“LET’S LEARN PHONICS WITH KINECT”
GAME-BASED LEARNING FOR KINDERGARTEN

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"LET'S LEARN PHONICS WITH KINECT"
GAME-BASED LEARNING FOR KINDERGARTEN

LEE JIA XIN

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2016

DECLARATION

I hereby declare that this project report entitled

"LET'S LEARN PHONICS WITH KINECT"
GAME-BASED LEARNING FOR KINDERGARTEN

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

STUDENT : _____ Date: 24 August 2016
(LEE JIA XIN)

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: 24 August 2016
(MRS. SHAHRUL BADARIAH BINTI MAT SAH)

DEDICATION

To my beloved family, lectures and friends.

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First and foremost, I would like to thanks to my supervisor, Puan Shahrul Badariah Binti Mat Sah for giving me lots of guidance and encouragement to complete this final year project. I have exposed to lots of knowledge and different point of view throughout the meeting with my supervisors, Puan Shahrul Badariah Binti Mat Sah who always gave me a better idea.

Besides, I would address my appreciation to Faculty of Information and Communication Technology for giving me the opportunity to carry out this project and every lecturer that have helped me. I could not complete this project without all this guidance and knowledge delivery from them to me.

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ABSTRACT

The concept of “Let’s Learn Phonics with Kinect” is a game-based learning game for kindergarten. This game is develop using Unity3D game engine and it is used along with Kinect device for capture children movement purpose. This games will provide an interactive and personalized entertainment in a games-based learning environment with the aids of Kinect device. “Let’s Learn Phonics with Kinect” is inspired by a book title “Bug’s Mug – A Phonics Wheel Book” by Glenn Johnstone (2005), Sydney Australia. In the game environment, learning content is delivery in the form of the animated video clip. Exercise is added test the children understanding level, for example, children are asked to kick the ball to the correct goal (answer) based on the question given.

ABSTRAK

Konsep “Let’s Learn Phonics with Kinect” adalah permainan berasaskan pembelanjaran yang khas untuk pengguna tadika. Permainan ini adalah dibina dengan menggunakan enjin permainan Unity3D dan ia akan digunakan bersama alat Kinect yang bertujuan untuk membaca pergerakan kanak-kanak. Permainan ini akan menyediakan hiburan interaktif dan peribadi dalam persekitaran permainan berasaskan pembelanjaran dengan bantuan alat Kinect. “Let’s Learn Phonics with Kinect” diilhamkan daripada sesebuah judul buku bertajuk “Bug’s Mug – A Phonics Wheel Book” by Glenn Johnstone (2005), Sydney Australia. Dalam persekitaran permainan ini, kandungan pembelajaran adalah dalam bentuk video klip animasi. Latihan telah ditambah sebagai ujian kepada kanak-kanak untuk mengaji tahap kefahaman mereka, sebagai contohnya, kanak-kanak diminta menendang bola kepada matlamat (jawapan) yang betul berdasarkan soalan yang diberikan.

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CHAPTER I

INTRODUCTION

1.1 Introduction

"Let's Learn Phonics with Kinect" is a motion detection game-based learning application for education purpose project. The project that going to produce is in the field of motion detection or knows as multisensory integration field. The integration between human and the multisensory in this project includes visual, auditory and kinesthetic learning. The kinesthetic learning is a different kind of learning style where the student need to carry out some physical activities during learning. Compare to traditional style learning, the student just sitting on the chair, listening the teacher explain the learning material or watching demo.

The purpose of this application is to attract children who under the age between 4-5 years old to learn phonics while playing virtual games. This application learning material inspired by the existing phonics book title "Bug's Mug – A Phonics Wheel Book" by Glen Johnstone (2005), Sydney (Australia) that teaches children about

phonics through a simple story. These book having simple interactive features where the reader can turn the wheel around to make words from the given phonics (alphabet) on the wheel. In this project, a motion detection game based learning features is add in the learning process. The target user of this project is the children between ages 4 to 5 years old and aim to deliver a better approach of learning style which includes some indoor physical activity during the process of learning.

Every student has the different type of learning method to understand and absorb the information. For example, some student only able to recall the information through visual, auditory or tactile stimulation. This is because human brain in nature will turn the environment stimulation into sensory stimulation. In nature, children are more active and like to move around but as the age grows, it becomes a challenge to being active due to the demands of homework of classes to attend. According to Andrea Gordon, the article stated that children who can move naturally during learning process are able to absorb more than who does not. Thus, it is believe that children academic result will be improved after attending physically active classes.

In conclusion, this thesis is to document the features of motion detection into the game-based learning of phonics. This paper will further discuss the technique that uses to complete his project like the type of software use to produce a motion detection game.

1.2 Problem Statement

With the wealth growth of IT technology, almost every families have more than one smart devices like smartphone, iPad, or laptop. Due to the influence of the parents, there is no doubt the children at an early age had exposed to these electronic smart devices. As an adult, playing the electronic game might help to relief stress but of cause not for children. We should realize that children at the early age are a "plain paper", they are a fast learner and absorb any information that exposes to them. Violence game and harmful information might easily expose to the children if the parent does not guide the children in choosing the type of game.

Playing electronic games can bring entertainment to someone but it is dangerous if obsessed with it. It is believed that children with more than 4 years old who had to expose to electronic games, will face some difficult to focus during the study in school. This might due to the restriction like children not able to move freely in the school, no entertainment or not able to control or do what they want during the school time, cause children get bored during the learning process. Compare to electronic games, children are entertainment with the visual stimulation or audio input where it is the fundamental element of the game to ensure the user does not get bored.

Therefore, by combining the element of the game into learning the material and allowing the learner to move around would help to improve the children interested towards learning. Thus, this project is to develop a game-based learning that able to capture children motion as an interaction to enhance the children understanding level. Besides, the purpose of the game is to influence the children to feel the learning can be so joyful. We know like to move around instead of sitting at one place for a few hours. Even we force them to do that, they would not give 100% of concentration. With this project, a motion detection game based learning is a solution to increase children interest where children can freely move around as they like while study.

1.3 Objective

i. **To develop a game-based learning that able to capture children motion detection as an interaction.**

This game-based learning games will deliver the learning material to the children through a simple animated clip while exercise material is using a simple visual football game where it comes with a question that required children to solve it. Thus, in this project children have to move by kicking the ball to the correct goal according to the question after learning.

ii. **To investigate the reaction of the user on the game-based learning in convey the information by implementing game to achieve the understanding level.**

This game based learning deliver different learning method compare to the original method. The original learning material is printed on a paper and combine as a storybook allow the children to read, but this may limit the information to be delivered where children might not able to read all the words without teacher or parent guidance. Away from the original idea, the learning material is now delivered in the form of 2D animation video clip with audio output. This may result in the increase of user interest to learn to compare to reading the storybook because it is much interesting and entertainment. Thus, with this interaction, children able to learn by themselves and do some exercise with physical movement.

iii. **To implementing game-based interaction in the development of the interactive game-based learning phonics book.**

There are lots of game engine that provide the features in develop game and devices that able to capture human motion. However, each software has their pros and cons too. To choose among this technology, this paper will analyze and discuss the type of game engine chosen and the type of motion detection input device that able to bring a better result.

1.4 Project Scope

i. **Target users**

The target users of this project are the children ages between 4 to 5 years old.

ii. **Themes**

This project focuses on delivering phonics learning material in the form of game-based learning as the main themes.

iii. **Platform**

This project will be developing in Windows platform.

1.5 Project Significance

The target users that will get benefits from this project are children from the ages between 4 to 5 years old and the parents or teacher who want to teach this group of children. When the project is successfully developed, it will bring the contribution in providing an idea of transferring the old style learning method to game based learning that will bring joy and fun to children to attract their attention toward learning. It will fulfil the natural needs of children to be able to move around and also increase the interaction from the children.

1.6 Conclusion

The project is expected to increase the children attention, interaction and understanding level towards the learning material that delivering through game-based learning study method.

In conclusion, the project can bring benefit to teacher or parent who educate the children at the range of 4 to 5 years old in the help to increase children attention. Besides, this project also will bring entertainment to children during learning process so that children will love to learn and no longer getting bored or restriction on the movement. The next chapter will discuss the literature review and project methodology that have been conducted.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

A literature review is a research the carry out to analyze related previous research paper, article, journal, case study, reference and finding to identify the approach to be done while develop and implement the project. Analyze can be done by comparison the case study or any theoretical articles. Thus, this chapter will discuss on overview of previous research related to motion detection game based learning technology. Besides, project methodology will discuss the process of managing the project.

In conclusion, this chapter will discuss research related to an input device that able to capture motion detection, research related to the uses of motion detection devices for education purpose, and research about the uses of motion detection device in the game to teach children 4 to 5 years old on learning alphabet/phonics.