TEACHING KIDS ON ANIMAL LIFE USING AUGMENTED REALITY: A STUDY ON MULTIPLE MARKER INTERACTIONS

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JUDUL: TEACHING STANDARD 5 STUDENT ON FOOD CHAIN TOPIC USING AUGMENTED REALITY: A STUDY ON MULTIPLE MARKER INTERACTIONS

SESI PENGAJIAN: 2017

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERITY TEKNIKAL MALAYSIA MELAKA

2017

DECLARATION

I hereby declare that this project report entitled

TEACHING STANDARD 5 STUDENT ON FOOD CHAIN TOPIC USING AUGMENTED REALITY: A STUDY ON MULTIPLE MARKER INTERACTIONS

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

STUDENT : _____ Date: 21/8/2017

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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 (Interactive Media) With Honours.

SUPERVISOR: _____ Date: 21/8/2017

(DR MOHD HAFIZ ZAKARIA)

DEDICATION

First of all, this dedication is addressed to my family members especially my beloved parents which are my backbone in completing this project and give encouragement so that the project is progressing well. Thank you for your endless and unconditional supports when I need the most, always pray the best for me also give me a lot of advices during the process of develop this project. I am honored to have you as my parents and family.

To my supervisor, Dr. Mohd Hafiz Zakaria, thank you for your guidance supports and encouragement during project implementation. Thank you for giving me a chance to prove and improved myself through all my walks of life.

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To my evaluator, Profesor Dr. Faaizah Shahbodin, thank you for providing good advices and feedback during presentation and evaluating my Final Year Project.

Last but not least, thank you to all my beloved friends who help me and always give m support directly or indirectly from the beginning of this project until the end and together we can pursue a broad knowledge.

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Bismillahirrahmanirrahim.

Firstly, I would like to give all the praise to Allah S.W.T for giving me the strength and patience for the whole process of completing this project. Without Him, I cannot complete this project according to what have been planned.

This Final Year Project is the end of my journey in pursuing my degree at Universiti Teknikal Malaysia Melaka. This project has been completed on time with the support of numerous people including my supervisor, my family and my friends. At the end of my Final Year Project, I would like to take this opportunity to say thank you for all those who are willing to lend their hands for me. Without them, this project would not be finished on time.

First and foremost, I would like to express my deepest gratitude to my supervisor, Dr. Mohd Hafiz Zakaria, who has supported, guide and give constant supervision towards me throughout the progress of my Final Year Project with his patient and knowledge. Without him, this report and product would not have been completed n time. Thank you for giving assistant to complete this project successfully. In addition, Dr always monitors this project, gave the idea for this project, good enhancer and helps to correct all the defects and weaknesses that found in this project as to ensure that the project is appropriate and reach the needs of the users.

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Next, a high appreciation to my beloved family who has always supported and encouraged me when I encountered bottleneck during the progress of Final Year Project. Without their support, I would not have the motivation to continue it.

Last but not least, I would like to thanks my friends and all those who involved directly or indirectly to the successful of this project because without their help during the project carried out, this project likely could not be completed right does not meet the requirement s of the target users. Thank you for listening, offering me advice and supporting me throughout this entire semester.

Thank you.

ABSTRACT

This AR_Animal mobile application project discusses about teaching and learning the standard 5 students on Science subject in food chain topic by using augmented reality technology. This is to ensure they can focus and learning in the interactive way. The mobile application also provided animals in 2D and 3D models and the sound of the animal and simple animation video about the food chain. By developing this AR_Animal mobile application, user will be able to learn about food chain and the animal's sound. For developing this project, waterfall model has been chosen as the project methodology. The waterfall model illustrates the software development process in a sequential flow and in this model, there is no overlapping in the phases. This project is one of ongoing study for developing new learning application through augmented reality technology.

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ABSTRAK

Projek aplikasi mudah alih AR_Animal ini membincangkan tentang pengajaran dan pembelajaran pelajar tahun 5 mengenai subjek Sains dalam topik rantaian makanan dengan menggunakan teknologi realiti bertambah. Ini adalah untuk memastikan mereka boleh fokus dan belajar dengan cara interaktif. Aplikasi mudah alih juga mempunyai haiwan model 2D dan 3D, bunyi haiwan dan video animasi mudah tentang rantaian makanan. Dengan membangunkan aplikasi mudah alih AR_Animal ini, pengguna akan dapat mempelajari tentang rantaian makanan dan bunyi haiwan dengan lebih mudah dan jelas. Untuk membangunkan projek ini, "waterfall model" telah dipilih sebagai metodologi projek. "Waterfall model" menggambarkan proses pembangunan perisian dalam aliran berurutan dan dalam model ini, setiap fasa tidak akan diakan diteruskan sekiranya fasa sebelum itu tidak siap seepenuhnya. Projek ini merupakan satu kajian berterusan untuk membangunkan aplikasi pembelajaran baru melalui teknologi realiti bertambah.

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LIST OF ABBREVIATIONS

2D	**-**	**Two-Dimensional**
3D	**-**	**Three-Dimensional**
AR	**-**	**Augmented Reality**
GPS	**-**	**Global Positioning System**
ID	**-**	**Identification**
JDK	**-**	**Java Development Kit**
JRE	**-**	**Java Runtime Environment**
RPH	**-**	**Rancangan Pengajaran Harian**
SDK	**-**	**Software Development Kit**
SME	**-**	**Subject Matter Expert**
SV	**-**	**Supervisor**
TV	**-**	**Television**
VR	**-**	**Virtual Reality**

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CHAPTER I

INTRODUCTION

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1.1 Introduction

Augmented Realty (AR) means live direct or indirect view of a physical, real-world environment whose elements are amplified by computer generated sensory input such as sound, video, graphics or GPS data. As Azuma et al (2001) said, they define AR to have the three properties which are combines real and virtual objects in a real environment, runs interactively in real time and align real and virtual objects with each other. It is related to a more general concept called mediated reality, in which a view of reality is modified by a computer. The technology functions by enhancing one's current perception of reality is one of the consequence. Augmentation is conventionally in real time and n semantic context with environmental elements, such as sports scores on TV during a match.

The primary purpose of this study is to create an interaction that kids will learn out food chain topic and the interaction between them. All the things that users need to do is just do the object recognition and there will be a model appear and the information about the animal based on food chain topic. But how can AR technologies be used for educational purposes? According to Wu et al (2013), AR technologies help learners engage in realistic exploration in the real world, and virtual objects such as texts, videos and pictures are supplementary elements for learners to conduct investigations of the real-world surroundings. One of the most dominant uses of AR is to interpret the existing spaces with an overlay of location based information. In addition, the uses pf AR technologies can extend to the integration of real-world and digital learning resources. The usage of AR enables learners to experience scientific phenomenon that are not possible in the real word for example chemical reactions.

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1.2 Problem Statement

Standard 5 students nowadays know the knowledge about the food chain topic but the problem is they are hardly focus on the topic because do not have any interaction or interactive medium when they in learning process about food chain topic. Secondly the problem is the existing application nowadays are not suitable for them and today there is less application that are using multiple marker of augmented reality. Figure 1.1 show the standard 5 Science textbook use by the teachers and students.