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JUDUL: MATH ADVENTURE HOW HIGH I CAN FLY A MULTIPLE ENDING GAME

SESI PENGAJIAN: 2 - 2007/2008

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MATH ADVENTURE HOW HIGH I CAN FLY A MULTIPLE ENDING GAME

NOR HAFIZAH BT ZULKIFLEE

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

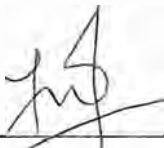
FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
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2008

DECLARATION

I hereby declare that this project report entitled
**MATH ADVENTURE HOW HIGH I CAN FLY A MULTIPLE ENDING
GAME**

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

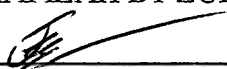
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DEDICATION

Specially dedicated to my beloved parents, family, and
my supportive friends..

ACKNOWLEDGEMENTS

I would like to thank to Puan Farah Nadia Binti Azman for giving assistant to complete this project successfully.

I would also like to thank my beloved parents who have been giving me support and motivation throughout my project.

Finally, I also express my deep gratitude to those who directly or indirectly helped me in completing this PSM documentation.

Thank you.

ABSTRACT

Math Adventure How High I Can Fly a Multiple Ending Game is a computer game with a multiple endings for kids between 7 to 8 years old. This document records the process of development for this game from the beginning until the end of the phase which is analysis, design, implementation and testing. The main existing problem is; even though much of the material had been used in teaching to assist the kids between 7 to 8 years old in practicing questions, they still need an extra tool to make them understand the basic addition and subtraction. The purpose of this project is to let the user to get the better understanding and having fun with the basic addition and subtraction. This game is also as an additional tool for learning the basic addition and subtraction to let them have an extra tool to learn math outside the classroom. It also helps them to be not stressful during learning process. Based on the research, the game-players are spending long periods of time immersed in visual environments in which they have to make decision, think critically, make choice and reflect on all of their action. Therefore; adding the multiple endings element into the game is one of the alternatives way in Game Based Learning (GBL).

ABSTRAK

Math Adventure How High I Can fly a Multiple Ending Game adalah permainan komputer dengan pelbagai kesudahan untuk kanak-kanak berumur 7-8 tahun. Dokumen ini merekodkan dan menyatakan proses-proses pembangunan permainan ini dari permulaan hingga ke akhir fasa iaitu analisis, rekabentuk, implementasi dan pengujian. Masalah sedia ada yang utama adalah, walaupun banyak material telah digunakan dalam pengajaran untuk melatih kanak-kanak di antara 7-8 tahun untuk menjawab soalan latihan, mereka masih memerlukan material tambahan untuk membolehkan mereka memahami pengetahuan asas di dalam penambahan dan penolakan. Tujuan projek ini adalah untuk membantu pengguna memahami perkara asas mengenai penambahan dan penolakan. Permainan ini adalah sebagai alat pengajaran tambahan untuk mempelajari asas kepada penambahan dan penolakan serta membantu mereka mempelajari matematik di luar kelas. Ia juga membantu mereka agar tidak terlalu tertekan ketika sesi pembelajaran. Berdasarkan kajian, pemain akan menghabiskan masa yang panjang untuk persekitaran visual dimana mereka terpaksa membuat keputusan, berfikir secara kritikal, dan membuat pilihan serta refleksi terhadap kesemua tindakan. Oleh itu, penambahan elemen *multiple endings* dalam permainan ini adalah salah satu alternatif dalam *Game Based Learning (GBL)*.

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LIST OF ABBREVIATION

GBL - **Game Based Learning**

LIST OF ATTACHMENTS

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CHAPTER 1

INTRODUCTION

1.1 Project Background

Multiple endings have become popular in games. Generally, multiple endings game is a case in entertainment where the story ends in different ways. The user interactivity is an important factor to determine which ending to use. An exploration by game can make to the education process which categorized as Game Based Learning (GBL).

Game Based Learning (GBL) is a new field in the learning area. It combines motivating aspects of computer games with learning. Research has shown that learning is much more effective when the student has fun. The digital game is meant to bring the fun into the learning on a natural way. Game Based Learning (GBL) uses competitive exercises, either putting the students against each other or getting them to challenge themselves in order to motivate them to learn better. Primary school teachers perceive that many educational titles contain a game element, and this perception is shared by children using such software. This is because game can provide a forum in which learning arises as a result of tasks stimulated by the content of the games, knowledge is developed through content of the game, and skills are developed as a result of playing the game.

The primary school students need to learn mathematics for their future learning. Much material had been use in the teaching method such as papers; pictures and the teacher to assist them in practicing questions. Even though a lot of theories

have been using to teach them, some of them are still need an extra tool to make them understand the basic addition and subtraction. So, computer game is one of the extra tools to help them.

There is a lot of difference between a kid sitting in a classroom because they had to be there, trying to soak in the information, and a kid sitting in front of a computer. A kid whom is sitting in front of the computer would feel more motivated and self-directed to learn.

A project that will develop is a computer math game entitled 'The Math Adventure How High Can I Fly'. This game has multiple endings. This game is about learning Mathematics and it will cover a simple addition and subtraction. The target users of this project are kids between 7 to 8 years old that has a basic knowledge of addition and subtraction. This game is about the mission of one boy who wants to fly to the high level. So, the user has to help this boy to solve the Mathematics problems solution to reach to the highest level. The score will determine the level that the boy can reach. Element of audio, graphics and simple animation will be applied in this project. Besides, the usage of colors, font, and grammar that is suitable is also applied in developing this project.

1.2 Problem Statement

Much material had been use in the teaching method such as papers; pictures and the teacher to assist them in practicing questions. Even though a lot of theories and techniques have been using to teach them, some of them are still need an extra tool. So, computer game is one of the extra tools to help them.

The most important thing in education is how to motivate the students to learn. There is a lot of difference between a kid sitting in a classroom because they had to be there, trying to soak in the information, and a kid sitting in front of a computer. A kid whom is sitting in front of the computer would feel more motivated and self-directed to learn. This is because; the game-players are spending long

periods of time immersed in visual environments in which they have to make decision. They have to think critically. They have to make choice. They have to reflect on all of their action.

1.3 Objective

- **To design a Mathematics game for the kids between 7 to 8 years old that has a basic addition and subtraction.** The teachers usually use sticks, boxes, graphics and worksheet as the material for their teaching. So this game is one of the alternative learning tools to assist them in practicing addition and subtraction questions.
- **To add multiple endings element into the game.** The game-players are spending long periods of time immersed in visual environments in which they have to make decision. They have to think critically. They have to make choice. They have to reflect on all of their action.
- **To test the game to the real target user.** This game should be tested whether it successes or not.

1.4 Scope

A target user is kids between 7 to 8 years old. This user is selected as the target user because the question provided in the games is just the basic addition and subtraction.

The project will take about 22 weeks for preparing the introduction, literature review and project methodology, analysis, design and implementation. For the testing and project conclusion, it will take about 8 weeks to accomplish it.

The costs are depending on the requirements and attributes of the project itself.

The main language is English. It is to fulfill the requirement of government syllabus.

1.5 Project Significance

This project is able the user to get the better understanding and having fun with the basic addition and subtraction. This game is an additional tool for practicing the basic addition and subtraction. So, the user can have an extra tool to learn math outside the classroom. This game can make them continuous to play it because it has multiple ending. So the user will interest to play it until up to the highest level. This game will help the kids to be not stressful during learning process.

This game can motivate the target user to study outside the classroom. There is a lot of difference between a kid sitting in a classroom because they had to be there, trying to soak in the information, and a kid sitting in front of a computer. A kid whom is sitting in front of the computer would feel more motivated and self-directed to learn. This is because; the game-players are spending long periods of time immersed in visual environments in which they have to make decision. They have to think critically. They have to make choice. They have to reflect on all of their action.

This game is also to assist the target user in practicing questions. Games are the extra tool for kids to assist them in practicing the questions. An early study on the effects of video games on children found that playing video games will motivate student to learn. This is because; games promote imaginative engagement.

1.6 Expected Output

The final output of this project is a math computer games for kids between 7 to 8 years old. This computer game has multiple ending. Multiple ending games are a case in entertainment where the story ends in different ways. The user interactivity is an important factor to determine which ending to use. This game can help the user to practice the basic addition and subtraction outside the classroom.

1.7 Conclusion

The computer game for mathematics is developing to help the primary school children in practicing the mathematical addition and subtraction multimedia elements such as texts, graphics, animation and audio. The computer game also can motivate the children to self-directed learning. The next chapter will explain about facts and findings, domain, existing system, comparison of existing system, project methodology, instructional design and project requirement including hardware and software requirement.

CHAPTER II

LITERATURE REVIEW & PROJECT METHODOLOGY

2.1 Introduction

This chapter will review about literature review, domain of the project, the existing system, comparison of existing system, project methodology, instructional design and project requirements. In literature review, all the facts and findings from books, journal, conference papers, electronic databases and other will be stated in details. All the facts and findings are used to verify the statement that involve in the research. In the domain part, a related domain will be identified and explained. In the existing system part, the past research, references, case study and other finding that relate to this project will be discussed. The comparison with the existing system also will be done. In the methodology part, all available approaches, technique and tools used to achieve predetermined objectives. In the project requirement part, software requirement, hardware requirement and other requirement will be determined. Project schedule and milestones also will be determined.

2.2 Fact and Finding

Fact is a statement or assertion of verified information about something that is the case or has happened while finding is the act of determining the properties of something, usually by research or calculation. For this project, fact and finding is important to determine the domain of the project. All the fact and finding will be

support by a review of the existing system and technique that related and already be used by the others. The fact and finding that will be review are Game Based Learning (GBL) and multiple endings game. Game Based Learning (GBL) uses competitive exercises, either putting the students against each other or getting them to challenge themselves in order to motivate them to learn better. Multiple endings games are a case in entertainment where the story ends in different ways. The user interactivity is an important factor to determine which ending to use.

E-learning has grown vastly over the past years, yet more and more people are beginning to question it's effectively. Many courses have been transformed into some kind of "multimedia" training. The information is embedded in multimedia-mix. The information maybe spoken by a "talking head", films can be included as well as a quiz or multiple choice test to test the knowledge level. Students very often fail to complete a whole course presented in e-learning format. The reason is because that the product is not engaging enough. Of course, when someone really wants to learn about a subject, the content is engaging by itself and the student will definitely finish the course; even if it is not well written, boring, or presented in a plain old textbook. Often a course is used to present content that a student might not find the extreme interesting by itself. In an instructor-led course the instructors' task to point out the highlights; to motivate the students, guard the pace of the course not too fast or too slow and make the content "come alive". Based on finance or physical availability of people and equipment, e-learning is often offered as an alternative manner to make the content more attractive. In many cases it fails in doing so. There are not many e-learning products that are able to take over all tasks of the teacher. The presentation of the content and the knowledge-test are often successfully realized in some way or another. But to make the content really come alive and engage the student in the course, like a good teacher can do, has rarely been implemented with success.

2.2.1 Domain

In developing this prototype, the domain of this prototype is GBL. Digital Game Based Learning is a new field in the learning area. It combines motivating aspects of computer games with learning. Research has shown that learning is much more effective when the student has fun. The digital games are meant to bring the fun into the learning on a natural way. Game Based Learning (GBL) uses competitive exercises to get them to challenge themselves in order to motivate them to learn better. The integration of learning with gaming makes mathematics more fun. It also motivates students to learn because it can encourage them to learn from their mistakes. They also can immerse them in the material, so they can learn more effectively. There are several elements that define an activity as a Game Based Learning (GBL). The elements are competition, engagement, and immediate reward. Competition means that the score-keeping element or winning conditions which motivate the players and provide an assessment of their performance. Engagement means that once the user starts, they do not want to stop before the game is over. According to Lepper and Cordova (1992), they refer this phenomenon as "intrinsic motivation" and ascribe it to four sources which are challenge, curiosity, control, and fantasy. Immediate rewards mean that players receive victory or points, sometimes even descriptive feedback, as soon as goals are accomplished.

The next domain is multiple endings. Multiple endings refer to a case in entertainment usually games where the story could end in different ways depending on the actions of the characters. Interactivity of the user is an important factor in determining which ending to use. Due to their interactive nature, multiple endings have become popular in games. Many games will artificially enhance their length by encouraging more than one play-through via multiple endings. Generally, endings have to be vastly different in terms of plot to be considered multiple endings; having obtained certain characters to get slightly different results at the end of the game does not count as a distinct ending. Also, the "Game Over" outcome is usually not counted as an ending in this context although "bad endings" are counted.

2.3 Existing System

From the research, Game Based Learning (GBL) has been implemented and used by several institutions, organizations and company such as Nintendo, Fukio Mitsuji, and others. The purpose of using Game Based Learning (GBL) and multiple endings is to make them continuous to play it because it has multiple endings. So the user will interest to play it until up to the highest level. This game will help the kids to be not stressful during learning process. The above below is the existing of Game Based Learning (GBL).

i) Existing system 1: The Timernator

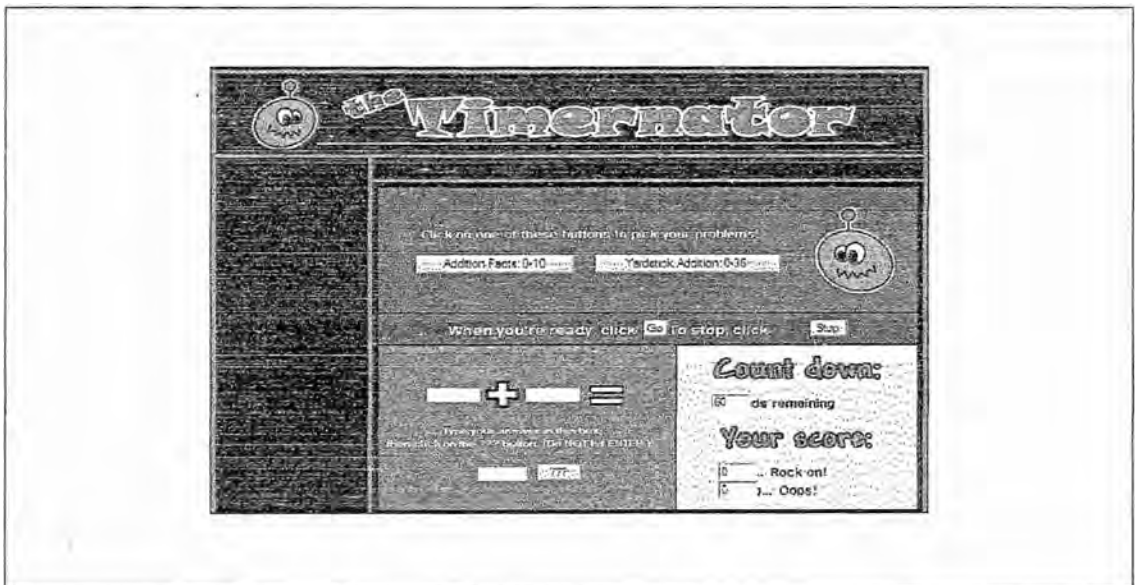


Figure 2.1: The Timernator screenshot

This is the example of Game Based Learning (GBL). Game Based Learning (GBL) uses competitive exercises, either putting the students against each other or getting them to challenge themselves in order to motivate them to learn better. For this game, the user challenged them self by timing. The primary teachers perceive that many educational titles contain a game element, and this perception is shared by children using such software. This is because games can provide a forum in which learning arises as a result of tasks stimulated by the content of the games, knowledge is developed through content of the game, and skills are developed as a result of