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The multimedia courseware for solar system / Sucilia Devi
Muniandy.

**THE MULTIMEDIA COURSEWARE FOR
SOLAR SYSTEM**

SUCILIA DEVI A/P MUNIANDY

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


**FACULTY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA**

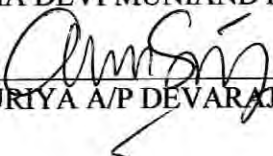
ADMISSION

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DEDICATION

To my beloved parents and friends....

ACKNOWLEDGEMENT

I wish to extend my grateful appreciation to all those who have contributed directly and indirectly to the preparation of this project. Especially I would like to extend my thanks to Miss Anusuriya Devaraju, Project Supervisor, for giving me assistance to complete this project successfully and also for her advice, guidance and encouragement throughout the preparation of this project.

I would also like to express my appreciation to the management of Faculty of Information and Communication Technology of Kolej Universiti Teknikal Kebangsaan Malaysia for their precious efforts in setting up the Project Sarjana Muda (PSM) as a pre-condition in order to graduate in Bachelor of Computer Science. Besides, I would like to thank the PSM Committee for their hard work in giving briefing and preparing the PSM report guidebook.

I also wish to express my sincere thanks to my parents, family members that constantly giving me support, encouragement, inspiration and motivation until at the end of my project.

Then, my heartiest gratitude is also to SMK Convent Taiping science teacher, Mrs. Choo Bee Theng for her willingness to provide related information regarding solar system and system requirement. I believe that the information will be a valuable input for the development of my project. Last but not least, special thanks to all my fellow friends especially my course mate who assist each other to complete each one's PSM. Thanks to their willingness to share ideas and concern with me.

ABSTRACT

One of the most rapidly changing and exciting areas of education today is the development of computer-based teaching materials or courseware. The purpose of the project is to develop an educational courseware that presents a vivid multimedia adventure unfolding the splendor of the solar system. The targeted end-users of the courseware will be high-school classes, as well as non-science majors in introductory astronomy classes. The courseware enables students to discover the facts and phenomena of solar system through an archive of text, graphics, audio, videos, 2D and 3D animation clips. The courseware also includes self-assessment components can be integrated to provide the student with immediate feedback. Macromedia Authorware, Macromedia Flash MX, 3d Studio Max and Sound Forge have been used to develop this courseware. Besides that, ADDIE model have been used as the methodology model for this courseware. The courseware had been tested among Form 3 students as well as the teachers. The development of courseware is important in offering enhanced exploration and educational enjoyment of the solar system and beyond. It provides a comprehensive self-learning and interactive material to the students via multimedia technology.

ABSTRAK

Bidang pendidikan berkembang pesat selaras dengan perkembangan teknologi maklumat. Salah satu daripadanya ialah melalui pembangunan perisian berbentuk aplikasi pendidikan menggunakan komponen multimedia. Projek multimedia ini dibangunkan untuk membantu pengguna dalam mendalami sistem suria kita dengan lebih lanjut. Ini adalah projek pembelajaran berasaskan CDROM. Pengguna seperti pengajar yang mengajar matapelajaran sains boleh menggunakan CD ini kerana ia lebih berkesan daripada pembelajaran menggunakan buku. Projek ini mengandungi tutorial dimana pengguna dapat mengetahui tahap pengetahuan mereka dalam topic ini. Projek ini dibangunkan menggunakan antaramuka pengguna yang sesuai dan menarik. Selain itu, perisian seperti Macromedia Authorware, Macromedia Flash MX, 3d Studio Max dan Sound Forge telah digunakan untuk membangunkan projek ini. Konsep ADDIE model juga telah diaplikasikan dalam projek ini. Projek ini telah diuji dikalangan pelajar-pelajar dan guru Tingkatan 3. Projek multimedia ini amat berguna dalam menyampaikan fakta mengenai sistem suria serta menjadi CD pembelajaran yang amat berguna kepada pengguna.

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LIST OF ABBREVIATIONS

1. RAM Random Access Memory
2. HCI Human-Computer Interaction.
3. PSM Project Sarjana Muda.
4. LMS Learning Management System
5. LCMS Learning Content Management Systems

CHAPTER I

INTRODUCTION

1.1 Project Background

The solar system consists of a central star (the sun) and the bodies that orbit it. These bodies include nine planets and their 61 known moons, asteroids, comets and meteoroids. The solar system also contains interplanetary gas and dust. The entire solar system orbits the centre of our galaxy. A galaxy is made of billions of stars, dust and gas, all held together by gravity. Galaxies are scattered throughout the universe [7].

Currently, the school teachers are using the text book as the material of teaching to explain the entire solar system including the stars, the phenomena of eclipse and the galaxies to the students. This is not an effective way to explain the solar system as the students will find it hard to understand the topic using words and static pictures from the text books.

The purpose of the project is to develop an educational courseware prototype that presents a vivid multimedia adventure unfolding the splendor of the Solar System. The targeted end-users of the courseware will be high-school classes, as well as non-science majors in introductory astronomy classes. The courseware enables students to discover the facts and phenomena of the Solar System through an archive of text, graphics, audio, videos, 2D and 3D animations.

1.2 Problem Statements

There are some weaknesses and problems from the current teaching method. The problems and weakness are listed as below:

1.2.1 Inefficient teaching material

Currently, teachers do not implement an effective teaching method. Using the textbooks, the teacher cannot give a good explanation regarding complicated topic like solar system to the students.

It is a time consuming for the teachers to explain the term and scientific facts involving the solar system and galaxies to the students. Moreover they need to repeat the topic if the students not clear enough regarding this topic. Therefore this project can help the teacher to explain this topic better in shorter period using the attractive images, animation clips, sound and narration.

1.2.2 Hard to understand the topic

The topic regarding solar system and galaxies is very complicated and hard to learn and understand. By just using book, it cannot guarantee the student to understand the topic clearly. Thus, the multimedia courseware project on solar system and galaxies will let the student understand the topic easily since the topic will be described, explained and shown with attractive animations and images. There will be also tutorial section to examine the student's knowledge on the presented topics.

1.2.3 Lack of Interactivity

Most of the current website or books which give information about solar system explain it using static pictures only. There is no sound or narration involves. This is not an effective way in delivering information about solar system to the user because there is lack of interactivity such as there are less animation, narrative text, games and tutorial.

1.2.4 User Centered Learning

Most students are too dependent to books besides teachers to gain knowledge on related topic. Student needs an effective self-learning material overcome this problem. So, this multimedia courseware will provide a comprehensive self-learning to the students which include all the information regarding solar system and self-review tutorial.

1.3 Objectives

The multimedia courseware on solar system and galaxies is developed to achieve a certain objectives to overcome the problem from the existing teaching material. Here are the objectives of the new teaching material:

1.3.1 To give a better understanding on solar system

Since this is a broad and complicated topic, the students depends 100% on teachers' explanation to have a good understanding on this topic. If the teacher did not explain component of the solar system clearly, it will cause the student understand the topic less. Hence, the proposed multimedia courseware project that will be developed using the multimedia elements such as images, animation clips and sound will give a better understanding regarding the solar system to the students.

1.3.2 To attract student's concentration

This complicated topic requires the students to remember many term and scientific facts. It is not easy for the students to memorize all of it from static information. So, the courseware will help to improve and strengthen the students' memory and concentration throughout interactive and attractive content presentation. This is because the main aim of this multimedia courseware project is to add in interactive multimedia elements such as sound, images, animation, narration, tutorial and games. This will make the complicated topic more interesting and fun to be learned by the student.

1.3.3 To provide a comprehensive self-learning material

Students do not have to depend on books and teachers to learn this solar system anymore. This multimedia courseware for solar system is developed to provide a self-learning material to the students. It contains all the facts about the solar system and have tutorial section which the user can examine their level of understanding regarding the solar system. Students can use this multimedia courseware to learn more about the solar system independently.

Furthermore, it is time consuming to make sure the students really understand the solar system topic using the explanation from the books and teachers. Teachers can save the teaching time by using the multimedia courseware project because it is an effective teaching material that will help the teachers to explain the solar system better. This will save the teaching time and students will have a good understanding in the related topic in a shorter period.

1.4 Scope

1.4.1 Data

The solar system is a broad topic including the stars, galaxies and the phenomena of eclipse. The project will be carried out the whole term, facts and phenomena of the solar system based on the Form 3 Science syllabus. Besides that multimedia component such as audio, video, text, graphic, 2D and 3D animation will be used in developing this courseware.

1.4.2 User

The targeted users of this project are Form 3 students and as well as the teachers. This courseware also can be used by any individual who interested in solar system topic.

1.4.3 Functionality

From the multimedia courseware project, user can easily gain better understanding regarding the solar system that will be explained in sound, images, 2D and 3D animation clips and narration. Besides that, at the end of the courseware lesson, the user can test their level of understanding with the tutorial questions. It will make sure the user really understand the topic well.

The multimedia courseware project not only focused on solar system, but the entire universe. It will also provide some extra valuable information regarding this topic to the user that not included in the Form 3 Science syllabus. For example, collection of videos and photo gallery regarding the solar system.

1.5 Project Significance

The multimedia courseware project will be developed using multimedia elements such as sound, images, 2D and 3D animation clips and narration to attract the users' attention regarding the solar system topic. This will be an effective way to present the solar system to the user.

The project will use a user friendly interface to let the user easily control, interact and access the content of multimedia courseware. It will allow all level of user to use the courseware easily.

Moreover, this multimedia courseware project will be provided with the tutorial section to the user. At end of the tutorial section, the user can know their score. In this way, the user can know their level of understanding regarding the topic.

1.6 Expected Output

The proposed multimedia courseware project is an offline training or education that will be delivered in CD-ROM. The project will have all the facts, terms and phenomena regarding the solar system and galaxies based on the form 3 science syllabus. It will be easy to be used by different level of user (student and teacher) as it is user friendly. Moreover, the project will provide a high-quality and up-to-date teaching material in the related topic. The courseware will have Flash player plug-in for the user to view the content.

1.7 Conclusion

The development of multimedia courseware for solar system and galaxies will be developed and expected to replace the current teaching material using book. This courseware project will be developed to achieve a certain objectives problem such as attract students' concentration, give a clear view on solar system, save time for a better effective way of learning and provide a self-learning material. The multimedia courseware on solar system and galaxies will improve the process of teaching and learning among teachers and students.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Literature review is a comprehensive survey of publications in a specific field of study or related to a particular line of research, usually in the form of a list of references or an in-depth review of key works. A specific type of serial known as an annual review is devoted solely to the publication of literature reviews. A literature review is conducted to further confirm the terms, definition and its characteristic. Both local and international literatures were reviewed. Through the literature review characteristics may or may not be confirmed, as sometimes no supporting literature can be found. Recent research findings are the most appropriate literature sources for the review [8].

The project methodology relates to the tools, technique and approaches used to achieve the project's motive. Whereas, hardware and software requirements are the technical requirements needed during the development of multimedia courseware.

2.2 Fact and Finding

Literature review will guide the researcher on the early stage of a multimedia courseware's development. Fact and finding play a big role of understanding the whole courseware. It will guide the researcher on the appropriate ways to develop the multimedia courseware. Several facts and finding been carried out for the development of the multimedia courseware for solar system. This includes:

2.2.1 Definition of Solar System [10]

The solar system consists of an average star we call the Sun, the planets Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. It includes: the satellites of the planets; numerous comets, asteroids, and meteoroids; and the interplanetary medium.

The planets, most of the satellites of the planets and the asteroids revolve around the Sun in the same direction, in nearly circular orbits. When looking down from above the Sun's north pole, the planets orbit in a counter-clockwise direction.

The planets orbit the Sun in or near the same plane, called the *ecliptic*. Pluto is a special case in that its orbit is the most highly inclined (18 degrees) and the most highly elliptical of all the planets. Because of this, for part of its orbit, Pluto is closer to the Sun than is Neptune. The axis of rotation for most of the planets is nearly perpendicular to the ecliptic. The exceptions are Uranus and Pluto, which are tipped on their sides [11].