THE DESIGN OF MULTIMEDIA E-BOOK FOR SECONDARY SCHOOL: CHEMISTRY IN MEDICINE AND HEALTH

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JUDUL: **THE DESIGN OF MULTIMEDIA E-BOOK FOR SECONDARY SCHOOL: CHEMISTRY IN MEDICINE AND HEALTH**

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THE DESIGN OF MULTIMEDIA E-BOOK FOR SECONDARY SCHOOL: CHEMISTRY IN MEDICINE AND HEALTH

NUR ANISS BINTI NORDIN

This report is submitted in partial fulfillment of the requirements for the Bachelor of [Computer Science (Software Development)] with Honours.

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2020/2021

DECLARATION

I hereby declare that this project report entitled

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

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I hereby declare that I have read this project report and found this project report is sufficient in term of the scope and quality for the award of Bachelor of [Computer Science (Software Development)] with Honours.

SUPERVISOR : _____ Date : _____

([NAME OF THE SUPERVISOR])

DEDICATION

This report is dedicated to my beloved parents, friends and my supervisor who consistently gave me support and help me in completing my studies.

ACKNOWLEDGEMENTS

Bissmillahirahmanirrahim,

First, I would like to thanks Allah S.W.T for give me the strength and good health to complete the whole process of this project. Without blessings, this project cannot be developing and complete.

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ABSTRACT

Multimedia e-book for secondary school: *Chemistry in Medicine and Health* is a multimedia e-book that was designed to help the students to grasp the subject of Chemistry in Medicine and Health more thoroughly and feel interested in studying. With this e-book, the student is easy to comprehend and review at the end of school time. Moreover, during this COVID-19 pandemic, the student movement would still be minimal and this might lead to a large number of students being left behind. The purpose of this project is to ensure that students receive adequate knowledge, thoroughly understand the subject they have learned, and can apply it in real life. This e-book provides interactive widget such as video, pop-up image, quick quiz that can help the students to catch up everything they have learned and remember it. The platform uses to develop this e-book is Adobe InDesign that can create various type of e-book and multimedia content. Next is Adobe Illustrator which help in develop the interactive background. The research method that has used for this project is the Rapid Application Development Methodology. Rapid application development methodology enables developers to make changes, compete with trends in evolution and add new features of interactive textbook. The analysis of this project has been made by comparing the other product based on the design and content that need to improve when develop this interactive book for effectiveness in learning chemistry especially for school students. These results are the findings from questionnaire that was conducted for target user. Some improvement of this interactive textbook need to added for better performance in future.

ABSTRAK

E-book multimedia untuk sekolah menengah: Kimia dalam Perubatan dan Kesihatan adalah kandungan multimedia yang direka untuk membantu para pelajar memahami subjek Kimia dalam Perubatan dan Kesihatan dengan lebih mendalam dan merasa berminat untuk belajar. Dengan e-book ini, pelajar mudah difahami dan dikaji selepas waktu persekolahan. Lebih-lebih lagi, di musim pandemik COVID-19 ini, pergerakan pelajar masih minimum dan ini mungkin menyebabkan sebilangan besar pelajar ketinggalan. Tujuan projek ini adalah untuk memastikan bahawa pelajar mendapat pengetahuan yang mencukupi, memahami dengan teliti subjek yang telah mereka pelajari, dan dapat menerapkannya dalam kehidupan sebenar. E-buku ini menyediakan widget interaktif seperti video, gambar pop timbul, kuiz pantas yang dapat membantu pelajar mengejar semua yang telah mereka pelajari dan mengingatinya. Platform yang digunakan untuk mengembangkan e-book ini ialah Adobe InDesign yang dapat membuat pelbagai jenis e-book dan kandungan multimedia. Selanjutnya adalah Adobe Illustrator yang membantu mereka latar belakang interaktif Kaedah penyelidikan yang telah digunakan untuk projek ini adalah *Rapid Application Development Methodology*. *Rapid application development methodology* membolehkan pembangun membuat perubahan, bersaing dengan trend evolusi dan menambah ciri baru buku teks interaktif.. Analisis projek ini telah dibuat dengan membandingkan produk lain berdasarkan reka bentuk dan kandungan yang perlu diperbaiki semasa membangunkan buku interaktif ini untuk keberkesanan dalam pembelajaran kimia terutama bagi pelajar sekolah. Hasil ini adalah dapatan dari soal selidik yang dilakukan untuk pengguna sasaran. Sebilangan penambahbaikan buku teks interaktif ini perlu ditambah untuk prestasi yang lebih baik pada masa akan datang.

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LIST OF ABBREVIATIONS

FYP	**-**	**Final Year Project**

LIST OF ATTACHMENTS

CHAPTER 1: INTRODUCTION

1.1 Introduction

Nowadays, E-learning platforms have exploded in significantly in recent years, due to technological developments. The e-learning platform differed from the traditional classroom that people normally use for learning and teaching purposes. E-Learning conveys knowledge to students by using graphics and animated videos that make it easier for students to understand and adapt to the real world. The teaching and learning process is frequently challenged with tough situations beyond the educators' own experience, making the scenario or subject difficult to explain and even more difficult to grasp for students. Therefore, according to Saraso (2008), visual is one of the ways in which something is difficult to explain. One of the teaching tools that can be used by the teacher is using an interactive book.

By using this e-learning method, it is more interesting and beneficial in ensuring that students remain focused in their learning sessions. By just clicking the widget given, students will be able to interact with the information more interactively and have a better understanding of the subject matter. This interactive book (e-Book) also provides sound, animation, and good graphics. For quiz and exercise it will be conduct by using quiz widget. This will inspire students to complete the task and make it easier for them to recall the content. In addition, students will be able to describe topics and respond to some of the exercises at the end of each session without worry of making a mistake.

So, in my project, which was designed specifically for the Form 4 students who took the Science subject in secondary school, I want to make sure that these students will grasp the subject of Chemistry in Medicine and Health more thoroughly and feel interested in studying. With this e-book, the student is easy to comprehend and review at the end of school session. Moreover, during this COVID-19 pandemic, the student movement would still be minimal and this might lead to a large number of students being left behind. The purpose of

this project is to ensure that students receive adequate knowledge, thoroughly understand the subject they have learned, and can apply it in real life.

The multimedia content is designed to make it easier for students to understand and experience these subjects in an immersive and memorable way. As we know, this subject, Chemistry in Medicine and Health, is a subject that is very difficult for secondary school students. To learn about free radicals, antioxidant substances, health goods need a fascinating and accurate method of distribution. This e-learning approach can help students understand it quickly and take additional notes when reading and watching it.

1.2 Problem Statement

These days, students are more drawn to something more fascinating and straightforward to understand than textbooks, which is why textbooks are less effective in helping students achieve outstanding grades. With eBooks simply requiring a device to use, they are much more convenient to use than the standard paperback books. Besides, this technique can aid the instructor in the teaching strategies in an interactive way.

These multimedia e-books are developed for students who are taking science subjects in secondary school and it focuses on Form 4 Science (Chapter 10: Chemistry in Medicine and Health). I preferred this title because considering the perspectives of school students on chemistry-related topics is tough. Students may become bored and unwilling to concentrate if words are difficult to comprehend and memorize. Therefore, by using e-books I can design multimedia content that can help students understand the subject by illustrating the substance of the topic.

Hence, using e-books as an interpretation tool will help students to understand the benefits of e-books and correctly use them. E-books are also one of the simplest and fastest platforms for students to do a quick review before they do any exercises. Also, this project will aware students of the uses, and benefits of e-book.

1.3 Objective

To ensure that the project works correctly, the project's objective must be clearly stated.

The objectives of this project are:

i. To study the features of e-books that can be apply in developing The Design of multimedia e-book for secondary school: Chemistry in Medicine and Health.
ii. To develop the multimedia e-book by using suitable software.
iii. To evaluate the effectiveness of the e-book.

1.4 Scope of the project

The scope of this project is focused on the two fields which are specific user and module or functionality.

1.4.1 Specific user

The target user for this project is Form 4 students in secondary school who are taking Science subject and it focuses on topics (Chapter 10: Chemistry in Medicine and Health). This interactive book can be uses in desktop version, make it very compatible for teacher and the student to use in their laptop and iPad. Aside from that, teachers may apply the learning tools as a guide to teach their students in more innovative ways.

1.4.2 Specific functionality

The specific functionality is to describe about the widget that have in this interactive textbook. This widget can help to interact students to learn this topics, Chemistry in Medical and Health. Table 1.1 shows the specific functionality.

No.	Module	Description
1.	Media	Allow users to watch the video included in this interactive book. Video is made and edited by the developer.
2.	Interactive	Allow users to touch the images, playing image with them to gain more information.
3.	Quiz	Allow assessment to be done to understand the level of understanding of the students.

Table 1.1 Specific functionality

1.5 Project significant

The project significant is an interactive book of Chemistry in Medical and Health for form 4 secondary schools' students who are taking this subject. This interactive book will assist the students to understand the content of the topic with the aid of simple explanation, animation videos, quiz and interactive widget. Parents also can simply use this e-Book at home to teach their children. Hopefully, this iBook will capture students' attention by assisting them in the learning process in a relaxed and enjoyable environment

1.6 Conclusion

The global COVID-19 epidemic has prompted innovative approaches to online teaching and learning. E-learning appears to be one of the safest and simplest ways to impart education for the acquisition of new skills. This chapter are explaining about interactive book for Chemistry in Medical and Health Form 4 students more about the project introduction, problem statements, objectives, scope, and project significance.

From the problem statement, this can help to come out with an objective for this project. There are three objectives that need to achieve the goal which are to study the features of e-Book that can be apply in developing The Design of multimedia e-Book for secondary school: Chemistry in Medicine and Health, to develop the e-Book by using suitable software and to evaluate the effectiveness of the e-Book. The user scope of this project is students in secondary students of form 4. The specific functionality for this iBook have a media, interactive, audio, quiz and gallery.

Next chapter will be discussing about the literature review and project methodology. This chapter will be show the previous project or product that has been discussed in relation to this project. The methodology applied to the development also will be explained.

CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This chapter discusses the literature review involved in conducting this project. To achieve the project's objectives and ensure that the process runs smoothly, a better understanding of the idea and approach is required.

Literature review is involved in collecting data from related published information and materials from anywhere example like internet, books, journals, published papers and so on. The result from finding will cover the objectives of this project. This chapter focus on finding the previous project, research and technique which related to the project, to prove that this project could really working and function well based on the previous evidence. Besides, this chapter also covers the project methodology to show the process and direction of the development and also the requirements such as software and hardware in order to develop the application.

2.1.1 Literature Review

Over the last decade, the e-learning business has grown at a rapid pace. As a result, an increasing number of students and businesses choose e-learning platforms over traditional classrooms. E-learning has been implemented within higher educations for the past years. In fact, online learning has become more popular (Shahzad et al., 2020) where universities all around the world, including Malaysia, do have their online learning portals to support day-to-day learning processes. A study conducted by Aboagye et al. (2020) stated teaching can be inside or outside the classrooms, the use of computer technology and the Internet is the main component of e-learning. However, another study by A. Pauline Chitra*& M. Antoney Raj (2018) proposed that the term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based learning. Many colleges have now acknowledged the importance of E-learning as an important part of the educational system. Due to its effectiveness as an alternative way of learning to the classroom teaching approach, several higher education institutions in Malaysia have

embraced e-learning. Online education opportunities for those who cannot attend or access the traditional method of education for one reason or the other. As a result, even before the outbreak of COVID-19, students were exposed to many forms of online learning, such as Massive Open Online Courses (MOOCs), distant learning, blended learning, and so on. The e-learning platform differed from the traditional classroom that people normally use for learning and teaching purposes. E-Learning conveys knowledge to students by using graphics and animated videos that make it easier for students to understand and adapt to the real world. Many colleges and universities have acknowledged the use of interactive video as a teaching medium as an alternative to or supplement to traditional classrooms. However, in compared to other developed countries' higher education institutions, this innovation is not being applied as effectively. While there is a larger awareness and availability of video content, its practical application is still questionable due to the association of videos with passive learning.

All of the above research examined the literature on e-learning in the subject of language teaching. Each of them took a different approach to e-learning and interactive video, whether it was to give a broad overview of how it is used in practice or to provide a larger framework for evaluating the use of interactive video in e-learning for educational purposes. However, a more thorough review of previous relevant research throughout the years is necessary to appreciate the use of e-learning in language teaching and what findings tell about the benefits and costs of using e-learning in educational settings.

2.2 Domain

2.2.1 E-Learning

Nowadays, technology is used in eLearning to ease, enhance, and expand educational material, access, and training progress monitoring. E-Learning, which began as a computer-based content delivery system for schools, is today used by a wide range of institutions, including major corporations, small enterprises, government, non-profits, and trade associations. The top industries using eLearning include Healthcare, Technology, Retail and eCommerce, Education, and Construction. Today, E-

Learning means much more than just delivering information. E-Learning is interactive and on-demand, and it is available on a range of digital platforms ranging from desktop computers to smartphones and other portable devices. This greatly enhances learning participation and engagement. E-Learning happens in a variety of ways, and a variety of terms are associated with it. For example, blended learning or hybrid learning, online learning and digital learning. Blended learning or hybrid learning involves ensuring competence by offering learning information across a variety of venues and styles over a long period of time. Face-to-face instructor-led classes, online modules and videos, self-study, and on-the-job training are all examples of blended learning. Online learning is referring to courses delivered online. These are modules that a user interacts with directly and feature material, interaction, simulations, and quizzes. These have also been referred to as Computer-Based Training (CBT) or Web-Based Training (WBT), while “eLearning” is a far more popular term that includes both. Digital learning is education delivered through a digital device in any environment, including classrooms, conference rooms, industrial plants, at a desk, or at home. There are a lot of benefits of using E-Learning because of it flexibility, speed and effectiveness. E-Learning provides flexibility for users. Content may be provided on-demand to teams and individuals on their preferred devices, at any time and from any location. Learners may revisit content, retake exams, and keep track of their progress with the more self-paced, interactive access. Content chosen by a small number of subject matter experts can reach a far broader audience through eLearning than if those experts were educating individuals in person. Because it is visual and participatory, eLearning improves brain function. According to research, participants in eLearning acquire up to five times more content than those in traditional teaching while spending the same amount of time in training. The first testing machine was created in 1924. Students might use this gadget to put themselves to the test. Then, in 1954, Harvard Professor BF Skinner created the "teaching machine," which allowed schools to provide pupils pre-programmed lessons. However, the first computer-based training programme was not presented to the world until 1960. PLATO-Programmed Logic for Automated Teaching Operations was the name of this computer-based training software (or CBT