NURTURING ELEMENTARY STUDENT YEAR 4 IN RECYCLE HABIT USING AUGMENTED REALITY MOBILE APPLICATION

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
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I hereby declare that this project report entitled

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I hereby declare that I have read this project 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 Honors.

SUPERVISOR : Date: 25/8/2016

(PN NORAZLIN BINTI MOHAMMED)

DEDICATION

To my beloved family for their support throughout my study

To my supervisor, Pn. Norazlin Binti Mohammed who has guided me while the development of this project,

To my evaluator, PM.DR.Faaizah Binti Shahbodin who gives a good advices on this project,

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ABSTRACT

Recycling is the process of collecting material that has been used and the materials will be re-processed to produce new materials. From the observation, most student acquire information and knowledge about recycling through text book at schools and lack of exposure. Therefore, to increase the awareness and to attract student involvement in recycling an Augmented Reality application has been develop to cover this problem. AR can be applied in learning process to improve student motivation and attention by combining both real and virtual objects in the same space and in real-time at real environment. This application will be present using smart phone. The student can scan the dustbin and item flash card to know its usage, the process, item facts and what item can be thrown into the dustbin. To get more information about recycle and AR mobile application, student can access the information through Recycle responsive website that provided. The website shows the student what recycle is in video. Next, it also contains how to recycle that show recycle process and lastly gallery that contains the flash card and AR recycling mobile application. This application and website can be a medium to improve student learning process.

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ABSTRAK

Kitar semula adalah proses pengumpulan bahan yang telah digunakan dan bahan-bahan yang akan diproses semula untuk menghasilkan bahan-bahan baru. Dari pemerhatian, kebanyakan pelajar memperoleh maklumat dan pengetahuan mengenai kitar semula melalui buku teks di sekolah-sekolah dan kekurangan pendedahan. Oleh itu, untuk meningkatkan kesedaran dan untuk menarik penglibatan pelajar dalam kitar semula pembangunan Realiti Augmented telah dilaksanakan untuk menyelesaikan masalah ini. AR boleh digunakan dalam proses pembelajaran untuk meningkatkan motivasi pelajar dan perhatian dengan menggabungkan objek sebenar dengan maya di ruang yang sama dan dalam masa nyata di alam nyata. Pelaksanaan projek ini menggunakan telefon pintar dan membolehkan. pelajar mengimbas tong sampah dan item pada kad flash untuk mengetahui fungsinya, proses, fakta, dan item yang boleh dibuang ke dalam tong sampah. Untuk mendapatkan lebih banyak maklumat mengenai kitar semula dan aplikasi mudah alih AR, pelajar boleh mendapatkan maklumat melalui laman web responsif yang disediakan. Laman web itu menunjukkan pelajar apa kitar semula di dalam bentuk video. Seterusnya, ia juga mengandungi cara untuk mengitar semula, proses kitar semula dan galeri. Aplikasi dan laman web yang dibangunkan boleh menjadi medium untuk meningkatkan proses pembelajaran pelajar

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LIST OF ABBREVIATIONS

2D	**-**	**Two-Dimensional**
3D	**-**	**Three-Dimensional**
AR	**-**	**Augmented Reality**
API	**-**	**Application Programming Interface**
SDK	**-**	**Software Development Kit**
JDK	**-**	**Java Development Kit**
PC	**-**	**Personal Computer**
MB	**-**	**Maya Binary**
PNG	**-**	**Portable Network Graphics**
GIF	**-**	**Graphic Interchange Format**
JPEG	**-**	**Joint Photography Experts Group**
AI	**-**	**Adobe Illustrator**
PS	**-**	**Adobe Photoshop**
CSS	**-**	**Cascading Style Sheet**
HTML	**-**	**Hypertext Markup Language**
OS	**-**	**Operating System**
GPU	**-**	**Graphic Processing Unit**
GB	**-**	**Gigabyte**
VGA	**-**	**Video Graphics Array**
QVGA	**-**	**Quarter Video Graphics Array**
iOS	**-**	**iPhone Operating System**
GPS	**-**	**Global Positionaing System**

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CHAPTER I

INTRODUCTION

1.1 Introduction

Recycling is the process of collecting material that has been used. The collection of materials that have been used will be re-processed to produce new materials that can be reused. Generally the recycled material is made up of glass, paper, aluminum, plastic, furniture, clothing or fabric, vehicle spare parts and iron. Recycling is one of the best ways for us to get a positive impact on the world. Recycling is important for us and nature, so we need to act quickly because the amount of waste in our country is growing from time to time.

Education is seen as the best way to form a generation that has the knowledge and awareness of environment and recycle. The goal of environmental and recycling education is to form a community that is more sensitive to environmental issues and acquire the knowledge, skills, values and commitment to work and act individually or together towards the solution of environmental issues. Therefore, to increase the awareness and

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involvement of people to practice their knowledge, this practice should be conducted primarily among students in schools.

From the observation, elementary student year 4 learn about recycle in their science syllabus. In that syllabus they will learn about the importance of reusing materials, reducing material use and recycling of materials. Existing activities carried out in the classroom such as through observation, discussion and carry out recycling activities during the learning process. Besides that, most students acquire information and knowledge about recycling through magazines and newspapers, electronic media other than environmental education in schools. There are many more ways to attract students to understand and how to apply recycling such as by produces their own products from recycled materials, doing recycling activities in class and there is no application using AR technology yet in Malaysia to promote recycling. From this issue, one application for AR will be develop to cover this problem.

This project used multimedia element such image, sound, text and animation in Augmented Reality technology to make the student understand the use of recycle dustbin and to know which item that can be recycle. This application will be present using mobile application. The student can scan the dustbin to know its usage and its differences. The student also can scan the image of item to know which dustbin it belongs and to relate the item either it can be recycle or not. To get more information about Augmented Reality mobile application and recycle, user can access through responsive website that provided at anywhere and anytime.

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1.2 Problem Statement

The main cause why students still not aware about recycling is because the lack of exposure and knowledge about recycle. The current techniques to teach the student about recycling was also not creative, bored and less effective. As a result, students think recycling is unattractive and unimportant activities in their lives and think it was the responsibility of adults and not their responsibility.

Most student easily get bored when they need to focus on what the teacher taught at in front of the class. This learning process make them hard to remember what they already learn in class and this is the reason why they don't want to take seriously about recycling. Next, parents also don't encourage and expose their children to do recycle activity and only depends on teacher and school syllabus. This is also one of the reason why children are not aware and don't know what the benefit of recycling in their daily life.

Thus, to attract the student interest in recycling the Augmented Reality of Mobile Application technology is the solution. This is because this application will be using smart phone which is the technology that student are familiar with it. Student can play with Augmented Reality technology and can learn about recycling dustbin and its item. This application also will teach them to practice the recycling activities in their daily life and in real life.

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1.3 Objective

This project embarks on the following objectives:

i. To develop marker based flash card using Augmented Reality in mobile application and responsive website.
ii. To apply marker based flash card using Augmented Reality in mobile application for children learning process.
iii. To evaluate the effectiveness of Augmented Reality in mobile application compared traditional learning process and the effectiveness of responsive website to spread the info about this application.

1.4 Scope

This section defines the scope that includes in this project followed by the reasons for the involvement of the scope.

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1.4.1 Target User

This project will be exposed to elementary school student year 4 (10 years old). This is because there is a syllabus in science textbook year 4 about the importance of reusing materials, reducing material use and recycling of materials. Existing activities carried out in the classroom such as through observation, discussion and carry out recycling activities during the learning process and lack of exposure and knowledge about recycle. They learn about recycle in school but the techniques used to teach them was bored and they just taking part of it only at school. In order to have a clean beautiful earth to live in it is very important to begin teaching children at a young age the important of recycling whether at school and at home.