

**DEVELOPING AN EDU-TAINMENT PROGRAM FOR STANDARD ONE IN
TOPIC ANIMAL WITH THE CONJUNCTION OF KINECT XBOX360**

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This report is submitted in partial fulfilment of the requirements for the
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DECLARATION

I hereby declare that this project report entitled
**DEVELOPING AN EDU-TAINMENT PROGRAM FOR STANDARD ONE IN
TOPIC ANIMAL WITH THE CONJUNCTION OF KINECT XBOX360**

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

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DEDICATION

I dedicate this research report affectionately to the following:

My parents, Mr Azmi Bin Alias and Mrs Zakiah Binti Jamaludin

My brothers, Mohd Hafiz Bin Azmi and Mohd Hazeem Bin Azmi

My sisters, Nurul Azreen Binti Azmi and Nurul Atiqah Binti Azmi

My supervisor, Madam Aniza Binti Othman

My group mates, Syazlin Amira Binti Abdullah and Siti Mahizan Binti Razaki

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ABSTRACT

This report explores the Kinect as a motion sensing device. The Kinect capabilities will be discovered as it has the potential as an interactive technology that is suitable to be implemented as an enhancement into the teaching method for teachers and learning programs for students. The students are restricted with 'behind the desk' concept where the teacher delivers the knowledge and students just absorb it. Due to that situation, it is hard to see the student to participate in the class activity. Thus, the Kinect application ideas are built with the conjunction with the Science subject standard One. As the Kinect potential in creating an enjoyable and interesting interaction activity in the classroom, the idea to implement the magnificent technology is through starting at young age which is at age seven. By using the abilities in developing the Kinect application, it is found that the students and teachers are interested and very enthusiastic in trying the application. The Kinect application lets the student explore and gives themselves freedom in expressing themselves. As a new technology that is suitable to be implemented in the classroom, it can create such a good bond between teacher and students. However, the implementation of Kinect in classroom has technical limitations for example it requires large classroom space. But still, living in the 21st century where the technology is emerging within the blink of an eye, the education also needs to be one step ahead. Therefore it can be said that Kinect and education are able to work well.

ABSTRAK

Laporan ini menerokai Kinect sebagai peranti penderiaan gerakan. Keupayaan Kinect akan diterokai kerana ia mempunyai potensi sebagai teknologi interaktif yang sesuai untuk dilaksanakan sebagai tambahan kepada kaedah pengajaran untuk guru-guru dan pembelajaran program-program bagi pelajar. Pelajar adalah terhad dengan konsep 'belakangmeja' di mana guru menyampaikan ilmu dan pelajar hanya menerimanya. Disebabkan keadaan itu, ia adalah sukar untuk melihat pelajar untuk mengambil bahagian dalam aktiviti kelas. Oleh itu, dengan idea-idea yang wujud aplikasi Kinect dibinabersama-sama dengan subjek Sains darjah Satu. Dengan potensi Kinect dalam mewujudkan satu aktiviti interaksi yang menyeronokkan dan menarik di dalam kelas, idea untuk melaksanakan teknologi yang hebat ini adalah bermula pada usia yang muda iaitu pada usia tujuh tahun. Dengan menggunakan kebolehan dalam membangunkan permohonan Kinect, didapati bahawa pelajar dan guru-guru sangat berminat dalam mencuba aplikasi ini. Aplikasi Kinect membenarkan pelajar meneroka dan member diri mereka kebebasan dalam mempamerkan diri mereka. Sebagai satu teknologi baru yang sesuai untuk dilaksanakan di dalam kelas, ia boleh mewujudkan satu ikatan yang baik antara guru dan pelajar. Walaubagaimanapun, pelaksanaan Kinect di dalam kelas mempunyai batasan teknikal contohnya ia memerlukan ruang bilik darjah yang besar. Namun tinggal di dalam abad ke-21 di mana teknologi baru muncul dalam sekelip mata, pendidikan juga perlu untuk satu langkah di hadapan. Oleh itu boleh dikatakan bahawa Kinect dan pendidikan dapat bekerja dengan baik.

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LIST OF ABBREVIATIONS

PSM	-	Projek Sarjana Muda
CD-ROM	-	Compact Disk-Read Only Memory

CHAPTER I

INTRODUCTION

1.1 Project Background

This project is mainly focusing on EDU-TAINMENT (education and entertainment) which makes the learning environment more attractive and interesting. Nowadays, learning substances are not able to give kids an interesting way of learning. This kind of approach does not require the kids participation which most of the time only from their teachers. That is why students tend to get bored and lose focus while in class. This problem can lead to the lack of interest in learning and can make the students think that the learning process is hard especially in Science subject which is something new for them.

Virtual Reality will act as the domain in this project. The project will be working with the help of Kinect Xbox360. Lately, the nations have been introduced with the usage of virtual reality through gaming product which has gains a lot of attention around the world. The Kinect attracts the world to experiencing a new way of playing games that not just by console.

Kinect is a motion sensing input device developed by Microsoft for the Xbox 360 video game console. Based around a webcam-style add-on peripheral for the Xbox 360 console, Kinect enables users to control and interact with the Xbox 360 without the need to touch a game controller, through a natural user interface using

gestures and spoken commands. The project is aimed at broadening the Xbox 360's audience beyond its typical gamer base. Kinect works in 4 ways where it is by motion sensor, skeletal tracking, facial recognition and voice recognition.

The main reason for developing this project is to be able to create two ways of interactions where the kids are able to response to the questions given virtually with the help of Kinect. The Kinect education will be able to help the students to learn and perceive things in more interesting way instead of just watching a dull and ordinary video learning. The uniqueness of this project is that the conjunction with Kinect and learning makes the education more interesting. The user will be able to experience a lively learning through Kinect.

1.2 Problem Statement

The world is moving forward so does the technology. However, learning system nowadays seems like a bit layback. Malaysian rarely been introduced with the learning substance such as the using of virtual reality application in the classroom. Most of the learning substances that exist in Malaysia only use video animation aside from just dependable on textbook as the medium in learning process.

In fact, there are also schools that do not even use the videos that have been provided by the Ministry of Education Malaysia to the school. This phenomenon occurs because some of the educators think that using the cd that contains video learning is just some basic learning program for the students. Thus, a new application should be introduced as another alternative to attract the students to learn and gain valuable knowledge.

In Malaysia, it is very rare and most probably none, to find any learning programs that apply virtual environment in primary and secondary schools. The usage of advanced technology probably has been applied only to the higher learning institutions like in the university.

According to the LEGO Group, in their article on The Whole Child Development Guide, between ages of four and eight, a child improvement in coordination and skill is still amazing [9]. So is the child perceptuo-motor integration, or ability to synchronize her body movements to the movements she sees, or hears, others performing, (so-called eye-hand coordination is a pair of perceptuo-motor integration, and begins when children eyes can be guided to follow movements of their hands) [9]. This shows that, at this stage of development, kids are really in a state of being excited in trying a new thing, develop new skills and able to solve problem they encounter.

Based from the University of Michigan Health System website in the topic of Developmental Milestones, the site stated that child development refers to how the child able to do or solved complex things as their age increasing [8]. Development in child is referring to their skills progress. For example, their Fine motor which they able to use their hands to eat, draw, play and write.

Besides that, is the development of their Language skills where the child able to speak, use body language and gestures, communicating, and understanding what other say to them. Both skills that were stated in the site really have similarity with the idea of introducing Kinect to kids.

The main reason of choosing kids at age seven because around that age is the peak age where the kids are in curious state. Kids at this age are interested in finding, exploring and investigating new things. Every single day becomes an adventure and a time of discovery.

According to howkidsdevelop.com, in their article about the childhood development from age 5 to 7 years, this is the period where the children learn skills needed to become a self-sufficient person. For instances, how the kids uses their hand, how the kid moves, how the kid communicates and how the kid explores. At this age, it is fundamental to learn how to read, write and learn basic math. The kids are eager to learn and explore new things.

Besides that, according to the book, ‘The Whole Child Development Guide Edition 1’ part 4, the writer state that during the age of four and eight, the child improvement in coordination and skills is amazing [9]. They have the ability to synchronize their body according to the movement of what she sees or hears. Other than that, the writer also mentioned that during this period the child is in their peak of physical energy and intellectual vigour. That is why the purpose of this project is to create a virtual reality education program that is goes along the way with the development of technology and education in Malaysia.

1.3 Objective

1. Objective 1

To investigate what is Kinect Xbox360 device is, and what it capable of in conjunction with education and learning program in Malaysian primary school where it will be focusing in Standard One Science topic “Animal”.

2. Objective 2

To develop a virtual reality educational program which is work with kinect that able to give an interesting way of learning among students with involve the participation of the students and teacher.

3. Objective 3

To evaluate a user acceptance testing towards the project whether the proposed project can be accept by the students and able to create a new interesting learning environment for schools where just not dependable on whiteboards and books.

1.4 Scope

1.4.1 User

The main target user for this educational program is primary school students, age 7 that is in Standard 1. This is because at early school years it marks huge progress in a child's abilities to understand, communicate, and reflect upon matters that can motivate social relations. At this age, children gain greater control over their emotion and able to show their understanding through the activity they are doing.

1.5 Project Significance

1.5.1 User Requirement Analysis

Learning programs need to be interesting and able to educate the user once they use it. The program that is work with Kinect Xbox360 is able to give a virtual reality of learning process that capable to improve the understanding of science subject among the Year 1 student. Through this application, it able to delivers the active learning experience to all classrooms. As stated in the problem statement, at the age of 5 to 7 years, the kid is in the stage where they are very enthusiastic in trying new things. The kids are in the beginning of their interesting journey and discovery. Every action that they experience is a learning process for them. Thus, by starting at the age of 7, the kids are in suitable state for the developer to introduce a new learning environment.

In addition, if the introduction of this Edu-tainment program to Standard One student is succeeded probably the idea can be introduce to upper level like Standard Two, Three, Four, Five or Six or even to Secondary School students.

Beside that the educational program also must be suitable in the age range of the students where it can attract them due to the facts that this is new for them to learn science subject. In fact at this age, it is marked as the time most of them exploring and investigating. The child at this age will be expanding their curiosity and in the full force and energy in investigating to find the answer. Most of them during this age are eager to learn and develop and take charge.

1.5.2 Importance of Study

The importance of this project is able to create a new environment in learning process that can involve the participation of students and teachers in more interesting ways which is goes along the way with fast growing of technology around the world. Besides, as a community with diverse backgrounds and varying skill level, Kinect Xbox able to help the classrooms evolve.

1.6 Conclusion

The purpose of this project is to develop a new environment in learning process among Year 1 students in Science subject that can involve the participation of student and teacher. Beside that's, this project also hoping to be able to educate the students educationally and technologically. In fact, through this it can help in transforming the classrooms to a 21st century model of learning with the evolving of technology.

In the next chapter, literature review and project methodology will be explained. It will contain with the fact and finding where it will be discussed about the related or passed research that have been done before by the developer. In the project methodology, it will be an elaboration on the activity that will be carrying out during the development of the project.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Previous chapter has been discussed about the purpose of the project that is going to be developed that is in Virtual reality domain. The project will be carried out with Kinect Xbox360 which supports an interactive learning experience. This project focussed on developing an interactive learning environment in Standard One Science subject, which in the chapter 3 about Animal.

While, for this chapter, literature review and project methodology will briefly review the specific factor and research about the project and the significant between the existing project and the developing project. This chapter will consist of facts that related or passed research or findings that relate with the project title. Beside that's, this chapter also comprises with the procedure in carrying out the project. Project requirement which are involving the hardware, software and other requirement will be discuss in this chapter.

Moreover, at this chapter the project schedule and milestone will be plan out and describing about the activities that will be carrying out in every stage.

2.2 Domain

The project will be focusing on Science Standard One which is The Animal World Chapter 3. The project will be developing with the use of Kinect. The main reason of choosing this domain is mainly because Virtual Reality is evolving worldwide. In fact, combining Kinect technology with the education will improve the students learning environment. The conjunction of education and Kinect is already a growing fast community that happen around the world but certainly not in Malaysia. Thus, that is the main reason for choosing the implementation of Virtual reality with Kinect Xbox360 as the domain for developing this project.

2.3 Existing System

The introduction of Science in Standard One or in *bahasa* called as '*Dunia Sains dan Teknologi*' subject has been introduced since year 2003.

The subject has brought tremendous impact in the student knowledge. However during the year 2003 to 2005, the technology that was used was not interactive enough to attract student to learn science. In fact, the learning materials that the Ministry of Education introduced were only textbooks including with CD-ROM. The CD-ROM for students called My's-CD contains the same idea in enhancing the students' knowledge in science such as exercises, games, and simulations.

As for the teacher, they have been included with the Teacher's Guide Book. The book provided as a preference and guide to the teachers in implements an

effective teaching and learning. Beside students, the teacher also provided with the CD-ROM which able to help the teacher in planning and carrying out the teaching.

According to the article in Kinect Education, the site stated that that the community have been raised in the typical schools setting where the students have to sit in row desk with only minimal space to do activity [1]. The students are restricted with the rows of table where they have limited area in enjoying the activity. That is why, Kinect trying to create a new environment for the schools atmosphere where they trying to evolve the classroom beyond this 18th century model. The development of Kinect project able to construct the learning structure that is aligned with brain exploration and involving active learning. The project will involve all participation of the students with the teacher. There are existing applications that were created by the Kinect Xbox team were used by the school which able to improve the learning experience in classroom like what have been use by the Lakeside Centre for autism [17]. Besides that, there were also application that was developed by the student for the final project for example, the project by Uzma Khan 'Kinect power of gesture and speech as an education tool' [2].

2.3.1 Kinect's power of gesture and speech as an education tool

According to the article in the Kinect education site in year 2011 by Greg Duncan, 'Kinect power of gesture and speech as an education tool' is one of the school projects that is done by Uzma Khan [2]. Uzma Khan is a student that took course in Human – Computer Interaction (HCI) with her professor in her university, University of Toronto. She decided to work with novel input modalities of gesture and speech with Microsoft Kinect as new hardware and developed a proof for use in education. Based from Uzma Khan, she got the idea that it would be an efficient mode of interaction in learning environment. Through gestures and speech, that been