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JUDUL: GAME BASED LEARNING FOR LEVEL 2 SLOW LEARNER

CHILDREN COURSEWARE ON SIMPLE MATHEMATICS

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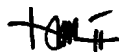
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**GAME BASED LEARNING FOR LEVEL 2 SLOW LEARNER CHILDREN
COURSEWARE ON SIMPLE MATHEMATIC**

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**This report is submitted in partial fulfillment of the requirements for the
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DEDICATION

To my beloved parents...

Rashed Bin Omar..

Muslipah Binti Marman..

Thank you for all your support and motivation...

Also my younger sister..

Amira Binti Rashed..

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ABSTRACT

Game Based Learning For Level 2 Slow Learner Children Courseware On Simple Mathematic is one of courseware that has been develop for level 2 slow learner children for Sekolah Kebangsaan Bukit China, Melaka to define concentrate level and technique memorize for long term memory. Normally, this child has learned using traditional classroom method which uses multimedia as adjoin learning in teaching. By the way, this product is developing using Game Based Learning approach. Which this approach, this product will be give good impact for children memorize in this level. These products have 3 modules include whole number, addition and subtraction process. It also uses the same syllabus with the school to assure children can understand more after use this product. This product applied project development methodology which is using ADDIE Model.

ABSTRAK

Game Based Learning For Level 2 Slow Learner Children Courseware On Simple Mathematic merupakan produk pembelajaran yang dibangunkan khas untuk kanak – kanak lembap tahap 2 terutamanya untuk Sekolah Kebangsaan Bukit China, Melaka bagi menentukan tahap penumpuan dan teknik ingatan mereka bagi kadar masa yang panjang. Kebiasaannya, kanak-kanak ini melalui tahap pembelajaran tradisional yang mana hanya menggunakan multimedia sebagai bahan tambahan dalam pengajaran. Tetapi, produk yang dibangunkan ini menggunakan kaedah bermain sambil belajar. Dengan berasaskan kaedah ini, produk ini dijangka mampu memberikan kesan yang baik terhadap memori kanak-kanak dalam lingkungan ini. Produk ini mengandungi 3 modul yang merangkumi sistem pengenalan nombor, operasi penambahan dan juga penolakan. Walaupun produk ini menggunakan kaedah bermain sambil belajar tetapi masih berdasarkan silibus pengajaran dan pembelajaran di sekolah-sekolah harian yang mempunyai silibus yang tersendiri. Ini adalah untuk memastikan kanak-kanak ini boleh memahami dengan lebih lanjut setelah mempelajari secara tradisional di dalam kelas. Sistem ini mengaplikasikan metodologi pembangunan iaitu menggunakan model ADDIE.

TABLE OF CONTENTS

| CHAPTER | SUBJECT | PAGE |
|-----------------------|--|-------------|
| | DECLARATION | ii |
| | DEDICATION | iii |
| | ACKNOWLEDGEMENTS | iv |
| | ABSTRACT | v |
| | ABSTRAK | vi |
| | TABLE OF CONTENTS | vii |
| | LIST OF TABLES | xi |
| | LIST OF FIGURES | xiii |
| | LIST OF ABBREVIATIONS | xv |
| | LIST OF ATTACHMENTS | xvi |
| CHAPTER I | INTRODUCTION | |
| | 1.1 Project Background | 1 |
| | 1.2 Problem Statements | 2 |
| | 1.3 Objectives | 3 |
| | 1.4 Scope | 3 |
| | 1.5 Project Significance | 4 |
| | 1.6 Conclusion | 5 |
| CHAPTER II | LITERATURE REVIEW & PROJECT METHODOLOGY | |
| | 2.1 Introduction | 6 |
| | 2.2 Domain | 7 |

| | | |
|---------|--------------------------------------|----|
| 2.2.1 | Game Based Learning for Slow Learner | 7 |
| 2.2.2 | Learning Theories Technique | 11 |
| 2.2.3 | Memory Processing | 11 |
| 2.3 | Existing System | 16 |
| 2.3.1 | Comparison of Existing System | 21 |
| 2.4 | Project Methodology | 22 |
| 2.4.1 | Instructional Design | 25 |
| 2.4.1.1 | Educational Goals | 26 |
| 2.4.1.2 | Course Map/Flowchart | 26 |
| 2.4.1.3 | Detailed Course Content | 28 |
| 2.4.1.4 | Test Question | 31 |
| 2.4.1.5 | Metaphor | 31 |
| 2.5 | Project Requirement | 32 |
| 2.5.1 | Software Requirement | 32 |
| 2.5.2 | Hardware Requirement | 33 |
| 2.6 | Conclusion | 33 |

CHAPTER III ANALYSIS

| | | |
|---------|----------------------------|----|
| 3.0 | Introduction | 34 |
| 3.1 | Current Scenario Analysis | 34 |
| 3.1.1 | Flow chart existing system | 35 |
| 3.2 | Requirement Analysis | 39 |
| 3.2.1 | Project Requirements | 39 |
| 3.2.2.1 | Need Analysis | 39 |
| 3.2.2.2 | User Analysis | 41 |
| 3.2.2.3 | Technical Analysis | 41 |
| 3.2.2.4 | Resources Analysis | 42 |
| 3.2.2.5 | Requirement Gathering | 44 |
| 3.2.2 | Software Requirement | 45 |
| 3.2.3 | Hardware Requirement | 47 |

| | | |
|-------------------|---------------------------------------|----|
| | 3.3 Project Schedule and Milestones | 48 |
| | 3.4 Conclusion | 50 |
| CHAPTER IV | DESIGN | |
| | 4.1 Introduction | 51 |
| | 4.2 System Architecture | 51 |
| | 4.2.1 Application of the Courseware | 53 |
| | 4.3 Preliminary Design | 56 |
| | 4.3.1 Storyboard Design | 56 |
| | 4.3.2 Audio Script | 57 |
| | 4.4 User Interface Design | 57 |
| | 4.4.1 Navigation Design | 57 |
| | 4.4.2 Input Design | 60 |
| | 4.4.3 Metaphor | 66 |
| | 4.5 Conclusion | 69 |
| CHAPTER V | IMPLEMENTATION | |
| | 5.1 Introduction | 70 |
| | 5.2 Media Creation | 70 |
| | 5.2.1 Production of Text | 71 |
| | 5.2.2 Production of Graphic | 73 |
| | 5.2.3 Production of Audio | 73 |
| | 5.2.4 Production of Animation | 75 |
| | 5.3 Media Integration | 76 |
| | 5.4 Product Configuration Management | 77 |
| | 5.4.1 Configuration Environment Setup | 78 |
| | 5.4.2 Version Control Procedure | 78 |
| | 5.5 Implementation Status | 80 |
| | 5.6 Conclusion | 80 |
| CHAPTER VI | TESTING | |
| | 6.1 Introduction | 81 |
| | 6.2 Test Plan | 81 |

| | | |
|---------------------------------------|---|-----|
| 6.2.1 | Test User | 82 |
| 6.2.2 | Test Environment | 83 |
| 6.2.3 | Test Schedule | 84 |
| 6.2.4 | Test Strategy | 85 |
| 6.3 | Test Implementation | 86 |
| 6.3.1 | Test Description | 86 |
| 6.3.2 | Test Data | 87 |
| 6.3.3 | Test Result and Analysis | 91 |
| 6.3.4 | Analysis Testing | 95 |
| 6.4 | Conclusion | 97 |
| CHAPTER VII PROJECT CONCLUSION | | |
| 7.1 | Observation on Weaknesses and Strengths | 98 |
| 7.1.1 | The Strengths | 98 |
| 7.1.2 | Weaknesses | 99 |
| 7.2 | Propositions for Improvement | 100 |
| 7.3 | Contribution | 101 |
| 7.4 | Conclusion | 101 |
| REFERENCES | | 102 |
| APPENDICES | | 104 |

LIST OF TABLES

| TABLE | TITLE | PAGE |
|--------------|--|-------------|
| 2.1 | Level of Academic Functioning | 10 |
| 2.2 | Differences in Memory Stores | 14 |
| 2.3 | Description Type of Existing System | 21 |
| 3.1 | Module and Description for the Courseware | 41 |
| 3.2 | Syllabus for Slow Learner Children | 43 |
| 3.3 | Description for Activities During PSM | 48 |
| 4.1 | Navigation Design | 58 |
| 4.2 | Input and Output for Introduction | 60 |
| 4.3 | Input and Output for Introduction Simple Math Game | 61 |
| 4.4 | Input and Output for Learn Number | 62 |
| 4.5 | Input and Output for Activity Drag Me | 63 |
| 4.6 | Input and Output for Main Pluck Apple | 64 |
| 4.7 | Input and Output for Pluck Apple exercise | 65 |
| 4.8 | Input and Output for I'm Back Activity | 66 |
| 5.1 | Productions of Text | 71 |
| 5.2 | Configuration Environment Setup | 78 |
| 5.3 | Version Control Procedure | 79 |
| 5.4 | Implementation Status | 80 |
| 6.1 | Criteria of Environment | 83 |
| 6.2 | Test Schedule for this Courseware | 85 |
| 6.3 | Level for Usability Testing of Courseware | 87 |
| 6.4 | Question for Usability Testing of 10 Teachers of Slow Learner | 87 |
| 6.5 | Level for Functionality Testing of Courseware | 88 |

| | | |
|------|---|----|
| 6.6 | Question for Functionality Testing of 10 Multimedia People | 89 |
| 6.7 | Level for User Acceptance Testing of Courseware | 90 |
| 6.8 | Question for User Acceptance Testing of 13 Slow Learner Students | 90 |
| 6.9 | Result for Usability Testing of 10 Slow Learner Teachers for Each Question | 91 |
| 6.10 | Mean, Median and Mode for Usability Testing of 10 Slow Learner Teacher | 92 |
| 6.11 | Result for Functionality Testing for Multimedia People for Each Question | 92 |
| 6.12 | Mean, Median and Mode for Functionality Testing of Multimedia People | 93 |
| 6.13 | Result for User Acceptance Testing for 13 Slow Learner Students for Each Question | 94 |
| 6.14 | Mean, Median and Mode for User Acceptance Testing of 13 Slow Learner Student | 94 |

LIST OF FIGURES

| DIAGRAM | TITLE | PAGE |
|----------------|--|-------------|
| 2.1 | Game Based Learning Module | 8 |
| 2.2 | Brain of Slow Learner | 9 |
| 2.3 | Memory Model of Atkinson and Shiffrin | 13 |
| 2.4 | Cognitive Theory of Multimedia Learning | 15 |
| 2.5 | My Rummy | 16 |
| 2.6 | Introduction Playing My Rummy | 17 |
| 2.7 | Main Menu of the Games | 17 |
| 2.8 | Sample of Question | 18 |
| 2.9 | Mathematics Whole Number | 19 |
| 2.10 | Exercise in the Courseware | 19 |
| 2.11 | Interface of Number 1 to 9 | 20 |
| 2.12 | Exercise in the Courseware | 21 |
| 2.13 | ADDIE Model Process | 23 |
| 2.14 | Flow Chart for Simple Math Game | 28 |
| 2.15 | Detailed Course Content for Simple Math Game | 29 |
| 3.1 | Flow Chart of My Rummy Mathematics Game | 35 |
| 3.2 | Flow Chart of Simple Machine GBL | 36 |
| 3.3 | Flow Chart of Mathematics Whole Number | 37 |
| 3.4 | Flow Chart of Special Education Class | 38 |
| 4.1 | Hierarchy Diagram | 52 |
| 4.2 | Flow Chart For the Courseware | 55 |
| 4.3 | Format for Storyboard | 56 |
| 4.4 | Navigation Flow | 58 |
| 4.5 | Interface Design for Introduction | 60 |
| 4.6 | Interface Design for Introduction 2 | 61 |

| | | |
|------|--|----|
| 4.7 | Interface Design for Learn Number | 62 |
| 4.8 | Interface Design for Activity Drag Me | 63 |
| 4.9 | Interface Design for Pluck Apple | 64 |
| 4.10 | Interface Design for Pluck Apple Exercise | 65 |
| 4.11 | Interface Design for I'm Back Activity | 66 |
| 4.12 | Layout for Courseware | 67 |
| 4.13 | Background for All Screen | 67 |
| 4.14 | Template Design | 68 |
| 5.1 | Process Production of Text | 71 |
| 5.2 | Drawing Object Properties Used in This Project | 73 |
| 5.3 | Production of Audio | 73 |
| 5.4 | Production of Audio 2 | 74 |
| 5.5 | Process Production of Animation | 75 |
| 5.6 | Process in Media Integration | 77 |
| 6.1 | Layout in the Classroom | 84 |
| 6.2 | Mean Graph for Usability Testing | 95 |
| 6.3 | Mean Graph for Functionality Testing | 96 |
| 6.4 | Mean Graph for User Acceptance Testing | 96 |

LIST OF ABBREVIATIONS

| | | |
|-----|---|------------------------------|
| GBL | - | Game Based Learning |
| CD | - | Compact Disk |
| 2 D | - | Two Dimensions |
| CLT | - | Cognitive Load Theory |
| CGC | - | Child Guidance Clinic |
| GUI | - | Graphical User Interface |
| ISD | - | Instructional Systems Design |
| SAT | - | Systems Approach to Training |
| ID | - | Instructional Design |
| IQ | - | Intelligence Quotient |
| HCI | - | Human Computer Interface |

LIST OF ATTACHMENTS

| ATTACHMENT | TITLE | PAGE |
|-------------------|------------------|-------------|
| A | Gantt Chart | 104 |
| B | Storyboards | 105 |
| C | Audio Script | 107 |
| D | Questionnaire | 109 |
| E | Interface Design | 112 |

CHAPTER I

INTRODUCTION

1.1 Project Background

Game based learning (GBL) is remains one of the most effective teaching strategies to promote learning. Among all application software, computer games are having a shorter learning curve. If used effectively in a coherent and relevant way, GBL can support both the option of more choice for how the learner can learn as well as offering the potential for personalizing the learning experience.

GBL uses competitive exercises, either pitting the student against each other to getting them to challenge slow learner in order to motivate them to learn. Their Intelligence Quotient (IQ) is limit between 70-85 (Scheerenberger, 1987) or less. To know understanding process involves another brain function (higher mental function) such as general intelligence, reasoning, vocabulary and concept formation. As we know, much of the problem with the instruction of slow learners is the artificial split between special education and general education (Steven Shaw, 2005). So, this GBL product is produce to help teacher and parents to encourage this student to explore areas of interest to him. Level 2 slow learner student has difficulty to follow multi-step directions. GBL product will help them with special instruction to more focus and learns for their future.

In addition, there is no application software like game for disabled person especially slow leaner. This project will begin with interactive title screen sequence come with sound effects or visual stimuli. Upon completing this lesson, student

needs to follow the instruction because each game has their level. To appeal for different learning modalities, this project has included interactive text, graphics and audio narration. To make the learners encode information for long time storage, the additional guidance will be provided along the presentation example in each activity. This stage will provide formative feedback which mean have additional guidance and answer. It is important part to achieve the objective in this project.

On the other hand learning through playing games is considered a very important activity especially in early childhood. Game playing is considered an important activity for the psychological, social and cognitive development. GBL is remains one of the most effective teaching strategies to promote learning. Computer GBL possesses a high potential due to its use of multimedia and strong visual stimuli and the use of the virtual electronic environment.

1.2 Problem Statement

In this section, the problem statement will be discussed which found in the system and journal. After developer analyzed the existing system and journal, here have a few of weaknesses that should look into. There have briefly described the problem statement that occurs in the real environment. There are few problems:

a. Less Interactive CD for Slow Learner

Interactive CD for slow learner nowadays is less in the market compare for normal student. This is hard to teach them to learn Mathematics subject.

b. Teaching Technique

Normally teacher use Microsoft Power Point as multimedia technique learning. But, this technique had use only basic multimedia element. In GBL, student can play the game and at the same time they can learn Mathematic module.

c. Abstract Learning

Abstract thinking is difficult for a slow learner and their attention span is short. This is why slow learner is not eligible for special education.

1.3 Objective

The objectives for this project are:

- a. To develop simple Mathematic courseware for Level 2 Slow Learner student.
To make success this game, developer need to research how slow learner thinking and causes of slow learner.
- b. To apply GBL approach in the courseware.
GBL is a good technique to apply for slow learner student.
- c. To involve cognitive engagement learning theory using working memory component in the product.
Cognitive engagement is a necessary condition for learning. Traditional classroom-based methods of learning make individual cognitive interaction more difficult.

1.4 Scope

This GBL product is developing for Level 2 Slow Learner Student in Sekolah Kebangsaan Bukit China in Melaka. The name of courseware is Simple Math Game. It is about introduction of Mathematic focus in chapter 1 which has 3 modules; whole number, addition and subtraction using basic number between 1 until 9. Before student plays the game, they will learn number 1 to 9. Each number will

represent object to help student easier counting one by one. Student will ask if want to repeat or not.

For the first game module, it will help slow learner student learn about whole number with image. Student will learn how to count object one by one. This product use animal and fruits as a main object. Then, student need to match the object with the number given. All the number will show by images including sound to make the game look attractive and student will become more active when playing the game and improve their cognitive skills. In this module, student needs to drag and drop the object to match with the number given. After student plays the activity, he will repeat the activity by random questions.

The next module, student will learn addition and subtraction. In this exercise part, student needs to answer question follow by instruction. This is because developer wants each student can learn the addition and subtraction lesson. This activity will need student to answer addition activity first. When student had answered one question, he needs to pluck another apple until finish nine questions. After that, student needs to answer subtraction activity. This module also allowed student to repeat the module for repetition.

For the last module, student will learn subtraction technique. The "I'm Back" module required student to answer the question before moving to another question. This game was developing based from traditional game which is called "Teng-teng". If student gives wrong answer, he cannot move to the next box because he needs to give true answer.

This product is deliverable in CD and will be delivering in English language.

1.5 Project Significant

To ensure a good product, research on a slow learner is important part. Using GBL can give big impact because these games differ from another game in the

market. Furthermore, this is a way to create something that is impressive enough for people to stand up and take notice of GBL product.

Teaching using GBL technique can help teacher especially to attract student because this GBL product was apply multimedia element by using 2 Dimension (2D) and audio. This game does not using more text, because slow learner characteristics have weakness in reading text. According to P.Krishnankumar, M.G. Geeta and Ramakrishan Palal, (2006), level 2 slow learners only can write sentences with three words or more and can do simple calculations (single digit).

So, these GBL products will teach them that Mathematic is a fun and simple subject. Student will interest with some different lesson because this game has own storyline and student need to follow the instruction.

1.6 Conclusion

Nowadays, it is hard to find one learning theory that based on game for level 2 slow learner at the school. So, this product develops to decrease the problem.

As a conclusion, GBL is one of technique that suitable in learning application for slow learner student. GBL involve multimedia element which will discuss in Chapter II that can interact student to know introduction of Mathematic subject for level 2 slow learners. They will also know how to identify whole number, count addition and subtraction. It is hope that sense of correctiveness will be sharpened at the end of this project. On the next chapter, the literature review and project technology will elaborate.

CHAPTER II

LITERATURE REVIEW & PROJECT METHODOLOGY

2.1 Introduction

A literature review is a critical look at the existing research that has significance on the project. Literature review is done by consulting other people work in order to understand and investigate the problem of the research project. This review is important to suggest reader what knowledge and idea have been established in the topics. Project methodology refers to the approaches, techniques and tools used in development of the system that will guide developer to accomplish the project.

A key feature of educational games is the opportunity to apply subject matter knowledge in a new context. According to Maushak et al. (2001), teachers and educators can take advantage to help of this concept by using novel computer games to engage students in classroom learning with more enjoyable perspective and better student motivation. GBL is remains one of the most effective teaching strategies to promote learning. It is processes a high potential due to its use of multimedia and strong visual stimuli and the use of the virtual electronic environment. It has been indicated by a number of researchers that educational computer games can be improve in students' motivation, interest retention and overall concentration. Proponents of gaming in education, however, should remember that similar predictions were made for mimeograph machines, overhead projectors, movies, radios, television, and the computer, only to produce disappointing results after considerable expenditures of money (Cuban, 1996, 2001).

2.2 Domain

The concept of this GBL is learning content which is a multi-user environment where the developers may manage and learning content. GBL refers to different kinds of software applications that use games for learning or educational purposes. GBL has been recognized as an effective way for learning and has emerged to be a promising approach in addition to traditional lecture-based learning. Many schemes, methodologies, as well as systems were developed and applied to training courses in both academic and industrial domains (Hsin-Chang Yang, 2005).

2.2.1 Game Based Learning for Slow Learner

The purpose of this project was to examine how GBL can attract slow learner. Rieber (2005) indicates that “learning is believed to be achieved through active engagement in which the teacher provides support, resources and encouragement”. Normally, student show their engagement in playing complex computer games much more than they show in their school work. Mei Jun Kuo (2007) said that in order to make learning occur, educators must first motivate and engage student in their learning activities. For engagement to occur, educator must create an environment that encourages student-teacher contact, cooperation among students and active participants between both parties. This method also can get students, who are unmotivated by the traditional teaching method.

Regarding the difference in engagement, the factor between media and GBL environments is the integration of the game features. Hence, the purpose of this GBL is also to investigate if a game is a better approach for motivating the interest learning than other multimedia function alone. Computer games provide a good environment for learning. The theories of learning are behavioral learning theory, cognitive learning theory and motivation theory.