AUGMENTED REALITY: "KEMPEN PERANGI AEDES"

ROSSYAFINA BINTI RABIAH

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

© Universiti Teknikal Malaysia Melaka

AUGMENTED REALITY: "KEMPEN PERANGI AEDES"

ROSSYAFINA BINTI RABIAH

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2015

© Universiti Teknikal Malaysia Melaka

BORANG PENGESAHAN STATUS TESIS

JUDUL: AUGMENTED REALITY : "KEMPEN PERANGI AEDES.

SESI PENGAJIAN: SEM 2 2014/2015.

Saya ROSSYAFINA BINTI RABIAH .

(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis dan projek adalah hakmilik Universiti Teknikal Malaysia Melaka.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. ** Sila tandakan (/)

_____	SULIT	(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)
_____	TERHAD	(Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)
___/___	TIDAK TERHAD	

MUHAMMAD HELMY BIN EMRAN
Pensyarah
Fakulti Teknologi Maklumat dan Komunikasi
Universiti Teknikal Malaysia Melaka (UTeM)

(TANDATANGAN PENULIS)
Alamat tetap: NO 15, LORONG 6, JALAN 9/10, TAMAN AIR BIRU, 81700 PASIR GUDANG, JOHOR
Tarikh: 27/08/15

(TANDATANGAN PENYELIA)
MUHAMMAD HELMY BIN EMRAN
Nama Penyelia
Tarikh: 27/08/2015

CATATAN: * Tesis dimaksudkan sebagai Laporan Akhir Projek Sarjana Muda (PSM) ** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

© Universiti Teknikal Malaysia Melaka

DECLARATION

I hereby declare that this project report entitled

AUGMENTED REALITY: "KEMPEN PERANGI AEDES"

is written by me and my own effort and that no part has been plagiarized

without citations.

STUDENT : _____ Date: 27/08/15

(ROSSYAFINA BINTI RABIAH)

MUHAMMAD HELMY BIN EMRAN
Pensyarah
Fakulti Teknologi Maklumat dan Komunikasi
Universiti Teknikal Malaysia Melaka (UTeM)

SUPERVISOR: _____ Date: 27/08/15

(EN MUHAMMAD HELMY BIN EMRAN)

© Universiti Teknikal Malaysia Melaka

DEDICATION

To my parents,

for your support and love.

To my friends,

for your kindness and endless support.

To my lecturers,

for never giving up for me.

© Universiti Teknikal Malaysia Melaka

AKNOWLEDGEMENTS

I would like to thank En Muhammad Helmy Bin Emran for giving assistant to complete this project successfully. He also had given full attention and guides me to finish this project.

I would also like thank to my beloved parents, En. Rabiah Bin Ismail and Pn. Rusliha Binti Mohammed, who have been giving me endless support and motivation throughout my project.

I would also like thank to all my friends, who have been reprove my mistakes and provide ideas for improving my projects. Special thanks for them and it is fully appreciated.

© Universiti Teknikal Malaysia Melaka

ABSTRACT

Deaths due to dengue fever are a serious concern. As a citizen of a massage, I want to create an awareness campaign to produce several posters. The project focuses on seven statements about the introduction, literature review and methodology of the project, analysis, design, implementation, testing and conclusions. The introduction shows an overview of the project. Literature review and project materials discuss the project methodology and methods used in developing the project. Analysis provides the necessary requirements in the development of the project. The design defines the analytical results and need all the detailed requirements. Implementation describes the activities involved in the implementation phase and expected output. Testing discusses the testing phase and the strategy used. Finally, the concluding shows an overview of the project and the improvement needed in the project. The aim of this project was implemented to overcome the weaknesses of existing products such as the lack of information, interest and interaction.

© Universiti Teknikal Malaysia Melaka

ABSTRAK

Kes kematian akibat demam denggi semakin membimbangkan. Sebagai seorang rakyat yang pihatin, saya ingin membuat satu kempen kesedaran dengan menghasilkan beberapa poster. Projek laporan memberi tumpuan kepada tujuh bab iaitu pengenalan, kajian literatur dan metodologi projek, analisis, reka bentuk, pelaksanaan, pengujian dan kesimpulan. Bab pengenalan menunjukkan gambaran keseluruhan projek ini. Bab kajian literatur dan projek metodologi membincangkan mengenai bahan projek dan kaedah yang digunakan dalam membangunkan projek tersebut. Bab analisis menyediakan keperluan yang diperlukan dalam membangunkan projek tersebut. Bab reka bentuk mentakrifkan keputusan analisis dan memerlukan semua keperluan terperinci. Bab pelaksanaan menggambarkan aktiviti yang terlibat dalam fasa pelaksanaan dan hasil yang dijangkakan. Bab ujian membincangkan fasa ujian dan strategi yang digunakan. Akhir sekali, bab kesimpulan menunjukkan gambaran keseluruhan projek dan peningkatan yang diperlukan dalam projek itu. Tujuan projek ini dilaksanakan adalah untuk mengatasi segala kelemahan produk yang sedia ada seperti kekurangan informasi, kurang menarik dan tidak mempunyai interaksi.

© Universiti Teknikal Malaysia Melaka

TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	DECLARATION	**i**
	DEDICATION	**ii**
	ACKNOWLEDGEMENTS	**iii**
	ABSTRACT	**iv**
	ABSTRAK	**V**
	TABLE OF CONTENTS	**vi**
	LIST OF TABLES	**x**
	LIST OF FIGURES	**xiii**
	LIST OF ABBREVIATIONS	**xv**
	LIST OF ATTACHMENT	**xvi**
CHAPTER I	**INTRODUCTION**	
	1.1 Introduction	1
	1.2 Problem Statements	2
	1.3 Objectives	3
	1.4 Scope	3
	1.5 Project Significance	4
	1.6 Conclusion	4
CHAPTER II	**LITERATURE REVIEW AND PROJECT**	

© Universiti Teknikal Malaysia Melaka

	METHODOLOGY		
	2.1	Introduction	5
	2.2	Domain	5
	2.3	Existing System	6
		2.3.1 Comparison of Existing System	6
	2.4	Project Methodology	8
	2.5	Project Requirement	9
		2.5.1 Software Requirement	10
		2.5.2 Hardware Requirement	10
	2.6	Conclusion	10
CHAPTER III	**ANALYSIS**		
	3.1	Current Scenario Analysis	11
	3.2	Requirement Analysis	12
		3.2.1 Project Requirement	12
		3.2.2 Software Requirement	12
		3.2.3 Hardware Requirement	14
		3.2.4 Other Requirement	15
	3.3	Project Schedule and Milestone	15
	3.4	Conclusion	16
CHAPTER IV	**DESIGN**		
	4.1	Introduction	17
	4.2	System Architecture	17
	4.3	Preliminary Design	18
		4.3.1 Interactive Storyboard	19
		4.3.2 Character Profile	19
		4.3.3 Poster Layout	21
	4.4	User Interface Design	24
		4.4.1 Navigation Design	24
		4.4.2 Input Design	25

© Universiti Teknikal Malaysia Melaka

		4.4.3 Output Design	25
		4.4.4 Metaphor	26
	4.5	Conclusion	26
CHAPTER V	**IMPLEMENTATION**		
	5.1	Introduction	27
	5.2	Media Creation	27
		5.2.1 Production of Texts	27
		5.2.2 Production of Graphics	29
		5.2.3 Production of Audio	32
		5.2.4 Production of Animation	33
	5.3	Media Integration	35
	5.4	Product Configuration Management	36
		5.4.1 Configuration Environment Setup	36
		5.4.2 Version Control Procedure	41
	5.5	Implementation Status	42
	5.6	Conclusion	43
CHAPTER VI	**TESTING**		
	6.1	Introduction	44
	6.2	Test Plan	45
		6.2.1 Test User	45
		6.2.2 Test Environment	47
		6.2.3 Test Schedule	50
	6.3	Test Strategy	51
	6.4	Test Implementation	53
		6.4.1 Test Description	53
		6.4.2 Test Data	56
	6.5	Test Results and Analysis	59
	6.6	Analysis Testing	65

© Universiti Teknikal Malaysia Melaka

6.7 Conclusion 72

CHAPTER VII CONCLUSION

7.1 Observation on Weakness and Strengths 74

7.2 Propositions for Improvement 75

7.3 Project Contribution 75

7.4 Conclusion 76

REFERENCES

ATTACHMENT A

ATTACHMENT B

ATTACHMENT C

ATTACHMENT D

ATTACHMENT E

ATTACHMENT F

ATTACHMENT G

ATTACHMENT H

© Universiti Teknikal Malaysia Melaka

LIST OF TABLES

TABLE	TITLE	PAGE
2.1	Comparison of Existing System	7
3.1	List of Software Requirement and Functionality	13
3.2	List of Hardware Requirement and Functionality	14
3.3	Summary of Other Requirement	15
4.1	Character Description	19
4.2	Character Details	20
4.3	Input Design and Related Function	25
4.4	Output Design and Related Function	25
5.1	Application Text Type	28
5.2	Application Texture Type	30
5.3	Alpha Version and Description	41
5.4	Project Implementation Status	42
6.1	Test User and Description	46

© Universiti Teknikal Malaysia Melaka

6.2	Profile Background of Respondent from Multimedia Experts	46
6.3	Profile Background of Respondent from Primary School's Students	47
6.4	Hardware Requirement in Test Environment	48
6.5	Software Requirement in Test Environment	49
6.6	Testing Section and Time Duration Used for Multimedia Experts	50
6.7	Testing Section and Time Duration Used for Primary School's Students	50
6.8	Functionality Testing	52
6.9	Functionality Questions and Objectives	54
6.10	Usability Questions and Objectives	55
6.11	User Level of Satisfaction and Description	57
6.12	Pictures and Description	57
6.13	Result of Functionality Testing	60
6.14	Mean, Mode, Median of Functionality Testing	60
6.15	Result for Basic Information Analysis Testing Before Showing Products	61
6.16	Result for Basic Information Analysis Testing After Showing Products	61
6.17	Result for Ease of Use Analysis Testing	62
6.18	Result for Satisfaction Analysis Testing	63
6.19	Result for Experienced Gained Analysis Testing	64

© Universiti Teknikal Malaysia Melaka

6.20 **Result for Interface Design Analysis Testing** 65

6.21 **Graphs and Explanation in Usability Testing** 67

© Universiti Teknikal Malaysia Melaka

LIST OF FIGURES

DIAGRAM	TITLE	PAGE
2.1	Augmented Reality Posters Promote Domino's Deals	6
2.2	ADDIE Process Diagram	8
3.1	Existing Aedes Poster	11
3.2	Project Schedule and Milestones	15
4.1	System Architectures	18
4.2	Poster A Sketch	21
4.3	Poster B Sketch	22
4.4	Poster C Sketch	23
4.5	Navigation Flow Design	24
5.1	Text Production Step	29
5.2	Graphic Creation Step	31
5.3	Modelling Process in Adobe Flash CS6	31

© Universiti Teknikal Malaysia Melaka

5.4	Modelling Process in Adobe Ilustrator CS6	32
5.5	Modelling Process in Autodesk Maya 2012	32
5.6	Audio Creation Step	33
5.7	Audio Process in Audacity	33
5.8	Animation Creation Step	34
5.9	Animation Process in Metaio Creator	34
5.10	Media Integration Step	35
5.11	Combining Process in Metaio Creator	36
5.12	Final Poster A	37
5.13	Final Poster B	38
5.14	Final Poster C	39
5.15	Image of How AR is Applied	40
6.1	SK Bukit Beruang	48
6.2	Mean Calculation	59
6.3	Median Calculation	59
6.4	Mode Calculation	59
6.5	Functionality Test Graph	66

© Universiti Teknikal Malaysia Melaka

LIST OF ABBREVIATIONS

Apps	-	Application
AR	-	Augmented Reality
ARP	-	Metaio Creator File Format
FBX	-	Filmbox
iOS	-	iPhone Operating System
PNG	-	Portable Network Graphic
QR Code	-	Quick Response Code
WAV	-	Waveform Audio File Format
2D	-	Two Dimensional
3D	-	Three Dimensional

© Universiti Teknikal Malaysia Melaka

LIST OF ATTACHMENTS

ATTACHMENT	TITLE	PAGE
A	Gantt Chart	1
B	Proposal	3
C	Interactive Storyboard	9
D	Cover Letter	13
E	Questionnaires	15
F	DVD Cover	21
G	CD Cover	23
H	Pictures	25

© Universiti Teknikal Malaysia Melaka

CHAPTER I

INTRODUCTION

1.1 Introduction

Statistic shows rising number of dengue cases in our country. The number of people who have died from dengue fever in Malaysia has more than tripled on 2014 compared to 2013, with 250 cases being reported daily. The increase comes despite extensive government campaigns to highlight the danger of the virus, which is transmitted via mosquito bites. (www.bbc.com).

At 8th February 2009, there is a campaign about Aedes names "10 Minute Every Week Destroy Aedes, Fight Dengue" placed at Taman Taming Jaya, Balakong Selangor. The objective of this campaign is to increase awareness in society and encourage them to be responds towards preventing from dengue fever. The focus of this campaign is to destroy the places for Aedes breeding inside and outside their home.

The interactive posters on this fight the dengue campaign is produce by using Adobe Illustrator. Apart from that, the developer use Metaio Creator to built an augmented reality technology, AutoDesk Maya 2010 to build the 3D character animation. Augmented reality give a poitive feedback towards children. For example, a learning words using AR was developed by Juanand and his team had also proven effective as out of 32 children, 81% of them like using of augmented reality for learning. (Juan, 2010). In order to view the product, user can install Junaio in their

© Universiti Teknikal Malaysia Melaka

handphone or smart phone by download it for free at play store or apple store. User can use this application to view the 3D mosquito on that poster.

1.2 Problem Statement

The rising number of dengue cases in our country becomes a serious concern. This happened because our society does not have a high awareness in preventing mosquito breeding. It had been proved by the increasing the number of dengue cases in Malaysia. From my observation, number of dengue cases in Malaysia increased more than 600% during the first 2 months in 2014, compared to the same period in 2013 (Malaysia Health of Department,2014). Therefore, awareness campaigns should be organized to enlighten the public on how mosquitoes breeding and from there, they can tackle mosquito breeding areas around their homes. From my observation, people only have information about Aedes through advertisement on television or simple poster suspended along the street. But there is no application using mobile device or using augmented reality technology to help people understands more about Aedes. From this issue, several posters will be developed by using Augmented Reality technology to help the society understand about the danger of Aedes and dengue.

© Universiti Teknikal Malaysia Melaka

1.3 Objective

Before start this project the aim of the project need to be set up first. This project is based on the following objectives:

i. To study about dengue fever and the factor contributing the fever cases.

ii. To develop a campaign using Augmented Reality containing a dengue information to educate people.

iii. To test campaign using Augmented Reality are acceptable among people.

1.4 Scope

Specifying the work, the scope put in the picture to know where the project will lead to. Here are the scopes for the project:

i. This project is to develop a campaign using Augmented Reality containing dengue information to educate children about the awareness of Aedes.

ii. The target user for the augmented reality technology is children within the age of seven until twelve years old.

iii. A series of poster is created and substitute 3D animation consists of several interesting characters and environments.

© Universiti Teknikal Malaysia Melaka

1.5 Project Significance

This poster created to bring awareness to the community, especially to the kids about dangers of dengue fever and share information about ways to prevent Aedes breeding. By using this augmented reality technology, children will more interested to learn something. Hope this tool can bring benefits to society especially to the children.

1.6 Conclusion

This project will be built the application with the use of augmented reality technology in a series of posters that will help people understand the ways on how Aedes breeding using 3D animation to capture child's interest. I hope that it will help children to influence their parent and give them awareness about the danger of dengue indirectly.

© Universiti Teknikal Malaysia Melaka

CHAPTER II

LITERATURE REVIEW & PROJECT METHODOLOGY

2.1 Introduction

This chapter describe on overview of solving problem regarding to development of Augmented Reality (AR) content in poster. A lot of information is required in order to develop this project. One of the most favorite solutions is by searching on the internet. Internet provides much information about Augmented Reality and their useful to the user and the color scheme to build a poster to bring awareness to the children. An analysis and observation on the existing awareness poster about Aedes in Malaysia is used as a reference to develop this project so that the developer can produce better product towards user.

2.2 Domain

Augmented Reality is used as a platform to bring awareness especially to the kids about the danger of Aedes so that they can clearly see the structure of Aedes with the help of modelling in 3D and they can get knowledge about how Aedes breeding. Domain for this project is to create an Augmented Reality in image on poster.

© Universiti Teknikal Malaysia Melaka