphics, animation and text will be applied in this project.

They have learnt this topic in school during their physics classes. Thus, it is a way to practice and improve their knowledge on what they have learnt in school through mobile technologies. There will be numbers of them to answer and marks will be given for every correct answer.

M-learning products with easy-to-use tools that let you create your own content, and a growing library of ready-made resources, we offer an extensive selection of m-learning products. SMS quiz author Engage and excite your learners with SMS quizzes.

1.2 Problem statements

This project is about developing the m-learning product of physics form 4 and 5. The traditional way such books are not attractive as it is not interactive and it fails to attract student to gain interest with that way. We can see there are lots of CD courseware and e-learning for students nowadays. Many courseware and exercises books are sold in the market but there are a few weaknesses such as inconvenience factor where it cannot be accessible from anywhere such as bus and class and it depends on the physical location, the people and the tools that are available when to use them.

In school, teachers use CD as a supporting material in their learning activities but the schedule of each class to use the computer laboratory is limited. Each class normally uses the computer laboratory once or twice in a month. In this case, students will get to learn the subject using computer for a few topics only.

1.3 Objective

- To develop an educational physic mobile learning
- To develop the physic mobile learning to learn about wave
- To apply the practice and drill learning technique for developing the multimedia project in how to learn about wave physic by secondary school students.
- To produce learning tools become more interactive.

1.4 Scope

The scope of the project is only applied on three areas: specific users, specific platform and specific functional. Each area is described as below.

1.4.1 Specific User

The target users are between the ages 16 to 17 years old. Teachers and parents can used the application in helping their kids understand better in this topic. For parents, it is a great way to explore the subject together with their kids. For teachers, it is a simple way of engaging student in an activity that will help them learn and process information about this chapter.

1.4.2 Specific Platform

User must have mobile technologies which are handphone that has been installed with symbian OS, the operating system for handphone such as Symbian OS that is use in phone – Nokia N90. Symbian OS is the world-leading open operating system that powers the most popular and advanced smartphones today from the world's leading

handset manufacturers. The Nokia N90 is based on Symbian OS Version 8.1 and user interface S60.

1.4.3 Specific Functionality

This project will cover only one chapter in the standard one physics syllabus: "Comparison between transverse waves and longitudinal waves" Syllabus of physics subject for form 5 student according to the Ministry of Education. The selected topic is chapter 6: Wave. The accelerated learning techniques will be applied in this project to enhance the students to understand the topics that will be explained later in chapter 2.

1.5 Project Significance

The project has brings some benefits and advantages to the user of the system. It will become a new way in learning as it can give a new experience for student learning physics using mobile technologies.

Handphone usually is brought together with us. Using handphone, student can access this application from anytime and anywhere such as bus, class or home. It can be used during classes (with teacher's permission) and even at home where parents can explore the subject together with their children.

1.6 Expected Output

The output will be an application that will be designed specially for mobile devices with user-friendly interfaces and easy instructions for student to understand. This project is important in helping student to improve their thinking and learning

technique can be applied can be applied into multimedia application to help teachers, parents and students to improve the way of teaching and learning.

1.7 Conclusion

In a conclusion, in this chapter of introduction defines the subject of the project to be developing. It also outlines the purpose and objective for the project to be carried out. As a result, give the readers briefly overall of the m-learning approach of physics term project that will be perform.

It purposes to develop the physics term of momentum and collision in the real world application that will helps student to learn better and more effectively. As mobile devices enable learning in anytime and anywhere access to resources or quizzes. Furthermore, the mobile devices are portable to bring to anywhere.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

In writing the literature review, the main purpose is to convey to reader what knowledge and ideas have been established on a topic, and what the strengths and weaknesses are. As a piece of writing, the literature review must be defined by a guiding concept. It is not just a descriptive list of the material available, or a set of summaries. Literature review or research is crucial because it provide designer to enhance understanding about the project.

A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period. A literature review can be just a simple summary of the sources, but it usually has an organizational pattern and combines both summary and synthesis. A summary is a recap of the important information of the source, but a synthesis is a re-organization, or a reshuffling, of that information. It might give a new interpretation of old material or combine new with old interpretations. Or it might trace the intellectual progression of the field, including major debates and depending on the situation; the literature review may evaluate the sources and advise the reader on the most pertinent or relevant.

Literature review is the phase where all the processes happen such as searching, collecting and analyzing that have been published by researchers. All the processes can

be completed through relevant sources such as books, journal, and technical report, proceeding conferences, anonymous reference, web pages and others. The purpose of the literature review is to convey readers what knowledge and idea have been established on a topic and what are their strengths and weaknesses. In this literature review, it will study on how to develop and things to be considered when creating an interactive m-learning application using mobile technologies, multimedia elements used in the system, portability and accelerated learning technique.

Project methodology is a way to use all available approaches, technique and tools to be used in achieving predetermined objectives. In that phase it will actually describe the activities that may do in every stage of works. Instructional design is the approach that will be used for the project.

The hardware and software specifications that will be used will be discussed and explains briefly in this chapter and the topic is under the project requirements.

2.2 Domain

The domain for this project is education and learning using mobile learning technology. Based on the domain that has been chosen, the topic of this project is related to the syllabus of physics subject for form 5 student according to the Ministry of Education. The selected topic is chapter 6: Wave.

2.3 Existing Application

Physics education refers both to the methods currently used to teach physics, and to an area of pedagogical research that seeks to improve those methods. Historically,