

BORANG PENGESAHAN STATUS TESIS

JUDUL : KUKUH SAYA DAN CEKAP MATEMATIK TAHAP 1: TEKNIK INTERAKTIF

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KUKUH SAYA DAN CEKAP MATEMATIK TAHAP 1:
TEKNIK INTERAKTIF

NADIAH BINTI HUSSIN

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2013

DECLARATION

I hereby declare that this project report entitled
KUKUH SAYA DAN CEKAP MATEMATIK
TAHAP 1: TEKNIK INTERAKTIF

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

STUDENT : _____ Date: _____

(NADIAH BINTI HUSSIN)

SUPERVISOR : _____ Date: _____

(DR. HJH NORASIEN BAKAR)

DEDICATION

*I would love to dedicate this product of mine to all my love ones,
my family members, especially to my dear parents, my siblings, my granny, my
aunties, my cousins and my friends.*

*This is also dedicated to my warmth supervisor DR.HJH NORASIKEN BAKAR, as
she had guided me from the very beginning till
the end.*

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ABSTRACT

There are several kids in primary school who finds Mathematics is quite hard to understand and not an interesting subject. Since Mathematics contains solving problems question and lots of calculating, it is quite hard for teachers to attract these kids to be engaged with Mathematics. . This project is built to help school children to understand and apply mathematical concept and skills in various contexts. This 2D module will convey the information and assessments through 2D animation in a interactive technique technique. By using the interactive technique in 2D, children will easily absorb and understand the modules. Studies showed that kids learn and understand faster with colourful materials rather than verbally from human. Graphics also play an important role in attracting the kids in learning. This project aim to investigate which methodology is suitable for developing a 2D interactive Mathematics' courseware for primary school students and to develop a 2D Mathematics ourseware for standard 1 to 3 primary school students and to evaluate how effective and how far the kids understanding of Mathematics subject in a 2D interactive courseware learning module. The expected outcomes for this project is to produce a fun 2D Mathematic interactive courseware with complete modules as an alternative tool for the teachers in teaching-learning sessions so that the kids understanding and performance will increase.

ABSTRAK

Sesetengah pelajar sekolah rendah mendapati subjek Matematik adalah salah satu subjek yang kurang difahami dan tidak menarik di dalam kelas. Ini kerana Matematik mengandungi konsep penyelesaian masalah dan terlalu banyak pengiraan, oleh itu para guru juga mendapati ianya amat sukar untuk menarik minat pelajar mereka terhadap subjek ini. Projek ini dibina untuk membantu murid sekolah agar memahami dan menyelesaikan permasalahan Matematik dalam pelbagai konteks. Modul 2D ini mengandungi bahan pelajaran dan latihan yang di persembahkan dalam bentuk interaktif. Dengan menggunakan teknik interaktif ini dalam 2D, pemahaman murid-murid terhadap subjek ini akan menjadi mudah. Kajian menunjukkan kanak-kanak lebih memahamai sesuatu pelajaran dengan cepat jika terdapat penggunaan warna yang terang dan menarik, berbanding dengan apa yang di sampaikan melalui percakapan. Grafik juga memainkan peranan yang penting untuk menarik minat murid terhadap pelajaran ini. Tujuan projek ini dijalankan untuk mengenalpasti "*methodology*" yang sesuai untuk membangunkan "*courseware*" modul interaktif 2D untuk pelajar sekolah rendah dan untuk membina "*courseware*" 2D bagi pelajar Sekolah Rendah Tahap 1 dari darjah 1 hingga 3 dan juga untuk menilai tahap keberkesanan dan pemahaman murid terhadap pembelajaran melalui modul 2D. Hasil yang diharapkan bagi projek ini adalah untuk menghasilkan satu "*courseware*" yang seronok untuk digunakan dalam sesi pembelajaran subjek Matematik di Sekolah agar pemahaman murid terhadap subjek ini akan bertambah.

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LIST OF ABBREVIATIONS

PSM	-	Projek Sarjana Muda
UTeM	-	Universiti Teknikal Malaysia Melaka
2D	-	2 Dimension

CHAPTER 1

INTRODUCTION

1.0 Project Background

There are several kids in primary school who finds Mathematics is quite hard to understand and not an interesting subject. Since Mathematics contains solving problems question and lots of calculating, it is quite hard for teachers to attract these kids to be engaged with Mathematics. This project is to build an interactive Mathematic courseware titled “Kukuh Saya dan Cekap Matematik Tahap 1: Teknik Interaktif”. Each of the topics sources are taken from Ministry of Education Malaysia’s Integrated Curriculum for Primary Schools (KBSR) Mathematics text books.

Here, there are two subtopics that are KUKUH SAYA and CEKAP MATEMATIK and there will be several sub modules that will be cover in these subtopics. KUKUH SAYA, will introduce kids with numbers, it will teaches them from number 1 up to 1000 and teaches the kids how to calculate, round off and much more. As for CEKAP MATEMATIK it teaches about how to solve mathematical

problems and the usage of mathematics symbols. Each of these modules has its own assessments. The assessments will provide exercises for the teachers to evaluate the kids understanding.

This project is built to help teachers to have a fun and effective teaching-learning session with the kids in the school and to help children to understand and apply mathematical concepts and skills in various contexts. This 2D courseware will explain each topic then the kids or users need to answer the assessment that will be provided at the end of each module. This 2D module will teach the lessons through 2D animation in a Dialogue-Interaction Technique which is adapt from interaction design techniques and assessments through edutainment concept, in an open-ended game approach where kids will answer the questions as if they are playing games.

Through these techniques in 2D which is full of attractive graphics, sounds and colourful environment, children will easily absorb and understand the modules. Studies showed that kids learn and understand faster with colourful materials rather than verbally from their teachers. Graphics also play an important role in attracting the kids in learning. In order to achieve the understanding and engagement of the kids, 2D interactive modules that incorporated with Dialogue-Interaction Technique and edutainment technique will be use.

1.1 Problem Statements

School kids tend to dislike Mathematics because it involves calculation which is sometimes a bit hard to solve by the kids. In classroom, primary school's Mathematics teachers often use certain objects as an aid in their teaching-learning session, so that their students can easily get the idea of what is being taught.

For teachers to provide lots of tools for a specific number of kids are quite hard, in matter of to handle all the kids to use the objects in a right way instead of playing them as toys, after all they are kids. In order to overcome this problem, there is one solution which is developing a 2D modules or courseware for primary school students standard 1 till 3.

However, there are some of this courseware out there, but to produce the right courseware based on Ministry of Education Malaysia's Integrated Curriculum For Primary Schools (KBSR) Mathematics text books and at the same time make it a fun way of learning Mathematics is really hard to find. So to develop this courseware several multimedia elements and concepts are use, but the question is which methodology is really suitable to develop a 2D learning courseware for primary school kids? How to create a 2D courseware that will help the teachers in attracting the kids to like this subject and show improvement in their performance towards this subject.

1.2 Objectives

1. To investigate which methodology is suitable for developing a 2D Mathematics courseware for primary school students.
2. To develop a 2D Mathematics courseware for standard 1 to 3 primary school students.
3. To evaluate how effective and how far children understanding and their engagement of Mathematics in 2D interactive courseware than verbally from teachers.

1.3 Scopes

The target user for this 2D Mathematics courseware is school kids from standard 1 to 3, who is quite a beginner for Mathematics subject. Besides that, teachers who teach Mathematics for these kids also can use this software in order to develop interest towards subject. This courseware can be used in school for learning purpose because it is based on Ministry of Education Malaysia's Integrated Curriculum For Primary Schools (KBSR) This 2D Mathematics courseware also can be used by the students as their additional exercise at home.

This 2D courseware will be deliver in CD or DVD form, since every home have at least one computer, this software will be easy to use and learning become easy with this handy courseware.

This courseware will be develop using Adobe Flash CS4, to create the learning environment, the graphics and animations that will be included in the courseware. This will be an interesting courseware for kids to use and learn.

1.4 Project Significance

This courseware will become an alternative tool for teachers in the teaching and learning session in the school. It contains multimedia elements and integrated computer science elements, where it can help to attract the kids with this subject. Here, the lessons are deliver through dialogue-interaction technique which is adapt from interaction design techniques and the assessments will be deliver through edutainment concept, in an open-ended game approach where kids will answer the questions as if they are playing games instead of focusing too much on the subject.

As it comes in CD or DVD form, it will save costs and times and it will definitely become a handy to the teachers to teach kids who have lack of interest in this particular subject because it has multimedia elements that could help in attracting the kids and increase their engagement and also their performance with this subject.

1.5 Expected Output

The expected results for this project is to develop and produce a 2D Mathematics interactive courseware that is completed with several modules that cover Mathematics that is based on Ministry of Education Malaysia's Integrated Curriculum For Primary Schools (KBSR) Mathematics text books for standard 1 until standard 3. This courseware will give benefits to teachers where it can become one of an alternative tool in the learning session in school. Plus, students can even explore this courseware at home to get a better understanding at their own pace. This will save cost and time of the students and their parents since it comes in CD or DVD form. Last but not least, through this 2D interactive courseware, students can have fun while learning and the most important thing is their understanding and performance on this subject will increase.

1.6 Summary

In a nutshell, it has clearly stated the idea that will be included and how the lessons going to be deliver. This courseware will then be developed according to the objective and various measurements that need to be done in next stages of the development. All the materials and resources need to be analyses before producing this courseware.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This project, *Kukuh Saya Dan Cekap Matematik Tahap 1: Teknik Interaktif*, is a 2D courseware for primary school students from standard 1 to 3. In this chapter, the literature review will be discusses and analyzed of tools and output as well as the analysis of existing Mathematics courseware will be discusses.

In literature review, the process of searching, collecting, finding possible related materials, differentiating, and analysing existing courseware or any similar application that already existed and published by other researchers and compare it with the courseware or system that will be developed. These processes can be done through analysing educational CD-ROM, educational web site, school books, journals, technical reports, and any other form of relevant resources.

2.1 Area of Study

The area of study or domain for this project is Information and Communication Technology in Education and Learning and also Ministry of Education Malaysia's Integrated Curriculum for Primary Schools (KBSR) because this 2D courseware is based on Mathematics syllabus for primary school standard 1, 2 and 3. As Mathematics is a core subject in both primary and secondary school in Malaysia and there are lots of students who have lack interests in this subject, developing an interactive 2D courseware CD or DVD that has computer science and multimedia elements such as graphics, 2D animations, attractive sounds, simple games and others integrated in it, will help the students to learn Mathematics in very convenient and fun way.

2.2 Current Systems

According to Ian Stewart (1996), the author of 2nd Edition of "What Is Mathematics? An Elementary Approach to Ideas and Methods " book, the teaching and learning of mathematics has degenerated into the realm of rote memorization, the outcome of which leads to satisfactory formal ability but does not lead to real understanding or to greater intellectual independence.

As for Malaysia's school today, teachers teach the students verbally and use a blackboard to explain further about the lessons so that the students can understand the lesson. All the topics are taken from our country curricular standard Mathematics text book, the students will be given homework as a drill-exercise to sharpen their skills in Mathematics from the textbook too. There are sources available online but there are mainly exercises in soft copy form that need to be downloaded to answer.

2.2.1 Case Study 1: Mathematics Revision Book Xpress Bestari Mathematics UPSR 4, 5, 6

This is a Mathematics' revision book for Tahap 2 (Standard 4,5and 6) called Xpress Bestari Mathematics UPSR 4,5,6. This book contains explanations of each topic for Tahap 2. It also provides exercises for student to test their understanding of overall chapter in a test form. Students can answer the question and check the answer at the back of the book. This book contents are mainly texts and a bit of graphics. It is quite handy for students to do extra exercises besides than school's homework, but this book is targeting and focusing on students who quickly absorb the concepts of Mathematics or quick learner and excellent students, rather than the one who lack of interest in Mathematics. This is because this book only contains the explanation about certain topics, and also how to solve several types of questions but it does not have an exercise that students can do after learning each topics in the book. From this analysis, what can be seen is that, the pattern of learning of this book is lot more useful for quick learner students.

Figure 2.0 shows the interface of Xpress Bestari Mathematics UPSR 4, 5, 6 book. On this page, it has several short notes about every subtopic under Unit 1, which represents Chapter 1 in the national KBSR syllabus for standard 4. As shown below, the interface is text-based, lots of texts and a few tables to explain the lesson.