GAME APPLICATION FOR CHILDREN WITH DYSLEXIA TO LEARN ABOUT
TIME

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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This report is submitted in partial fulfillment of the requirements for the Bachelor of
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SUPERVISOR   :   _____   Date: 29/8/2016

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DEDICATION

Bismillahirrahmanirrahim

This thesis is dedicated to my beloved parents Norisah binti Men and Haris bin Mohammed Yunus, to my siblings Nur'Ain and Aida Sofea, to Cik Man and Cik Yan, Teacher Sab, and for all gifted children in this world.

"For the world you might be a person, but for a person you might be the world"

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ABSTRACT

This project presents a mobile games application called as TIK-TOK game for helping the children with Dyslexia who have difficulties about time when they see the analogue clock. The children also confuse between the numbers. The design of TIK-TOK was developed with discussion with the teacher at Pusat Persatuan Dyslexia Ipoh. TIK TOK game have been evaluated by the teacher and the four students at Pusat Persatuan Dyslexia Ipoh. During the observation, we found the game help in understanding about time concept through visual. Reward in TIK-TOK game able to motivate the children to play the games which can prolong their attention span. We also found that the game promote interaction. In addition, TIK-TOK game increases engagement of the children through simple interface. Lastly, this game application has the potential for helping children with Dyslexia to learn about time. It is also expected to be the starting point to others developers to build a game that will be more advance and more improvement.

ABSTRAK

Projek ini memnceritakan tentang aplikasi permainan di telefon mudah alih yang dikenali sebagai permainan TIK-TOK untuk membantu kanak-kanak Dyslexia yang mempunyai masalah untuk mengenalpasti waktu jika mereka melihat jam dinding. Mereka juga keliru dengan huruf dan nombor yang dipamerkan. Oleh sebab itu, permainan TIK-TOK ini telah dibangunkan. Permainan TIK-TOK ini telah melalui proses reka bentuk bersama-sama denan guru di Pusat Persatuan Dyslexia Ipoh. Permainan ini jugak telah melalui proses ujian dimana seorang guru dan 4 orang pelajar Dyslexia telah mencuba permainan ini. Kami mendapati bahawa permainan ini membantu kefahaman pelajar tentang konsep jam melalui visual. Selain itu, didapati bahawa ganjaran dalam permainan ini dapat menyuntik motivasi kepada kanak-kanak Dyslexia dan memanjangkan tempoh tumpuan meraka. Permainan TIK-TOK juga telah menarik minat interaksi kanak-kanak Dyslexia. Paparan muka yang minimum juga telah meningkatkan penglibatan kanak-kanak Dyslexia. TIK-TOK dijangka mempunyai potensi untuk membantu kanak-kanak Dyslexia belajar tentang masa. Ia juga dijangkan sebagai titik permulaan untuk pereka aplikasi permainan yang lain untuk menambah baik lagi hasil kerja mereka pada masa akan datang.

TABLE OF CONTENTS

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

LIST OF TABLES

TABLE	TITLE	PAGE

LIST OF FIGURES

CHAPTER I

INTRODUCTION

1.1 Introduction

This game application is one of various ways to support children with Dyslexia to overcome their problem with time management. This game will implement the time management skills to the children. The task will be given to them and they must complete the task that will trigger their mind about time management. The game requires mobile phone as the platform and the android as the operating system. In addition, the principle of animation will be applied when designing the interface or character in the games to attract the children to play the game.

1.2 Problem statement

Time management problem among children with Dyslexia is crucial. As we know, most of the Dyslexic children will have the problem to follow the schedule or to complete the task given with time as the concept of the game. The problem arise when they tend to demotivated or feel stress because they are unable to complete the task in order to win. This also will lead to failure in their learning process at school. In other word, the children are weak to plan their time. According to Karey (2008), a

Dyslexic tends not to look at their life in any kind of systematic way. They are often called "free spirits", "flighty", "unfocused" or "easily distracted". Hopefully, this game application will give interest and help the Dyslexic children to manage their time.

1.3 Objectives

This project objectives are:

i.   To investigate technology intervention use to support children with Dyslexia to learn about time management.

ii.   To develop mobiles games application for children with Dyslexia to learn about time.

iii.   To evaluate the usability of the developed mobile games application for children with Dyslexia.

1.4 Scopes

There are two scopes of this project. The first one is Target User and the second one is Content.

a. Target User

The target user for this project is Dyslexic children around 8 to 12 years old. As we know there are high percentages of children that have Dyslexia every year in Malaysia. So, we decide to focus on this group of children as our target user.

b. Content

The content of the game was chosen after the analysis pocess is done. We did the research and found that there are certain existing game for Dyslexia that will give us some ideas to start develop this game. We validate the content of this design with the teacher at Pusat Persatuan Dyslexia in Ipoh.

This game will only have one module which is the learning about time element which is time, minute and second for analog clock game. The player will have to pass through the first introduction page that will help them to have a clear view about the game and the play pattern. In addition, this game also will have certain page as setting and introduction page. The game will also have audio and character as part of the game element. The award page and score element also the important thing to put as the content of the game.

1.5 Project Significance

In this project, the children with Dyslexia will learn and understand more about how to manage time. As they try to play the game, they will know how to count the time. In addition, this game also will make them attract and longer the time span of playing the game. They do not have to learn in traditional way on how to manage time because if they do, the time span for learning will be shorter and they will get bored easily.

So with this game application, they can play as long as they want at anywhere because the game will be available to be downloaded in the smartphone.

1.6 Expected Output

There are several outputs that we expect to have in the end of the project. Firstly, we hope that the application will overcome the problem of time management among the children with Dyslexia. In addition, this mobile game will be developed by using Bahasa Melayu as the official language. Moreover, this games will improve the learning skills of the children with Dyslexia instead of they attend the special class.

1.7 Conclusion

As the conclusion of this chapter, it is an overview about the game application that will help children with Dyslexia to overcome their time management problem. In the problem statement section, there are several problem that have been detected about children with Dyslexia are having problem to manage their time. From the problem statement, we state the objective of this project. In the scopes section, we explain about the user target and content. Then, we come out with project significance to show. Lastly, the expected output is stated to know the result of this game. In the next chapter, we will discuss about literature review, comparison between existing system, project methodology and the requirement of the project.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHADOLOGY

2.1 Introduction

This chapter will provide the literature review about any project or product that has been related with this project. We also make the comparison between the previous game projects. The comparison will be based on the multimedia element, user control, visibility of the system, consistency, localization of the content, design and help documentation of the project. In addition, we also explain the methodology that has been applied in the development of this project. Lastly, we also state the requirement of the software and hardware that will be used to develop this project.

2.2 Domain

The fact and finding of the project will be based on the domain and existing system. Domain is focus about the problem of children with Dyslexia and how mobile games can be used a tool to overcome their problem about time management.

This project will focus to study about children with Dyslexia and their problem in time management. The study is focus to get more understanding how the mobile games can help these children to overcome their problem. We use the game as the platform to attract the children with Dyslexia to learn in the fun ways. In addition, the content in the game will attract them to learn longer than before. The content of the project consist of text, images, video, audio and 2D animation. The platform is a smartphone and the output result is to have a mobile game that will help children with Dyslexia to manage time. In the existing system part, the research is found and the chosen system or product will be explained.

Children sometimes have difficulties in reading and spelling. This difficulty is called as dyslexia. They have to face those difficulties that affect their life. Tore, Mangione and Ludovico, (2014) had found in modern society about 10% of children experience difficulty in learning to read. They suffer from a neurodevelopmental disorder called dyslexia. So that, based on this issue we decided to develop a game that will help dyslexia children to overcome their problem.

In addition, we decided to use mobile as a platform for the development of the game to help the Dyslexia children. This is because, we believe that the game on mobile is much easy to play and require multiple sensory of the children's skill. Moreover it will help the children to react faster when they play the games. This statement is supported by Haladjian, Richter, Muntean, Ismailović, Brügge (2010), tablet devices provide a more direct way of interaction, allowing children even without computer experience to interact with objects on the screen by literally touching them. It also facilitates its usage in the context of a therapy.

2.3 Existing System

The existing mobile games that have been investigated are Dyssegxia, Diesel-X,Arabic game, and Dyslexia Baca. Each game will be explained more as stated below:

2.3.1 Comparison of Existing System

In this project, three existing system was evaluated to get an overview for designing our game. There are 1) Dyssegxia, 2) Dysl-X and 3) Dyslexia Baca.
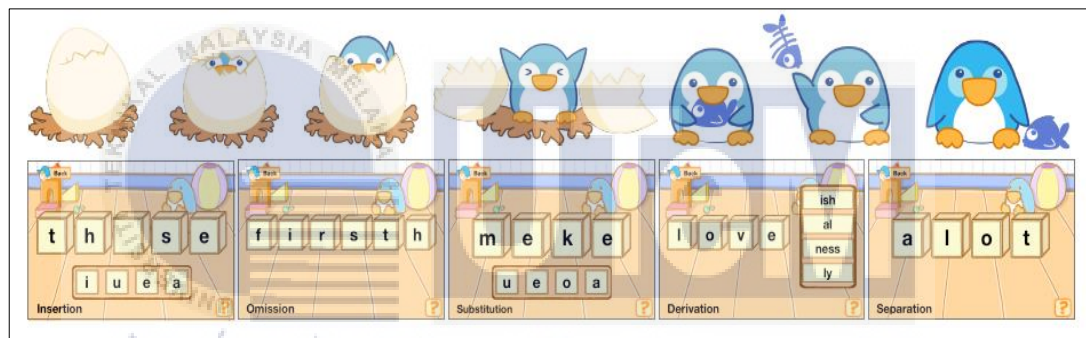
Figure 2.1 The Interface of the Dyssegxia Game

The first game as shown in Figure 2.1 is Dysseggxia. The game contains 6 types of word exercises which are add a letter, remove a letter, change a letter, choose the correct word ending, cut into words and order the letter. The objectives of this game are to correct and create the valid words.

Figure 2.2: The Interface of the Dyslexia Baca Game

The second game as shown in Figure 2.2 is Dyslexia Baca. This game is built special for Dyslexia children in Malaysia. The goal of this game is to help children with Dyslexia to recognize and distinguish letter p, q, b, d, m, and w. The feature presents in this game are practicing letters that sound and look familiar which are b, d, w, and m. The player needs to find the letter give and click on the balloon that has the letter.

Figure 2.3: The Interface of the Dyslexia Baca Game

The third game as shown in Figure 2.3 is called as DYSL-X. It contains 3 mini games in this game. First is chasing game, which the robot needs to chase the robber that has the bag with stolen item.
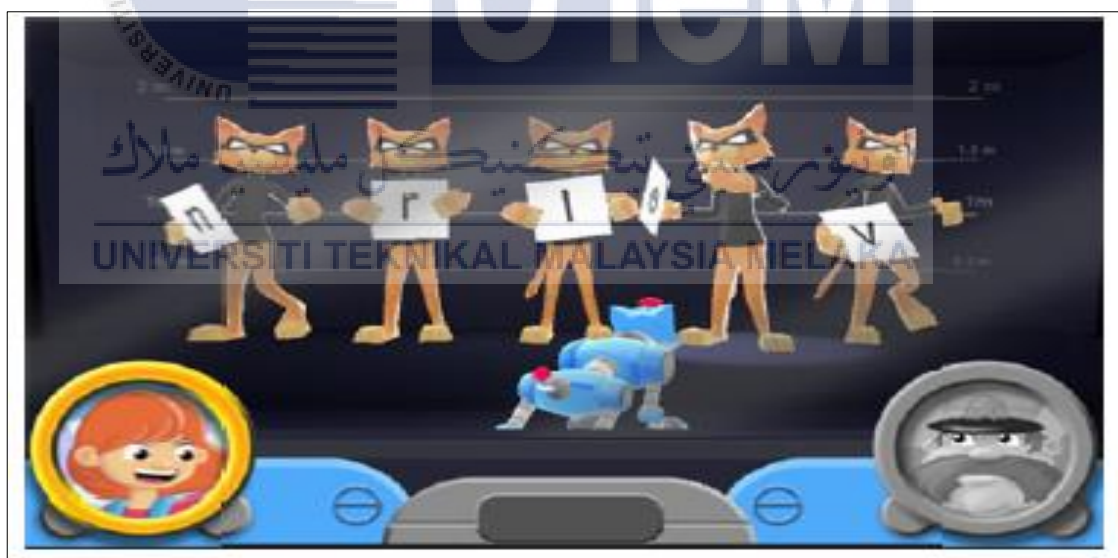
Figure 2.4 : The Interface of the Dysl-X Game

Secondly is the lineup game. In lineup game, the robot needs to select the robber that has a letter that being called by the citizen.
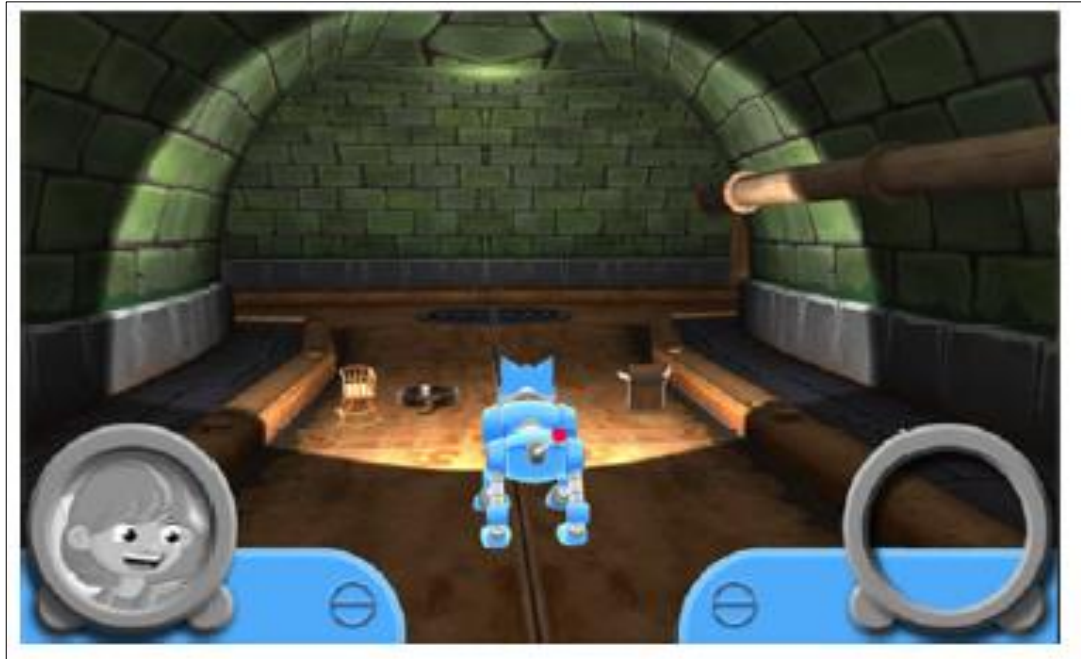
Figure 2.5 : The Interface of the Dysl-X Game

The last mini game (Figure 2.5) is search for lost item where the robot will search the item that has the same letter ended as Alex told.

Table 2.1: Comparison of Existing Mobile Games

Apps Name	DYSEGGXIA	DYSL-X	DYSLEXIA BACA
Aim	Overcome difficulties of word recognition and poor spelling	To develop tool to predict whether a pre-schooler (5yr) shows high risks for developing dyslexia.	to help dyslexic children to recognize and distinguish letter p, q, b, d, m, and w
Language	English and Spanish	English/france	Malay
Platform	Mobile devices	tablet	Mobile devices
Operating System	ios	ios	ios 5.1 or later
Feature	1. Add a letter 2. Remove a letter 3. Change a letter 4. Choose the correct word ending 5. Cut into words 6. Order the letters or syllables	Contains 3 mini games : 1. High speed chase 2. A line up 3. Search for lost object • collectible items • touched-based intuitive control • character- creation It is a game about story based game. Which a robot dog with a name of Diesel is needed to get rid the criminal gang of cats in the city.	-Practice letters that sound and look familiar which are b & d and m & w. -click on the balloon that have the same letters
Advantages	-has the potential of reaching a large number of children and helping them in improving their reading skills in a	-longer the attention span -higher motivation	-The used of app motivates and draws student's attention. -It promotes learning in an

Table 2.2: Comparison of Existing Mobile Games

Apps Name	DYSEGGXIA	DYSL-X	DYSLEXIA BACA
	playful way -motivates children to work on The exercise regularly -the use of mobile devices allows us to isolate language problems from handwriting problems.		enjoyable and interactive manner. - It provides exciting opportunities for designing innovative learning environment.
Target	children	Pre schooler	Children
Audio	It used the audio to make the game more interesting.	It used the audio to make the game more interesting.	It used the audio to make the game more interesting.
User profile	The player can create account for their penguin's character as the player	No user profile	No user profile
Localization	Use the penguin character as the common animal found in their country.	Use the scenery of town that look like as in their country.	Use the localization at the character game only
User control and freedom	user also can track their progress of the achievement in the main page.	User can control the dog robot in the game.	User are strict to play according to the instruction
Consistency and standard	The icon and graphic in each level is consistent and standardize	The graphic and icon is in the same position for each page.	Menu button is place in the same place and the background image of the game is same for each level of the game.
User engagement	If the task is complete, the player will get an egg. The penguin will be born as a reward.	If the player succeeds, they will get money to customize their dog robot.	After the player completes the task, they will get rewards which are congratulation page and claps sound.

Table 2.3: Comparison of Existing Mobile Games

Apps Name	DYSEGGXIA	DYSL-X	DYSLEXIA BACA
Error prevention	It will produce alarm audio if the player make mistakes.	It have the instruction page	It will produce short alarm sound if player make mistake
Repetition-	Has a repetition when the level increase as the challenge in the level will be more difficult.	No repetition because each mini games have different task to complete.	The repetition is continuing when player must distinguish the specific letter along the level.
Aesthetics and minimalist design	The design is simple and use clean graphic with clear appearance.	The graphic used is simple and use combination of light color.	The design is simple and use clean graphic with clear appearance.
Help and documentation	It has a page that explain how the game works(text)	It has a page that explain about the gameplay.(text)	It has a page that explain the instruction to the player

Based on Table 2.1 shown that each of the existing games application is consistent in term of button, graphic and icon use in the game. In term of user engagement, the game will have the award page to make the player will feel motivate to play the game. For error prevention, three of the game use alarm sound and 2 of the game use help page to help the player make mistake. In addition, for the repetition, 3 of the existing game use repetition, while 2 of the game is not having the repetition because it have different min games. For the aesthetic and minimalist of the design, all of the existing game uses the simple design and clear graphic. For help and documentation part, all the game has the help and documentation part.

Based on the comparison in Table 2.1 , the proposed key concept for design requirement for TIK-TOK is list in details.(as in Table 2.2)

Table 2.2: Summary of Proposed Design

Apps Name	TIK-TOK
Consistency and standard	All the image and font use in this game is consistent for every level.
User Engagement	If the level is complete, the player will get three stars as reward and can go to the next level.
Error Prevention	If player make mistake, there will be another page appear to motivate them to keep trying.
Repetition	All the level use the repetition of gameplay
Aesthetics and minimalist design	All the design is simple and use soft color to avoid the children confuse and lost focus.
Help and documentation	We provide page of "Pengenalan" to make sure player know the basic about time.

2.4 Project Methodology

Rapid Prototyping as shown in Figure 2.3 is the one of the iterative design model of System Development Life Cycle methodology that will be used in the development of this project. It is the best methodology to have when we need to do so many things in the shorter period of time. Moreover, at the first phase of development, we can use the low fidelity medium such as paper to design the interface of the game. So, here is the explanation for each phase of the methodology.
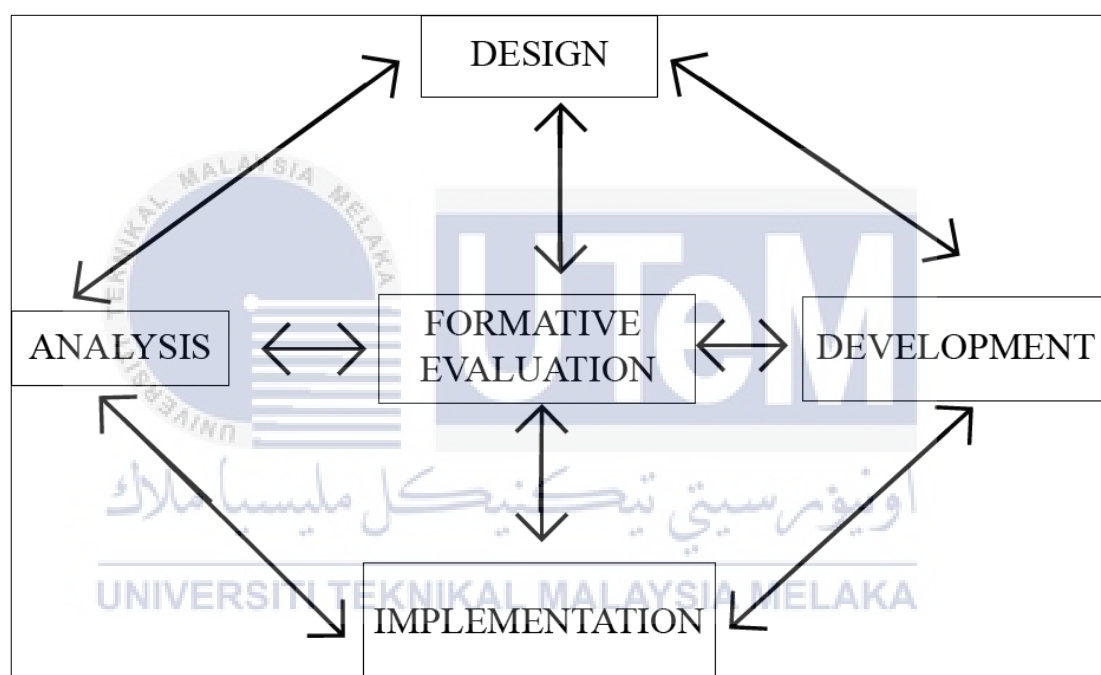
Figure 2.3: Rapid Prototyping Phase(adopted from website: strategybeach.com/product-engineering/rapid-prototyping/2016)

In analysis phase, we need to read all the journal or research paper about children with Dyslexia. We find the existing applications that have been developed to help the children with Dyslexia. In addition, we also go to the Pusat Dyslexia Malaysia to observe how the Dyslexic children play this TIK-TOK game during

testing process. After we get the data and result, we will do the analysis based on the data we get.

In design process, we design the interface of the game based on the analysis data that we get. We use the simple font and soft color for designing process. All the design will be analyze too before we start to develop the game.

In development process, we need to use C# language as the code to make sure all the element of the game function in Unity software. We import all the design that we want to use into the Unity software in development process.

For implementation phase, we implement all the development of the game into the mobile phone. For our case, we need to transfer and implement the game into android phone using Android SDK tools. If we want to correct anything on the game, we always can go back to development phase to fix the thing.

2.5 Project Requirement

2.5.1 Software Requirement

The software and hardware are the most important tools to build the game application. So below is the minimum list of software that needed to develop this game.

- Adobe Illustrator
- Unity
- Audacity
- Android studio
- Notepad++
- Microsoft project 2010
- Microsoft Word 2010

2.5.2 Hardware Requirement

Personal Laptop: Lenovo G400S

Processor: Intel Core i5-3230M CPU 2.60GHz

Memory: 4GB

Platform: Windows 10

Disk: 900GB

Display: 1366x768

Smartphone: Redmi Note 2

Android version: 4.4.4 KTU84P

CPU: Quadcore 1.6 GHz

RAM: 2.00GB

Memory: 8.00GB

2.6 Conclusion

This chapter explains about domain and existing game application It also explains about the methodology and model used in this product development. This is important to ensure the smoothness of the development process. In this chapter, the entire software and hardware requirement is stated to make use clear what technologies are being used. Lastly, in the next chapter, all the analysis process will be explain.

CHAPTER III

ANALYSIS

3.1 Introduction

In this chapter, it is more about the analysis of the product. It is the important phases in developing the product. In requirement analysis, we need to understand the user requirement and system requirement. Moreover, this chapter will explain about problem analysis which discusses the facts and findings of the project. All the fact and finding is being done by observing and investigating the current mobile games. The purpose to do analysis is to get more understanding along the way of product development.

3.2 Current Scenario Analysis

One of the current mobile games for children with Dyslexia that have been observed is Dyseggxia. This mobile game provide feature such as add and remove letter, choose the correct ending word and order the letter in sequence. The aim of this mobile game is to help children with Dyslexia to overcome the difficulties of word recognition and poor spelling. The lack of this mobile game is the sentence is

too long for children with Dyslexia to solve it. Moreover, this game focuses on word only (Figure 3.1). There is still no mobile games that provide other feature such as learning about time for children with Dyslexia in Malaysia.

i. **Dyseggxia Game**
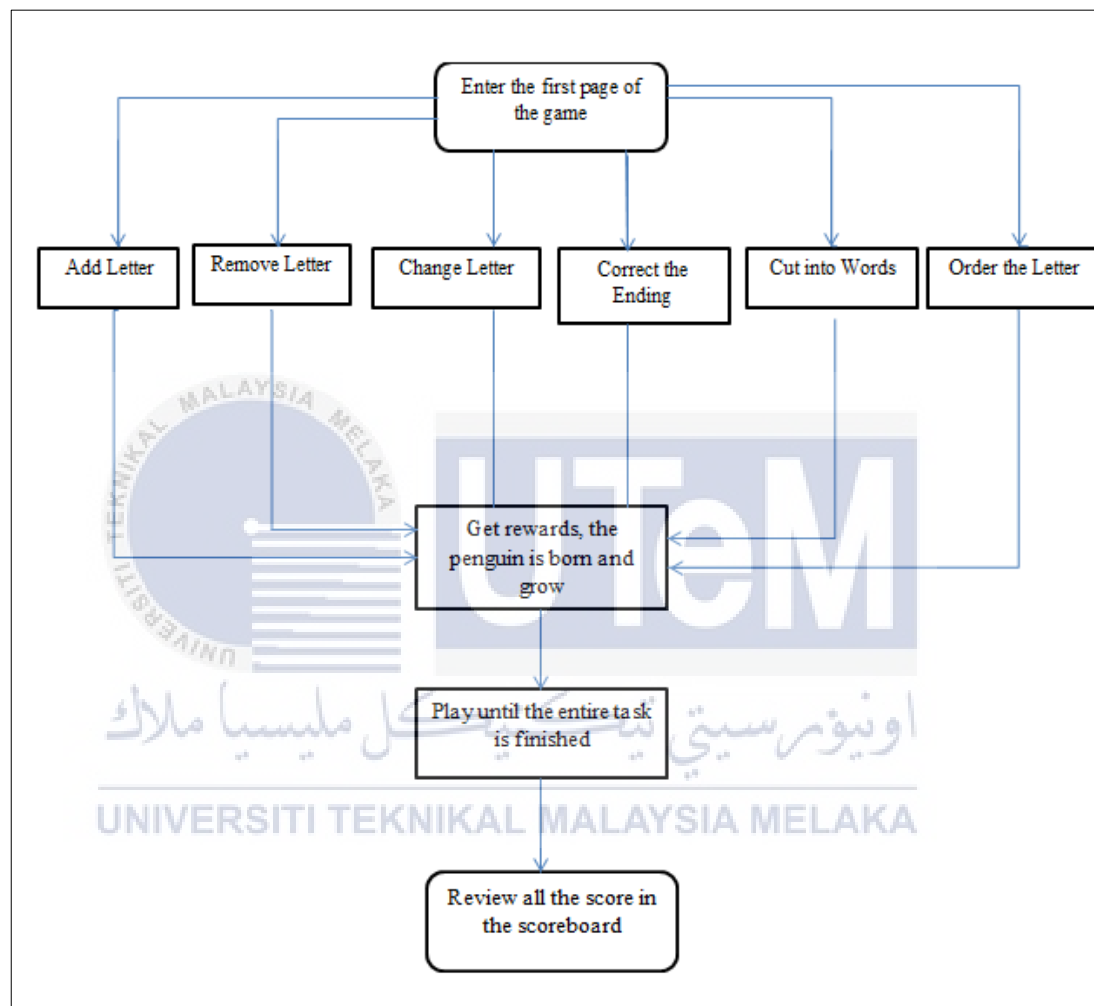
Figure 3.1: The Flow Chart of the Dyseggxia Game

Another mobile game for children with Dyslexia is known as Dyslexia Baca. This game helps the children to recognize and differentiate between letter m,w, b, and d. The player needs to distinguish the same letter by clicking on the balloon that has the same letter as hint given(Figure 3.2). In this game, the player also can go through the Introduction part to get knowledge about the letter. This mobile game application is using Bahasa Melayu as their official language. The weakness of this game is, the interface is using too much bright color combination which is not suitable for children with Dyslexia. This game also focuses only on letter.

ii. **Dyslexia Baca**
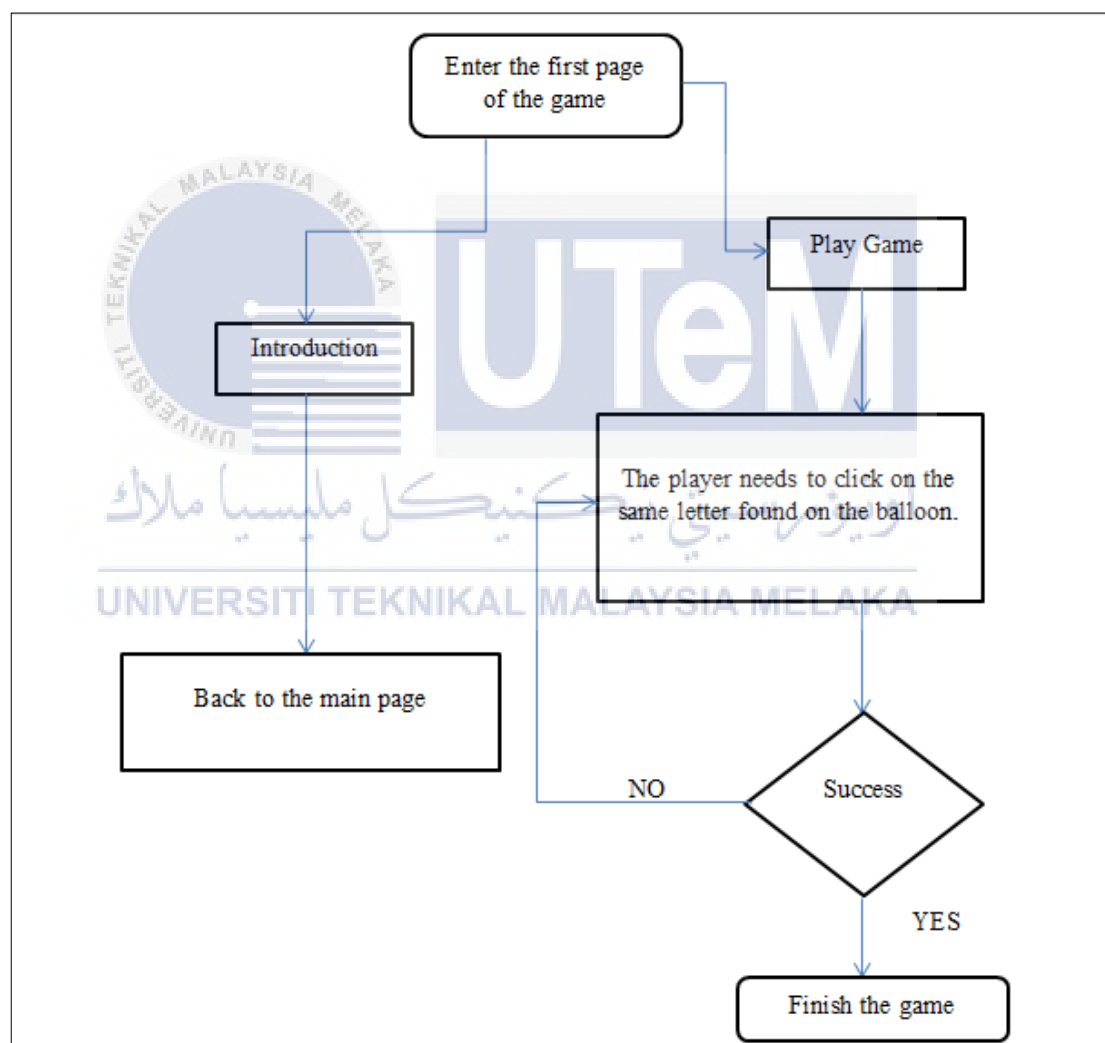
Figure 3.2: The Flowchart of Dyslexia Baca game

The last game that has been found is Dysl-X. This game is like an action game for the children with Dyslexia. The character used in this game is a robot that will help Alex to find the robber. This game contains three mini games as shown in Figure 3.3. Player needs to complete the first task before entering the next mini game. Player will chase the robber that have the bag with stolen item in the first mini game. After that, the player needs to choose the line-up robber that has the certain letter. Lastly, the player will search the lost item that have same letter ended with the Alex's information. The weakness this game is the player maybe can't play too fast when the instruction is given.

iii.   Dysl-X Game
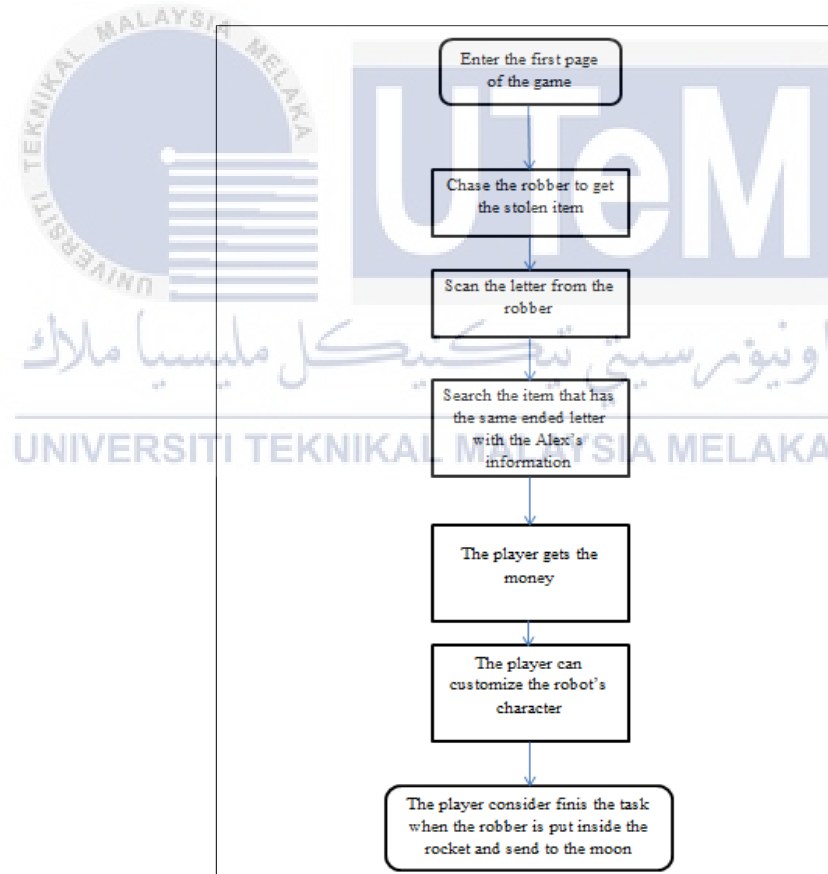
Figure 3.3 : The Flowchart of Dysl-X game

3.3 Requirement Analysis

3.3.1 Project Requirement

The genre of the games that we want to develop is action game. The aim of this game is to help the children with Dyslexia to learn about how to manage the time. So, first thing that the player will see is the main menu of the game. Player can click to button Pengenalan to know about the analogue clock or button Main to start play the game. In this game, player will go through four mini levels to complete the game. After player finish the first task, player will get three stars as the award. Player has to choose the right answer according to the time given.

Based on the existing mobile game that being observed, there are mostly use English as the main language for their game. More over the game use the character such as penguin for Dyseggxia game. This is show that the language and the character are not localized if we want to build game for children with Dyslexia in Malaysia.

So, below (Figure 3.4) is the flow of the mobile game that we want to develop to make the gameplay more easy and simple for the children with Dyslexia.
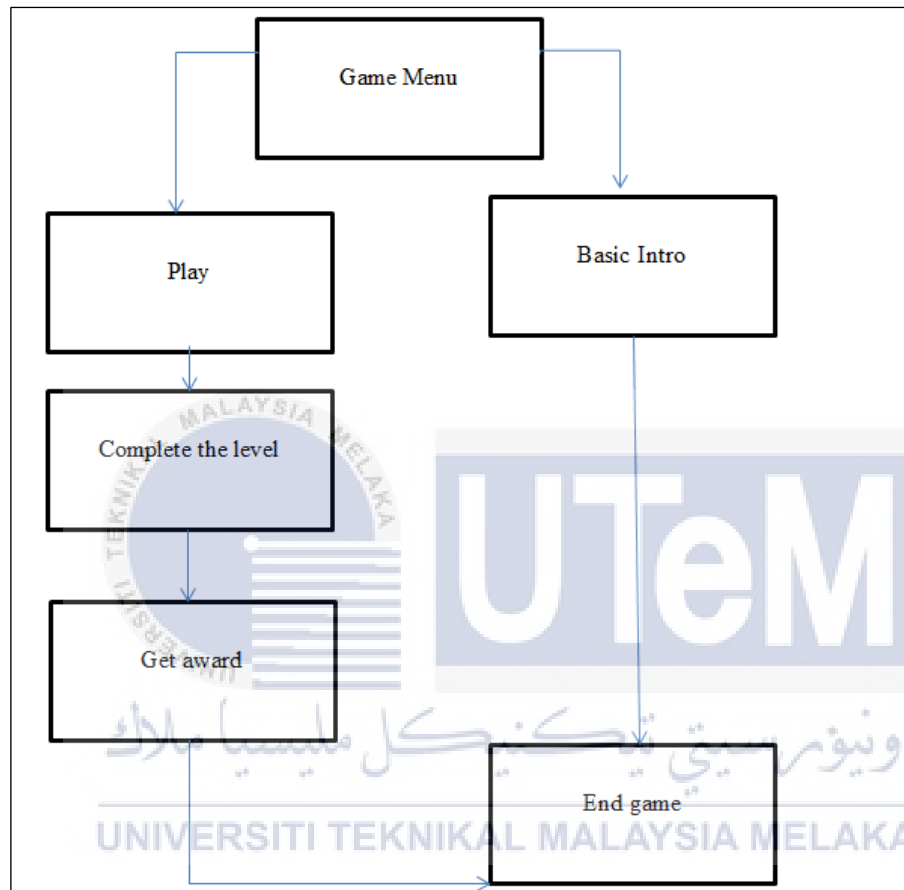
Figure 3.4 : Flow of the game

The device that we use to develop this game is the mobile and the platform for operating system is android. We use the mobile for this game because it is the common platform that will be easy for children to play because as we know most of the children now have mobile phone or smartphone.

3.3.2 Software Requirement

The software used in this project as in Table 3.1 is the important for the successful of the game.

Table 3.1: List of Software Requirement

Software	Purpose
Unity	To develop content of the game
Visual Basic Studio	For scripting using C#
Adobe Illustrator	Designing and tracing the graphic
Audacity	To record and edit the audio
Android SDK	To develop content for android support

3.3.3 Hardware Requirement

The hardware used in this project as in Table 3.2 is the important for the successful of the game.

Table 3.2: List of Hardware Requirement

Hardware	Purpose
Personal Laptop: Lenovo G400S Processor: Intel Core i5-3230M CPU 2.60GHz Memory: 4GB Platform: Windows 10 Disk: 900GB Display: 1366x768	To place the content in Unity, which can only be apply in computer.
Smartphone: Redmi Note 2 Android version: 4.4.4 KTU84P CPU: Quadcore 1.6 GHz RAM: 2.00GB	Transfer the completed game into the android phone.

3.4 Project Schedule and Milestone

Table 3.3 shows the project schedule during the development of the game.

Table 3.3: Project Schedule

Activities	Start Date	End Date	Result
Analysis Doing research and analyse data about the Dyslexic children.	7/2/2016	9/2/2016	Get the analysis requirement.
Design Doing sketching and tracing on interface of the game.	10/2/2016	28/2/2016	Prototype of the game
Development Create element(icon, image, interface) Using the C# language for coding development	1/3/2016	10/4/2016	Develop the real game in unity
Implementation Implement all the development game in unity into the mobile smartphone by using Android SDK tools.	11/4/2016	1/6/2016	Fix the problem
Formative Evaluation	2/7/2016	11/7/2016	Get the evaluation and improve the game.

Table 3.4 : Milestone of The Project

Activity	Week													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Doing research on Google scholar website about the Dyslexic children. Observe the existing games for Dyslexic children. Meet the Dyslexic children at Persatuan Dyselxia. Observe the way of Dyslexic children learn.	▓	▓	▓											
Designing the interface and flow of the game. Sketching the storyboard of the game. Tracing the image or icons that want to be use in the game.				▓	▓									
Develop the content of the game(icon, image, audio)						▓	▓	▓	▓	▓	▓			
Develop the code for the game using C#												▓	▓	
Record the audio for the game												▓	▓	
Implement the developed game into smartphone by using Android SDK tools.														▓
Evaluate the game by presenting it to the evaluator. Proceed to the testing process. Go to the Pusat Dyslexia and give the children time to play the game and evaluate the usability of the game.														▓

3.5 Conclusion

From this chapter, we try to develop the mobile games based on the requirement analysis. All the existing mobile games also need to be investigated so that we know what is the lacking on the existing game and what should we improve in our game. Besides that, we also need to identify the software and hardware requirement to ensure the development of this project is success. In next chapter, we will start to design our game before we can implement it in the real platform.

CHAPTER IV

DESIGN

4.1 Introduction

In this chapter, it will show the overall flow of the game and the details of the game design. All the work in designing phase will be use as the interface of the game. It is important phase in developing game because nobody will play the game if the game does not have any interface design.

4.2 System Architecture

There two menu button in the main menu page, "Main" where player can start to play the game and "Pengenalan" where player need to go if they want to know basic of the analogue clock. When player starts play the first level, they need to identify the correct clock that show the same time as time given. If they get correct answer, they will go to the reward page and continue to play the next task. Each level will have three tasks. After they complete the entire task, they will go to the next level. If they make a mistake, another page will appear to motivate them to continue to finish the game. All the process will continue until the player complete all the four level. All of the process will be explaining in details using flowboard diagram as shown in Figure 4.1 in the next page to make it more clear about the flow of the game.
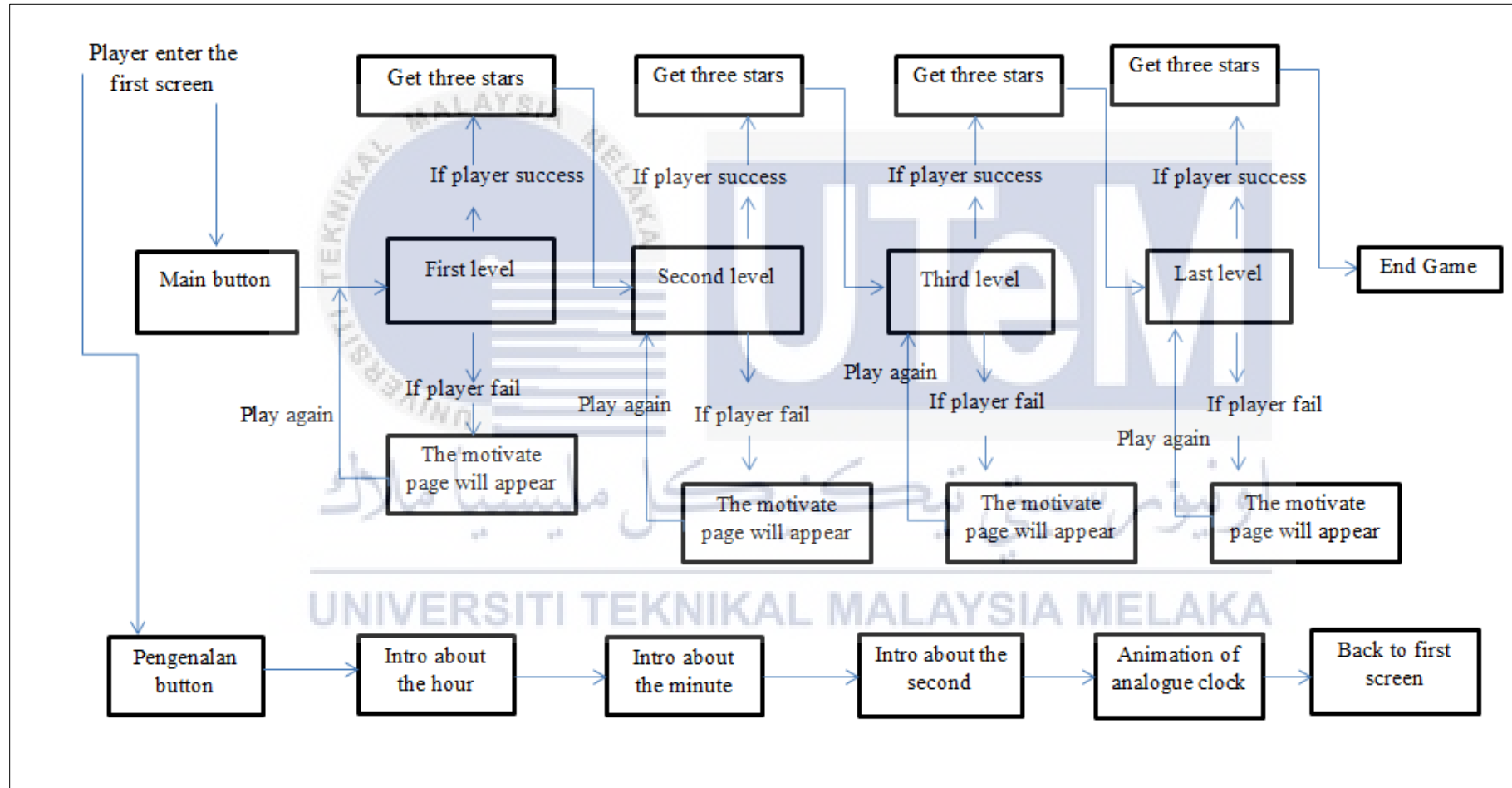
Figure 4.1: Flow board of the Mobile Game Application

4.3 Preliminary Design

4.3.1 Storyboard Design

Storyboard design need to be prepared to plan the flow of the game process. It will be clearer to player to understand the process of the game flow. So in this storyboard, all the design will be explain in more detail.

Figure 4.2 shows the Main Menu of the game. In the main menu, the player will see the two button. If the player click the Pengenalan button, the player will go to the Introduction Page as shown in Figure 4.3 until Figure 4.8. After that the player will be at the Main Menu again and if they click Main button, they will go to the first level as shown in Figure 4.9. If they win all the three task in first level, they will go to the next level as shown in Figure 4.10 until Figure 4.12.

If the player failed or get the wrong answer, the motivated page will appear. The design of the motivated page is shown in Figure 4.14. If the player gets the right answer, the award page will come out as shown in Figure 4.13.

Information:

TEXT

T1: Title of the game

IMAGE

I1: Image of the background

I2: Image of the clock's character

BUTTON

B1: Button of play

B2: Button of introduction

(labels in figure: T1, B1, B2, I1)
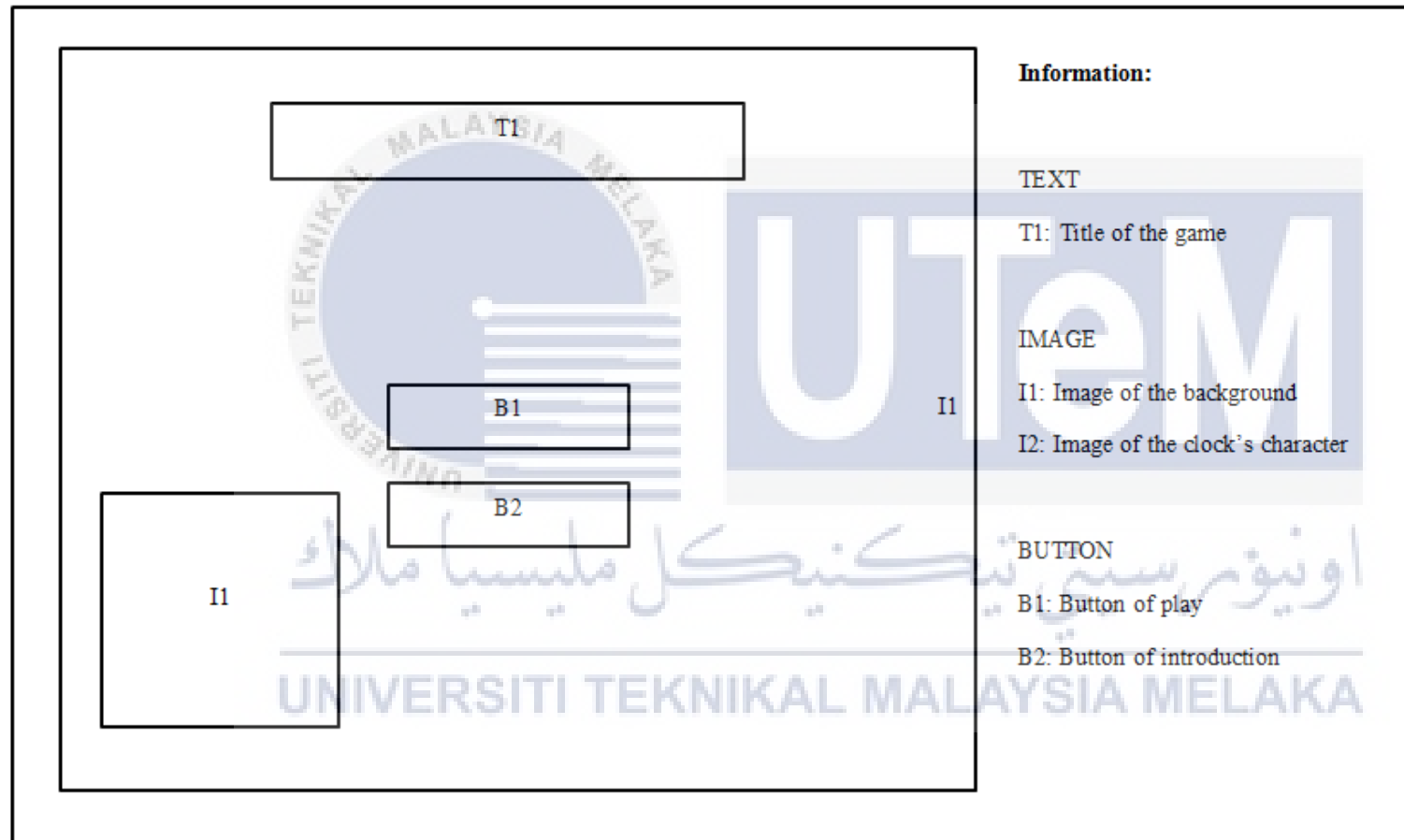
Figure 4.2 : Storyboard of the Mobile Games
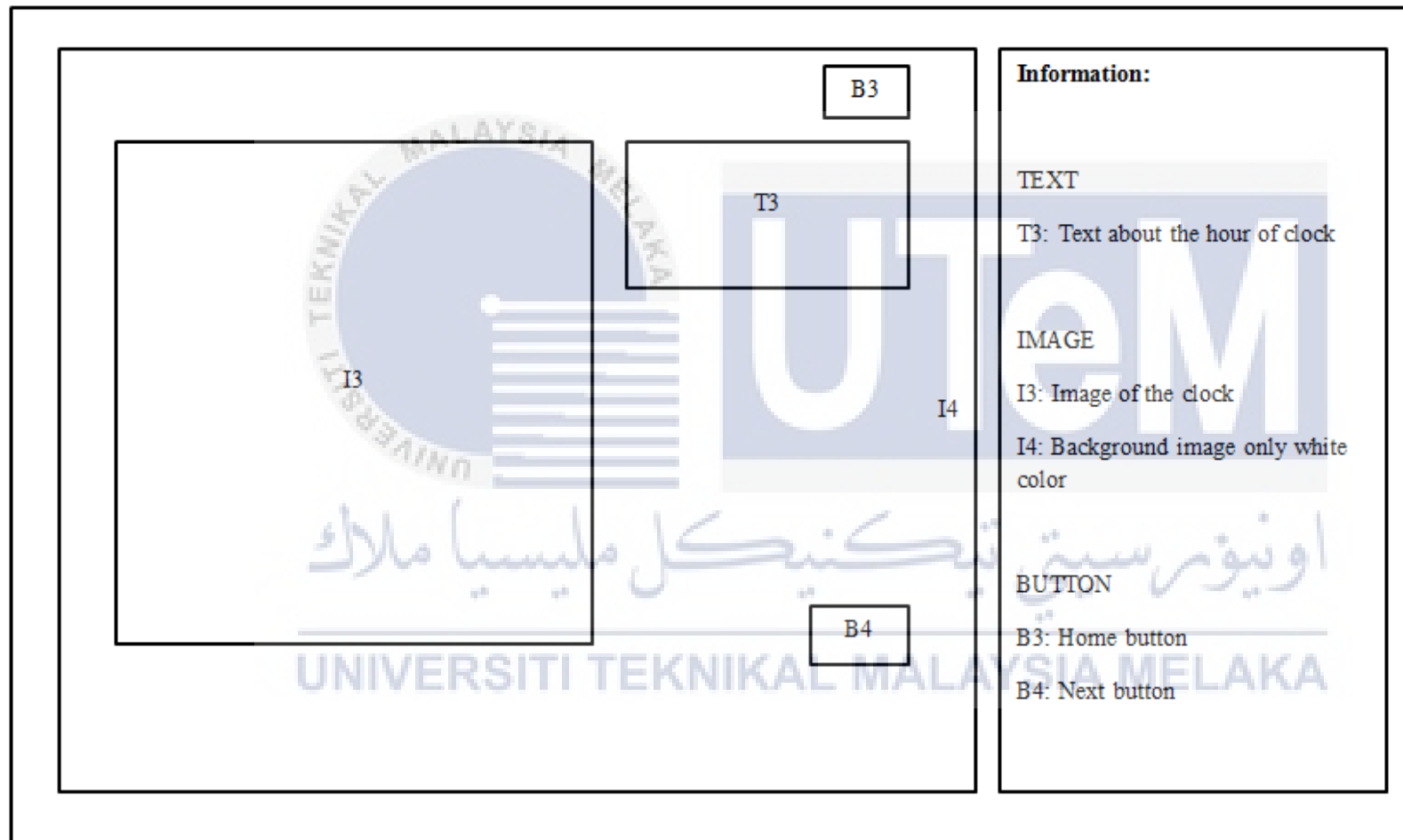
Figure 4.3: The Storyboard the Introduction Page
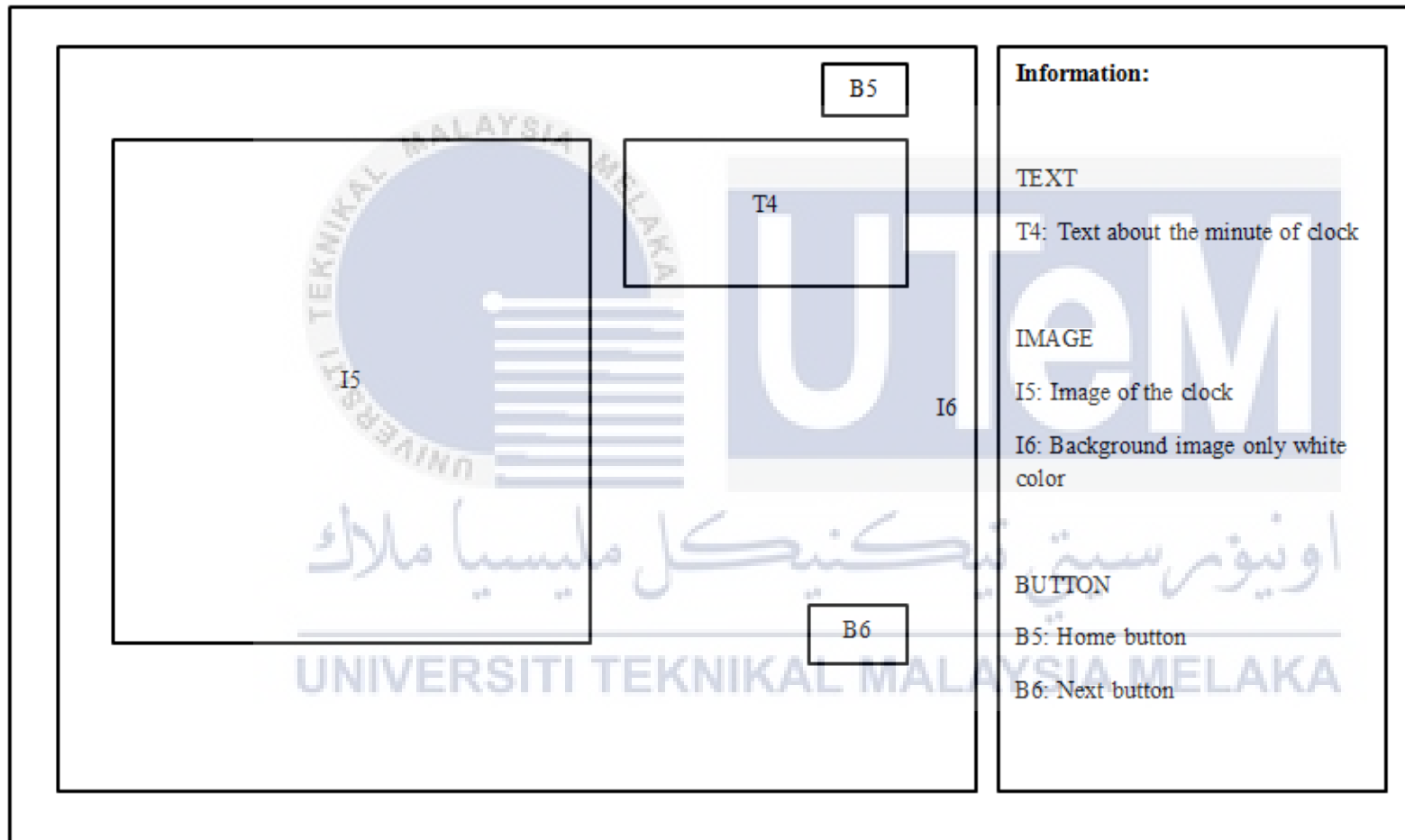
Figure 4.4: The Storyboard the Introduction Page

Information:

TEXT

T4: Text about the minute of clock

IMAGE

I5: Image of the clock

I6: Background image only white color

BUTTON

B5: Home button

B6: Next button

B5

T4

I5

I6

B6
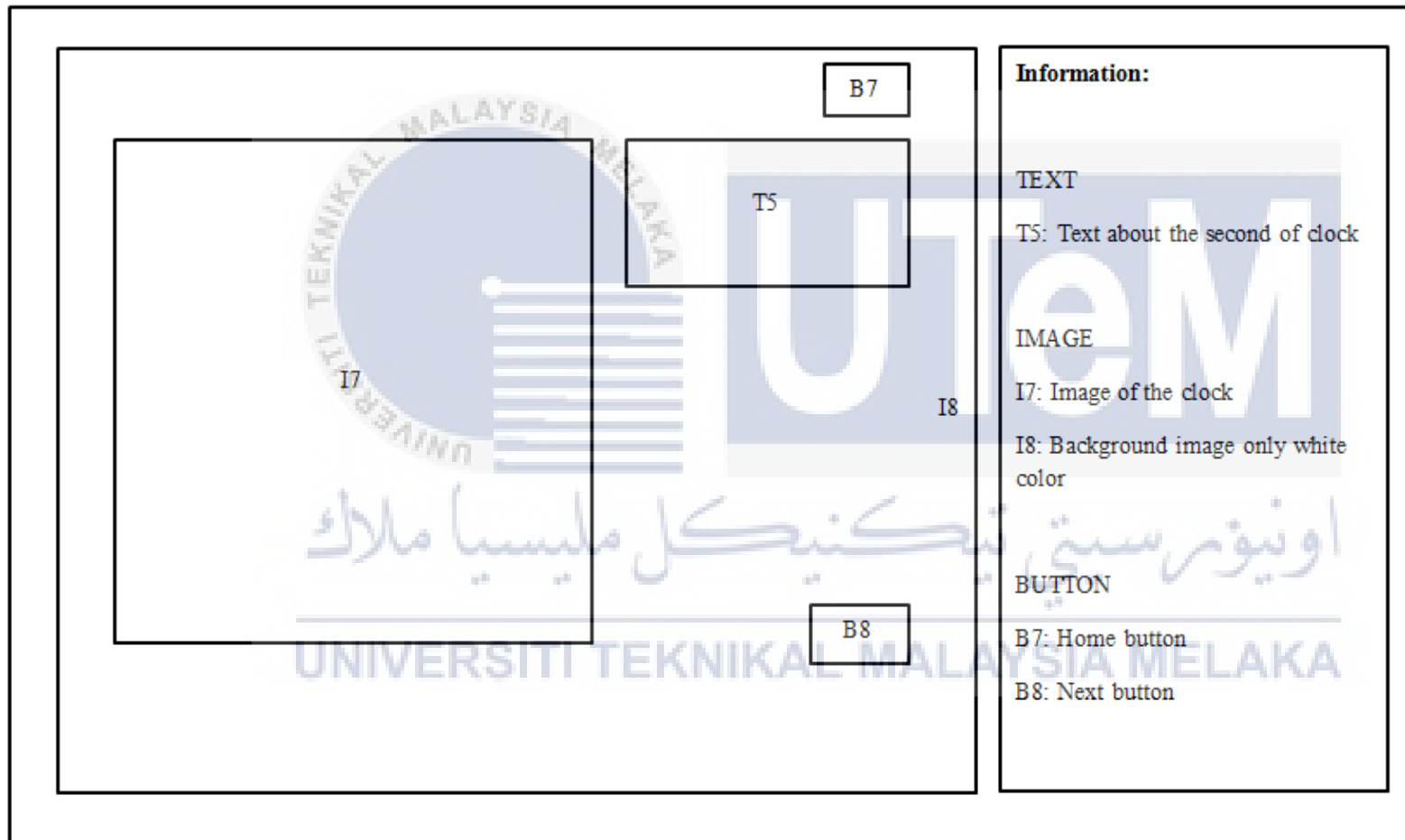
Figure 4.5: The Storyboard the Introduction Page

Information:

B9

TEXT

T6: Text about the outer dots of the clock

T6

IMAGE

I9

I10

I9: Image of the clock

I10: Background image only white color

BUTTON

B10

B9: Home button

B10: Next button
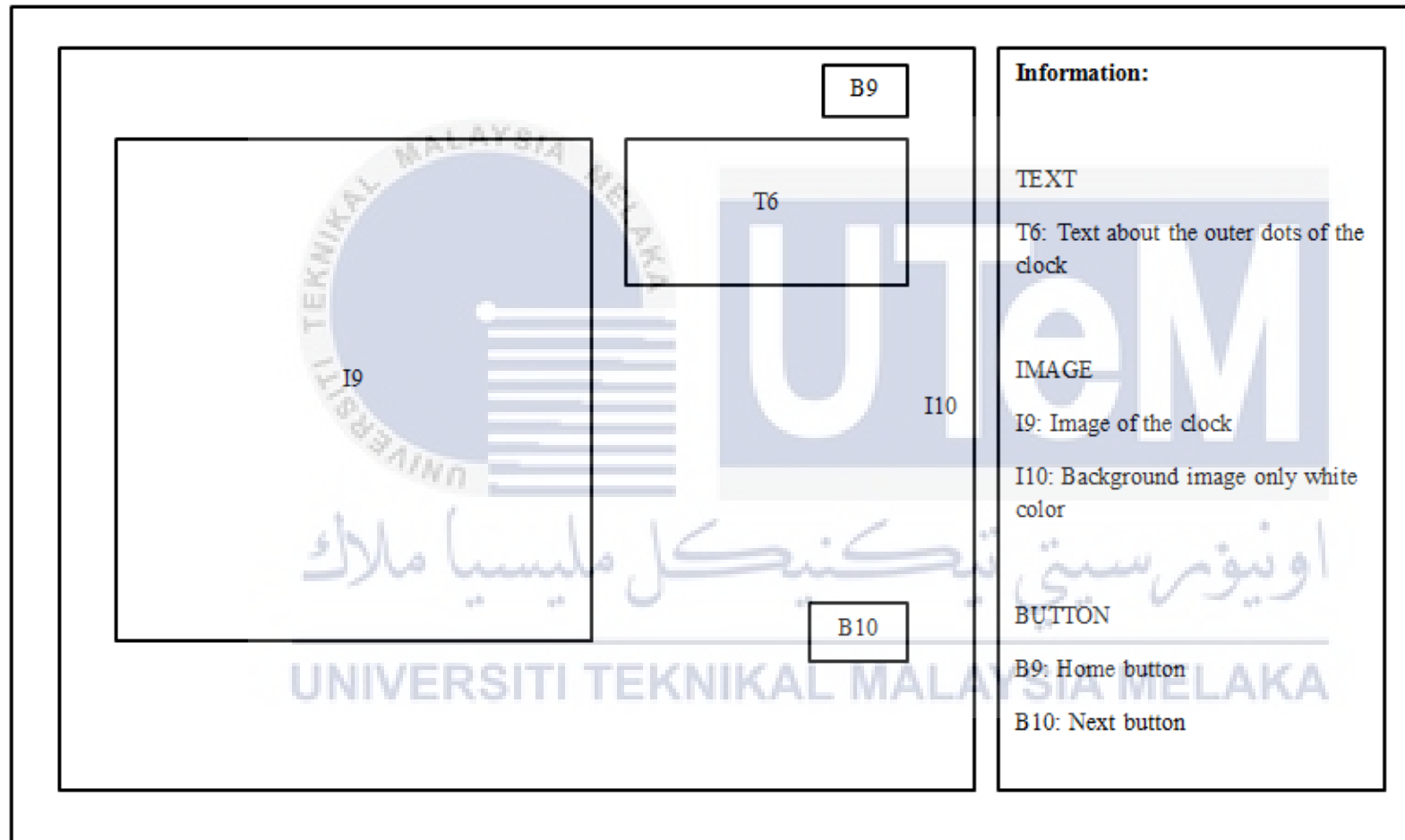
Figure 4.6: The Storyboard the Introduction Page
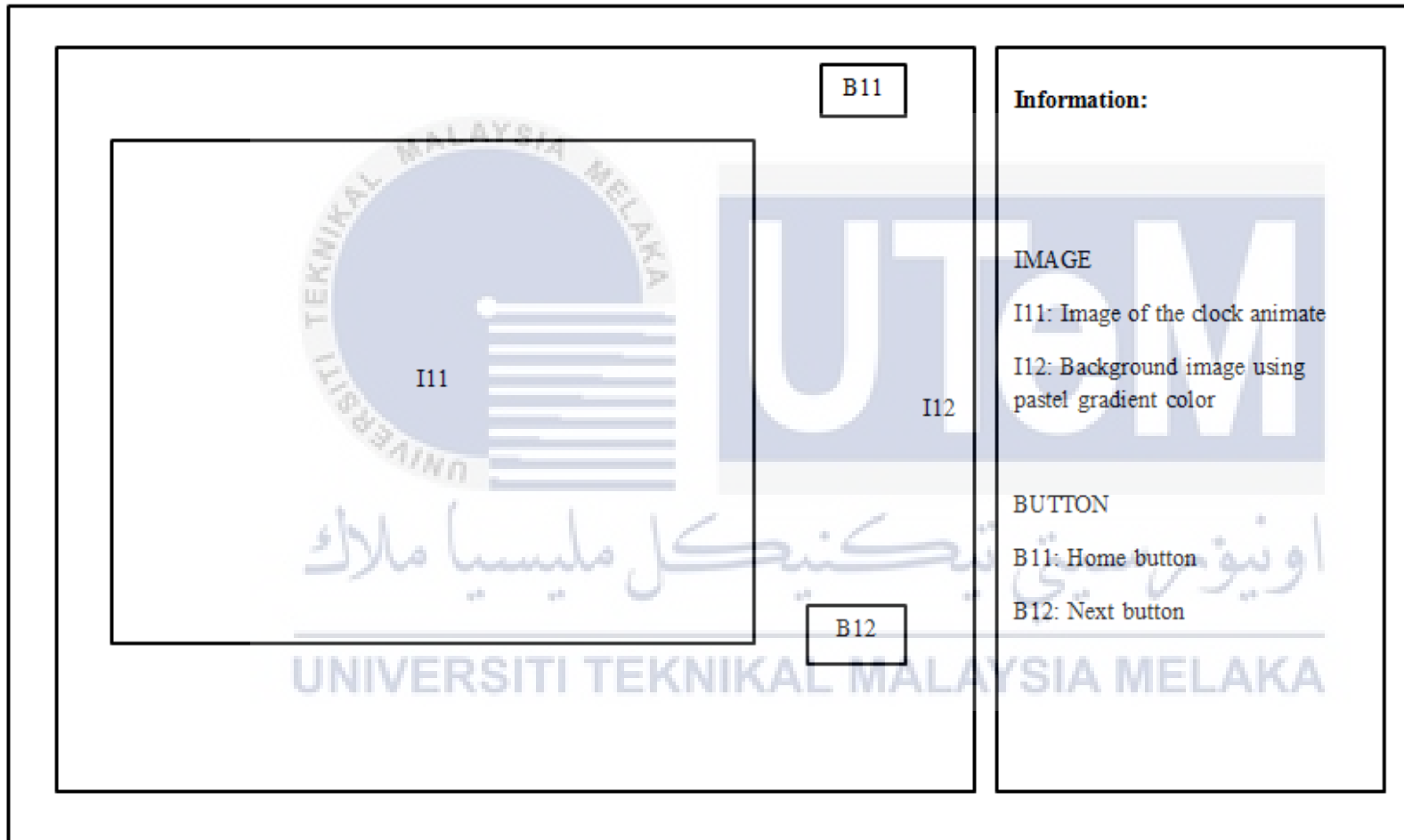
Figure 4.7: The Storyboard the Introduction Page
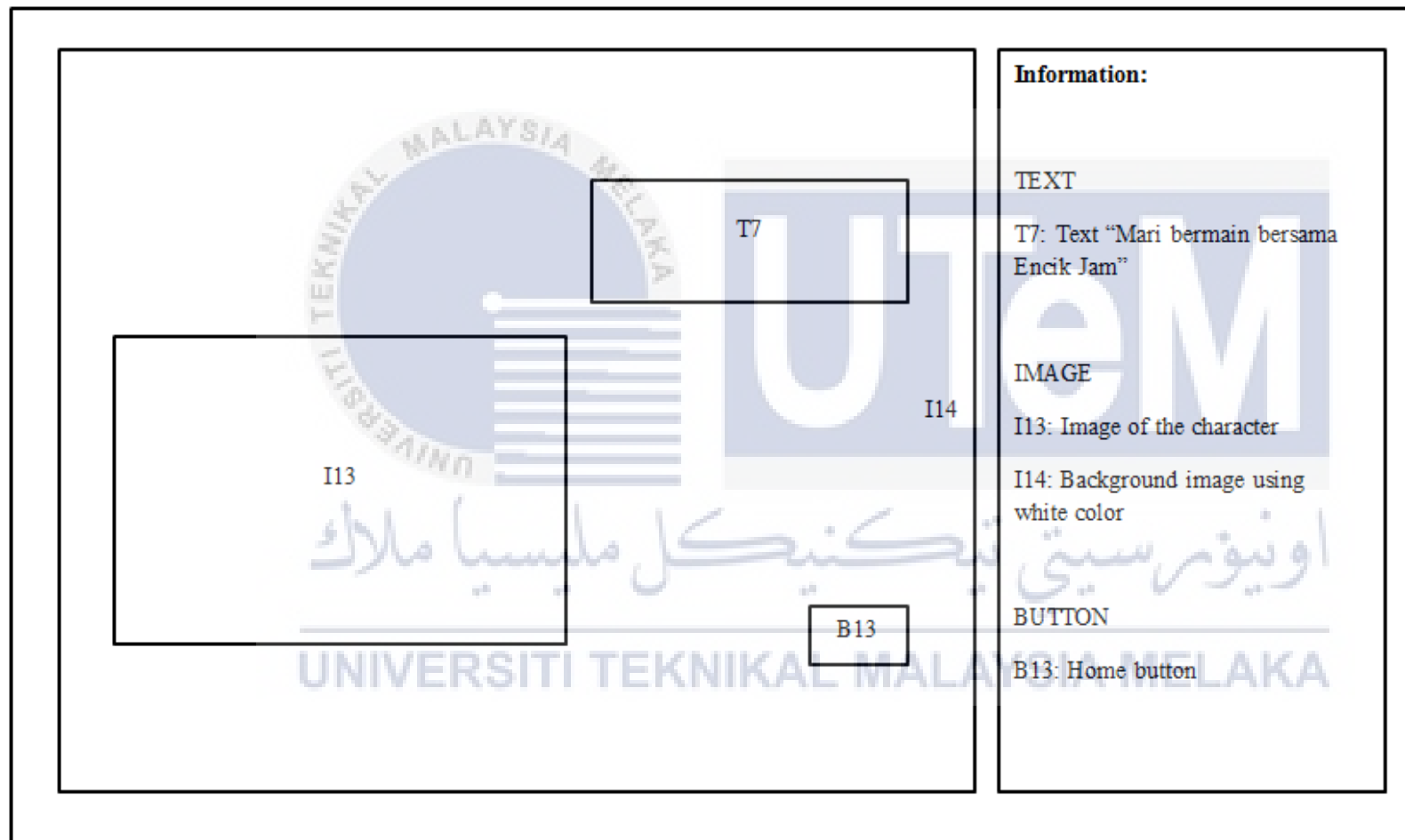
Figure 4.8: The Storyboard End of Introduction Page

Information:

TEXT

T7: Text "Mari bermain bersama Encik Jam"

IMAGE

I13: Image of the character

I14: Background image using white color

BUTTON

B13: Home button

T7

I14

I13

B13
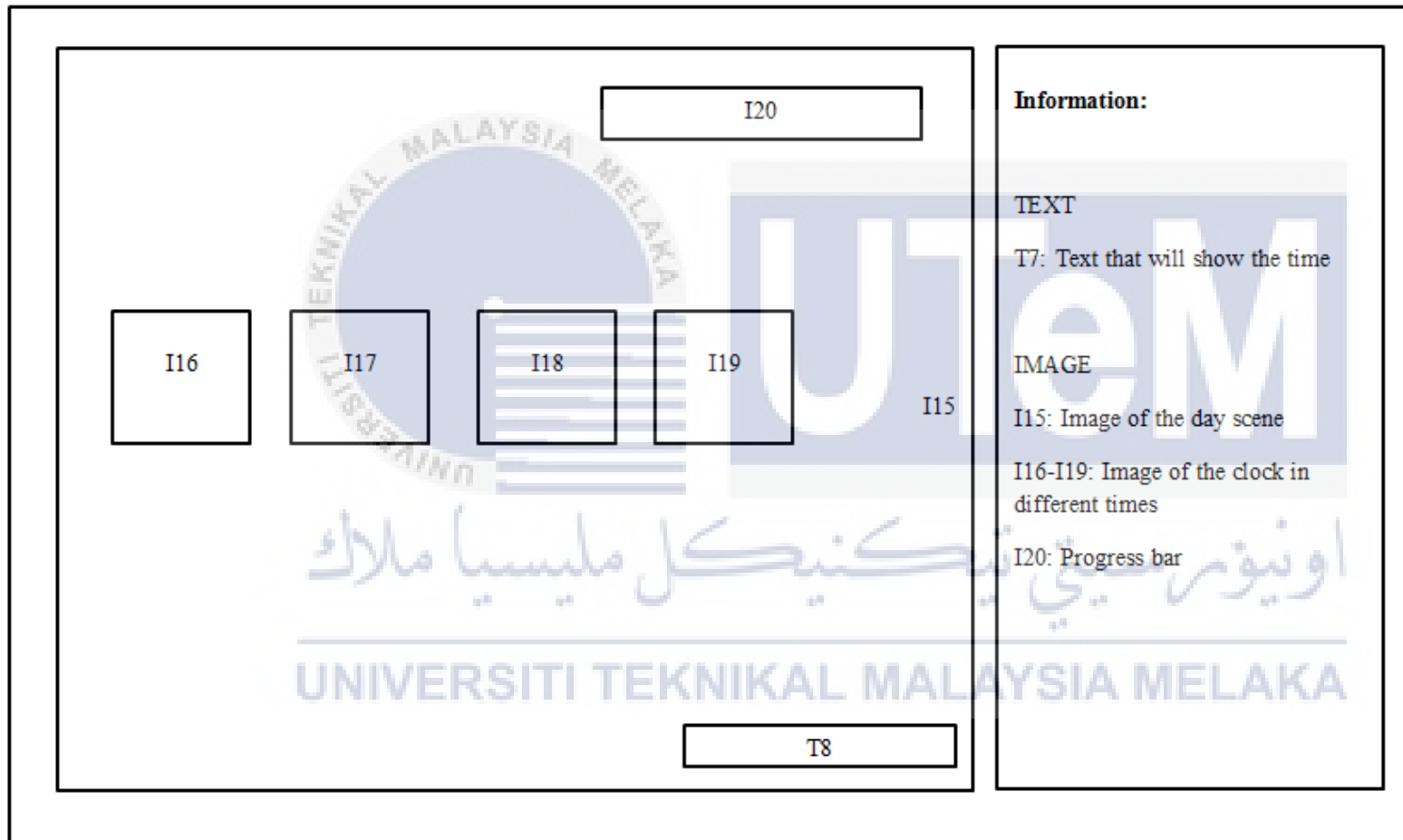
Figure 4.9: The Storyboard the First Level
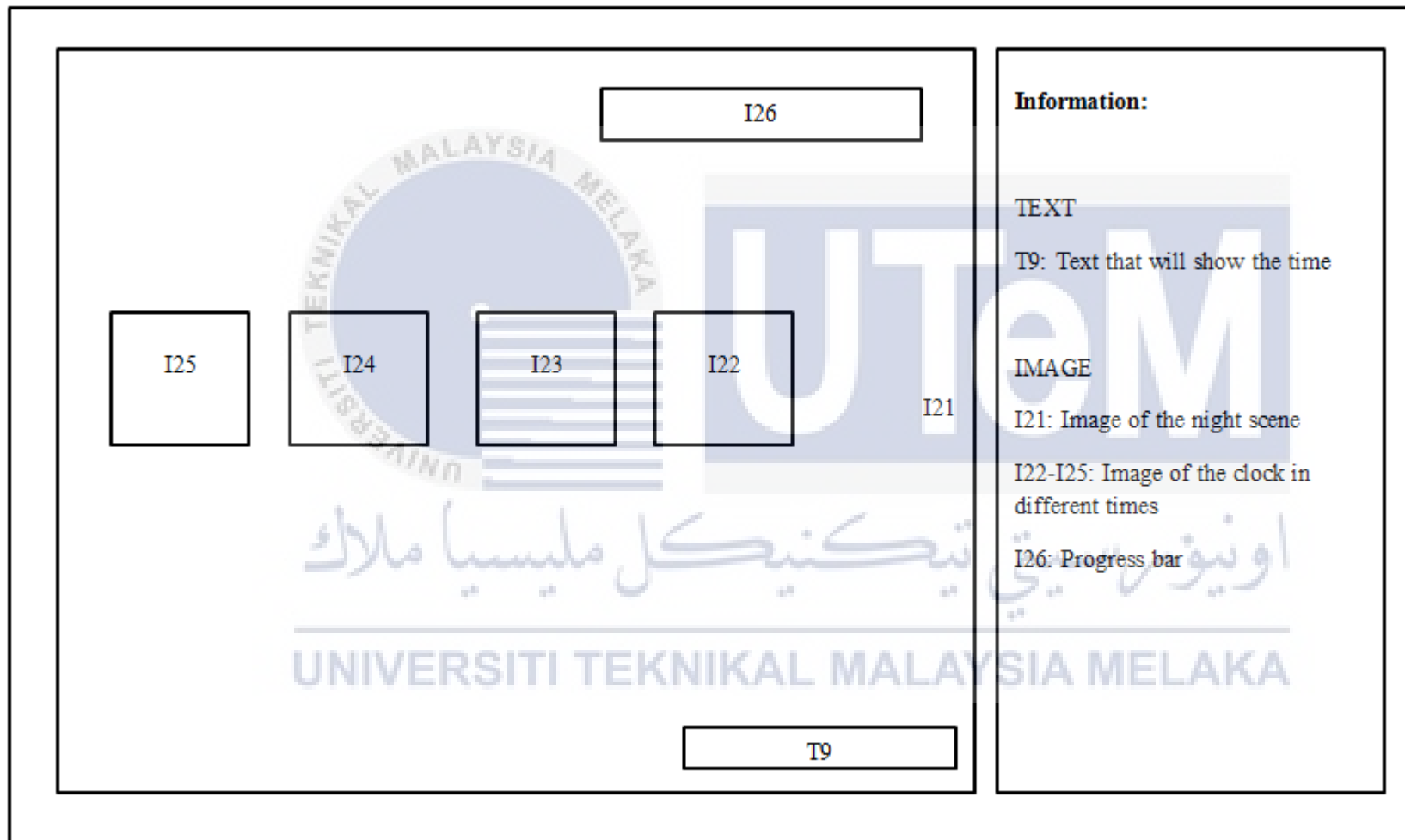
Figure 4.10: The Storyboard the Second Level
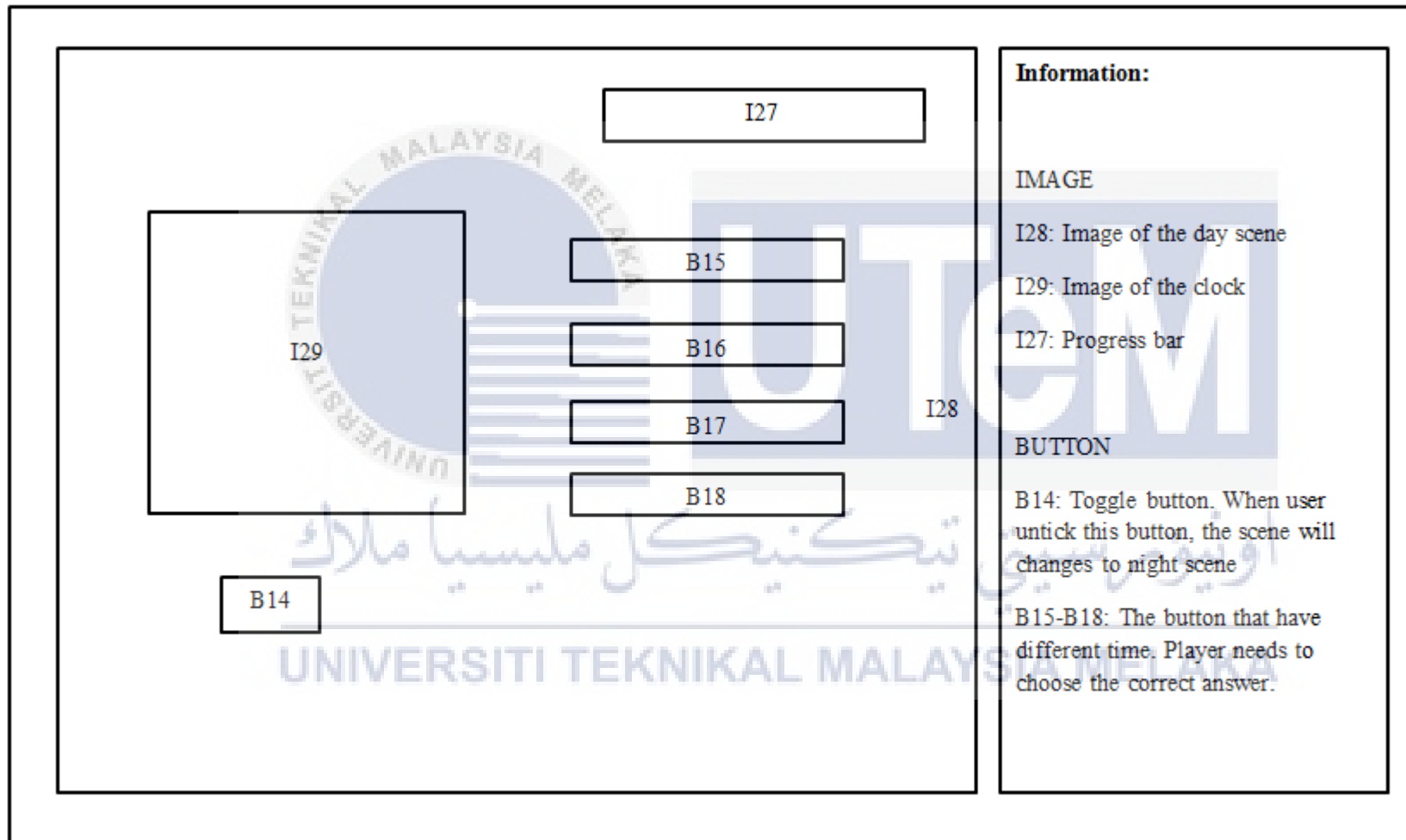
Figure 4.11: The Storyboard of the Third Level

Information:

IMAGE

I28: Image of the day scene

I29: Image of the clock

I27: Progress bar

BUTTON

B14: Toggle button. When user untick this button, the scene will changes to night scene

B15-B18: The button that have different time. Player needs to choose the correct answer.

Information:

IMAGE

I30: Progress bar

I31: Image of the clock

I32: Background image using the gradient pastel color.

BUTTON

B19-B22: button needs to be chosen by the player. It indicates the time.

Figure 4.12: The Storyboard of the Last Level

Information:

IMAGE

I33: Background image that use gradient color

I34: Image of the level that has been passed. The player will get three stars if she/he pass the level.

I34

I33
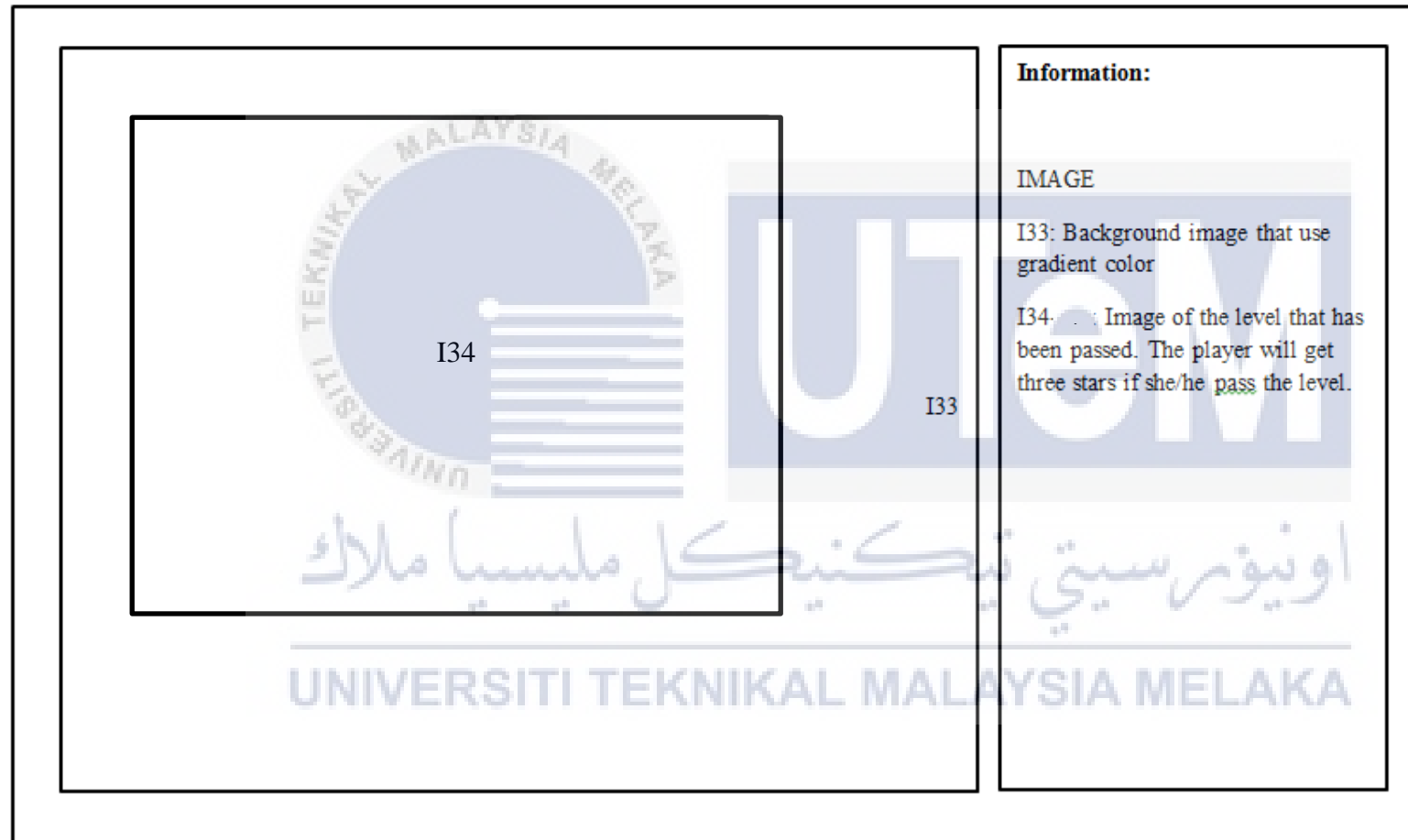
Figure 4.13: The Storyboard the Award Page
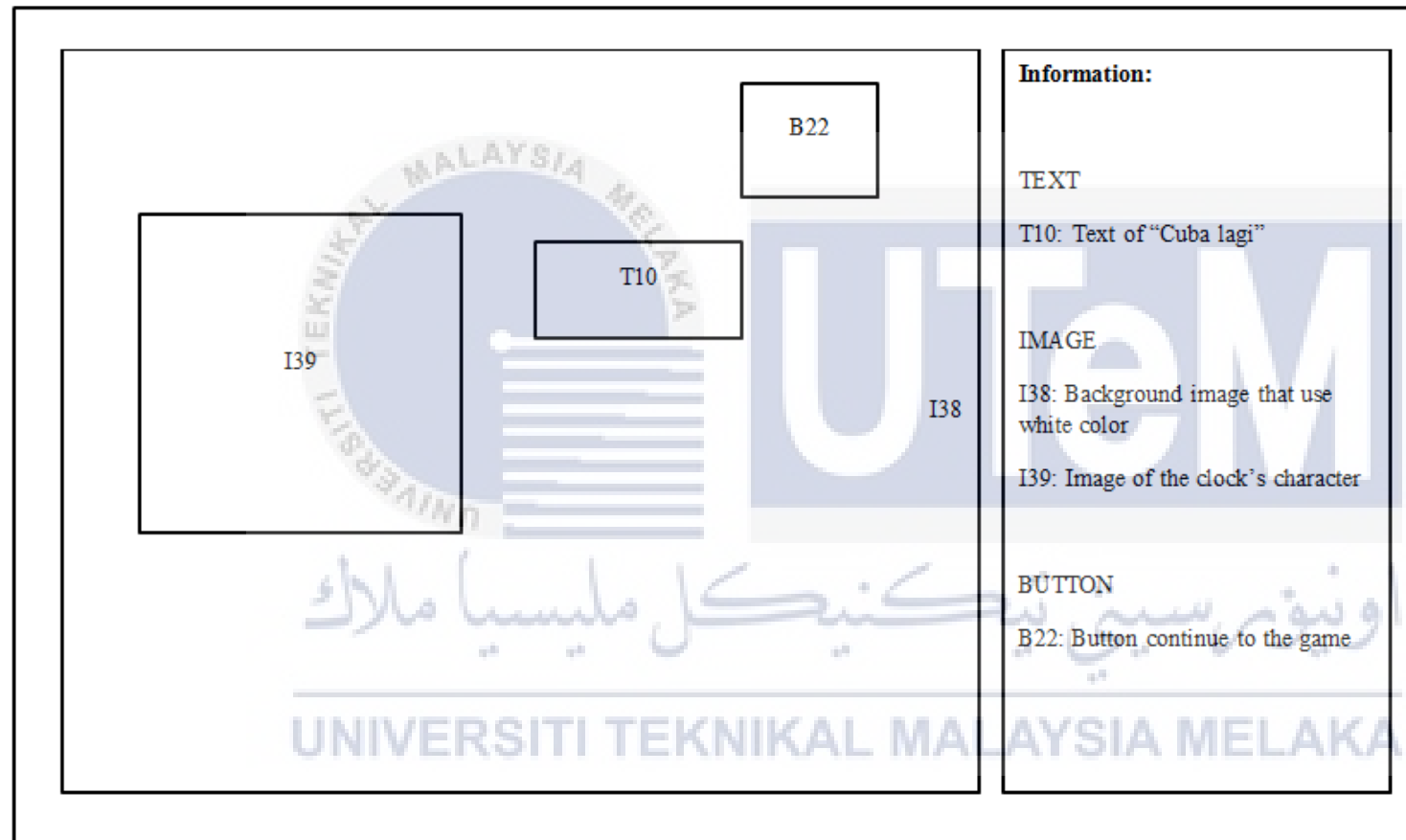
Figure 4.14: The Storyboard of the Motivated Page

4.4 User Interface Design

I.   Navigation Design

Navigation of the game will be shown in the flow chart below.(as in Figure 4.15)
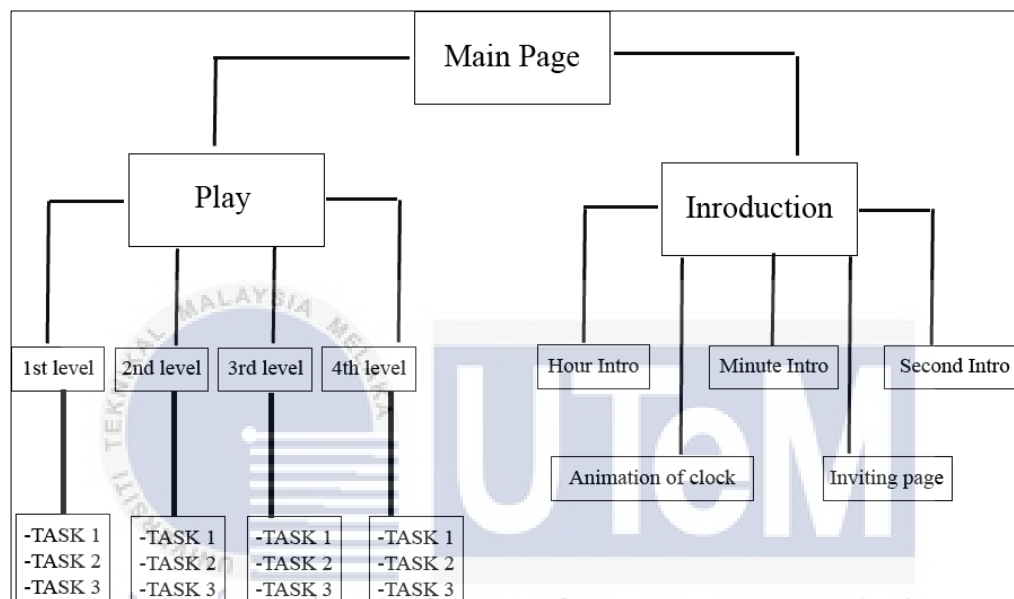
Figure 4.15: Navigation Structure of the Game

II.   Input Design

The player is not need to insert any data into this game. The player only has to click on desired element to play the game. The player use their touch sensor to continue play the next level.

III.   Output Design

Figure 4.16: The First Page Sketching

The Figure 4.16 shows that the sketching of the Main Menu before the real graphic is implemented.

Figure 4.17: Menu Screen of the Game

The Figure 4.17 shows that, there are two buttons, Main and Pengenalan. Player can choose to start playing if he or she click Main button. Player click Pengenalan to go to introduction about time.

Figure 4.18: The Sketching of the First Level

The Figure 4.18 shows that the sketching interface of the first level before we implement the real graphic into the game.
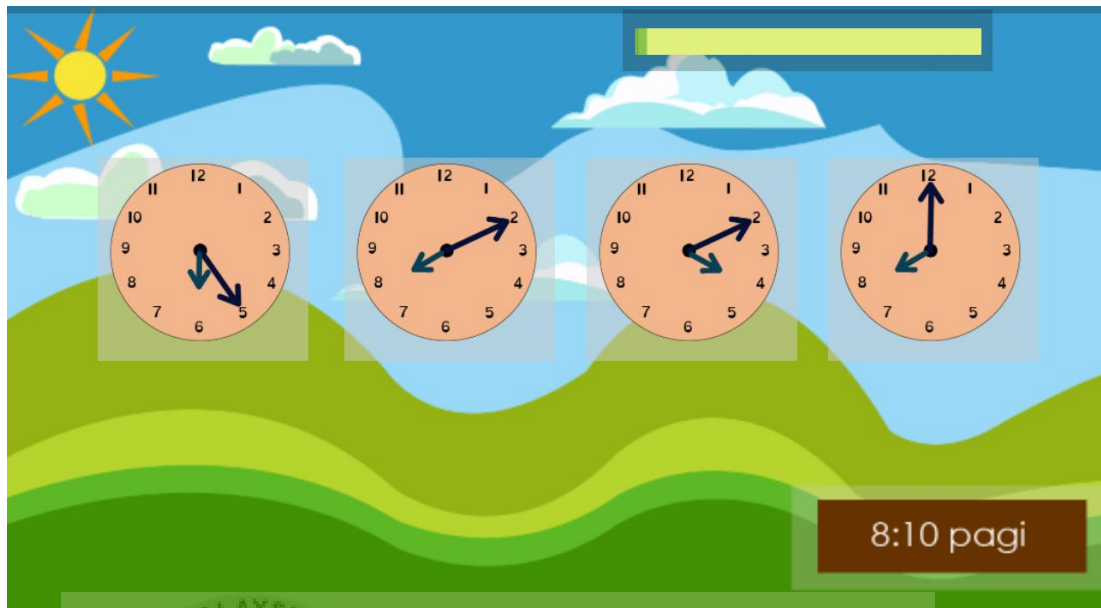
Figure 4.19: First Level of the Game

Player needs to tap on the right image (Figure 4.19) according to the time given in the right bottom of the page. The progress bar indicates the progress of the player. The player will have to go through two other same tasks to complete the first level.

Figure 4.20: Award Page of the Game

Player will get the star (Figure 4.20) after he got the right answer for each task. Player needs to click at the star if the player wants to play the next task. This reward is to motivate the player to play more.

Figure 4.21: Page after Success in Second Level

If player win the first level, he or she will get three stars and the level 2 icon (Figure 4.21)will move forward and backward. Player can click level 2 to continue.
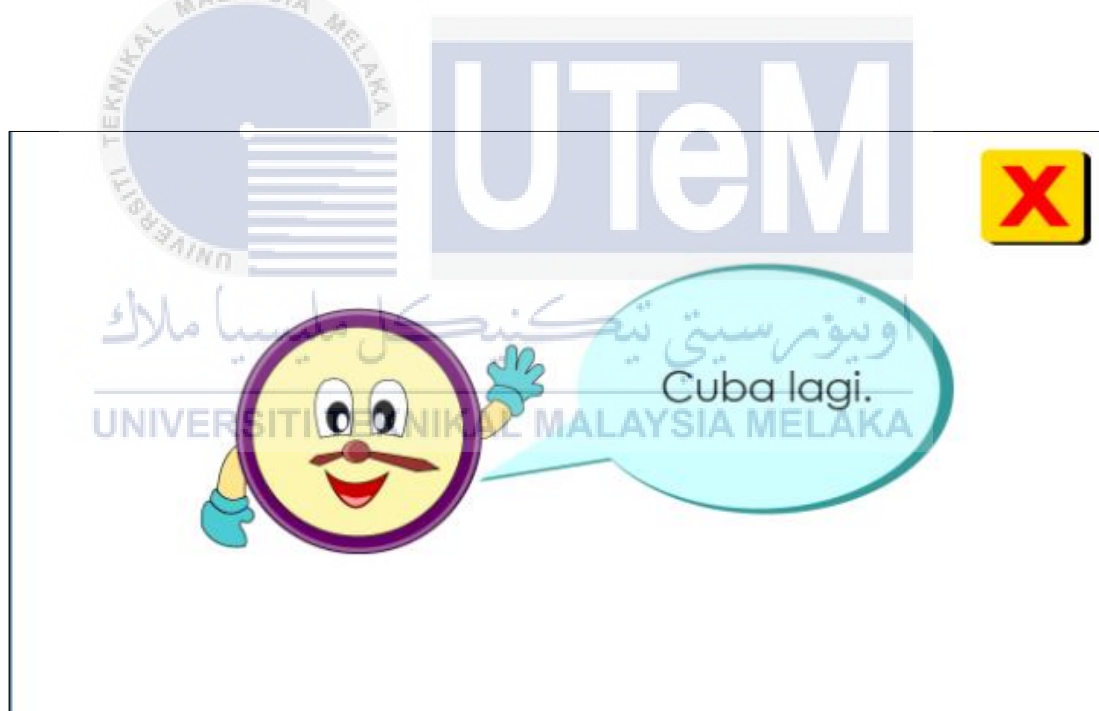
Figure 4.22: The Page to Motivate Player

If player make a wrong choice, another page as shown in Fifure 4.22 will apper to motivate them playing the game. Player need to click on X icon to continue playing.

Figure 4.23: The Interface of the Second Level

In second level (Figure 4.23), the player needs to choose the correct clock with correct time. The background in this level is night scene. When player choose the right clock, the award page will appear.

Figure 4.24: Page after Success in Second Level

If player win the second level, he or she will get three stars and the level 3 icon will move forward and backward(Figure 4.24). Player can click level 3 to continue.
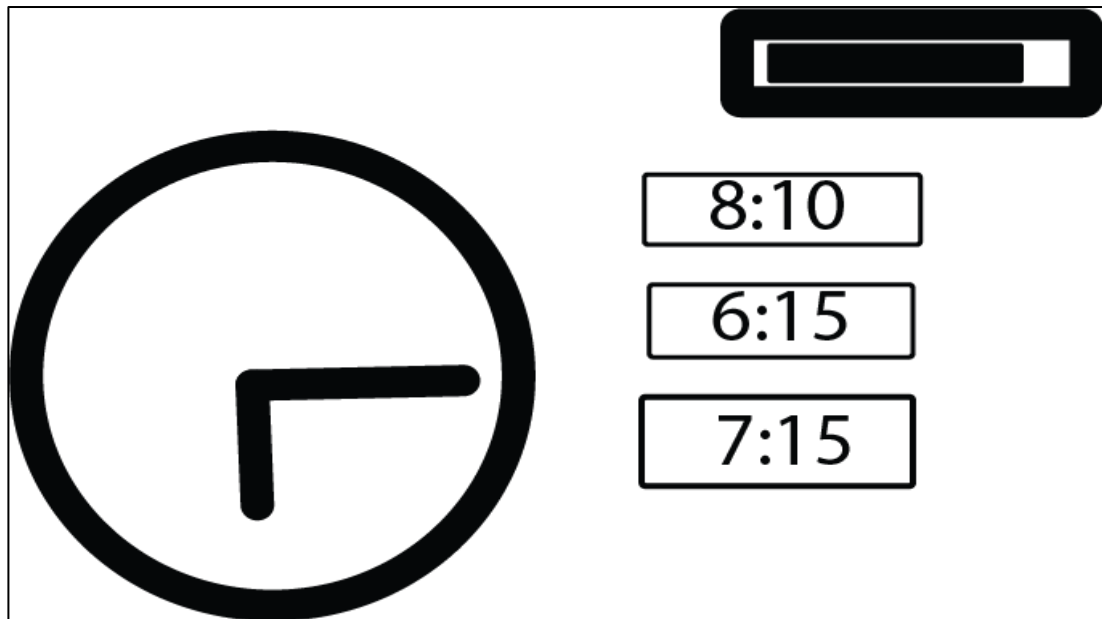
Figure 4.25: The Sketching of the Third Level

Figure 4.25 is the interface that have been sketch as the third level interface for this game before we implement the real graphic and icon into the game.
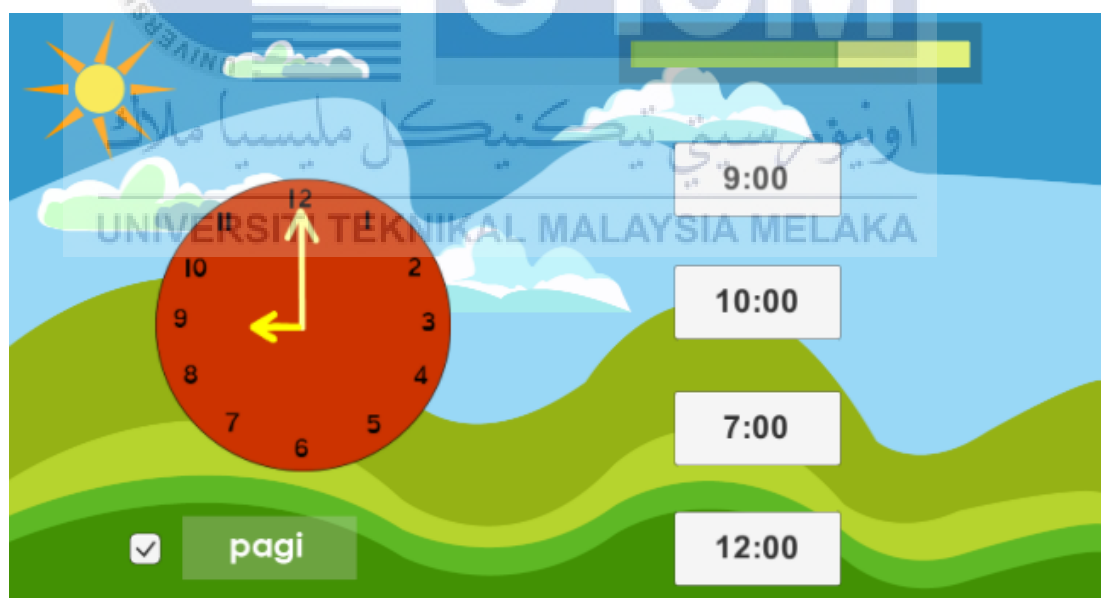
Figure 4.26: Third Level of the Game

In level 3, player must tap on the time listed(Figure 4.26) to make sure they know what is the time in the analogue clock is showing. The toggle button can be unticked so that the background of the scene changes to night scene.
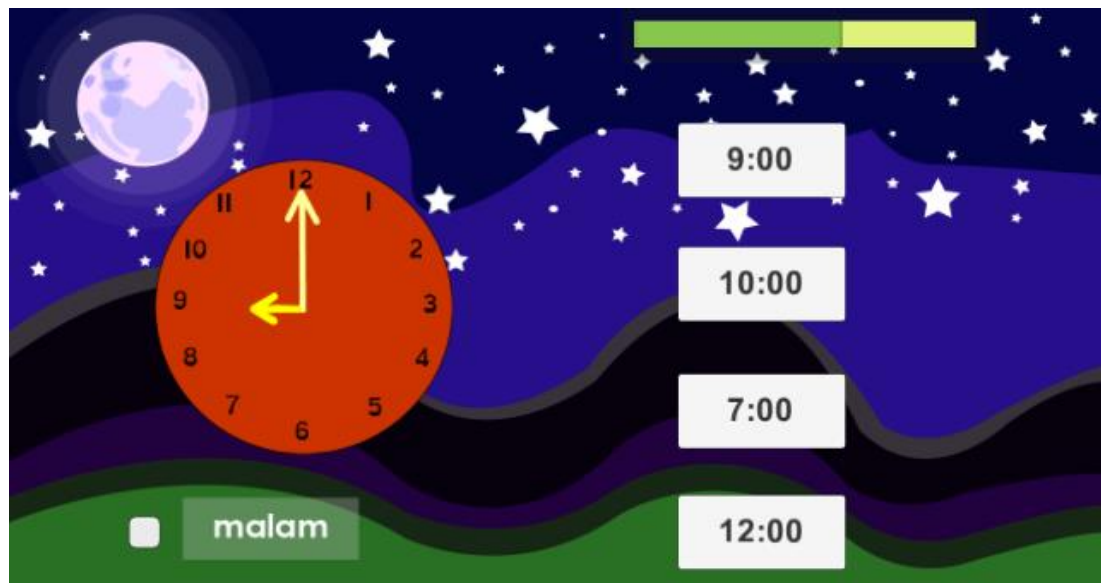
Figure 4.27: The Third Level in Night Scene

If player untick the toggle button, the scene of the background in Figure 4.27 changes to the night scene. The purpose is to alert the children, on hat time it can be two situation either 8.30 in the morning or 8.30 at the night.

Figure 4.28: Page After Player Win Third Level

If player win the third level, he or she will get three stars and the level 4 icon will move forward and backward(Figure 4.28). Player can click level 4 to continue.
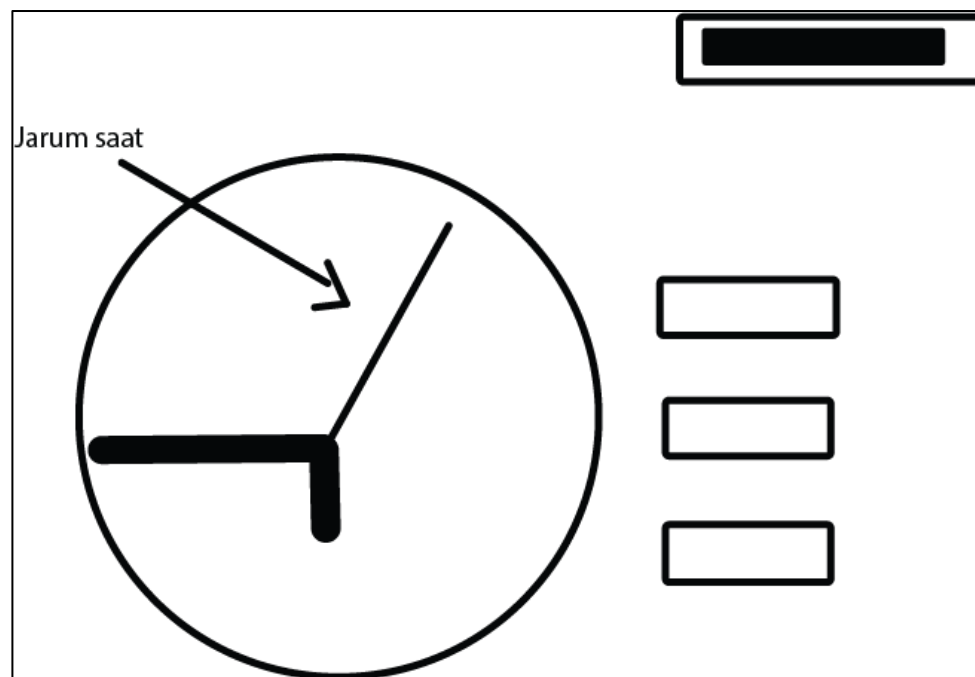
Figure 4.29: The Sketching of the Last Level

Figure 4.29 shows the sketch of the last level interface before we implement the real image and graphic into the game.

Figure 4. 30: The Last Level of the Game

It same as the previous level, but in this level(Figure 4.30) the hand of the clock is moving. After the hand of second complete one cycle, the hand of minute will move to number 6. The 30 outer dots will become bigger if the hand of second pass through them.

Figure 4.31: The Award Page after Complete Last Level

If player win the last level, he or she will get three stars the game is finished. Player can click level Home button if they want to play again(Figure 4.31).
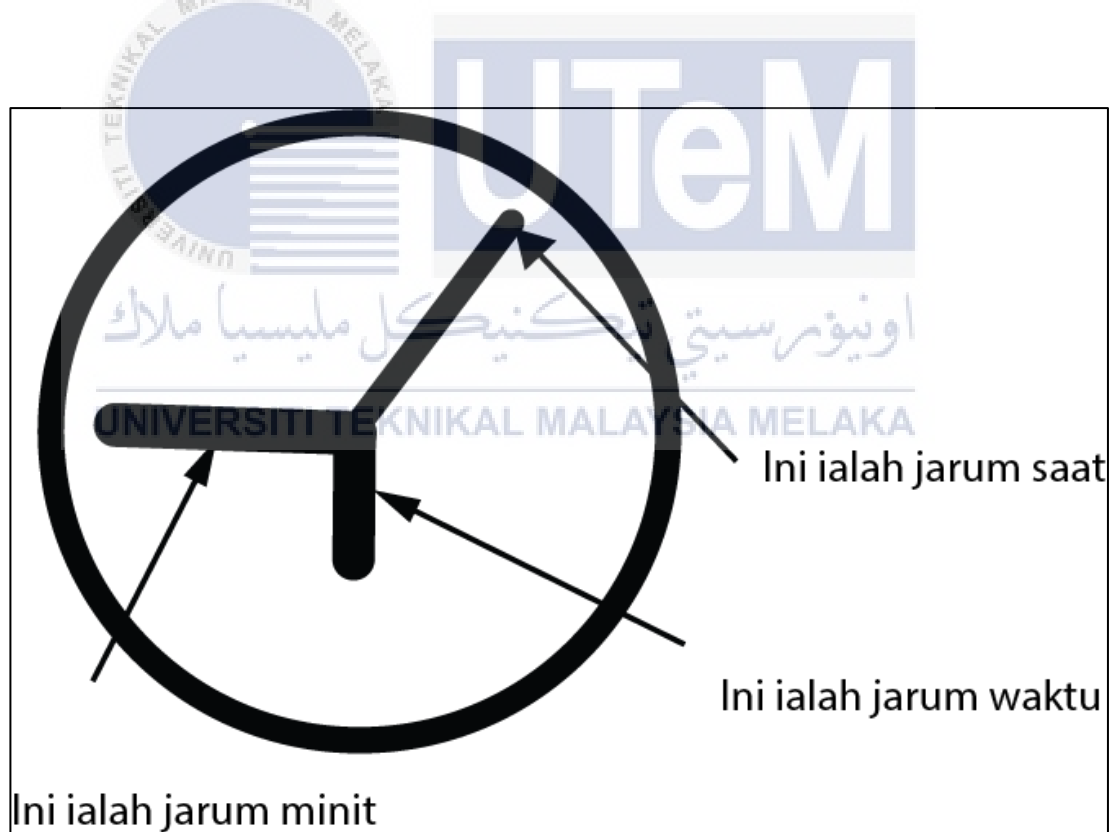
Figure 4.32: The Earlier Version of Sketching Introduction Page

Figure 4.32 is the earlier version of the sketching for Introduction Page. We just want to put the simple information in this page so that the children will understand easily.
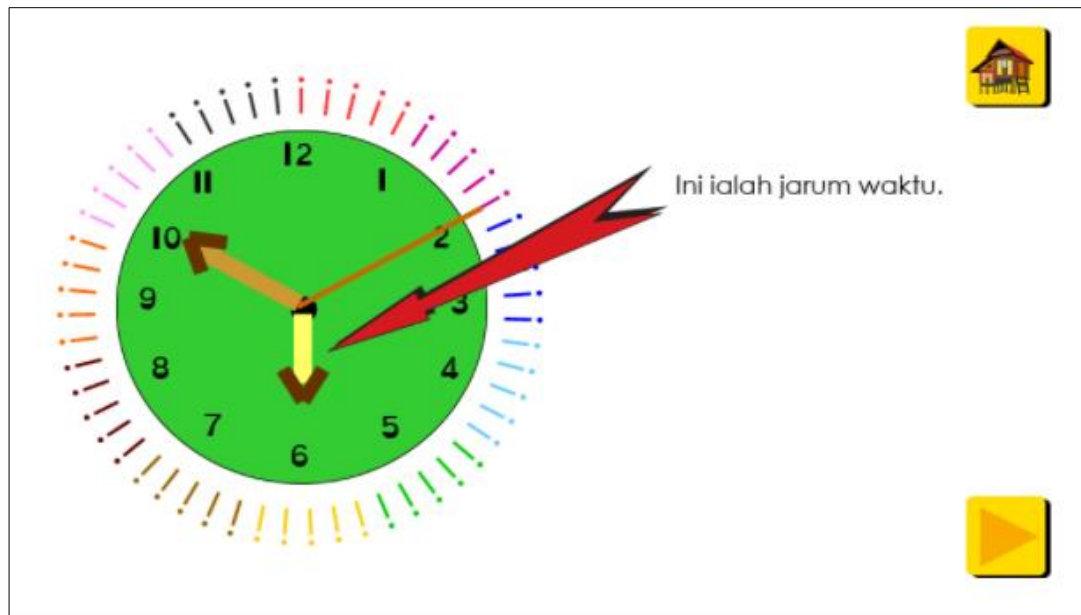
Figure 4.33: The Introduction about Hour

In this page(Figure 4.33), player can hear the introduction and if player want to continue, he or she can click the next button. If the player wants to go back at the menu page, player can click the home button.
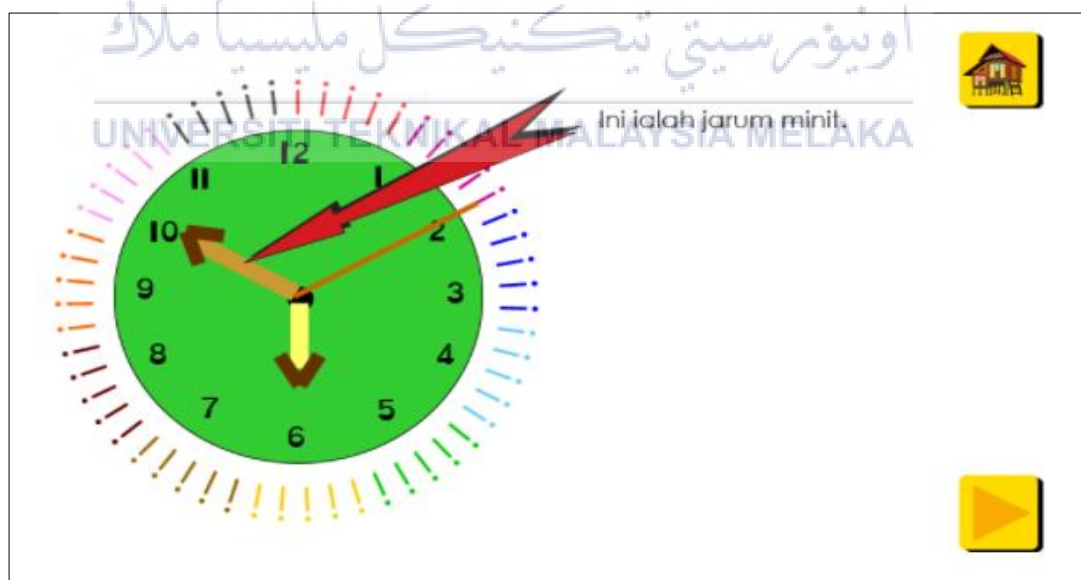
Figure 4.34: The Introduction about Minutes

In this page(Figure 4.34), player can hear the introduction about the minute of the time and if player want to continue, he or she can click the next button. If the player wants to go back at the menu page, player can click the home button.
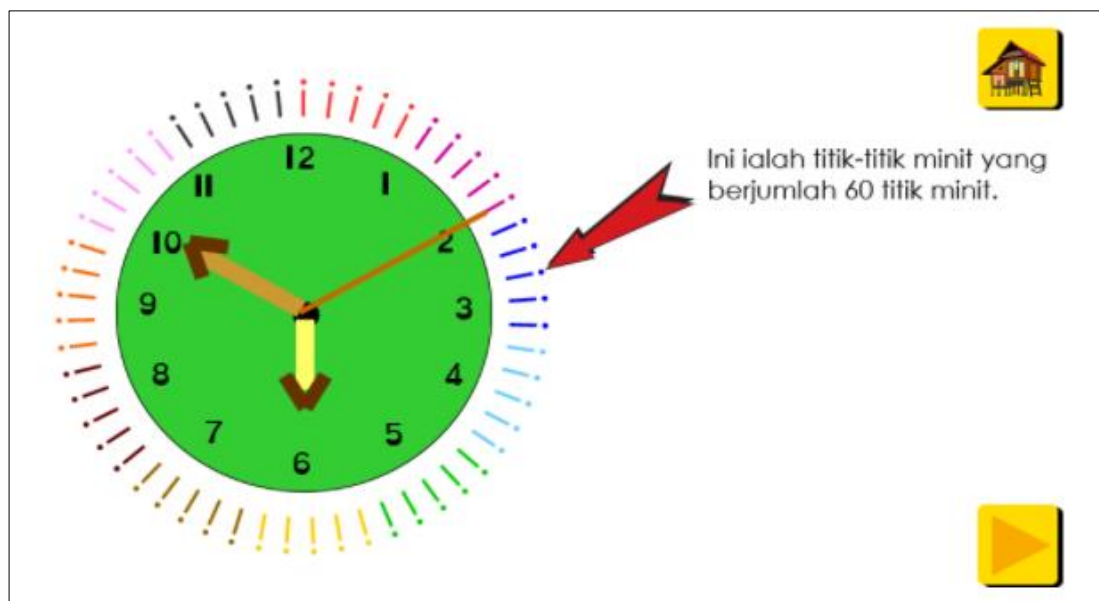
Figure 4.35: The Introduction about Dots of Minute

In this page(Figure 4.35), player can hear the introduction about outer dot of the clock and if player want to continue, he or she can click the next button. If the player wants to go back at the menu page, player can click the home button.
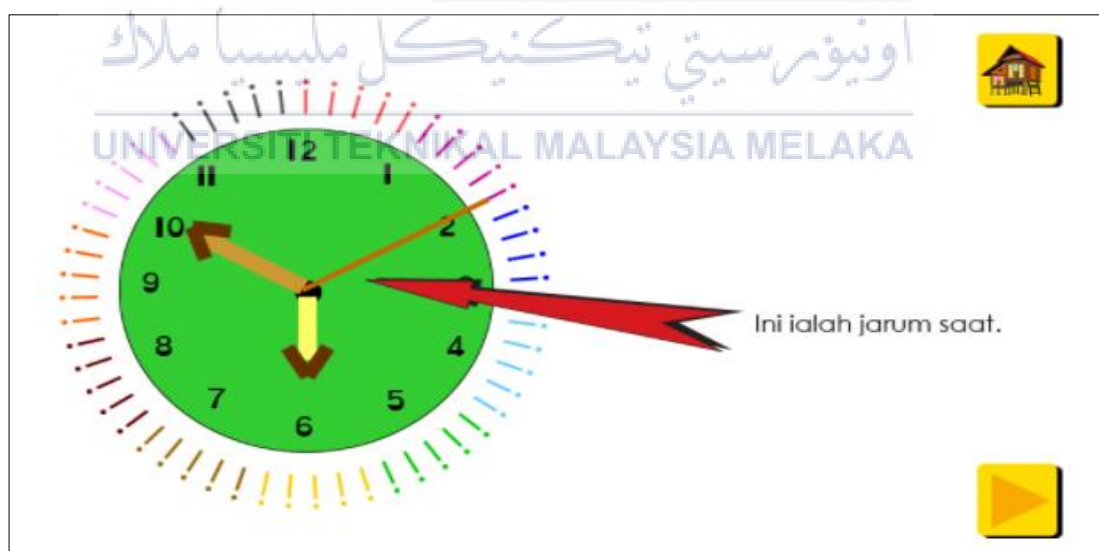
Figure 4.36: Introduction about Seconds

In this page(Figure 4.36), player can hear the introduction about second of the clock and if player want to continue, he or she can click the next button. If the player wants to go back at the menu page, player can click the home button.

Figure 4.37: The Animation of the Analogue Clock

In this page(Figure 4.37), player can see the animation of the analogue clock and if player want to continue, he or she can click the next button. If the player wants to go back at the menu page, player can click the home button.

Figure 4.38: The Inviting Page

In this page(Figure 4.38), it just asks the player to play. If the player wants to go back at the menu page, player can click the home button.

IV.   Metaphor

In this game, we use Malay language to make it more localize for Dyslexic children in Malaysia. In addition, the combination color use is pastel color to so that it will keep the Dyslexic children continue playing this game.

V.   Media creation and Integration

The graphic is edited and traced by using Adobe Illustrator. For the audio, the voice is recorded using Audacity software. The scripting language used is C# which is debugged in Visual Basic Studio.
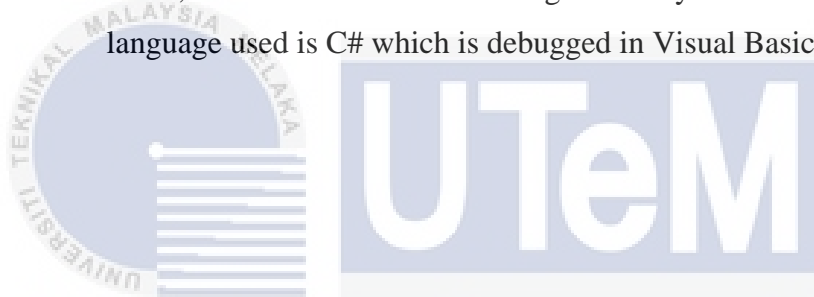
4.5 Conclusion

As the conclusion for this chapter, the system and context diagram is important to visualize the navigation of the game. The storyboard is used to make the player and developer clear about the game flow. Design phase is important to illustrate all the game content. It will help developer to deliver the content in creative way. For the next chapter, we will start to implement all the content in this chapter to complete the development process.

CHAPTER V

IMPLEMENTATION

5.1 Introduction

This chapter will explain about software that we use to implement the development of this project. This chapter tells about the way we setup the software to develop this project. The steps of media being created also will be explained in this chapter. Moreover, the status of the implementation also will be explained in details.

5.2 Media Creation

Text, graphic, audio and animation are the main thing that will complete the media creation. This is important to make our product more interesting and fun to use. All of the process to create the media is important.

5.2.1 Production of Text

Text is one of the media we used to deliver information in this game. We used this font to attract and make user feels interesting to play this game. We also choose these font because it is easy to read and simple in look. Moreover, texts that we used in this product are Arial Bold 40 when we want to show the time option

(Figure 5.1). The font is used because it is simple and easy to read. We also used Myriad Pro Bold font for the title of the main page(Figure 5.4). For the button and number on the clock we use Dyslexie Regular font(Figure 5.3). This is because this font will make the Dyslexic children easy to read. We also used the Century Gothic font as shown in Figure 5.2 to deliver the information in the Introduction Page.
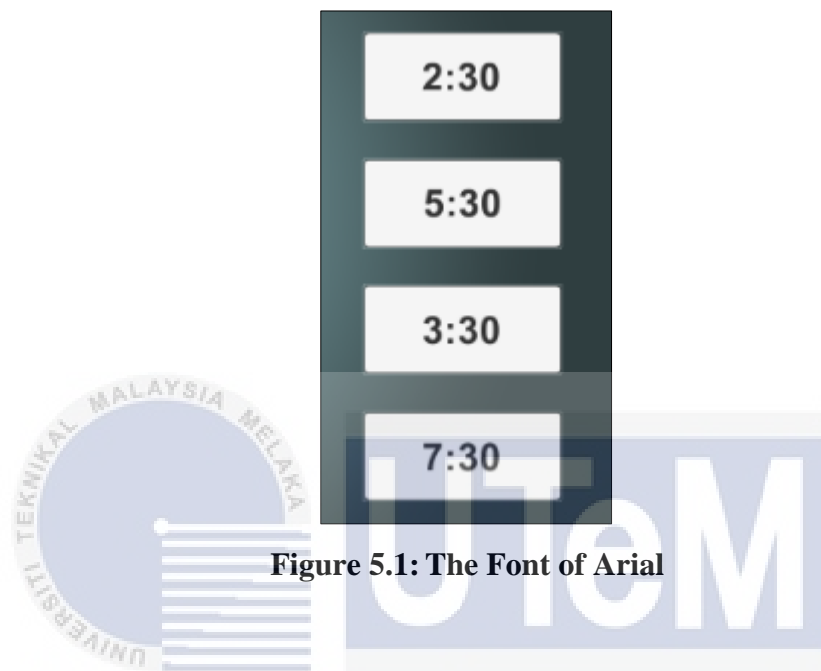
Figure 5.1: The Font of Arial
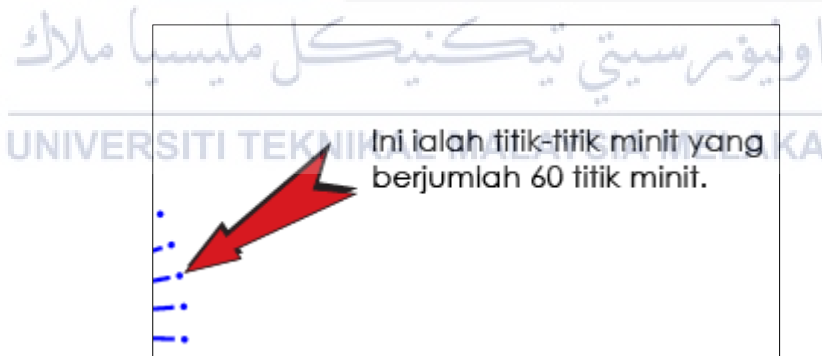
Figure 5.2: The Font of Century Gothic

Figure 5.3: The Font of Dyslexie

Figure 5.4: The Font of Myriad Pro

5.2.2 Production of Graphics

The graphic and all the images in this product are using the vector images. This product also use 2D image only. We create the graphic using Adobe Illustrator CS5. We use pastel color to color this graphic One of the icon is star icon as shown in Figure 5.5 which is we used s reward after the player get the right answer. Moreover, we created Home button as shown in Figure 5.6 to indicate as the button for player click after they finish the game.

In addition, we also create the clock icon as the main graphic for each level in the game (Figure 5.7). For level 3, we used different color of the clock(Figure 5.8) because the level changes. There are day scene (Figure 5.9) to show that it is a day and night scene to indicate it is night (Figure 5.10). For the Main Menu page, we make the village background as it is in Malaysia culture (Figure 5.11)
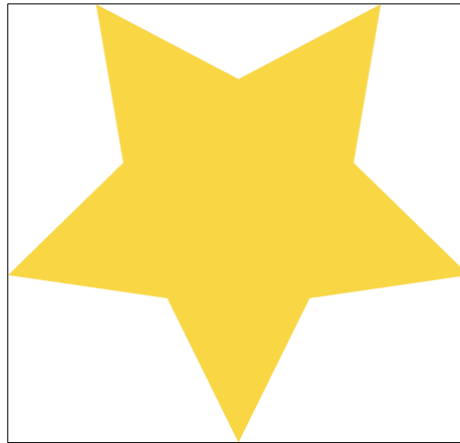
Figure 5.5: The Star Icon
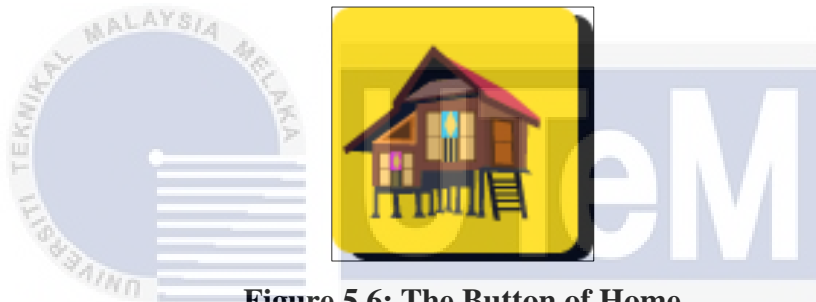
Figure 5.6: The Button of Home
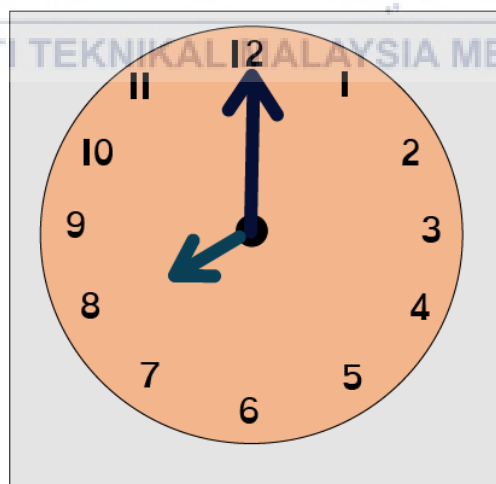
Figure 5.7: Clock Icon in The Game
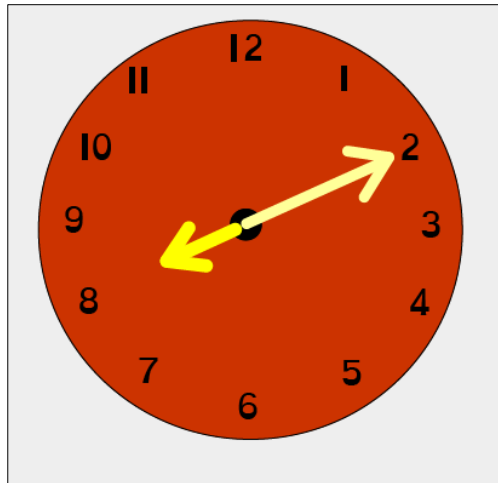
Figure 5.8: Clock Image in The Level 3
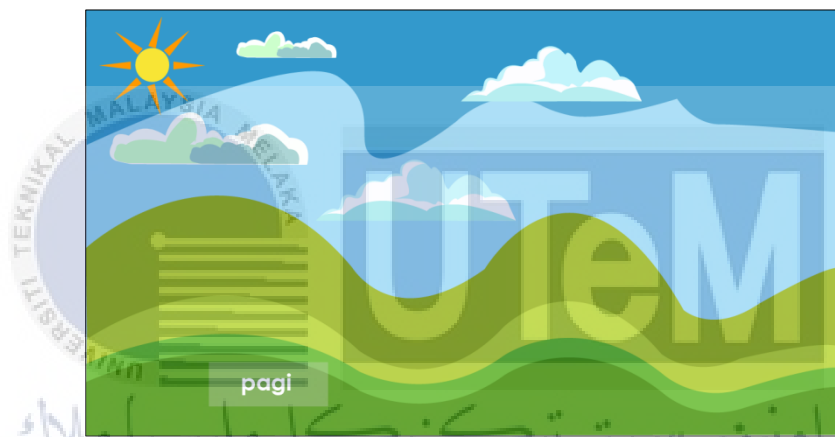
Figure 5.9: Backgound Image of The Level
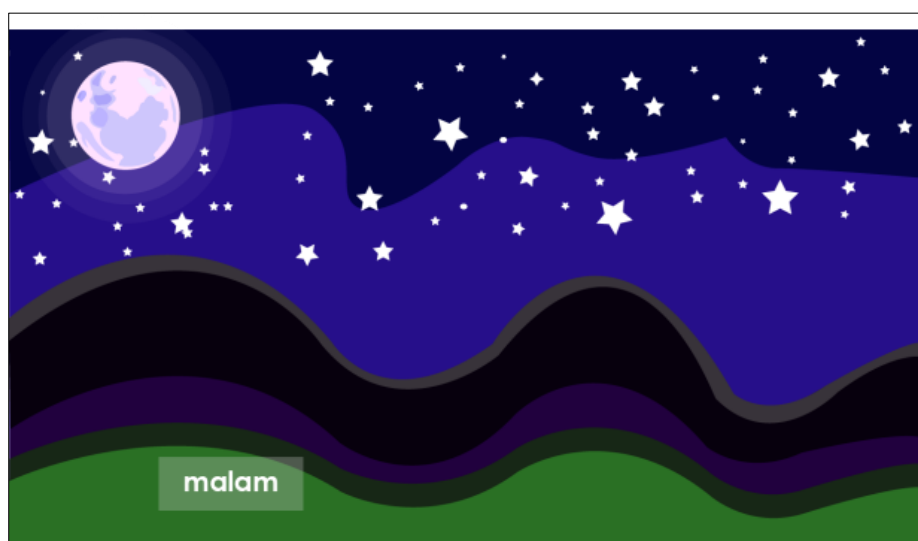
Figure 5.10: Backgroung Image of The Level

Figure 5.11: Background Image of The Main Menu

5.2.3 Production of Audio

In this game not too many audio was used. We only provide the audio for reward page or when the kids complete the task. All the audio used is recorded by using Audacity software(Figure 5.12). The clapping audio is downloaded from free sources.

Figure 5.12: Audio Editing Using Audacity

5.2.4 Production of Animation

Animation in this product is used in certain area of the game. All the animation has being animate using the animation features in Unity Software (Figure 5.13). Animation will make the game more interactive. This animation is used to resemble the real hands of analogue clock that will rotate persistently.
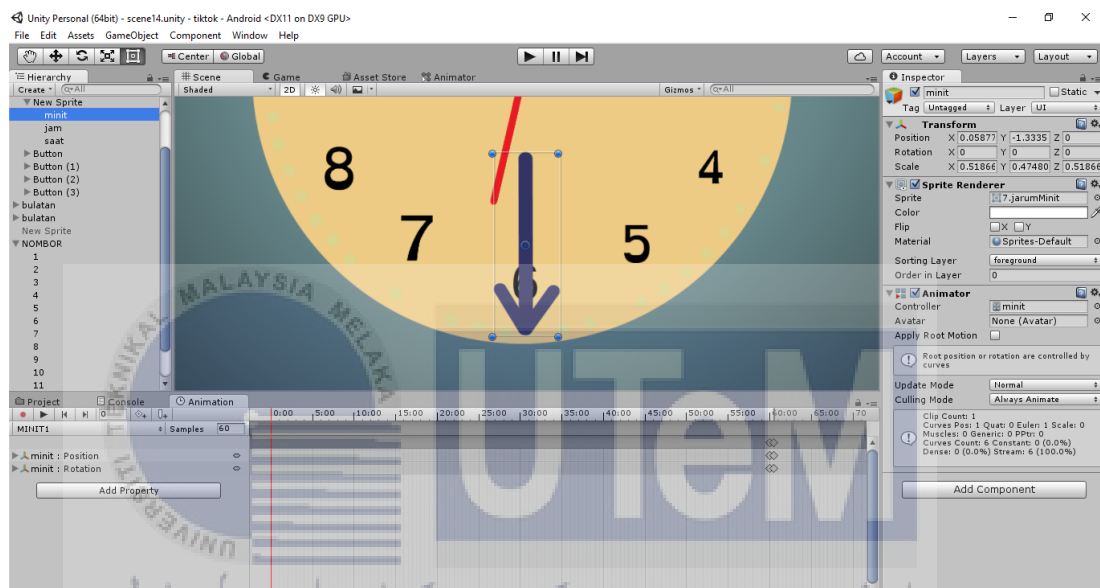
Figure 5.13: Animating the Object Using Unity

5.3 Media Integration

Most of the media we used are made in Adobe Illustrator software. The icon is developed one by one. Tracing are the method we used when we need to draw something and refer to the real picture of the object. For audio, the voice is recorded by using Audacity Software. All the animation is being manipulated in Unity Software. After all the media complete, we will transfer them to the android phone so that we can play the game.

5.4 Product Configuration Management

Configuration environment for this product is being setup by using android phone as the main platform to implement this game. The game is developed by using Unity as the main software to import and build all the scene of the game. Designing process is the longer process which we need to trace and color all the image in Adobe Illustrator software. Plugin that we used when developing this game is Android SDK tools to make sure the sources in Unity can be run well in mobile phone.

The content of this product will upload to mobile phone so it will be able to be played by the target user. Before we complete the Golden Master Release, we built the Alpha version and test it with the evaluator. After getting some improvement, we made the second version of this game which is Beta version. After that, we give this Beta version to be tested to the children with Dyslexia. Finally, after we adjust and add some improvement, we release the Golden Master as the final product.

5.5 Implementation Status

All of the implementation is being recorded as the prove we have done the implementation. So, the status of implementation is presented in the table below.

Table 5.1: The Implementation Status

Module Name	Description	Duration to Complete	Date Completed	Status
TIKTOK version 1	The game consist of 4 level	3 month	16th May 2016	Completed
TIKTOK version 2	The game consists of 4 level. Each level will have 3 task for each level.	2 month	7th August 2016	Completed

5.6 Conclusion

As the conclusion, this chapter explained about how the implementation process occurs. It also state in details about the way we manipulated and transfer the media to the platform. So, in the next chapter, the testing process will be explained. All the testing plan will be stated too.

CHAPTER VI

TESTING

6.1 Introduction

This chapter will explain about the testing process and the result of the testing that have been done. The testing will show us how the children with Dyslexia deal with this mobile game. Moreover, we will also provide the clasess of test so that we can get the data and analyze all of the data. In this chapter we will know game is successful or failed.

6.2 Test Plan

6.2.1 Test User

The test user for this testing is children with Dyslexia. All the children will be in range of 6 to 12 years old. We will choose 4 random children to participated as the test user.

6.2.2 Test Environment

The venue of this testing is at Pusat Dyslexia Ipoh, Malaysia. The testing will be held at the room with the teacher in charge on that day. The hardware that we used during the testing is mobile phone. We are not specific on phone type but we must make sure the phone is an android phone. Before the testing, we prepare the camera to record the video and taking some pictures of the children. We also prepare the audio recorder so that we can easily record the answer of the teacher during interview session.

6.2.3 Test Schedule

During the testing, the cycle is going to be one cycle for each of the children. Each child will be given 20 minutes to play the game and complete the task. The length of time will be controlled to make sure the data is valid(as shown in Table 6.1). The children will play the game using the android phone provided.

Table 6.1: The List of The Participants

Tester	Children with Dyslexia
Number of Testers	4
Duration	20 minutes
Date	28th July 2016

6.3 Test Strategy

The test will start when the children start to play the game. The strategy of this test is one by one test for 4 children. They will discover and explore the games during the testing. Each of the children will have 20 minutes to do this testing. During the testing, we will observe and record their action. After that, we will interview the content expert to get the feedback about this game. In our case, the content expert is the teacher at Pusat Dyslexia in Ipoh.

All the testing will be concluded after we get the feedback from the content expert. Advice and suggestion from the content expert are the point that will be taken as the important notes so that we know the state of usability, learnability and effectiveness of this game.

6.4 Test Implementation

Test implementation will consist of test description and test data. All the data that have been obtained from the test data will be analyzed in details.

6.4.1 Test Description

Firstly, we have provided an android phone that has the game to the children. The teacher will guide the children when they play the game. One by one child will play the game during the testing process. After all the children done the testing process, we will conduct the interview with the teacher. The entire question given will be based on effectiveness, content relevant, interface and usability of the game.

6.4.2 Test Data

All the data is gained from the testing that have been conducted in Pusat Dyslexia Ipoh. All the data are recorded in Table 6.3 to Table 6.6 after the 4 selected children with Dyslexia were done playing the game.

Table 6.2: Participants During Testing

Anynomous Name	Age	Gender	Picture
Siti	7 years old	Female	
Azmi	8 years old	Male	
Abu	8 years old	Male	

Anynomous Name	Age	Gender	Picture
Falihin	6 years old	Male	

6.5 Test Result and Analysis

Table 6.3: Understanding to read the time at the analogue clock

Name	Task/Activity	Completed Times.(to get the right answer)
Siti	On the first level, she got one wrong answer. At the second level she got one wrong answer.	7 seconds
Azmi	Only got one wrong answer on the second level.	6 seconds
Abu	Got one wrong on the first level.	21 seconds
Falihin	He got two wrong answer at first level and one wrong answer at second level	7 seconds

Table 6.4: Engagement With The Game

Name	Task/Activity	Completed Times.(all task)
Siti	Play all level in the game	3 minutes
Azmi	Play all level in the game	2 minutes
Abu	Play all level in the game	5 minutes
Falihin	Play all level in the game	7 minutes

Table 6.5: Navigation Using The Button

Name	Task/Activity	Status
Siti	When the prevention error page appears, she did not know where to click but for the next task, she straight away clicks the button.	The teacher assisted the student where to click.to click.
Azmi	When the prevention error page appears, he did not know where to click but for the next task, he straight away clicks the button.	The teacher assisted the student where to click.
Abu	When the prevention error page appears, he did not know where to click but for the next task, he straight away clicks the button.	The teacher assisted the student where to click.
Falihin	When the prevention error page appears, he did not know where to click but for the next task, he straight away clicks the button.	The teacher assisted the student where to click.

Table 6.6: Adaptation To The Game Concept

Name	Task/Activity	Status
Siti	From level 1 to level 2, she still knows where to click, but when comes to level 3, she stops awhile and took a little bit times to click the answer.	The teacher assisted the student where to click.to click.
Azmi	He straight away knows where to click on the third level without the teacher tells him.	He knows the level is different.
Abu	He got confused on the minutes and hour on the third level	The teacher assisted the student where to click.
Falihin	He clicked several times on the clock at the third level like the previous task.	The teacher assisted the student where to click.

6.6 Analysis Testing

After the test result and analysis is done, we will do the analysis testing to know whether this game is going to fulfill the objectives or not.

i.   Promote Interaction : The Children Interested on Playing Game

After we did the testing, we found out that TIK-TOK game is able to promote interaction. Each of the children is interested to play the game.

Figure 6.1: Azmi Smile When The Teacher Ask Him About Game

During the test, the teacher asked Azmi(Figure 6.1) whether he liked to play or not. Azmi nodded his head and smile to the teacher to show that he love to play. Same goes to two other children, Falihin and Abu,(Figure 6.3) they straight away clicked on the "Main" button instead of "Pengenalan" button on the main menu.
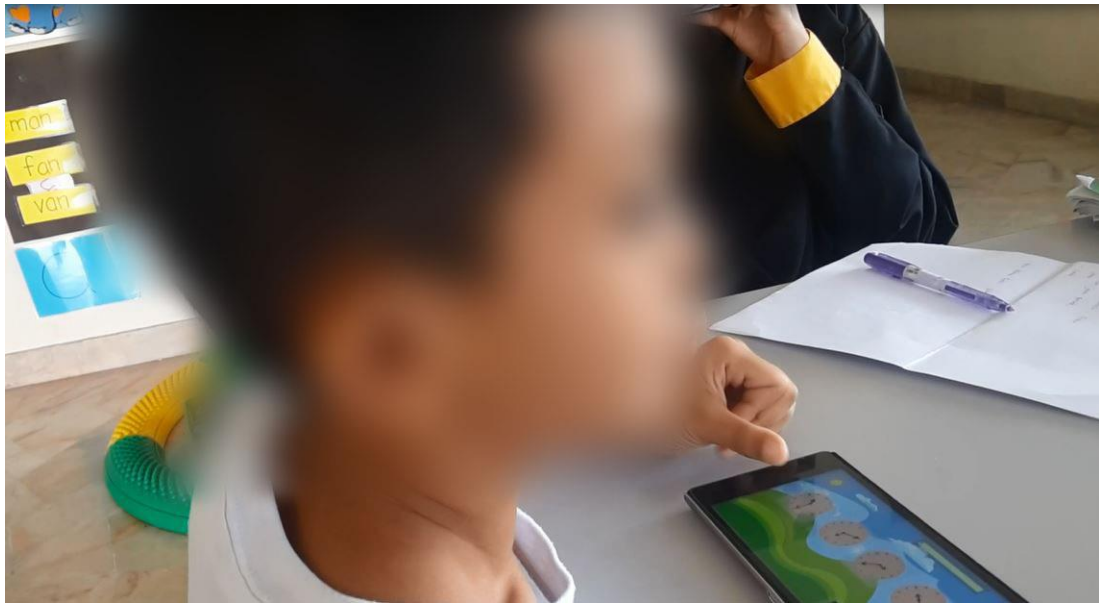
Figure 6.2: Abu Start To Play The Game

Figure 6.3 : Falihin Click "Main " Button

Children with Dyslexia are more interest in playing game rather than learning. When they learn about analogue clock sometimes they got confused because they only learn the analogue manually using books and looking to the real analogue clock. So they will get bored easily and lost focus. So, when we did the test, we noticed that 3 of them click the "Main" button when they see the main menu page(Figure 6.2 and Figure 6.3). According to the Audenaeren, Celis, Abeele, Geurts, Husson, Ghesquière, Wouters, Loyez, Goeleven(2015) pre-schooler like the intuitiveness of the physical interaction with their hands and fingers.

According to the teacher, Encik Saiful Nazrin, he teached the children using the analogue clock but sometimes the student not really interested in the topic because they cannot interact with the clock. So the teacher has to build mock analogue clock using cardboard so that the children can touch the hands of clock and rotate it. So when this game exists, he told that he can see the children excited to play the TIK-TOK game.

This statement is supported by Haladjian, Richter, Muntean, Ismailović, Brügge(2010), tablet devices provide a more direct way of interaction, allowing children even without computer experience to interact with objects on the screen by literally touching them. It also facilitates its usage in the context of a therapy.

ii.   **Help in Understanding about Time Concept Through Visual**

As the result of the testing, we also found the children with Dyslexia can understand the time concept through visual.

Figure 6.4: Falihin Was Trying To Solve The Game

Figure 6.5: Siti Start To View The Game

In this game we provide the content that relevant to the children with Dyslexia that have difficulties to learn about time. The content can help the children to understand more about analogue clock. This is related with Table 6.3 in page 75. Siti is the first children try to play the game(Figure 6.5). She clicked on the Pengenalan page and look carefully on the information that she saw. She got assisted by the teacher but in minimize way. She got wrong answer at the first and second level but after the next level she started getting the right answer.

On the other children, Abu,he is only learn about the basic thing about the clock with his teacher. During the test, he got one wrong answer. Azmi and Falihin show the same respond when they got wrong answers on the earlier level but after that they getting better in next level and choose the right answers. This reaction is related with statement of Franceschini, Bertoni, Ronconi, Molteni, Gori, Facoetti(2015), video games led to improved information processing.

According to the teacher, he stated that he agreed that the content is relevant and helping the children to learn about time but he noticed that the children start to learn faster even though he only teach them the basic things about clock. He also added that the task in the game should be more variety and should focus more about minutes. Moreover, Franceschini, Gori, Ruffino,Viola, Molteni and Facoetti(2013) stated that only playing action video games improved children's reading speed.

iii.   Reward Able To Motivate The Children To Play The Games Which Can Prolong Their Attention Span

After the testing process, we found that reward in the game is able to motivate the children to play again the game. This means their attention is prolonged.

Figure 6.6: Siti Stares To The Star At Reward Page

For example, when Siti get rewarded (Figure 6.6) after get the right answer, she looks carefully on the animated star as she interested on it. She completed the games and she looks like wanted to touch the "Home" button to play again.
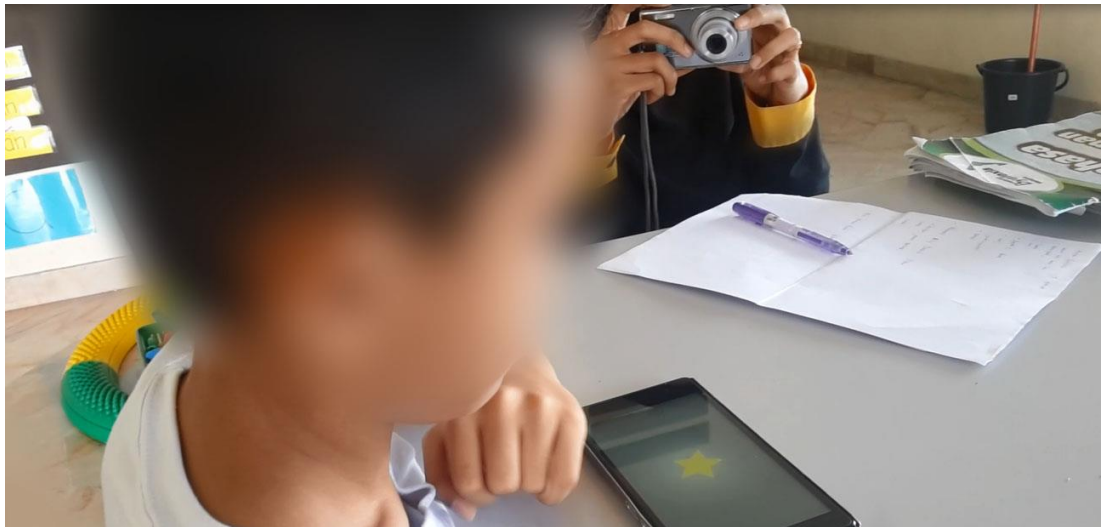
Figure 6.7: Abu Look Satisfied When He Get The Star

Reward is the things that will make the children with Dyslexia spend more time to learn or play. In our game we provided the reward page after they get the right answer to motivate themselves to learn more. So, during the testing we noticed Falihin and Abu click faster on the star(Figure 6.9) as they want to grab it.

Figure 6.8: Azmi At The Prevention Error Page

It is the same case to Azmi, in addition during the page of motivation appear, he quickly tap on the X button and eagerly choose the right answer instead of stop playing after got the wrong answer. The result also shown in Table 6.5.
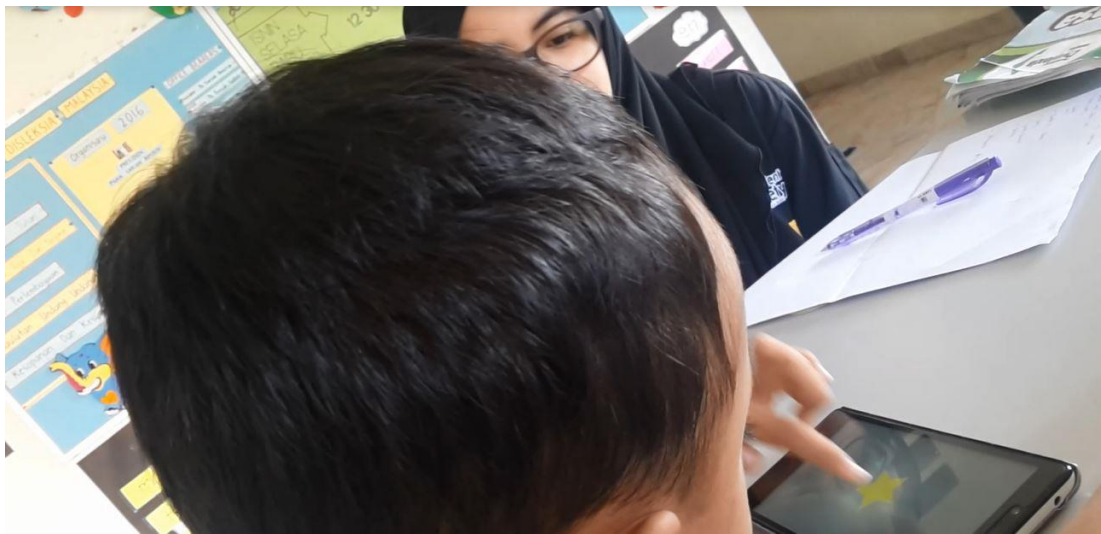
Figure 6.9: Falihin Want To Catch The Star

According to the teacher, the children will spend more time playing instead of learning. In the classroom, as the teacher teaches, they will easily lost focus during learning but if it is the play time they will play more without hesitate. Moreover, according to Plakopiti and Bellou(2014), the colours, the images, the sound and the overall information that meet the multisensory pupil's interest, keep them concentrated.

iv. Simple Interface Increase Engagement For Children

We also found that the simple interface can increase the engagement of the children. This is shown in the Figure 6.10.
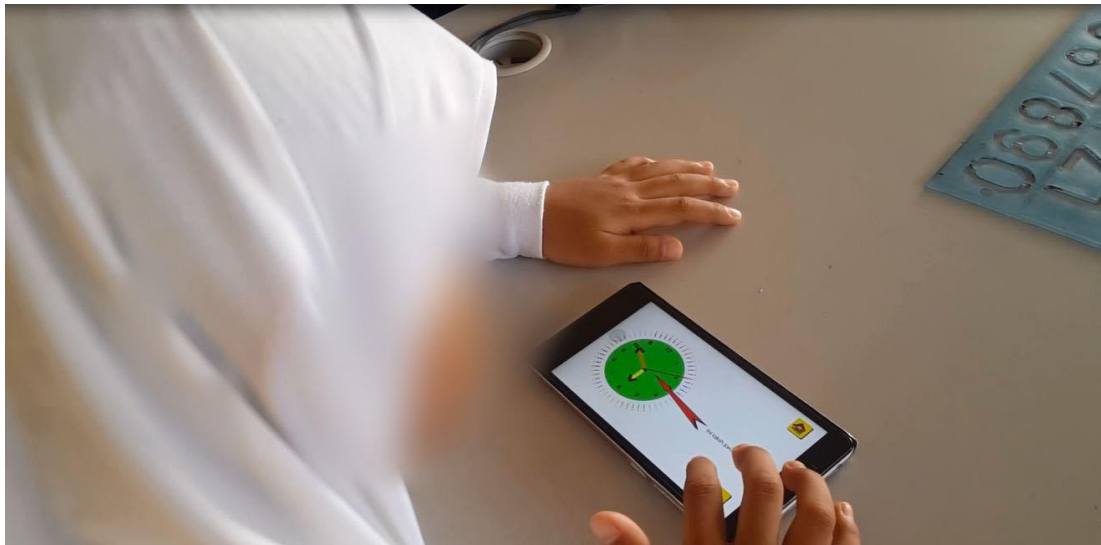
Figure 6.10: Siti Focus on Pengenalan Page

The interface is the most important part when we build this game. This is because the player will interact with the game by looking at the interface. It is important to make sure the interface is clean and simple so the children can focus when playing. The color use in this game is also important because the children with Dyslexia tend to like the pastel color more rather that vibrant color.

During the testing, when Siti wants to start play the game(Figure 6.10), she is happy and look at one by one clock in the "Pengenalan" page. As for Azmi, he clicked at the right place to click along the testing (Figure 6.11) and his progress is faster as he knows where to click after the level complete.

Figure 6.11: Azmi Try To Choose The Right Answer

Figure 6.12: Abu More Focus on The Background Image

For Abu, he tends to over click when he not noticed the time hint at the bottom right corner of the screen. Instead of looking at the clock, he likes to look at the background image(Figure 6.12) which is night scene and day scene.

During the interview, the teacher said that the color use is nice because it use the pastel color theme. The interface is simple and easy to be understood by the children. He also said that the simple interface is about not making too many moveable objects in one scene to avoid the children from attract to unimportant things. He also state that the font of the time at level one and two should be bigger and the placement should be in center.

According to Anoual and Abdelhak(2010), in order to keep the attention of the user on the games , the interfaces with simple graphic pages with light background colours is developed rather than on the sophisticated graphics.

6.7 Conclusion

In this chapter, all the testing description is explained in details. The data that have been obtained also recorded in this chapter. The result of the testing will be analyzed too. So, on the next chapter we will conclude the overall result and identify the strength and weakness of this game. The point will be as the opportunity to future work.

CHAPTER VII

CONCLUSION

7.1 Observation on Weakness and Strengths

Weakness and strength of the product is the things that will make our product have the chance to improve in the future work. So, after we get some result during the analysis cycle, we identify the weakness and strengths of this game. Here are some lists of the weakness and strengths of this game.

Weakness:
1. The font used in the first level and second level too small.
2. There is no sound of the clock ticking.
3. The activity for each task is not too focusing on minutes.
4. The progress bar icon is confusing.

Strengths:
1. The interface such as color and the font type use is good to attract the children's attention.
2. The interface is simple and easy to navigate.
3. It is suitable for the kids that have medium knowledge about time.

7.2 Propositions for Improvement

This game have potential to be as one of the tools that can help the children with Dyslexia but it is still need some improvements before it can be publish to the user. Moreover, this game needs improvement to fulfill the quality in industry. If in the future, there are some future works that other want to do base on this field, maybe they should improve certain things that will be highlighted in this section. One of the improvements that should be done in this game is to provide visual instruction for the first page on the first task. This improvement will make the children understand overall view about how they can solve the task.

In addition, the progress bar icon should be replaced with star icon. This is to make the children aware about how far they have done by seeing how many stars that they get.

Next, the improvement that should be done is to add the ticking clock sound to the level that has the animation of the clock. This is because the ticking sound will help the children to count the time by listening to the sound.

7.3 Project Contribution

This game is built to help the children with Dyslexia to learn about time. The game is hoped to be as one of the contribution to the community to help these children. This game also will assist children to learn with fun and get the knowledge in interactive way. Even though this game is more specific to children with Dyslexia, it still can be play by the other kids too.

7.4 Conclusion

As the conclusion, there are several processes that should be taken to ensure the game can be complete well. Overall, this game meets the objectives that we stated earlier. This can be show when we do the testing process and do the analysis part. We hope this game can be one of the tools to help the children with Dyslexia. The existing of this game shows that game should be taken as positive thing that can create excitement for children to learn in interactive ways.

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APPENDIX A

INTERVIEW QUESTION

TO EVALUATE THE USABILITY OF THE DEVELOPED MOBILE GAMES APPLICATION FOR CHILDREN WITH DYSLEXIA

1. How do you rate this mobile application in scale of 1-10 and give your explanation.

2. Do you agree this mobile game can help children with Dyslexia to learn about time. Can you explain why?

3. The interface of the mobile games is suitable and easy to understand by children with Dyslexia or not? Give your opinion.

4. What is the weakness that you can spot in this mobile game when the children are playing this game?

5. What is the strengthens that you can spot in this mobile games when the children is playing this game?

6. Do you think the task in the game is relevant and suitable to help the children with Dyslexia to learn? Can you explain why?

7. The color use in the game is suitable or not? Can you explain why?

8. Do you think this mobile game is a good technology to help the children with Dyslexia? Can you explain why?

9. Any suggestion that you can give to improve this game?

APPENDIX B

LOG BOOK PSM1

Student's Name: NUR HAIFA BINTI HARIS

Matric: B031410071

Supervisor's Name: MUHAMMAD HAZIQ LIM BIN ABDULLAH

Date: 31/12/2015

Activity:

-Proposed the title of PSM project to my supervisor

-Revision on the project title

-Revision on the proposal report.

-Determine what the technology of the project, objective and target user.

Signature:

M. HaziqLim

LOG BOOK PSM1

Student's Name: NUR HAIFA BINTI HARIS

Matric: B031410071

Supervisor's Name: MUHAMMAD HAZIQ LIM BIN ABDULLAH

Date: 18/1/2016

Activity:

-Show the article and research journal to the supervisor.

-Discuss and share about the literature review of the article with other members.

-Supervisor assists us on how to make a good example of literature review.

-Share at least 3 summary of literature review with others.

Signature: .

HaziqLim

LOG BOOK PSM1

Student's Name: NUR HAIFA BINTI HARIS

Matric: B031410071

Supervisor's Name: MUHAMMAD HAZIQ LIM BIN ABDULLAH

Date: 25/3/2016

Activity:

-Start to share about the project planning to other member.

-State the clear reason why we want to develop the project.

-Plan to go to the Persatuan Dyslexia to learn about how the Dyslexic children learn about time.

Signature:

M. Haziq Lim

LOG BOOK PSM1

Student's Name: NUR HAIFA BINTI HARIS

Matric: B031410071

Supervisor's Name: MUHAMMAD HAZIQ LIM BIN ABDULLAH

Date: 3/4/2016

Activity:

-Show the proposed design based on the research and heuristic evaluation.

-Need to match the design with the literature review that already been discussed.

-Share the information and discussed the design with others member.

Signature:

M. Haziq Lim

LOG BOOK PSM1

Student's Name: NUR HAIFA BINTI HARIS

Matric: B031410071

Supervisor's Name: MUHAMMAD HAZIQ LIM BIN ABDULLAH

Date: 29/4/2016

Activity:

-Show the proposed interface that already been traced using Adobe Illustrator to the supervisor.

-Need to improve the character of the clock and the instruction use in the interface.

Signature:

M. Haziq Lim

LOG BOOK PSM1

Student's Name: NUR HAIFA BINTI HARIS

Matric: B031410071

Supervisor's Name: MUHAMMAD HAZIQ LIM BIN ABDULLAH

Date: 20/5/2016

Activity:

-Show the proposed game with the interfaces that have been implementing in android smartphone.

-Need to improve the audio volume in the game.

-Need to add progress bar in the game level.

-Need to change the color of the clock in level 1 and 2.

Signature:

M. HaziqLim

LOG BOOK PSM1

Student's Name: NUR HAIFA BINTI HARIS

Matric: B031410071

Supervisor's Name: MUHAMMAD HAZIQ LIM BIN ABDULLAH

Date: 3/6/2016

Activity:

-Show the proposed game with the interfaces that have been improved as stated last week.

-Show the full report of chapter 1 until chapter 4.

-Supervisor checks the report.

- Need to fix and do correction on the report format.

-Need to make slide presentation for the upcoming presentation on 8/6/2016

Signature:

M. Haziq Lim

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