

**DEVELOPMENT OF INTERACTIVE BOOK FOR MATHEMATICS
SUBJECT YEAR 6**



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

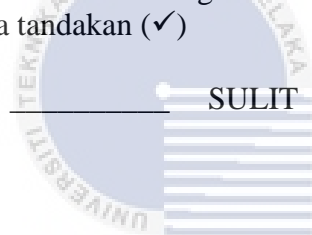
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JUDUL: DEVELOPMENT OF INTERACTIVE BOOK FOR MATHEMATICS SUBJECT YEAR 6

SESI PENGAJIAN: 2020 / 2021

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DEVELOPMENT OF INTERACTIVE BOOK FOR MATHEMATICS SUBJECT
YEAR 6

KHOR KAI XIN



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

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

DECLARATION

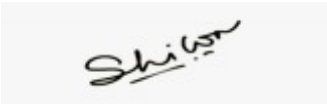
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I hereby declare that I have read this project report and found
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SUPERVISOR :  _____ Date : _____
(Ass. Prof. Ts. Dr. Hjh. Norasiken Bakar)

DEDICATION

I want to express my utmost dedication to my beloved family and my supervisor, Ass. Prof. Ts. Dr. Hjh. Norasiken Bakar who has guided me and motivated me along with the project. Also, this project is dedicated to my evaluator Ts. Syariffanor Hisham who advises to me for this project. Besides, I also dedicated to my faculty, Faculty of Information and Communications Technology, for giving me an opportunity to develop this project. Last but not least, my beloved friends who always support me and encourage me.



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Besides, I also want thanks to my supervisor, Prof. Madya Ts. Dr. Norasiken Bakar who gave me continuous support and guidance to continue efficiently during my FYP period.

Last but not least, I would like to express my deep and sincere gratitude to my family and friends who have been magnificent support me by giving motivation to me to throughout this project.



ABSTRACT

Nowadays, students need to be having online classes due to the Covid-19. This has caused the problem of misunderstanding between the teachers and the students. Sometimes, students cannot get what the teachers are teaching when having the online classes, and this causes time-consuming to both sides. Moreover, students are hard to focus when having online classes and this makes their understanding of study worst. Especially for the young students like primary school, they are most have the problem of difficulty to focus in front of the screen. This interactive book is a book that has notes with some interactive elements such as video, audio, graphics, and animation that can attract the students' attention, and the most important thing is students can easily understand the learning content through this interactive book. Furthermore, this interactive book has included some quizzes, so that can help the students to refresh what they have learned about the chapter. With these interactivities, students can focus on the study and get it fast. In this thesis, there are 7 chapters have been discussed, introduction of this project, literature review and project methodology that has been used which is ADDIE Model, analysis of the software and hardware requirements, design of the interactive book such as storyboard and interface design, implementation like production of the media, testing for the alpha tester and beta tester and evaluation of the interactive book. The result from the testing phase, we can conclude that this project has hit the goals, which is this interactive book did help the students in learning Mathematics. The limitation during the testing phase is we only can conduct through the online platform because of the pandemic.

ABSTRAK

Pada masa kini, pelajar perlu belajar dalam talian yang disebabkan oleh Covid-19. Hal ini telah menyebabkan muncul masalah perselisihan faham antara guru dan pelajar. Kadang-kadang, pelajar tidak dapat faham apa yang diajar oleh guru semasa waktu kelas dalam talian dan ini telah menyebabkan pembaziran masa kepada kedua-dua belah pihak. Selain itu, pelajar sukar memberi tumpuan semasa belajar di atas talian dan ini telah menjadikan pemahaman mereka terhadap pembelajaran semakin teruk. Terutamanya kepada pelajar yang lebih kecil seperti pelajar di sekolah rendah, kebanyakan pelajar agar sukar untuk fokus di depan skrin. Buku interaktif ini adalah buku yang mengandungi dengan elemen interaktif seperti video, audio, grafik dan animasi yang dapat menarik perhatian pelajar dan yang paling penting adalah pelajar dapat memahami isi pembelajaran dengan lebih mudah melalui buku interaktif ini. Di samping itu, buku interaktif ini juga mengandungi kuiz yang dapat membantu pelajar untuk ingat balik apa yang mereka telah belajar dalam bab-bab tersebut. Seterusnya, melalui buku interaktif ini, pelajar dapat menumpukan perhatian kepada pembelajaran dan faham dengan lebih pantas. Dalam tesis ini, terdapat 7 bab yang telah dibincangkan, pengenalan projek ini, tinjauan literatur dan metodologi projek yang telah digunakan iaitu Model ADDIE, analisis keperluan perisian dan perkakasan, reka bentuk buku interaktif seperti papan cerita dan reka bentuk antara muka, pelaksanaan seperti penghasilan media, pengujian alpha tester dan beta tester dan penilaian buku interaktif. Hasil dari fasa pengujian, kita dapat bahawa projek ini telah mencapai matlamat, yang merupakan buku interaktif ini dapat membantu para pelajar dalam mempelajari Matematik. Batasan semasa fasa pengujian adalah kita hanya dapat melaksanakan melalui platform dalam talian disebabkan wabak Covid-19.

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LIST OF ABBREVIATIONS

FYP	Final Year Project
PDF	Portable Document Format



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CHAPTER 1: INTRODUCTION

1.1 Introduction

Coronavirus disease 2019 (Covid-19) pandemic is an infectious disease caused by a newly discovered coronavirus. The COVID-19 virus spreads primarily through droplets of saliva or discharges from the nose when an infected person coughs or sneezes (WHO, 2020). On 16 March 2020, our government has announced the implementation of movement control order (MCO). Kuok Ho Danie Tang (2020) mentioned that implementation in order to keep the social distancing could slow down the spread of the virus. Everyone is required to stay at home and student were having their class at home online.

Ferri, Grifoni and Guzzo (2020) discussed that the online class has many kinds of problems and one of the problems is students hard to understand what the teacher was teaching. Due to the internet access problem of some areas, there are always happened that internet lost connections or lag and this has caused the students cannot receive the complete information from the teachers. Moreover, Umar Abdullahi, Musa Sirajo, Yakubu Saidu and Umar Bello (2020) mentioned that by just reading the static textbook, students cannot understand it easily and hard to focus on it, especially for the subject Mathematics.

Karen Marie Doty (2015) discussed the development of the interactive book can help the students to understands and get what the teacher was teaching because the interactive book includes the multimedia contents such as pictures, videos, and other media that can help the students to understand it. This project also will create exercise

and quiz to help the students to get the knowledge. With the interactive exercise, students will easier understand the knowledge.

1.2 Problem Statement

It has occurred the misunderstanding between the teachers and the students when having the online class. Sometimes, students cannot get what the teachers are talking about when having online classes and teachers need to explain again and again. This is time-consuming to both sides. Moreover, students are hard to focus when having online classes, and their understanding of the study become worst. Especially for the young students like primary school, they are most have the problem of difficulty to focus in front of the screen.

Next, by just reading the static textbook, students totally cannot understand them and have no idea with the steps of working especially is for the subject Mathematics that need to have the steps to solve the question. Although the textbook also included the images and text as be explanation, however, they are hard to understand for the students that age is still young.

1.3 Objectives

- **To design a better content for students**

For this particular reason, with the interactive elements such as graphics, animation and video, students can faster understand the knowledge compare with reading the printed textbook.

- **To develop a better learning tools for student**

A learning tool is very important for the student to achieve the understanding of learning content. A good learning tool can help the student to understand the topics easily with animated examples.

- **To evaluate the easy method for the students**

Able to read anywhere and anytime because the interactive book can access through their mobile phones, tablet and other devices which are very portable.

1.4 Scope

This project scope will focus on two-part, specific user and functionality.

1.4.1 Specific User

This interactive book is developed for year 6 primary school students that taking the subject of Mathematics.

1.4.2 Specific Functionality

This part is explained about the elements multimedia that use in this interactive book. Table below has shown the specific functionality.

Table 1.1 Specific Functionality

Module	Description
Video	User can watch the video that added in this interactive book.
Audio	User can hear the notes of the chapter.
Graphic	User can view the graphic.
Quiz	User can do quizzes to examine their understanding for each chapter.

1.5 Project Significance

In this project, the significance is to the students who are in year 6 in primary school and taking the subject of Mathematics. The interactive book will help the students in understanding the contents of Mathematics with the multimedia elements such as graphics, video, audio, animation and text. Perhaps, this interactive book will capture the students' attention in their learning process with a more attractive way.

1.6 Conclusion

In conclusion, the Interactive book of Subject Mathematics Year 6 Primary School is very useful and convenient for the year primary school students. This interactive book provides multimedia content that can attract the student's attraction

and easily understand how Mathematics worked. Furthermore, this interactive book is a portable book that very easy for the students to bring out, and they can read it everywhere and anytime. It is much lighter than the standard paper books. The next chapter will discuss the literature review and the methodology in this project.



CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

In this chapter will go through the methodology used to develop this project which is ADDIE model. The ADDIE model is a generic approach that training developers and instructional designers have usually used. The five phases are Analysis, Design, Development, Implementation and Evaluation, have represented an innovative and flexible guideline for developing a practical training and performance as support tools.

2.2 Domain

Printed books are books that are mainly composed of pages or pieces of paper that are linked inside the cover. It is a fictional or non-fiction literary work containing facts, stories, poetry, or other comparable material. In other words, a printed book is a long-form literary production that has been published. A book's layout is the format in which a printed book is made out. A front cover, back cover, and body copy or content pages make up the basic layout. The title, subtitle, author name, and publishing house name are all printed on the front cover. Typically, the inner part of the front cover is left blank. The back cover, on the other hand, has the book's ISBN, a photo of the author, and their introduction. It may also include barcode, price and excerpted reviews.

An ebook can be defined as an electronic book that includes images and text in pdf format. In another word, an eBook can be said as an electronic version of a printed book. Based on M. Biñas, P. Štancel, M. Novák and M. Michalko (2012), there are no significant differences between the regular printed book and the eBook except the

ebooks in the digital format example in pdf file. Moreover, it is more portable to bring out, particularly can access through the devices such as a tablet, computer and mobile phones. An interactive book is an eBook that comes with interactive elements. For instance, a standard digital book includes images and text, but for an interactive book, it includes more multimedia elements compared to a normal digital book. The interactive elements can be listed as image, text, video, audio and animation.

An eBook is an electronic version of traditional print books that can be read on electronic devices, example smartphones, laptops and tablets. The eBook has the potential to enhance the audience to absorb the content easily. According to Karen Marie Doty (2015), Interactive eBooks are digital books that in addition to text, may include audio, video, game and animation. This type of content has many contacts where the audience can react to the video, audio, link, and other interactive features. More interactive elements will provide richer experiences and engagement for the readers. According to Mehmet Kesim, Hakan Yıldırım (2017), these portable libraries provide a cost-effective learning technology that enables anytime, anywhere, self-study and interactive study. Besides, the result offered by Şenay Özen Altinkaynak (2019) concluded that the most exciting approach to the phonological and print skills of the children subjected to the interactive book reading method improved more than the other children.

Mathematics is a subject that students compulsory learns in primary school. Based on Umar Abdullahi, Musa Sirajo, Yakubu Saidu and Umar Bello (2020), they said learning Mathematics through the online class is a big challenge for students as a consequence of the inability to communicate between the teachers and the students and students facing the problem of difficulty in solving question Mathematics.

2.3 Existing System

2.3.1 Existing Traditional Printed Book of Mathematics

In the traditional way, students are learning subject Mathematics through the printed textbook and notebooks. Students can try to understand the content through the text and images only. Students need to figure out the solution by just reading the static notes. The figure below shows the printed textbook and notebook.