LEARNING SOLAH FOR AUTISM USING iBOOK (iSOLAT)
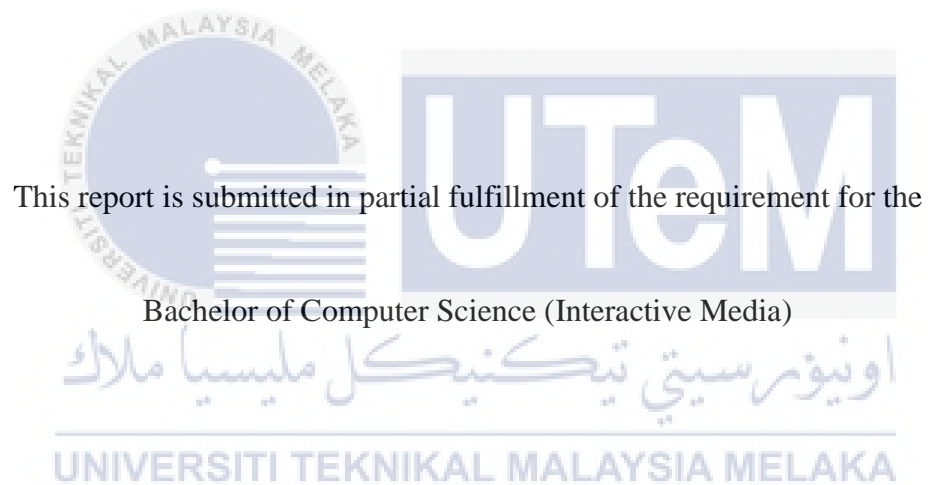
ARIFAH BT ABDUL TALIB

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

BORANG PENGESAHAN STATUS TESIS

JUDUL: LEARNING SOLAH FOR AUTISM USING iBOOK_____

SESI PENGAJIAN: 2015/2016

Saya ARIFAH BT ABDUL TALIB_____

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Tarikh: 27/8/16

(TANDATANGAN PENYELIA)

PROF. DR FAAIZAH BT SHAHBODIN

Tarikh: 22/8/16

CATATAN:*Tesis dimaksudkan sebagai Laporan Akhir Projek Sarjana Muda (PSM)
**Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa

LEARNING SOLAH FOR AUTISM USING iBOOK (iSOLAT)

ARIFAH BT ABDUL TALIB

This report is submitted in partial fulfillment of the requirement for the

Bachelor of Computer Science (Interactive Media)

FACULTY OF INFORMATION AND COMMUNICATION TECNOLOGY

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2016

DECLARATION

I hereby declare that this project report entitled

LEARNING SOLAH FOR AUTISM USING iBOOK (iSOLAT)

Is written by me and is my own effort and that no part plagiarized

without citations.

STUDENT   : _____   Date: 11 August 2016

(ARIFAH BT ABDUL TALIB)

SUPERVISOR   : _____   Date: 11 August 2016

(PROF. DR FAAIZAH BT SHAHBODIN)

DEDICATION

This final project is dedicated to my beloved parents for their support and pray for me to make me always success. They always give me a lot of useful advice in process of making this project.

To my supervisor who play an important role in giving idea to make this project. She always give me guide and be patient with me while making the progress for this project, Prof Dr Faaizah bt Shahbodin (UTeM).

Last but not least, to all my beloved friends who always help me from beginning of this project until the end of it.

ABSTRACT

Autism is a developmental disability that affects the normal functioning of the brain. Autism is present from birth and has an effect on how an individual learns. Individuals with autism often have difficulties with communication skills, social skills, and reasoning. Common characteristics include lack of eye contact, social aloofness, difficulty with expressing needs verbally, repitition of words or phrases, and responding differently sensory input. Through this problem, developer decided to create an iBook which will give autistic children an interactive way of learning. They are slow learner, so developer thinks that iBook can give fast learning because it have much more graphic, sound, video and animation. The learning approach that applied in this iBook is repetition.It use Adobe Author to develop this project. Developer wants to increase the ability of social skills among them. Developer thinks that learning solat is the best skills to improve during their daily life. It will make easier for them without asking someone else and learn from early stage. This iBook include four part which are " Niat Solat ", " Cara Solat ", " Waktu Solat " and " Uji Minda ". This iBook will include easy steps and activity for them. There are 35 tester involve in this project. 25 are from students and 10 from special needs teachers to test the effectiveness os iSolat. Overall, 90% of them are strongly agreed that iSolat could be an effective tools for learning solah.

ABSTRAK

Autisme adalah kecacatan perkembangan yang memberi kesan fungsi normal otak. Autisme adalah dari lahir dan mempunyai kesan ke atas bagaimana seseorang individu belajar. Individu yang mempunyai autisme sering mempunyai masalah dengan kemahiran komunikasi dan kemahiran sosial. Ciri-ciri biasa termasuk kekurangan fokus mata, sikap acuh tak acuh sosial, masalah dengan menyatakan keperluan secara lisan, pengulangan perkataan atau frasa, dan bertindak balas secara berbeza mengikut deria. Melalui masalah ini, pemaju memutuskan untuk mewujudkan satu iBook yang akan memberi anak-anak autistik cara yang interaktif dalam pembelajaran. Mereka adalah pelajar lemah, jadi pemaju berpendapat bahawa iBook boleh memberi pembelajaran cepat kerana ia mempunyai lebih banyak grafik, bunyi, video dan animasi. Pendekatan pembelajaran yang digunakan dalam iBook ini adalah pengulangan. Aplikasi ini menggunakan 'Adobe Author' untuk membangunkan projek ini. Pemaju mahu meningkatkan keupayaan kemahiran sosial di kalangan mereka. Pemaju berpendapat bahawa belajar solat adalah kemahiran yang terbaik dalam kehidupan harian mereka. Ia akan membuat lebih mudah bagi mereka tanpa meminta orang lain dan belajar daripada peringkat awal. iBook ini mempunyai empat bahagian iaitu "Niat Solat", "Cara Solat", "Waktu Solat" dan "Uji Minda". iBook ini adalah salah satu langkah efektif bagi pembelajaran harian mereka. Terdapat 35 responden terlibat dalam projek ini. 25 adalah dari pelajar dan 10 dari guru keperluan khas untuk menguji keberkesanan produk iSolat. Secara keseluruhan, 80 % daripada mereka sangat bersetuju bahawa perisian iSolat boleh menjadi alat yang berkesan untuk pembelajaran solat.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Autism is a developmental disability of brain that affects the normal functioning of the brain. Autism was seen from birth and an effect on individual learnings. Individuals with autism always hard with communication skills, social skills, and reasoning. Symptoms of autism include repetitive use of objects, inability to communicate clearly, resistance to change in routine, and difficulty with social interaction.

The characteristics of autistic children are lack of eye contact, social aloofness, difficulty with expressing needs verbally, repitition of words or phrases, and responding differently sensory input.

Through this problem, developer decided to create an iBook which will give autistic children an interactive way of learning. They are slow learner, so developer thinks that iBook can give fast learning because it have much more graphic, sound, video and animation. Developer wants to increase the ability of social skills among them. Developer thinks that learning solah is the best skills to improve during their daily life. It will make easier for them without asking someone else and learn from early stage. This iBook will include easy steps and activity for them.

In Conclusion, developer hope that learning solah through iBook is the best solution to teach autistic children.

1.1 Problem Statement

Based on the observation Autistic children are slow learner. So, they hard to understand something. Its need repetitive use of an objects. They also need something interesting and easy to learn.

Developer have observe the learning tools for Autistic children but it lack of e-learning courseware to teach solat. In Malaysia, they only have textbook or ibook for normal children instead of Autistic children. This project is different because it teach Autistic children with easy and attractive method of solah

It is also not effective because some books are not attractive and interesting to learn. Using graphical book or teaching orally may be ineffective enough. By using a media in learning method can save time and energy too.

In Addition, our learning tools is less interactivity and hard to understand for slow learner. If using a textbook there is a less interactive. Tis project involves interactivity between user and program. It will make learning become interesting and more understanding.

1.2 Objective

The research objectives as follows:-

1) To identify solah learning for autistic children.
2) To develop an interactive learning through iBook for autism.
3) To test the effectiveness of iSolat for autism.

1.3 Scope

This ibook is an educational based project and will be developed using iBook author. The main target user for this iBook are autistic children. For teachers and parents, it can helps in learning process about solah.

The multimedia elements that will be used in this project are text, animation, graphic, audio and video. The element will synchronize with autistic children interest. This project will apply character movement of solah. Besides that all the element such as color, brightness, size of images will be used on the graphic. This element will make them focus on learning.

Hopefully, this iBook can attract autistic children to learn solah.

1.4 Project Significance

The development of this project is for teaching and learning for autistic children. IBook will use iPad as learning tools. It will transform the way of teaching and learning. This device makes everyone loves to use. IPad enable to create hands-on, customizable learning experiences. It will kbring the content to live. The used on an iBook to teach Autistic children will act as customize textbook for them. It will help them learn solah either in school or at home.

1.5 Conclusion

This iBook is mainly focused on autistic children. These iBook also helps teaching and learning. This project is including graphic, text, sound and animation, audio and simple activity. These iBook will let user learn about solah. It's good to implant enthusiasm themselves. As a results, developer hopes that autistic children will understand this iBook and have ability to perform solah in correct ways.

The next chapter will discussed on details of literature review, and flow of the project. It also will compared existing program with the new one.

CHAPTER 2

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

In this chapter, developer will discussed about literature review. All the process can be completed through relevant sources such as books, journal, technical support, web pages and others. The purpose of this literature review is to search and analyze reader's ideas that have been established on a topic. This part also discover about their strength and weaknesses. Analysis and research finding also included.

This chapter will have all the finding about autism disorder, what can cause autism, characteristic of autistic children. It also will explain about area of study for autism which make an iPad as interactive learning tools for them.

2.2 Domain

A study about interactive element in developing an iBook of iSolat for Autistic Children to attract them learning with fun besides give knowledge about solah. The content consist of text, graphic, audio, video and animation. The target output is iBook Solah for Autism.

2.3 Existing System

Currently in the market there are many interactive learning of Solah teaching system but sadly a large majority of them are not suitable for autistic children. Three research have been done and the following are the observation from the research. Figure 2.1, 2.2 and 2.3 shows screen capture of existing solah learning courseware by previous developer.

2.3.1 Comparison of existing system

Table 2.1 shows comparison of different solah courseware that have been develop by others developer.

Table 2.1: Comparison of existing system

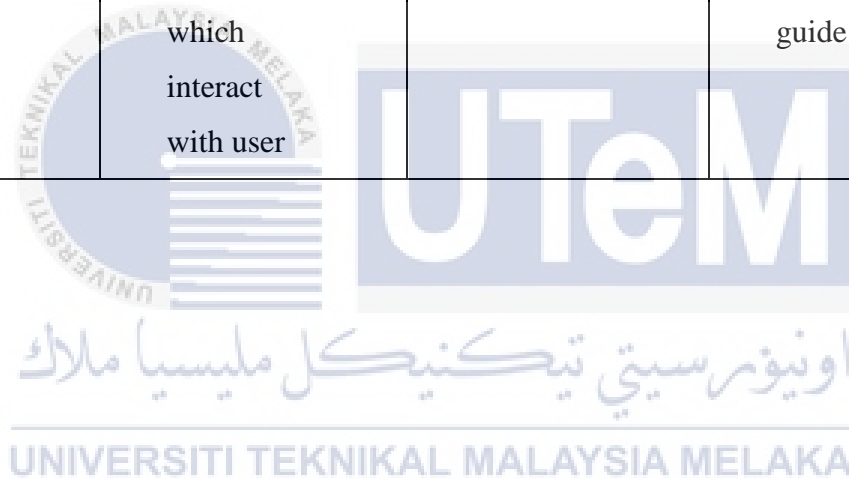| Tittle	Technique	Interface	Learning Theory
Solah Tutorial for kids	Application used graphic and sound	Interactive	Repetition
MOLAFA	A paper module used picture	Linear	Cognitive through words
' Marbel belajar Shalat '	Application which interact with user	Interactive	Explaination and guide

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Figure 2.1: Solah Tutorial Application

Figure 2.2: Solah Modul

Figure 2.3: Solah Application

2.4 Project Methodology

Project methodology will cover the details of method that is being used to make this project successful. This methodology or findings from this field mainly find in journal for other to take advantages and improves as upcoming studies. The methodology based on agile method.
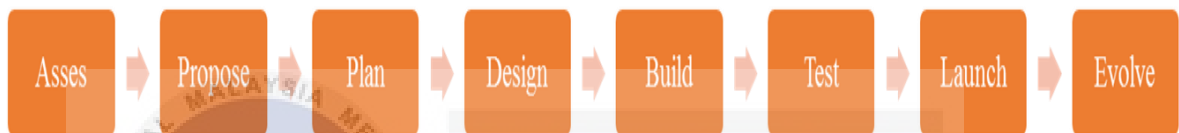
The Figure 2.4 shows Agile method.

Figure 2.4: Agile Method

In the asses phase, the observation and understand the projects problems are performed. Developer search about learning for autistic children. Then, developer meet the supervisor for further observation of the project.

Propose stage is the stage where the proposal is presented. This stage performed after asses phase is achieved the assess objective which is find the project problem. In this stage, an actionable proposal that align with project's objective is presented. There has a critic and improvement in the idea making between developer and supervisor.
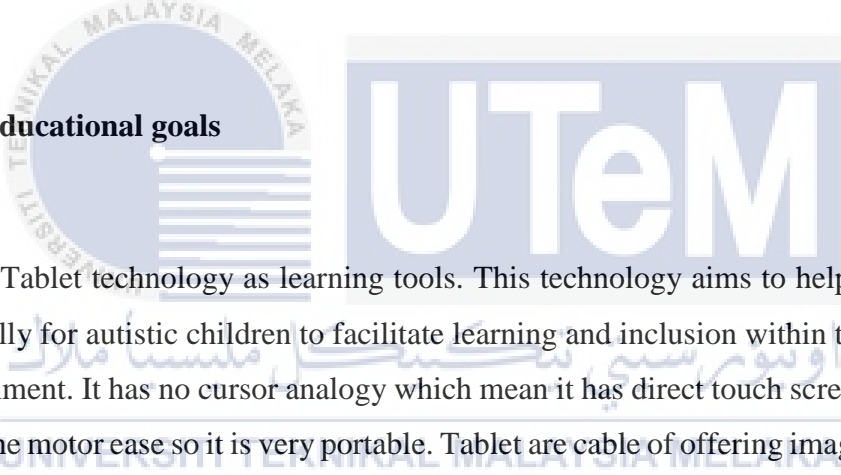
After that, plan phase occurred where everything are planned after proposal accepted. In this phase, details of project flow are planned according to milestone.

In the design phase, developer proceed to develop prototype of the iSolat iBook. At this stage, developer design interface, flow and functionality of the iBook.

After final product is created, test phase is conduct. At this stage, the iBook is tested bt the target user and expert. Based on testing sessions, developer will observe the weakness of the product. The test data is collected to see either the product meets objective or not. Finally, launch stage occur. At this stage, product will release to the public.

2.4.1 Instructional Design

2.4.1.1 Educational goals

Tablet technology as learning tools. This technology aims to help children especially for autistic children to facilitate learning and inclusion within the school environment. It has no cursor analogy which mean it has direct touch screen. It also have fine motor ease so it is very portable. Tablet are cable of offering images, video and audio. These elements are impossible to include in standard textbook.

2.4.1.2 Course map flowchart
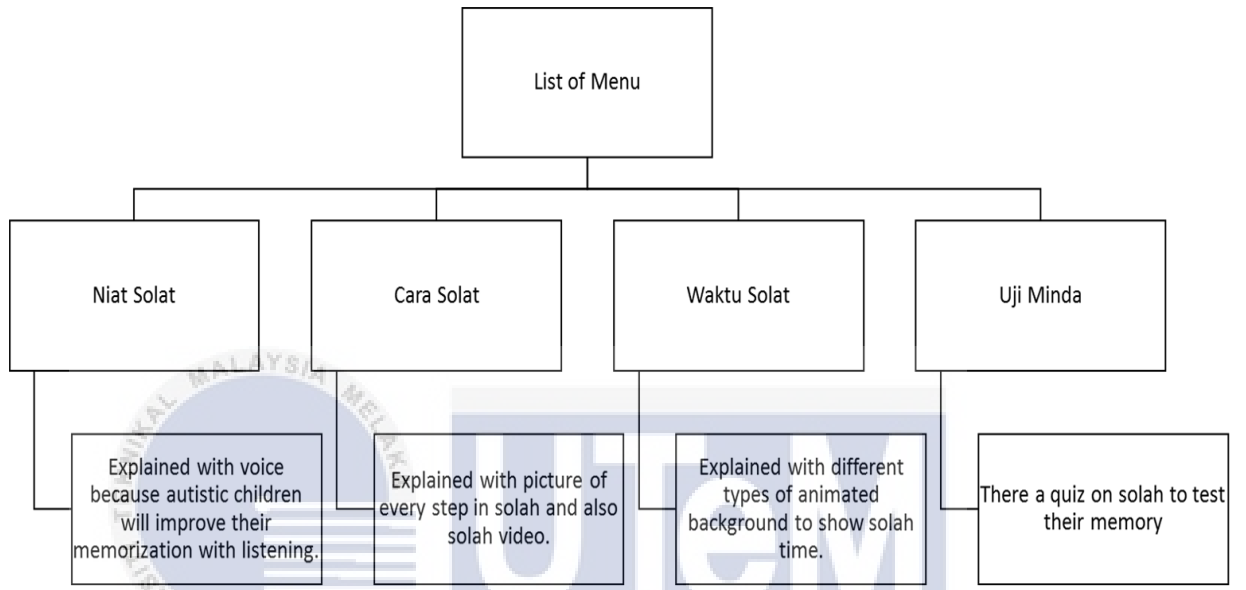
Figure 2.5: Course map

2.5   Project Requirement

There are several hardware and software that involve in this project.

2.5.1 Hardware requirement

Table 2.2 shows hardware requirement use to develop iSolat.

Table 2.2 Hardware Requirement

Devices	TOSHIBA	iMac	DSLR
Platform/OS	Windows 7	Mac OS	-

2.5.2 Software requirement

- iBook Author
- Adobe Illustrator
- Adobe Photoshop
- Adobe Premier

2.5 Project schedule and milestone

Project schedule are very important to keep track the project progress. It will been develop to monitor closely the task according to weekly basis. Project schedule and milestone shown in Table 2.3 and 2.4.

Table 2.3 Project Schedule

Task	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16
Submission proposal and verification	■															
Proposal correction and confirmation		■														
Chapter 1 (system development begins)			■													
Chapter 1 & Chapter 2			■	■												

Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Chapter 2				■	■											
Chapter 2 & Chapter 3 Progress presentation 1						■										
Project Demo Chapter 3 & Chapter 4							■									
Mid semester Break							■									
Project Demo & Chapter 4									■	■						
Project Demo & Chapter 4									■	■						
Project Demo											■					
Project Demo &											■	■				

Task															
PSM Report										▇	▇				
Project Demo& PSM Report/ Presentation										▇	▇	▇			
Project Demo & PSM Report										▇	▇	▇	▇		
Final Presetation														▇	
Submission															▇

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Table 2.4 Milestone

Week	Activity	Note / Action
1 22-26 Feb	Proposal PSM : Submission and Presentation	Deliverable-**Proposal** Action-Student
		Deliverable-**Proposal Presentation (PP)** Action-Student
	Proposal assesment and verication	Action-Supervisor,Evaluator
2 29 Feb-4 Mar	Proposal Corecction/Improvement Chapter 1	Action-Student
	List of supervisor/title	Action-AJK PSM/PD
3 7-11 Mar	Chapter 1 (System Development Begins)	Deliverable-**Chapter 1** Action-student, Supervisor
4 14-18 Mar	Chapter 1 & Chapter 2	Action-Student
5 21-25 Mar	Chapter 2	Action-Student
6 28 Mar-1 April	Chapter 2 Chapter 3	Deliverable-**Chapter 2** **Progress Presentation 1 (Pembentangan Kemajuan (PK 1))** Action-Student,Supervisor
	Student Status	Action-AJK PSM/PD, Supervisor Warning Letter 1
7 4-8 April	Project Demo & Chapter 3 Chapter 4	Action-Student
8	**MID SEMESTER BREAK**	
9 18-22 April	Project Demo & Chapter 4	Deliverable-Chapter 3 Action-Student,Supervisor

10 25-29 April	Project Demo & Chapter 4	Deliverable-**Progress Presentation 2 (Pembentangan Kemajuan (PK 2))** Action-Student,Supervisor
	Student Status	Action-AJK PSM/PD, Supervisor Warning Letter 2
11 2-6 May	Project Demo	Action-Student
	Determination os student status (Continue/Withdraw)	Action-PSM/PD Committee, Supervisor (submit student status to AJK)
12 9-13 May	Project Demo & PSM Report	Action-Student,Supervisor,Evaluator
13 16-20 May	Project Demo & PSM Report	Action-Student,Supervisor,Evaluator
	Presentation Schedule	AJK PSM/PD
14 23-27 May	Project Demo & PSM Report	Deliverable-**PSM Report** Action-Student,Supervisor
15 30 May-3 June	**FINAL PRESENTATION (PA)**	Action-Student,Supervisor,Evaluator
16 6-10 June	**REVISION WEEK** Correction draft report based on supervisor's and evaluator's comments during the final presentation session. Submission overall marks to PSM/PD committee.	Action-Student,Supervisor,Evaluator. PSM/PD committee
	FINAL EXAMINATION SEMESTER	

2.7 Conclusion

In conclusion, the research have been done on autism spectrum disorder. Developer also discover about tablet and iPad as learning tools for autistic children. Is the tools comfort and help them or not. The last part for this chapter, developers analyze the existing system or software that related for this project to make a better improvement of learning solah.

The next chapter will discussed about project methodology, requirement of this iSolat and details for data gathering.

CHAPTER 3

ANALYSIS

3.1 Introduction

This chapter consist of the development of analysis. Analysis requires understanding of the user requirement and system requirement. This chapter also discuss the scenarios, facts and finding of the projects. This will be done by observing current situation. The purpose of these phase is to get more understanding to make sure this project going well.

3.2   Product Analysis

3.2.1 Current Scenarios

The purpose of observing current scenarios or situations is to make sure the outcome of the project more understanding to develop. One of the current scenarios is Solah application. In this application focused for normal children despite of disability children (autism). So, the information quite messy for them to understand. It has interactivity but the interactivity could not support their thinking to learn and understand the information that deliver by the apps. The interactivity of the Solah apps only can make them have fun rather than develop a learning process. There is still no learning process for disability children (autism).

3.3   Requirement Analysis

Requirement analysis is report at process to be consider in developing the iBook. This is to make sure the objective which is to develop the effectiveness of the iSolat for autism in giving interactive learning can be achieved. For the development of this iBook, user analysis, system analysis, need analysis and content analysis will be discussed in this section.

3.3.1 User Analysis

The target user of this project is disability children which will focused on autistic children. There must be a way to educate and teach them to learn solah in interactive way. In current situation, they learnt solah in school or after school. They did not have complete book. Therefore, this project is develop to attract them and correct their solah. Hopefully, this iBook is effective in delivering the information by using multimedia element.

3.3.2 Need Analysis

As we know, there is a lack of iBook for disability children especially for autism in learning solah. So, this project comes out to solve this problem. This iBook will teach autistic children in learning solah. In this iBook, developer will include the element of interactivity such as images, audio, video and animation to make the iBook more fun to learn. Developer believe that this iBook will makes autistic children gain knowledge in better ways.

3.3.3 Content Analysis

This iBook will begin with homepage which user can choose "Waktu Solat", "Niat Solat", "Cara Solat" and "Uji Kefahaman". The user can simply click one of the main menu to understand more about the category. The user can test their knowledge under "Uji Kefahaman" menu. The content of every menu is different. In each of the content, there will be an audio, video, graphic and animation to attract

user to learnt solah. All this content will develop by iBook Author, Adobe Flash, Adobe Premier and Adobe Illustrator.

3.3.4 Technical Analysis

Technically, this iBook is design based on multimedia interactive element. Developer upgrade the syllabus of solah module from school to digital. This iBook can be access on the iPad, MacBook or iMac only. It require iBook application to view the iBook. The interactive learning that developer put in this iBook are audio, video, image, animated text and picture which are created by developer. There also have " Uji Minda" part which will test autistic children understanding.

3.3.5 Resources Analysis

Resources analysis involve to analyze the content in the iSolat. The developer compare other solah learning tools for kids. For this iBook, the source are referred as " Cara Solat" , "Niat Solat" and "Waktu Solat". All the content are referred from module that have been given by school.

3.4 Conclusion

The analysis of current scenarios will make the objective success. The next chapter will discuss about the design of the iBook. This will include design architecture and user interface design. The product development will explain too.

CHAPTER 4

DESIGN

4.1 Introduction

This chapter will explain about design process. Design phase is the phase which developer start create a prototype based on the storyboard that have been sketch. In this chapter it will include system architecture, preliminary design and user interface design which play an important role on the development of this iBook.

4.2 System Architecture

System architecture was explained by context diagram to show the structural design of the iBook. There are 4 menu in this ibook which are "Cara Solat", Niat Solat", "Waktu Solat" and "Uji Minda". This 4 menu will provide more about the

content of solah. In "Cara Solat" button will link user to the pages "cara Solat". This pages will gives user information how to pray with the corect way. In "Niat Solat" button will link user to "Waktu Solat"pages. This pages will give user information about solah time. This page also have animated background which can make autistic children more understand about solah time. In "Niat Solat" button will link user to "niat Solat" pages. This pages will give information about niat in each of solah time. It will be follow with audio. Last part of this ibook is "Uji Minda". In "Uji Minda" page will test children understanding despite test the effectiveness of this iBook.

4.3   Preliminary Design

4.3.1 Storyboard Design

Storyboard design is the early planning of the design interface in this iBook. Storyboard is important things in making an iBook because developer can get better structure in it. The detailed of storyboard is shown.

4.4   User Interface Design

User interface design is the largest part in design area. For this iBook developer use Adobe Illustrator and Adobe Photoshop.

4.4.1 Navigation Design

Flow of interface was shown:
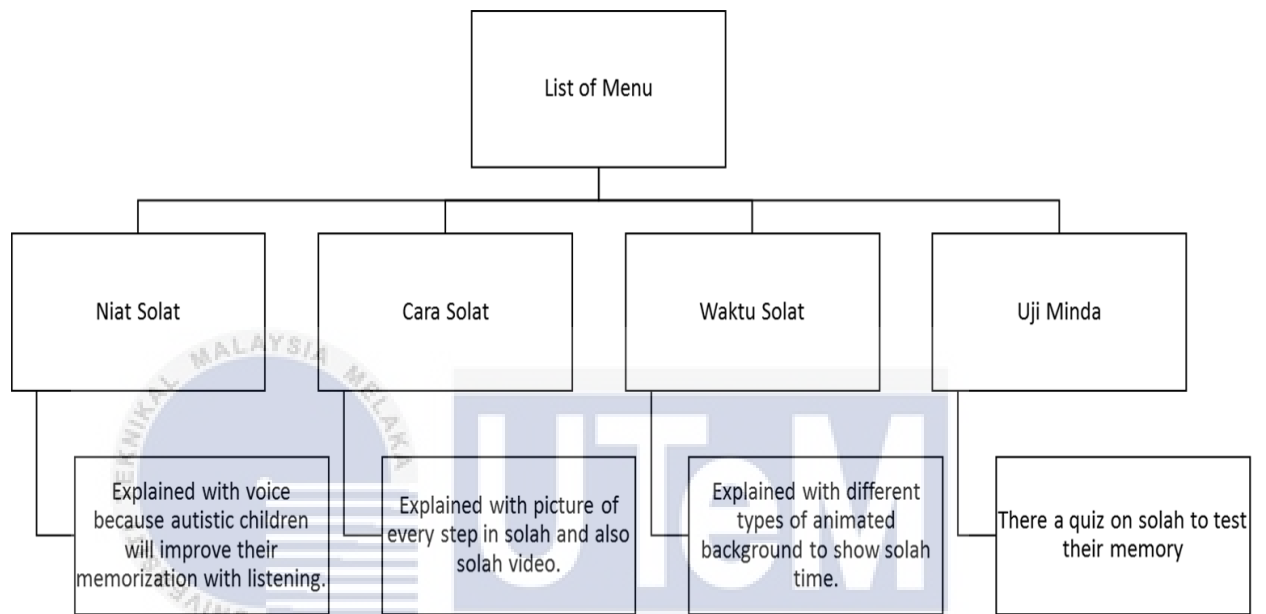
Figure 4.1: Navigation Design

4.4.2 Input Design

In this iBook, its only need user to move around with the books. There are no input data. The user just simply click on the button to see the interactivity of the iBook. But, user need a devices such as iPad to enable it.

Figure 4.2: iSolat Navigation Page

4.4.3 Output Design

The output is create to make the iBook more interactive in learning. In the first page there are 4 menu button which user can clock to see more about content. Figure was shown:

Figure 4.3: Content Page

Figure 4.4: Chapter Interface

4.4.4 Template

All the design idea in this iBook was created by the developer alone. There are no specific template that is used.

4.4.5 Media Creation and Integration

The image was drew by developer in Adobe Illustrator. Graphics was edited in Adobe Photoshop. While audio was recorded using sound booth and edited in Audacity. In the animated part was done by Adobe Flash.

4.5 Conclusion

This chapter focus on delivering the content. System Architecture was built to know flow of the iBook. Storyboard was sketch as a sample of interface design. Design phase make an easy to implement because the design were ready. The next chapter will discuss about implementation phase of the product during development.

CHAPTER 5

IMPLEMENTATION

5.1   Introduction

In this chapter will discuss on implementation of the product. Implementation involve production of text, graphic, audio, video, and animation. Media creation and integration also take part in this chapter. This chapter also contain product configuration management and implement status.

5.2 Media Creation

Media creating involve production of text, graphic, audio, video and animation. These multimedia element will put together to render and editing process.

5.2.1 Production of text

Text were not widely use in this iBook because developer want to minimize the texts and put more on graphic. Developer used Helvetica as a fonts in this iBook. Text in the image was created using Sergio marker and kbastitchintime fonts.

5.2.2 Production of graphic

Graphic was widely use in this iBook. This will increase the interactive part of the iBook. Early stage the image was sketch in Adobe Illustrator. In this stages, color and style was decided depends on target user which are autistic children. Then the graphic were save as .png file to easily import to iBook author. Lastly, graphic was apply in the iBook.

5.2.3 Production of audio

Most audio was used in each pages of this iBook. The audio is human voice that was recorded by Adobe Sound booth. Then the recorded audio was edited in Audacity to remove the noise and gain its audio. All the aidio were save as WAV and AAC format.

5.2.4 Production of video

The video was done by developer. It is Solah Video. Developer record by DSLR and were import to Adobe Premiere to make editing. Then, the video were convert as HDV as mp4S format.

5.2.5 Production of animation

In this iBook there are text in background animation. The animation was develop by Adobe Flash. Later it convert to .swf file and mp4.

5.3   Media Integration

Integration process is done in iBook author. All the elements which are text, graphic, audio, video and animation were integrated using iBook author. User can view the product in iBook application. Figure 5.1 shows flow of media integration.
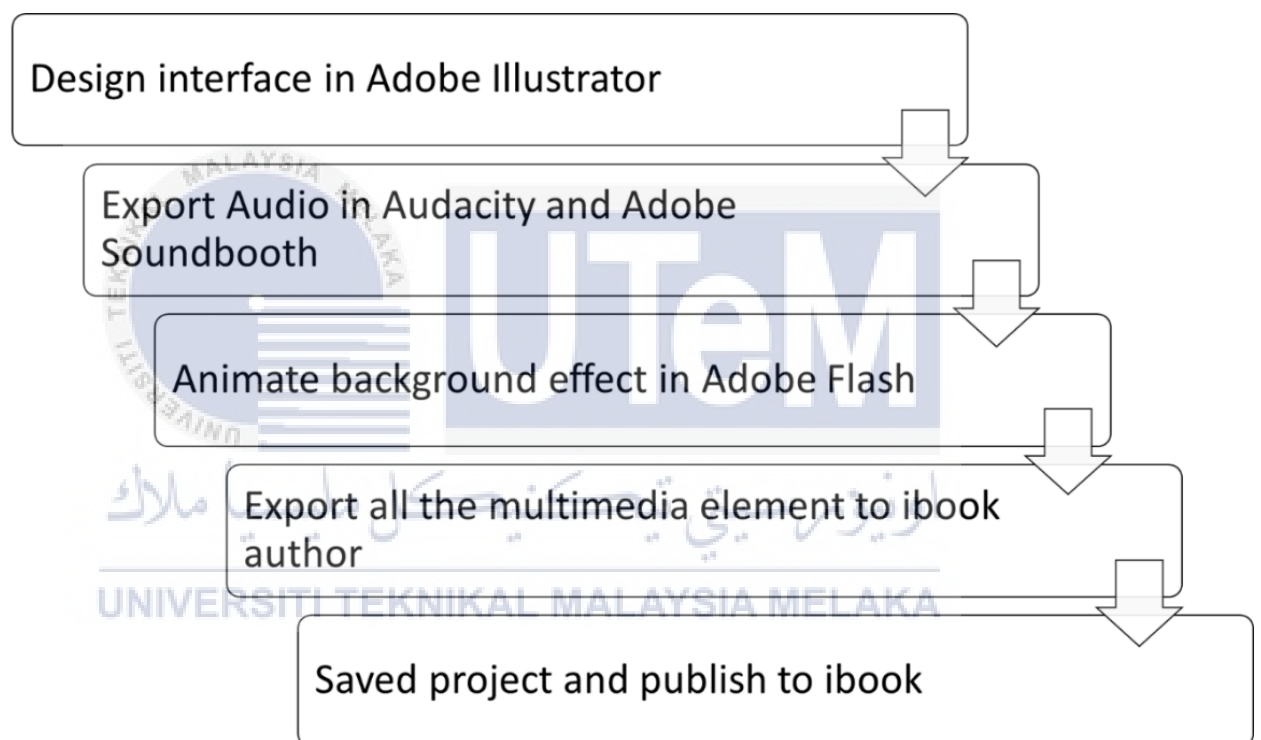
Figure 5.1 Flow of media integration

5.4 Product Configuration Management

There are 4 software been used to develop the whole project as shown in Figure 5.2, 5.3, 5.4 and 5.5.
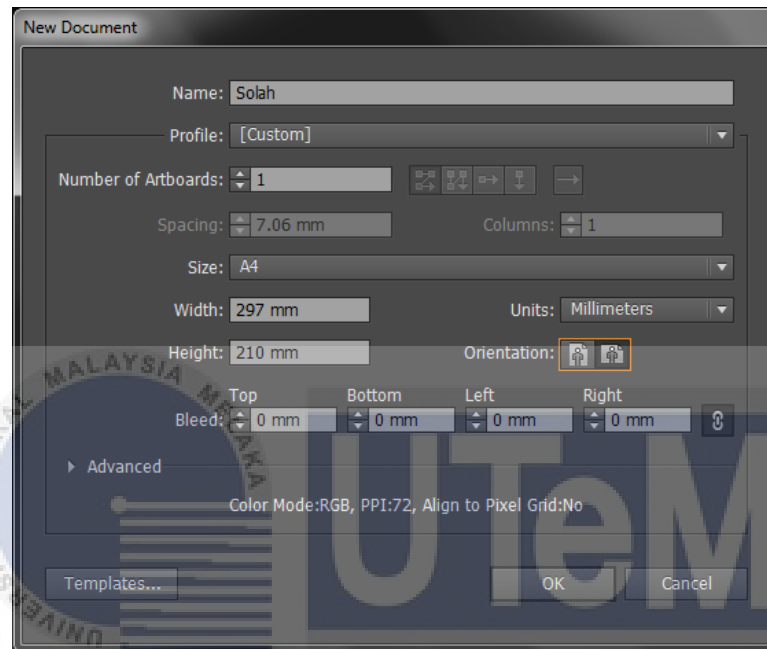
Figure 5.2: Adobe Illustrator
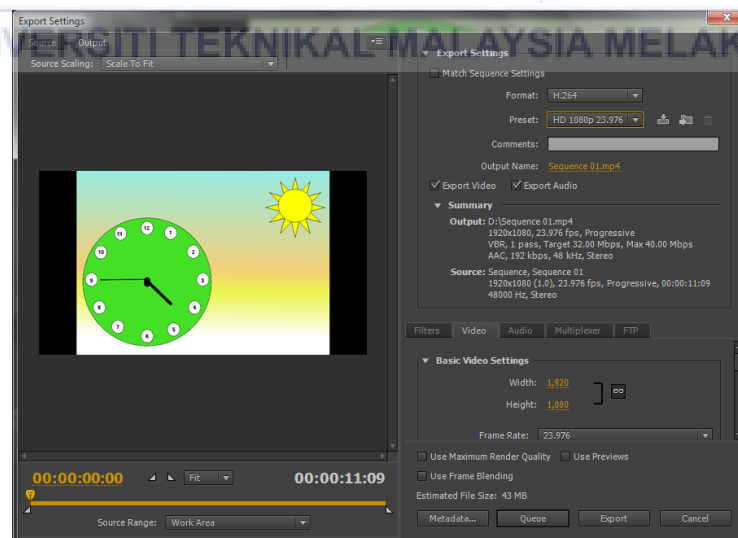
Figure 5.3: Adobe Premier
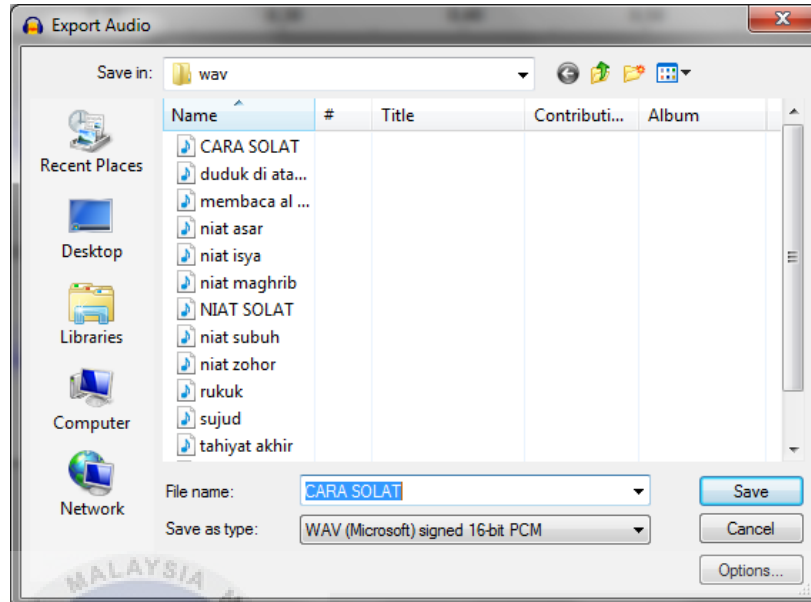
Figure 5.4: Audacity
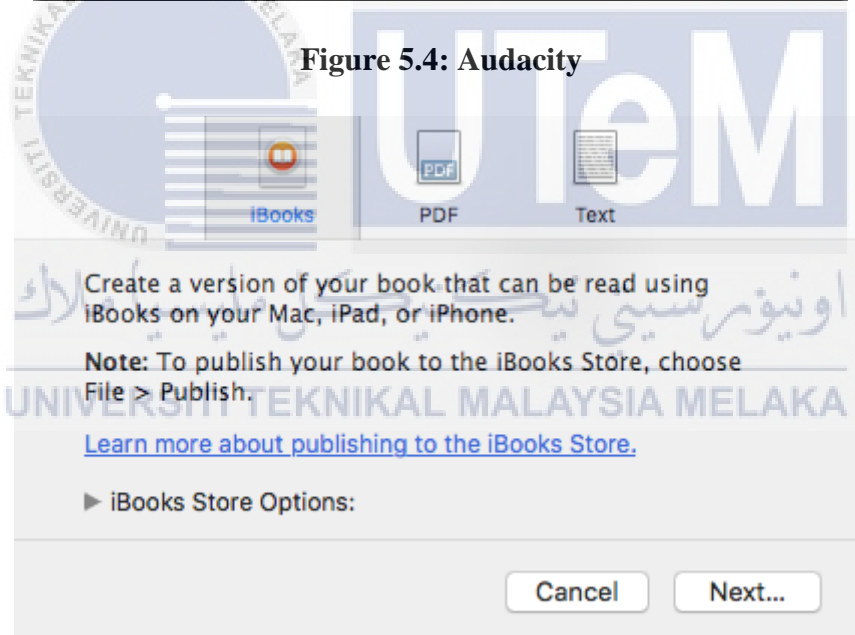
Figure 5.5: iBook Author

5.5   Implementation Status

The phase where the progress take part is shown in Table 5.1.

Table 5.1 Implementation Status

iBook	Description	Implementation Status
Cover Page	Book cover	Complete
Menu Page	All the button to link to other page	Complete
Cara Solat page	Cara Solat page for learn step in solah	Complete
Niat Solat page	Niat Solat page describe each solah time with niat	Complete
Waktu Solat page	Waktu Solat page gives information about prayer time with animated related background	Complete
Uji Minda page	To test understanding of autistic children and the effectiveness of the ibook	Complete

5.6   Conclusion

In Conclusion, this chapter has explained all the details in making of the iSolat. The completion phase will take to final part which is testing phase. In the next chapter, testing phase will explained the effectiveness of the product.

CHAPTER 6

TESTING AND ANALYSIS

6.1 Introduction

This chapter explained in detailed about iSolat testing. The result from the testing is evaluated. Testing is very important to determine the quality of the product. The purpose is to ensure the project works according to the specification, user requirement and its effectiveness towards user.

This chapter include test plan, test strategy, test implementation, test result and analysis testing. The details will elaborate through this chapter.

6.2   Test Plan

Test plan is the setup of the testing in the early stage. It also used to verify this projects meets its specification. It explains what will be done in testing before delivered to the user. Test plan consist of test user, test environment and test schedule.

6.2.1 Test user

Test user is the person that involve in this testing. The person involve is divided into two categories which are Alpha testing and Beta testing. For Alpha testing is the person who has based knowledge about this project and for Beta testing which is the user that will be involve in this testing.

6.2.2 Test environment

Test environment describe the location and environment of testing. The testing was carried out in classroom. The environment should be comfortable and in good condition. Developer used Ipad as testing tools. The location was in Sekolah Menengah Kebangsaan Bukit Katil bahagian Pendidikan Khas and Sekolah Kebangsaan Ujong Pasir bahagian Pendidikan Khas.

6.2.3 Test schedule

Test schedule is the guideline flow of test to make sure all the time and duration has been set for testing. It also to ensure testing phase run successfully. Testing from alpha user have been done before Beta user. Beta testing will involve at the end of the product.

Table 6.1 and 6.2 shows the test schedule of Alpha Testing

Location: Sekolah Menengah Kebangsaan Bukit Katil

Number of expert: 5 teacher

Table 6.1 Test Schedule of Alpha Testing in Sekolah Menengah Kebangsaan Bukit Katil

Process	Date	Time	Location
1. Interface (Quality of graphic used)	20/7/2016	10.30 a.m	Office (Pendidikan Khas)
2. Functionality (Function of button and navigation on the ibook)			
3. Usability (suitability of the content)			

Location: Sekolah Kebangsaan Ujong Pasir

Number of expert: 5 teacher

Table 6.2 Test Schedule of Alpha Testing in Sekolah Kebangsaan Ujong Pasir

Process	Date	Time	Location
1. Interface (Quality of graphic used) 2. Functionality (Function of button and navigation on the ibook) 3. Usability (suitability of the content)	21/7/2016	8.30 a.m	Classroom (Pendidikan Khas)

Table 6.3 shows the test schedule of Beta Testing

Location: Sekolah Menengah Kebangsaan Bukit Katil

Number of children: 15 children

Table 6.3 Test Schedule of Beta Testing in Sekolah Menengah Kebangsaan Bukit Katil

Process	Date	Time	Location
1. Interface (Effectiveness of the character) 2. Functionality (Function of button and navigation on the ibook) 3. Usability (understanding content)	21/7/2016	11.30 a.m	Classroom (Pendidikan Khas)

Location: Sekolah Kebangsaan Ujong Pasir

Number of children: 10 children

Table 6.4 Test Schedule of Beta Testing in Sekolah Kebangsaan Ujong Pasir

Process	Date	Time	Location
1. Interface (Effectiveness of the character) 2. Functionality (Function of button and navigation on the iBook) 3. Usability (understanding content)	21/7/2016	9.30 a.m	Classroom (Pendidikan Khas)

6.3   Test strategy

Test strategy is how the testing done in development cycle. It is to make sure the iSolat able to convey its intended message. The strategy for evaluate the product to allow user to test the iSolat. This testing have two different questionnaire. Both need to be answer by teacher which are for teacher and autistic children performance.

6.4   Test implementation

In this phase will discuss the test description and test data. All the modules will discussed in detail.

6.4.1 Test description

Test description is the details about testing that have been done. It is based on the effectiveness of the product. The testing was conduct using observation and questionnaire method. The questionnaire based on teacher perception on the iBook, usability of iBook for autistic children, usability of iSolat for autistic children and respond show by autistic children.

6.4.2 Test data

Test data is the method be used to get the feedback from user. The method are questionnaire and observation. Using Alpha testing, teacher will evaluate the usability, functionality and content of the iSolat. While in Beta testing teacher will evaluate the user which is autistic children on how they respond towards iSolat. This method is used to make sure the product achieve its objective. After testing, it was recorded in questionnaire to identify testing satisfaction.

6.5   Test result and Analysis
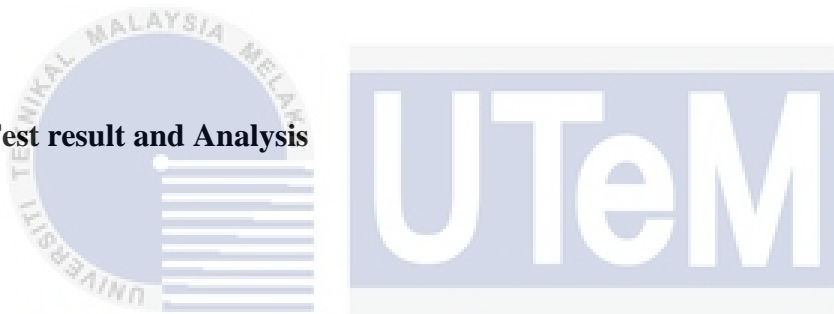
Test result and analysis is the outcome of testing result that have been made. Feedback of result and analyzed that the problem and weakness can be noticed by developer for improvement in future work. In this section, all the bar chart analysis from the questionnaire testing has been conducted and presented.

Firstly, testing was conducted for Alpha user which are 10 teachers from two different school. 5 of them from Sekolah Menengah Kebangsaan Bukit katil and the rest from Sekolah Kebangsaan Ujong Pasir. They are expert in learning material for autistic children. 2 of them were teacher of Pendidkan Islam subject. They need to observe and evaluate iSolat based on interface, functionality and usability.

Next, testing was conducted to Beta user which are 25 autistic children. 15 from Sekolah Menengah Kebangsaan Bukit Katil and 10 from Sekolah Kebangsaan Ujong Pasir. They are major user for this product. In this part, their teacher need to observe their respond based on the effectiveness on the learning Solah through iSolat.

The details of both testing was recorded in the questionnaire that given by developer. Figure 6.1 shows testing design for this project.
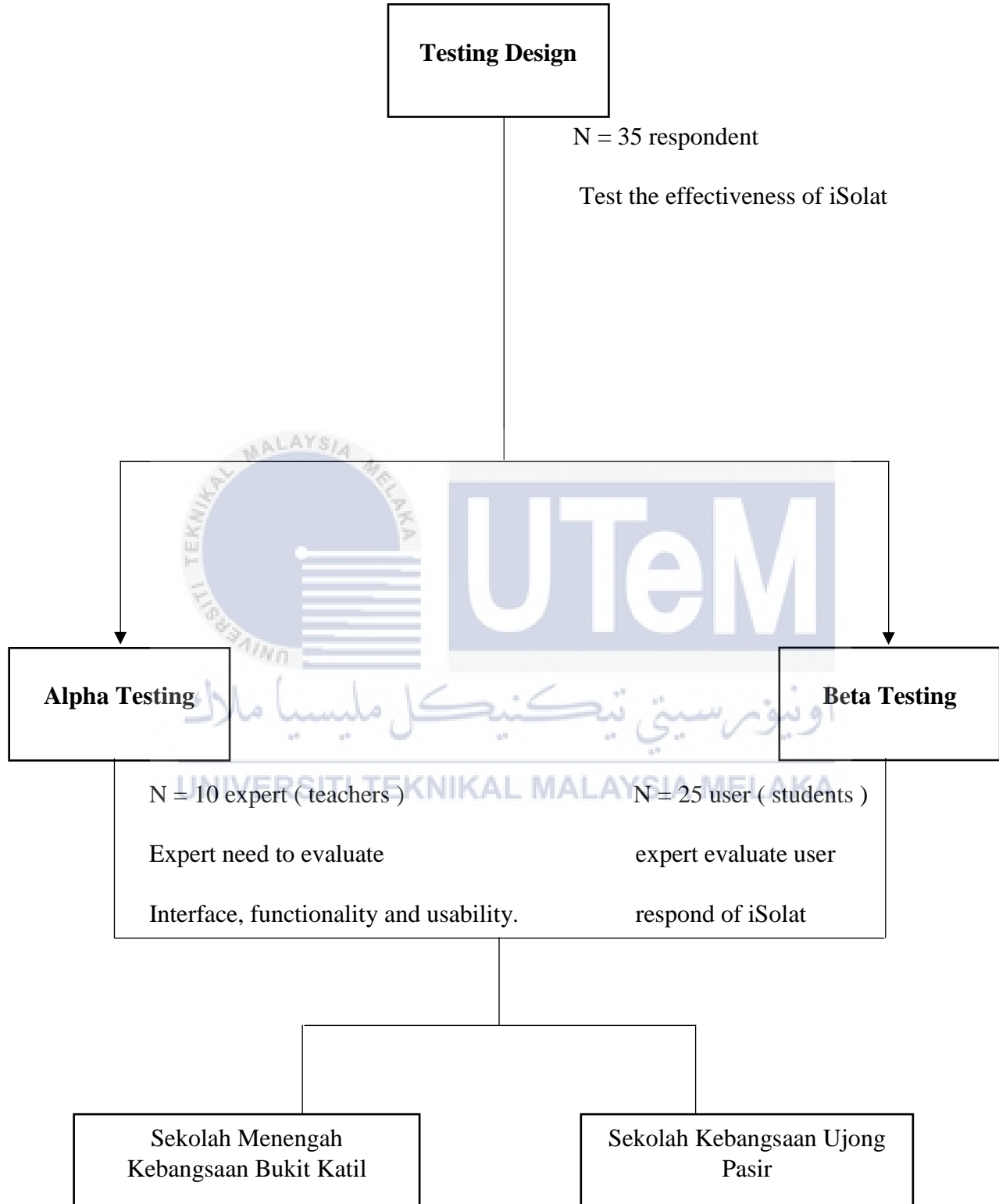
Figure 6.1 Testing Design

6.6   Analysis testing

Analysis testing is the details that collected from questionnaire and be deliver through bar chart.

Figure 6.2 shows the teacher perception of iBook. In this section there are many question that can be summarize into two which are about interesting system and effective tools in learning. 10 of them strongly agreed that iBook is interesting system for learning. This is because expert thinks that iBook can be new modern platform to help their teaching and learning program. Besides, 8 of them were agreed that iBook can be effective tools to help autistic children learn in interesting way.
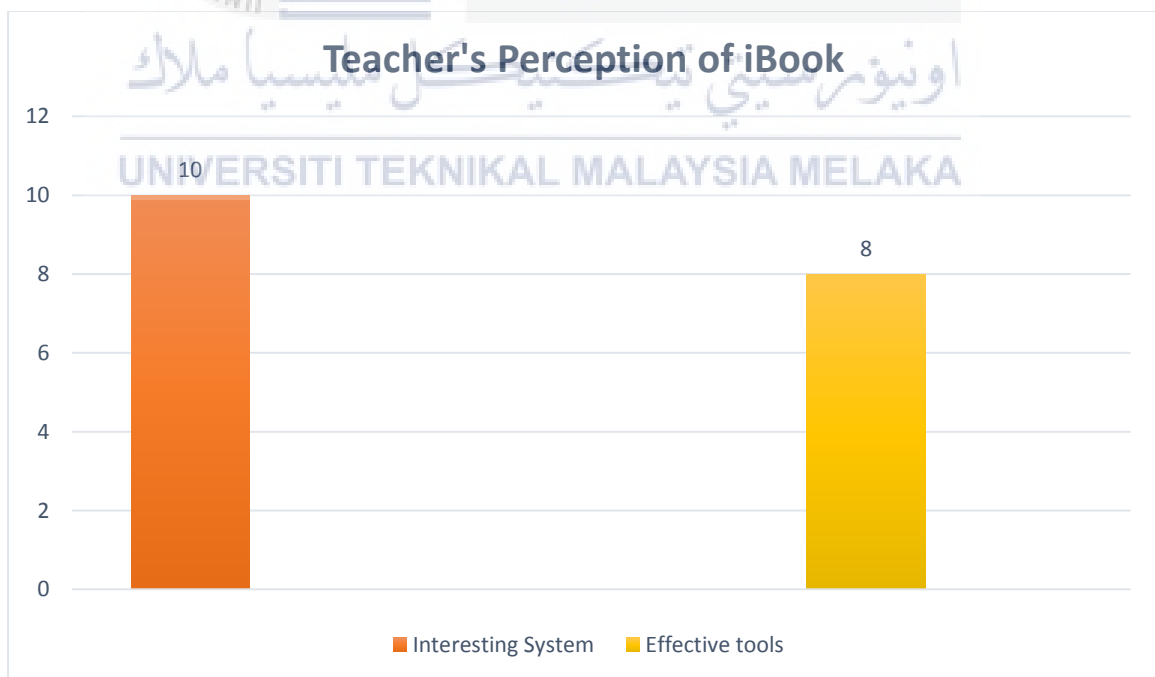
Figure 6.2: Teacher's Perception of iBook

Figure 6.3 shows the usability of iSolat for autistic children. In this section usability of iSolat was tested which include the graphic element suitable or not, audio and video, size and font and content of Solah. The result is average which are strongly agree and agree. Therefore, iSolat meets their requirement.
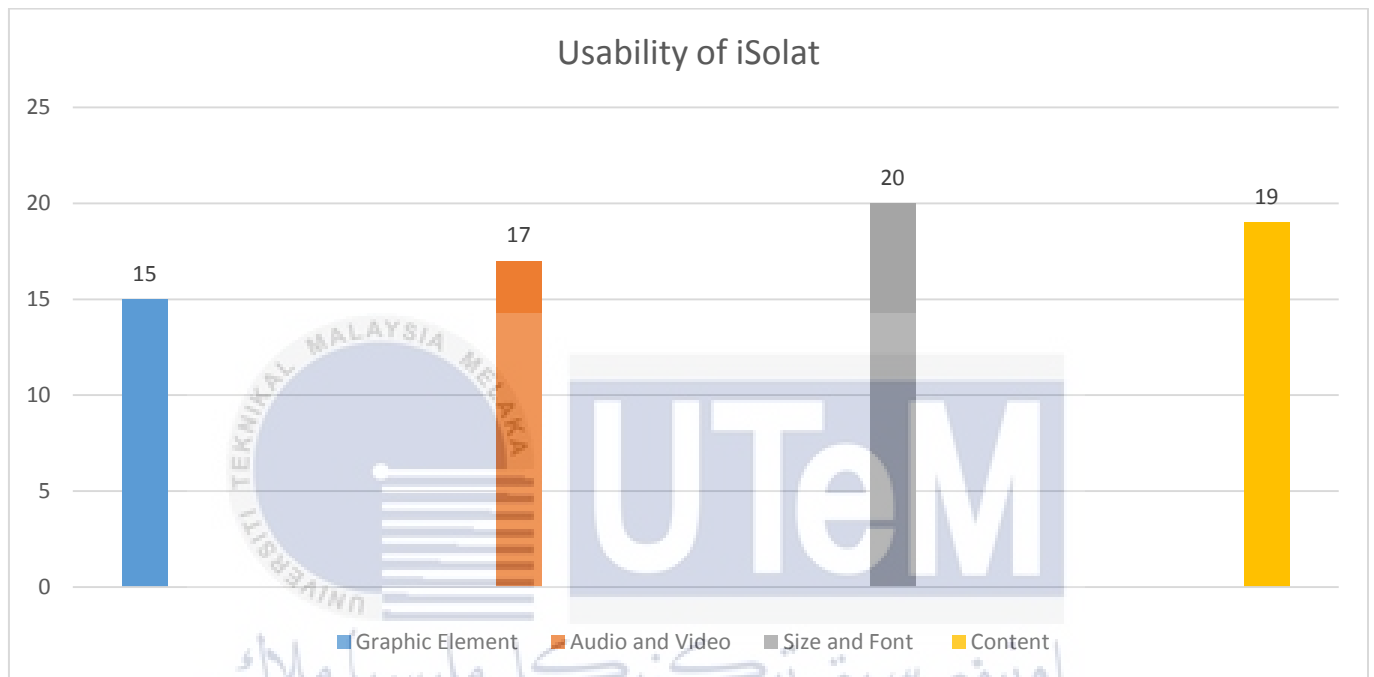
Figure 6.3: Usability of iSolat

Figure 6.4 shows that the respond show by autistic children. This is the major testing because developer wants to know if the product suitable or not to make it as learning tools for autism. This section were observe by teacher and developer. Their teacher will record all the respond show in the questionnaire. Most of them said it is interesting system and they like to learn continuously. Furthermore they easy to learn because it have an interactive element. After learning on iSolat there are 3 section of "Uji Minda" to test their understanding on learning solah through iBook.
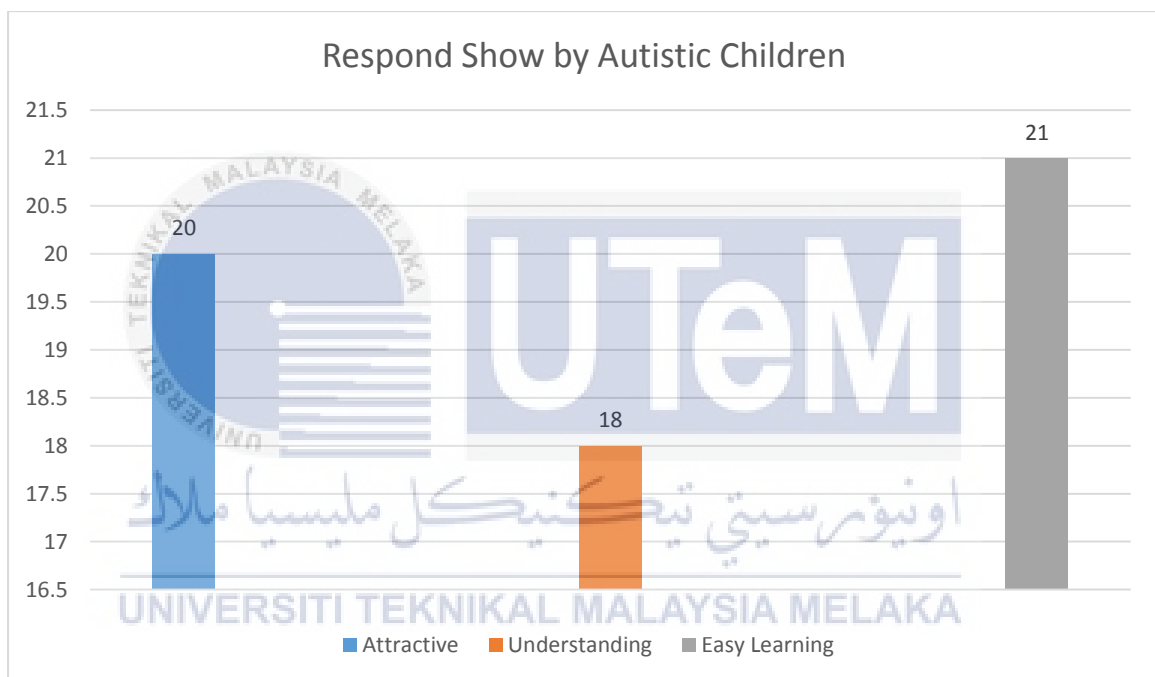
Figure 6.4: Respond Show by Autistic Children
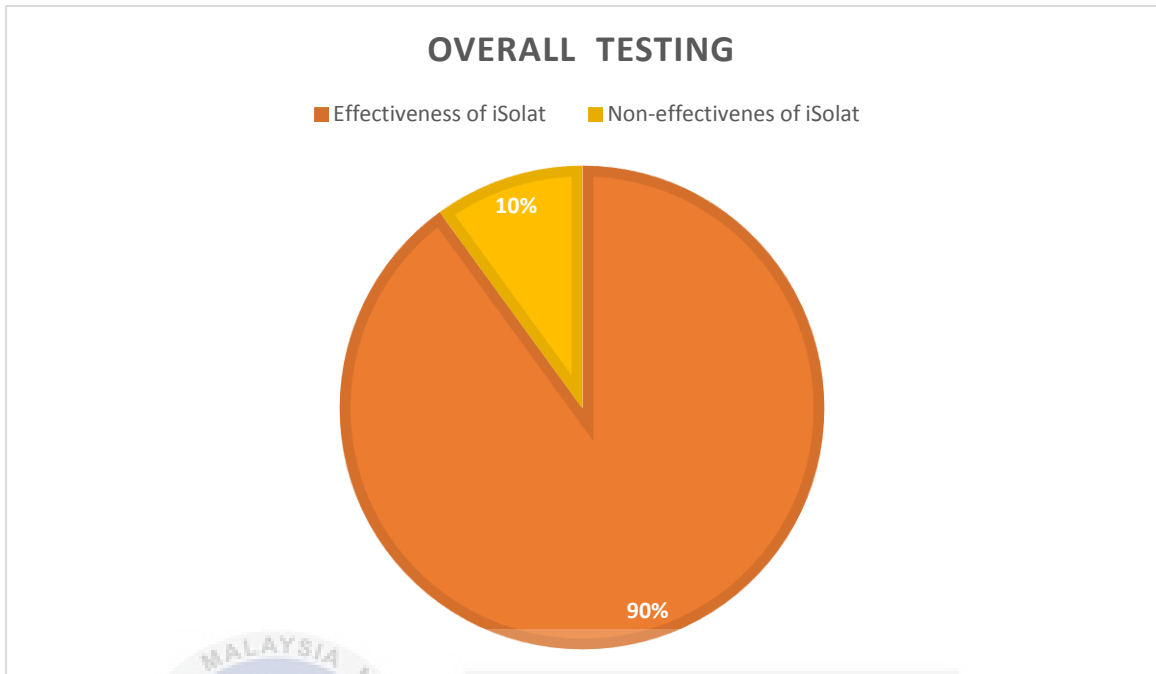
Figure 6.5: Overall Testing
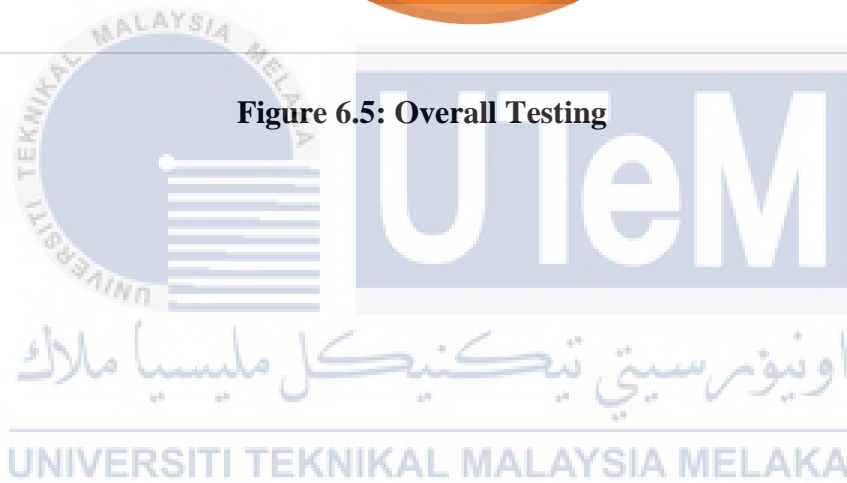
6.7 Conclusion

As conclusion for this chapter, developer have confirmed all the important things have been tested to the end user in this project. Based on the result developer can learn and know the strength and weakness of the product.

The weakness and strength will be explained more in the next chapter.

CHAPTER 7

CONCLUSION

7.1 Introduction

This chapter explained about the weaknesses and strength of the product that have been developed. Feedback from experience expert and user testing also explained in details. All the further contribution towards community will conclude in the last part.

7.2 Observation on weaknesses and strength

iSolat is the iBook that has been developed for Projek Sarjana Muda 1 and 2. Observation on iSolat was done to detect the effectiveness of the iSolat towards autistic children in learning solah.

The main strength of this product is an interactive element especially in graphic, animation, audio and video where user can experience in real learning environment. Then user are able to differentiate solah method by using large graphic which suitable for them. The character used was cartoon which is suitable for them to understand. The voice in this iSolat is kid's voice so it is very relate to them. Besides, text, font and style used were clear and large. This will attract their eyes to make them focus along the learning program. This iBook is different from other learning material because it give information in interactive way in just one click. It also have quiz inside to test their memory of learning. User also can choose which part to explore first either "Cara Solat", "Niat Solat", "Waktu Solat" and "Uji Minda".

However, there are slightly of weaknesses occurs in this iSolat. The main weakness is Arabic text. It is because the text are Arabic keyboard which cannot be alter to make it real as handwriting. There also lack of character movement. Nevertheless, this iSolat still can perform well and manage to give enough explanation about solah.

7.3 Preposition

iSolat has accomplished the objective of the product. However, there is still has small improvement to make this iSolat better. Improvements that can be done is the change of the type of Arabic font. If the text successfully created, it will give more understand of the content. More research need to be conduct to find the best Arabic text used. Furthermore, if developer add more video about solah it will give

exact understanding towards autistic children. In adding of 3D animation would be visualize their mind to think in real situation in solah.

Next, for autism which lack of focus and hard with gesture, developer can make it using Kinect. Kinect is one of the technology which can help autistic children in learning. It does not require mouse or touch sensor because the device will detect the body of user. So, user will freely move.

In addition, this iSolat is not user friendly because it only can view in Apple devices. To make it more user friendly developer can develop it in web based which make an easy learning for people. It also can be develop using mobile application or android. If user wants to view through pdf file so developer can develop it in Adobe InDesign.

The narration can be improve with more clearly for them. Lastly, wudu' sessions can be include to make it this iSolat complete in details.
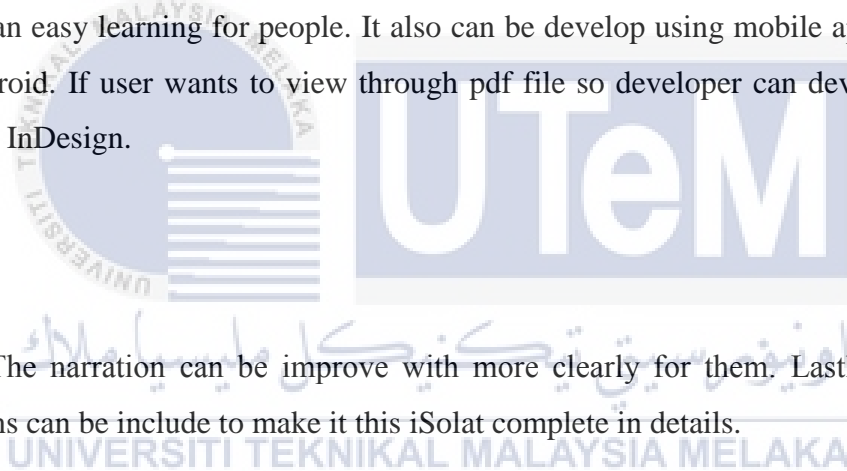
7.4   Contribution

iSolat is built as a method of learning for autistic children to learn solah. It is main platform for them to start know about solah in simplest way. Target user is autistic children but the information also suitable for normal kids and adults. iSolat was designed to give information about solah and hopefully with interactivity elements, this iSolat help them to understand and enjoy in learning. Moreover, this may help autistic children remember more effectively. This iSolat also can be new medium for Pendidikan Islam subject.

7.5   Conclusion

As conclusion, iSolat has been developed to test the effectiveness of learning solah through iBook with include interactivity elements. This iSolat can be used to attract autistic children especially those with lack of focus and hard to understand in learning. Through this, developer hope autistic children will be help in learning solah so that they can learn and practice independently.

REFERENCE

1. Modul Latihan Amali Fardhu Ain-Solat, Sekolah Kebangsaan Ujong Pasir

2. Siri Celik Minda Ezee-Ibadah, WMZ Media Sdn Bhd

3. http://elearning.autism.net/

4. http://elearning.autism-connect.org.uk/store

5. https://www.forms.portsmouth.gov.uk/autismawareness/

5. https://www.bps.org.uk/events/e-learning/e-learning

7. http://www.autismeducationtrust.org.uk/Global/News/KIDS%20launches%20fre

e%20elearning%20for%20schools.aspx

8. https://handsinautism.iupui.edu/elearning.html#.VtvBtvl9600

9. http://www.kwango.com/understanding_autism_elearning.php

10. http://raisingchildren.net.au/articles/autism_spectrum_disorder_learning.html

11. http://www.det.wa.edu.au/curriculumsupport/primary/detcms/navigation/tablet

Appendix A

Gantt Chart and Milestone

Task	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16
Submission proposal and verification	■															
Proposal correction and confirmation		■														
Chapter 1 (system development begins)			■													
Chapter 1 & Chapter 2				■												
Chapter 2					■											
Chapter 2 & Chapter 3 Progress presentation 1						■										
Project Demo Chapter 3 & Chapter 4							■									
Mid semester Break								■								
Project Demo & Chapter 4									■	■						
Project Demo & Chapter 4									■	■						
Project Demo											■					
Project Demo &											■	■				

Week	Activity	Note / Action

Activity	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16
PSM Report											■	■				
Project Demo& PSM Report/ Presentation											■	■	■			
Project Demo & PSM Report											■	■	■	■		
Final Presetation															■	
Submission																■

MALAYSIA MELAKA

UTeM

اونيۏرسيتي تيكنيكل مليسيا ملاك

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

1 22-26 Feb	Proposal PSM : Submission & Presentation	Deliverable – **Proposal** Action – Student
		Deliverable – **Proposal Presentation (PP)** Action – Student
	Proposal assessment and verification	Action – Supervisor, Evaluator
2 29 Feb -4 Mar	Proposal Correction/Improvement Chapter 1	Action – Student
	List of supervisor/title	Action – AJK PSM/PD
3 7-11 Mar	Chapter 1 (System Development Begins)	Deliverable – **Chapter 1** Action – Student, Supervisor
4 14-18 Mar	Chapter 1 & Chapter 2	Action – Student
5 21 - 25 Mar	Chapter 2	Action – Student
6 28 Mar -1 April	Chapter 2 Chapter 3	Deliverable – **Chapter 2** **Progress Presentation 1** **(Pembentangan Kemajuan(PK 1))** Action – Student, Supervisor
	Student Status	Action – AJK PSM/PD, Supervisor Warning Letter 1
7 4-8 April	Project Demo & Chapter 3 Chapter 4	Action – Student

8	MID SEMESTER BREAK	
9 18-22 April	Project Demo & Chapter 4	Deliverable – **Chapter 3** Action – Student, Supervisor
10 25 - 29 April	Project Demo & Chapter 4	Deliverable – **Progress Presentation 2** (**Pembentangan Kemajuan ,(PK) 2)** Action – Student, Supervisor
	Student Status	Action – AJK PSM/PD, Supervisor Warning Letter 2
11 2 - 6 May	Project Demo	Action – Student
	Determination of student status(Continue/Withdraw)	Action –PSM/PD Committee, Supervisor(submit student status to AJK)
12 9 – 13 May	Project Demo & PSM Report	Action – Student, Supervisor, Evaluator
13 16 - 20 May	Project Demo & PSM Report	Action – Student, Supervisor, Evaluator
	Presentation Schedule	AJK PSM/PD
14 23 - 27 May	Project Demo & PSM Report	Deliverable – **PSM Report** Action – Student, Supervisor
15 30 May -3 June	**FINAL PRESENTATION (PA)**	Action – Student, Supervisor, Evaluator
16 6 - 10 June	**REVISION WEEK** Correction draft report based on supervisor's and evaluator's comments during the final presentation session.	Action – Student, Supervisor, Evaluator. PSM/PD committee.

	Submission overall marks to PSM/PD committee.	
	FINAL EXAMINATION SEMESTER	

Appendix B

Storyboard

page 1

Niat Solat

CARA SOLAT

WAKTU SOLAT
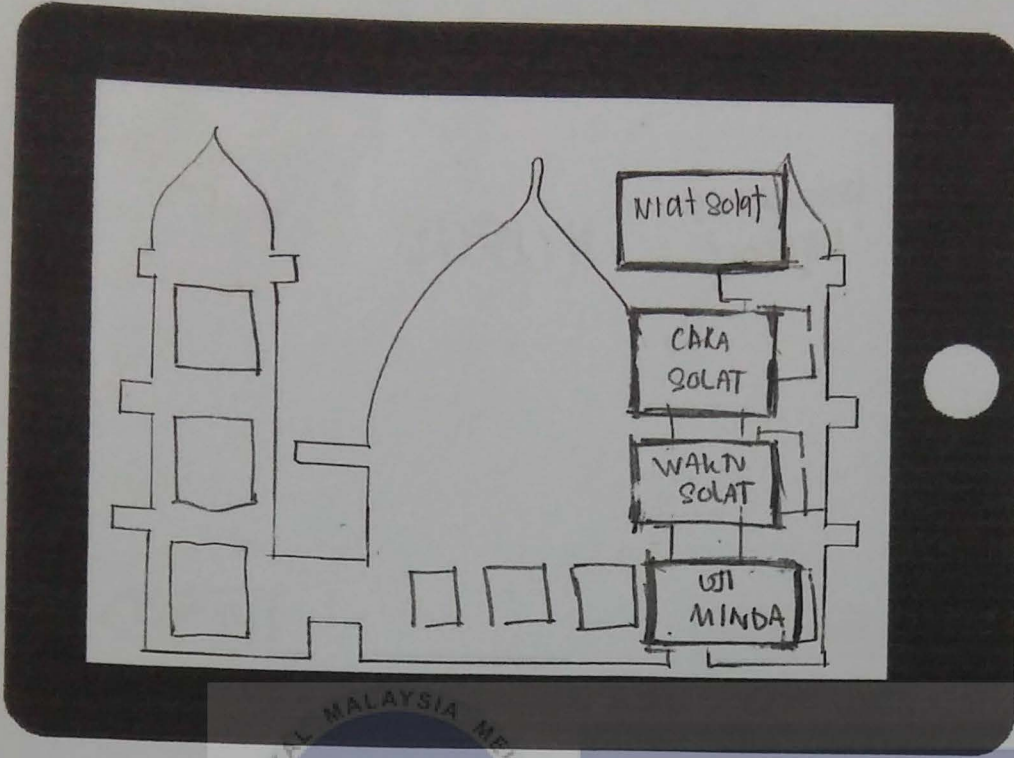
UJI MINDA

Description : Navigation page

Narration : Niat Solat, Cara Solat, Waktu Solat, Uji minda.

page 2

MENU UTAMA

NIAT SOLAT
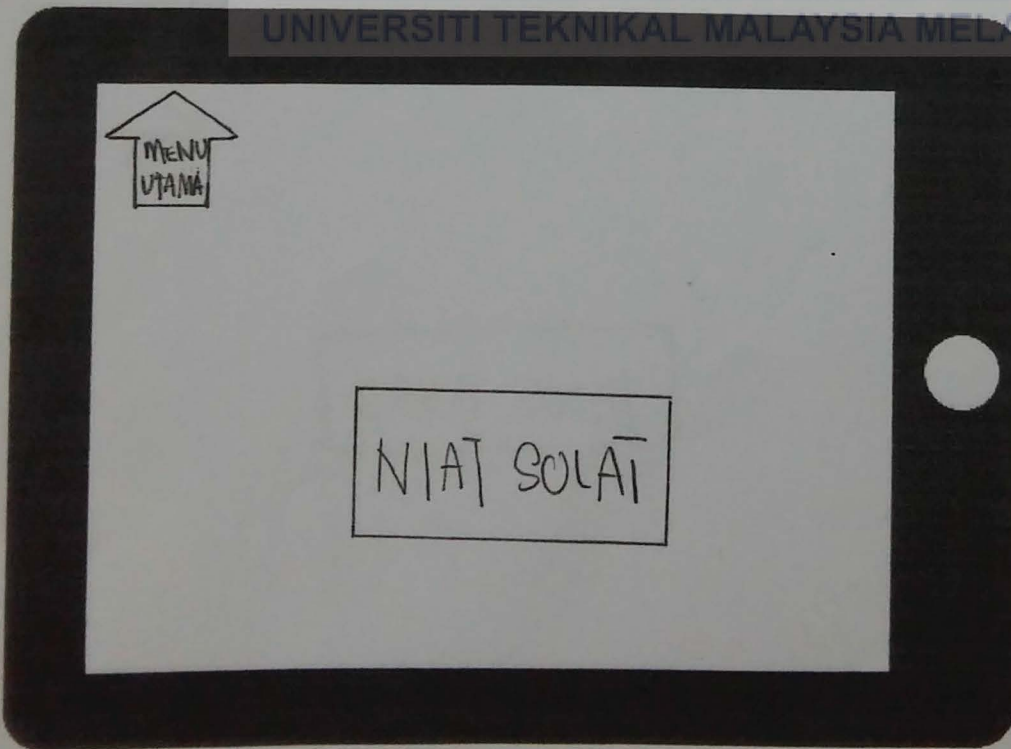
Description :

Narration :

page 3 - page 7

SUBUH

MENU
UTAMA

background
'masjid'

KEMBALI

SETERUSNYA
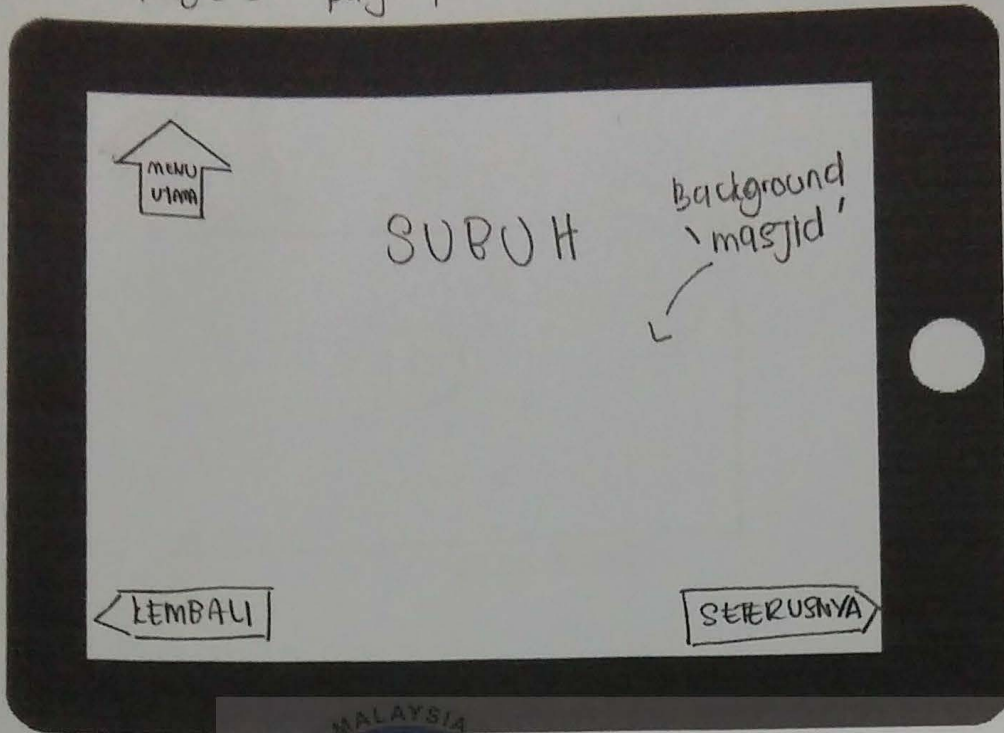
Description : Niat solat page from 3 - 7 with same interface and different content.

Narration : Niat solat narration (Subuh, zohor, Asar, maghrib, isya')

page 8

MENU
UTAMA

CARA SOLAT

Description :

Narration :

page 9

video solat
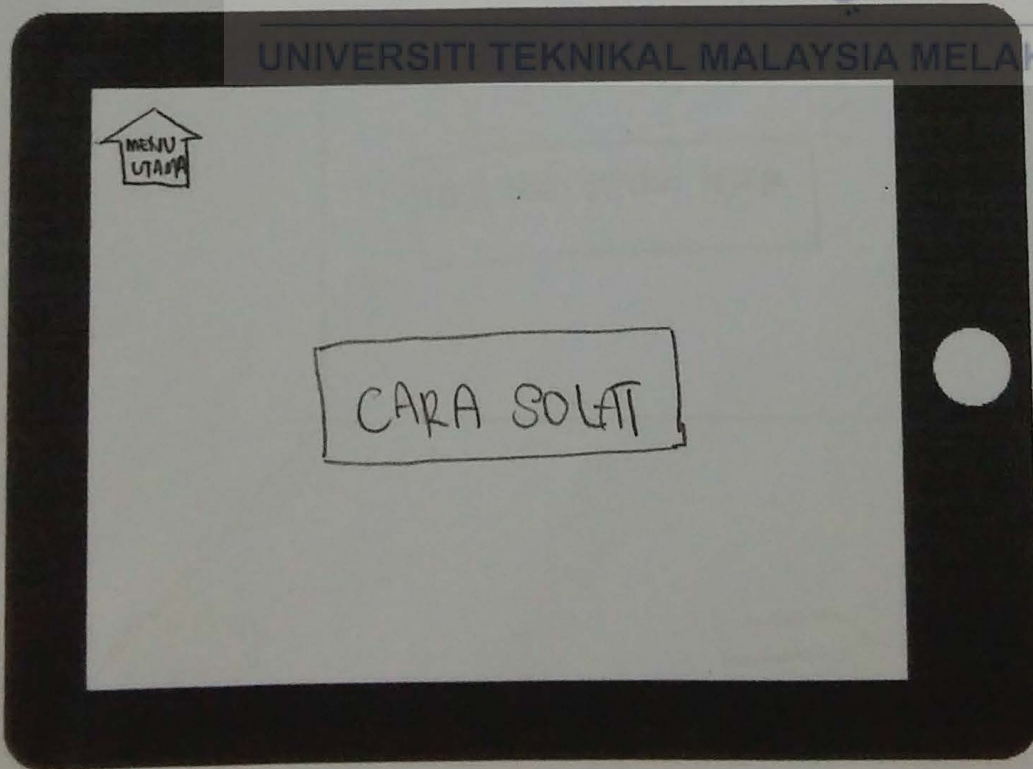
page 10

Niat dan berdiri tegak
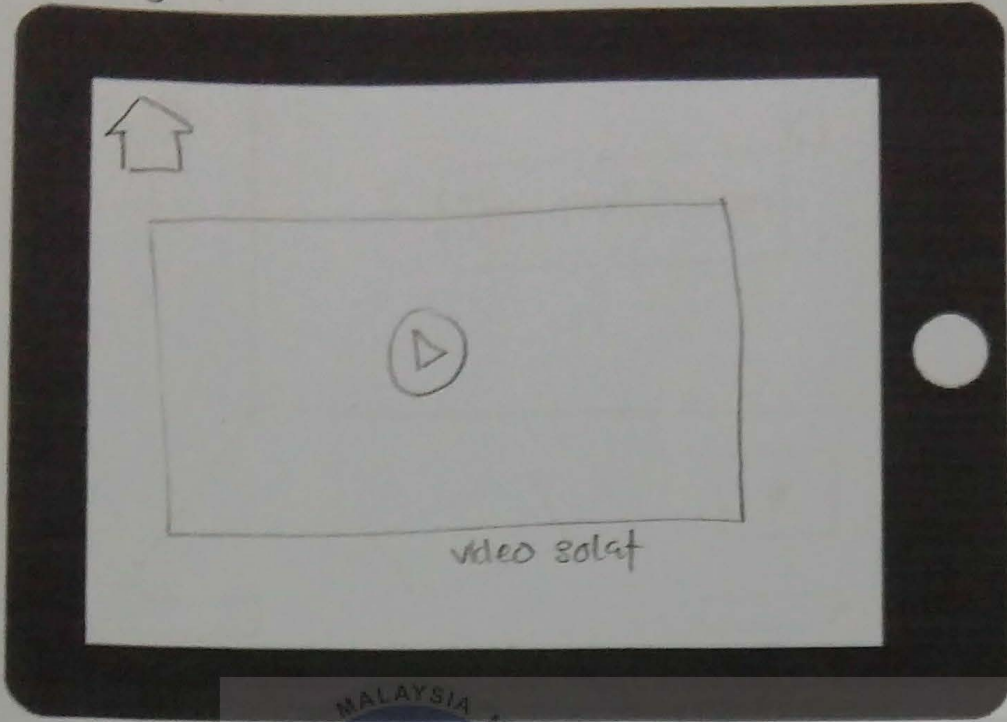
Description : Solat video.

Narration : —

Description : Interface with cartoon character

Narration : Niat dan berdiri tegak.
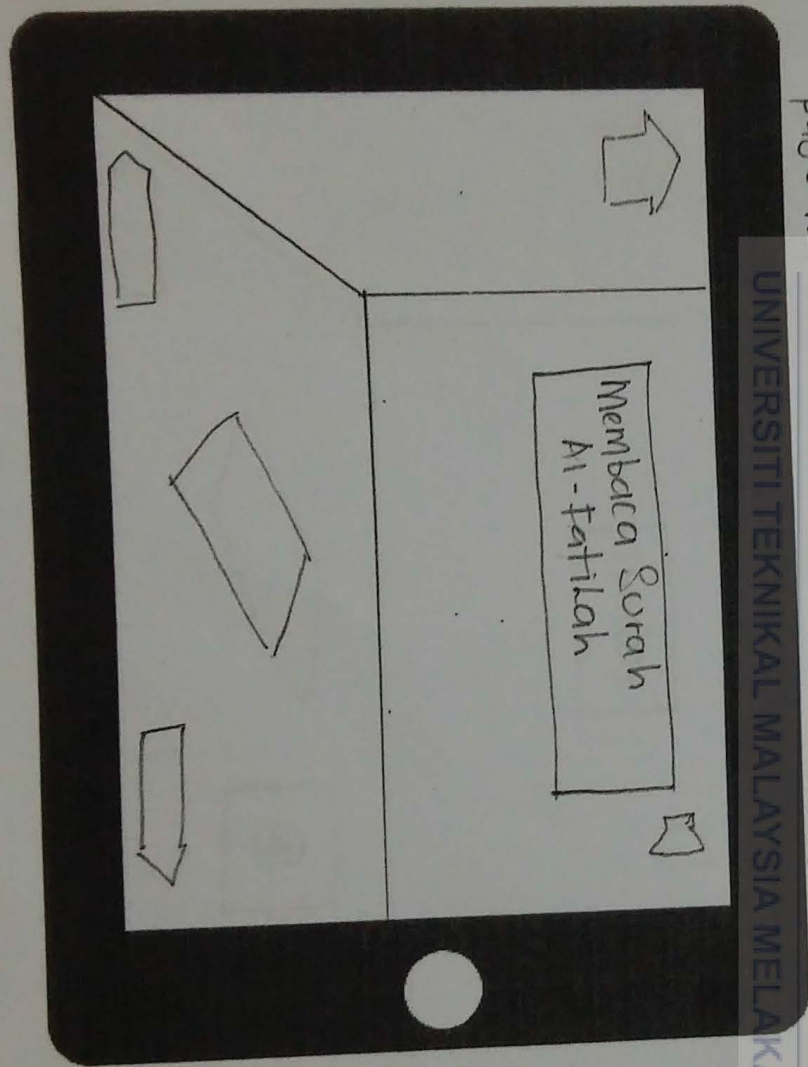
Description : Interface with cartoon character and pop up widget on 'Al-fatikah' sentence.

Narration :

Membaca Surah Al-Fatikal (Lave arabic version)
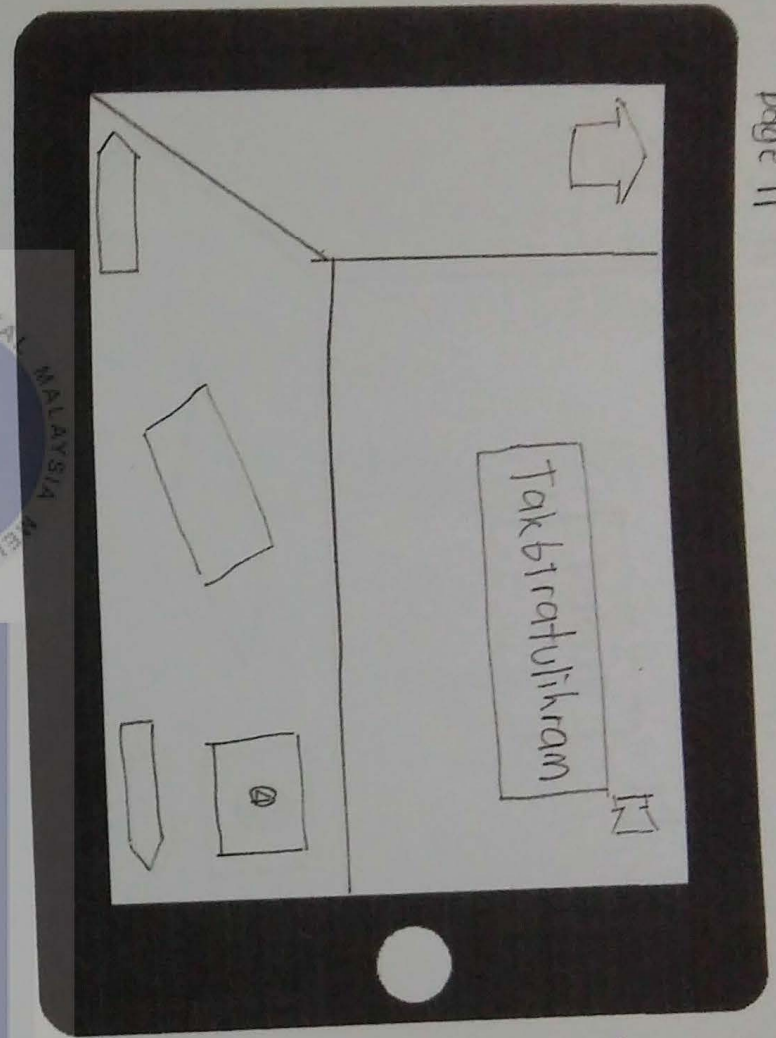
Description : Interface with cartoon character and short video.

Narration : Takbiratullihram
(Lave arabic version)
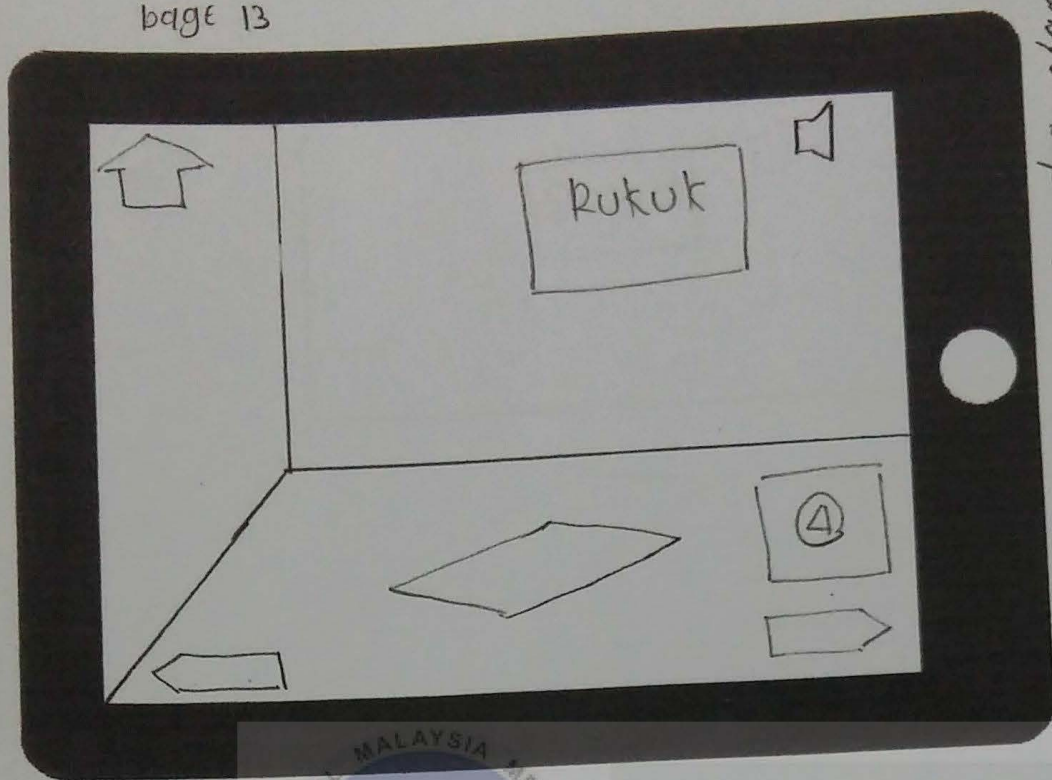
page 13

Description : Interface with cartoon character and short video.

Narration : Rukuk
(have arabic version)
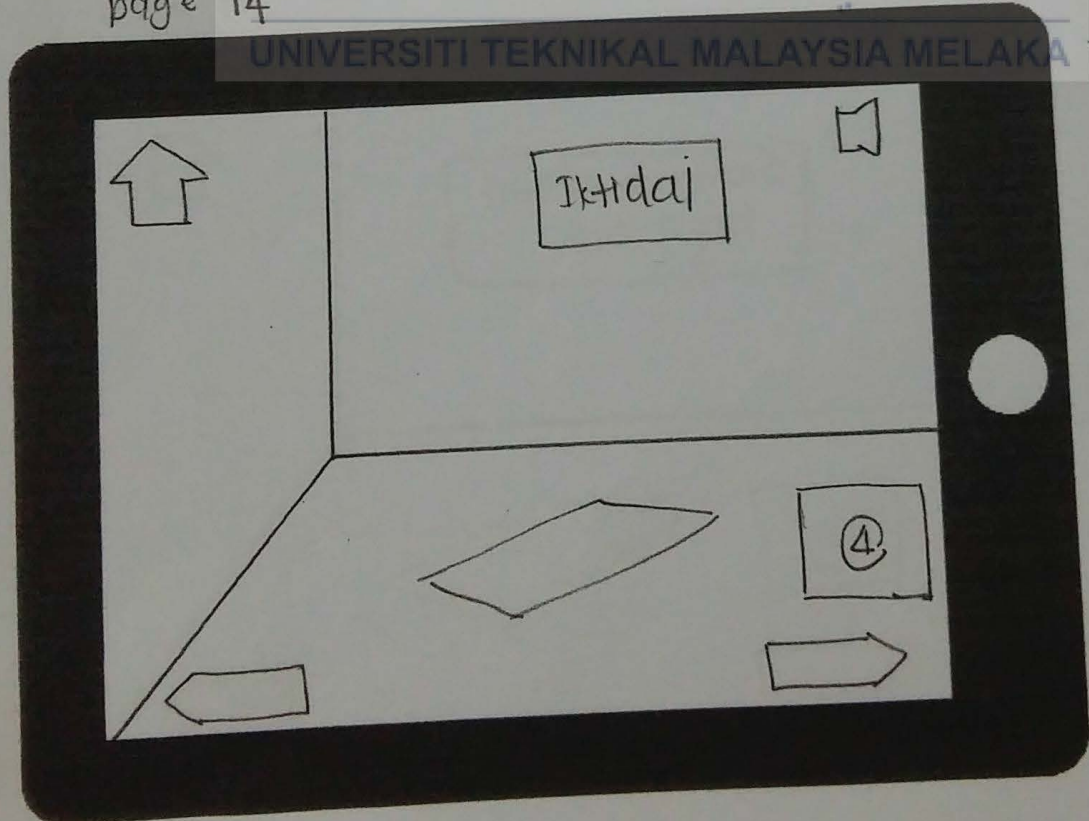
page 14

Description : Interface with cartoon character and short video

Narration : Iktidal
(have arabic version)
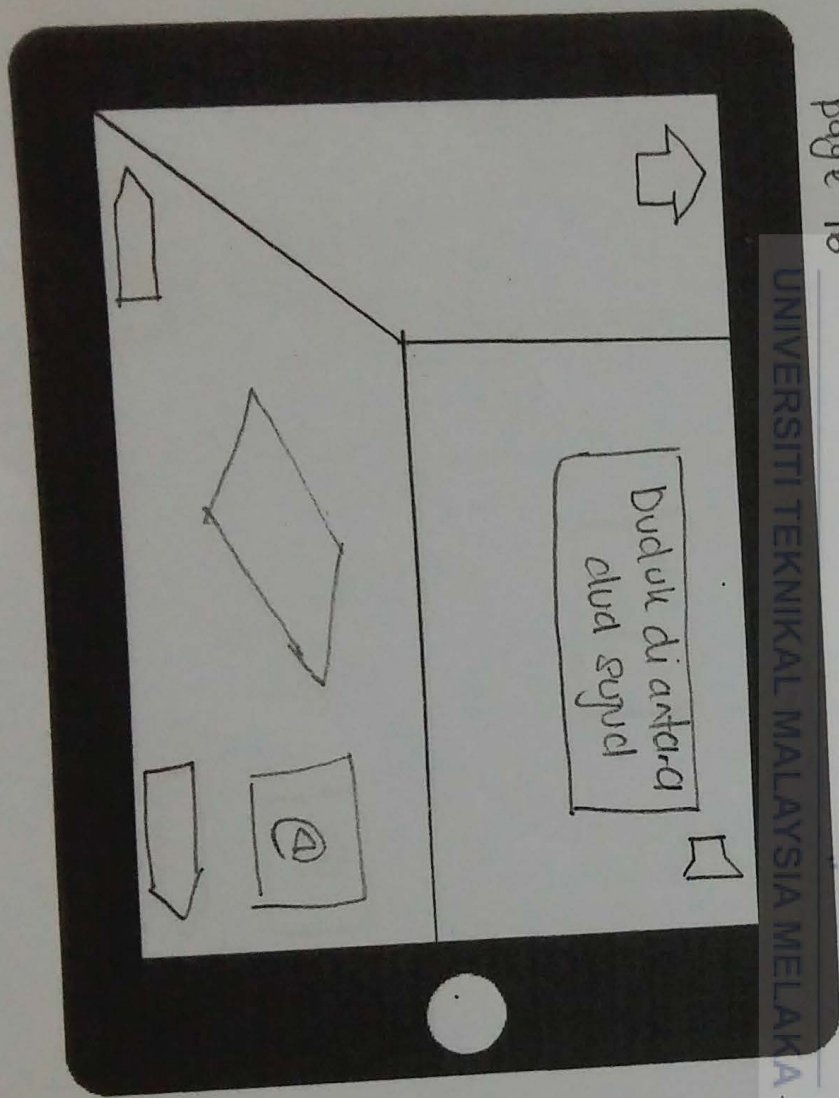
Duduk di antara dua sujud

Sujud

Description : Interface with cartoon character and short video

Narration : Sujud
Chave arabic version

Description : Interface with cartoon character and short video

Narration : Duduk di antara dua sujud
(Chave arabic version)
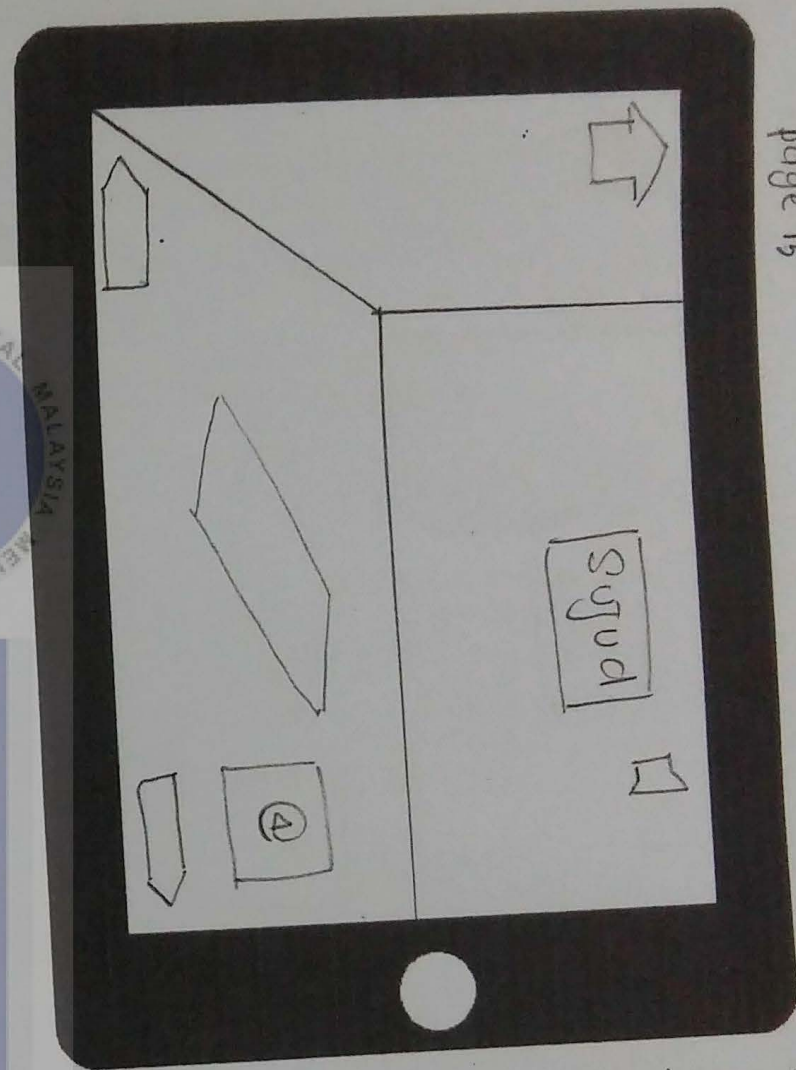
page 17
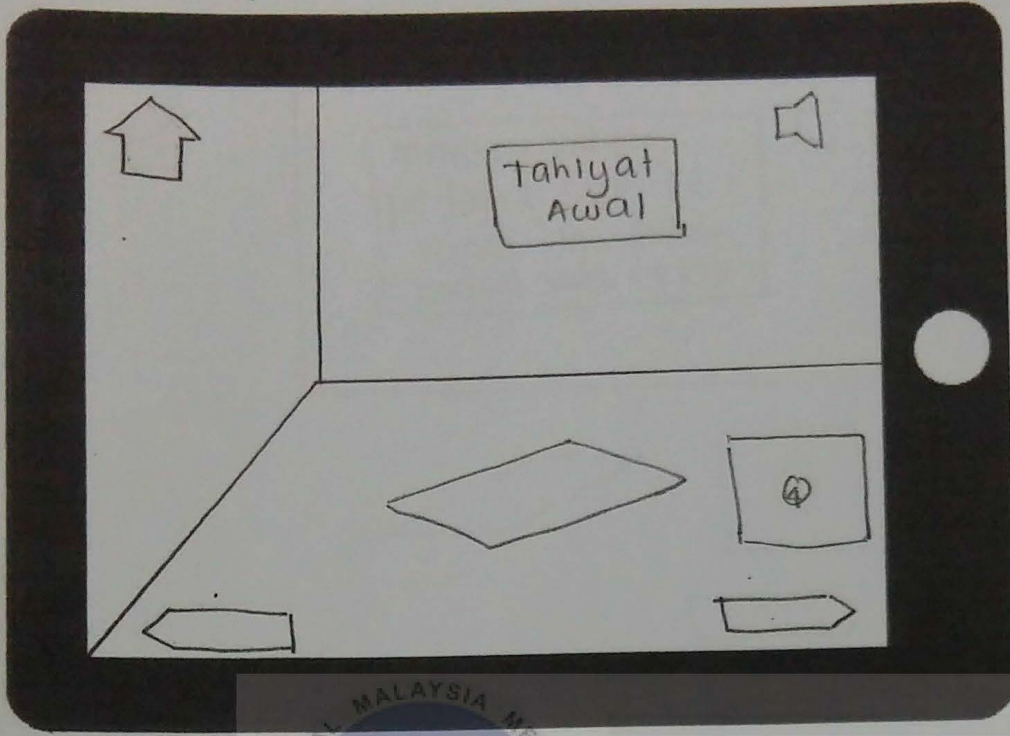
Description : Interface with cartoon character, short video and pop up widget.

Narration : Tahiyat awal
(have arabic version)

page 18

Description : Interface with cartoon character, short video and pop up widget.

Narration : Takiyat akhir
(have arabic version)

page 19

page 20
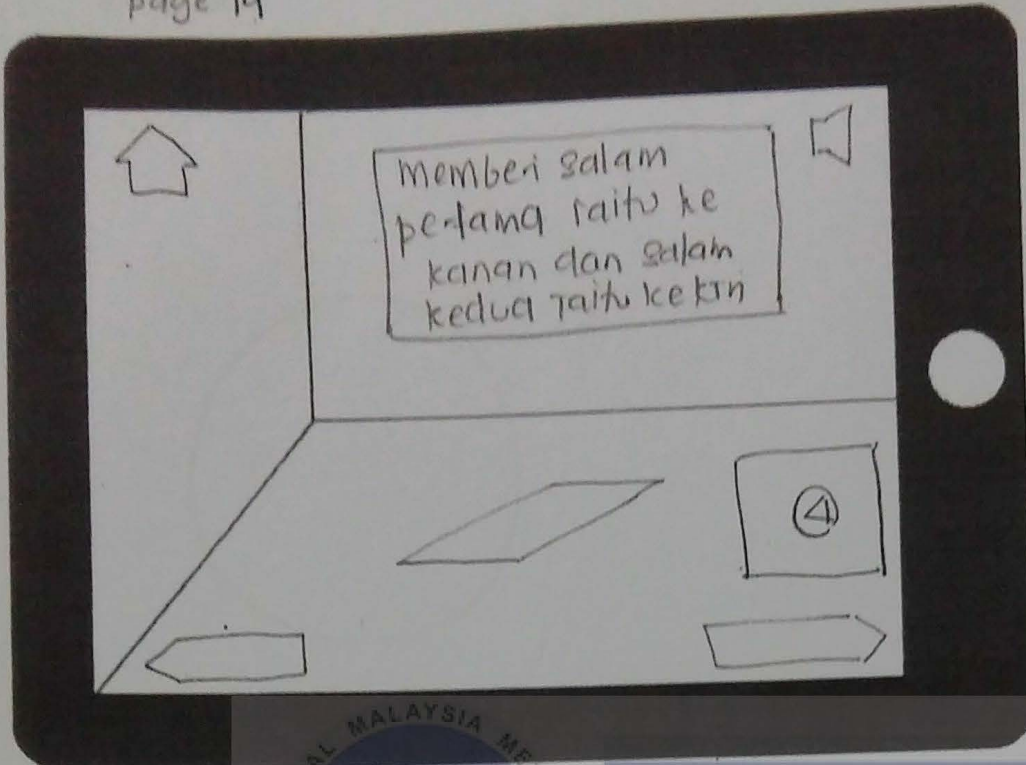
Description : Interface untuk cartoon character and short video

Narration : memberi Salam pertama iaitu ke kanan dan Salam ke dua iaitu ke kiri.
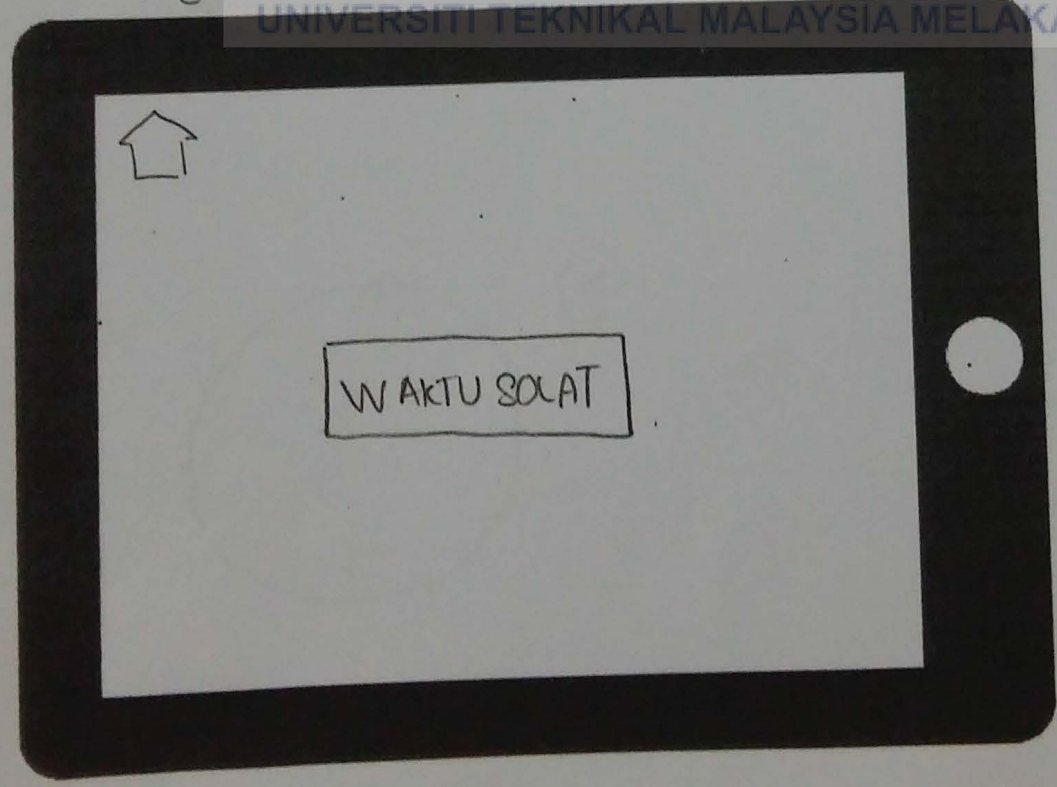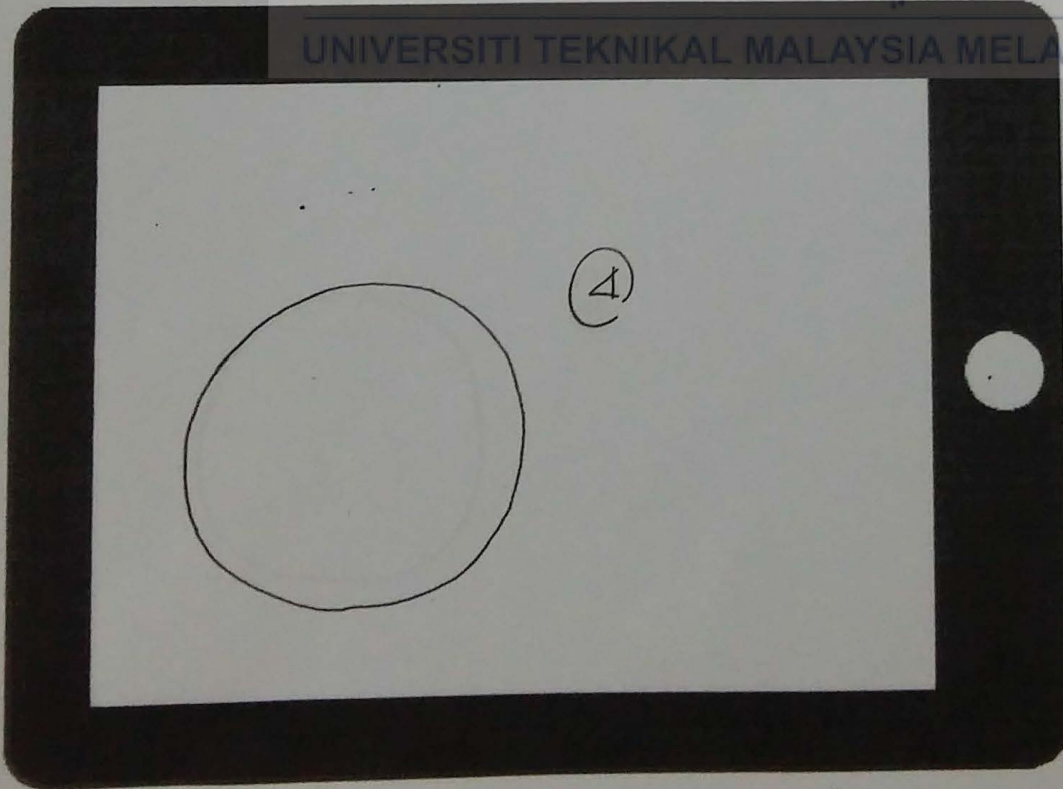
Description :

Narration :

Description : Short Animation on waqtu Solat.

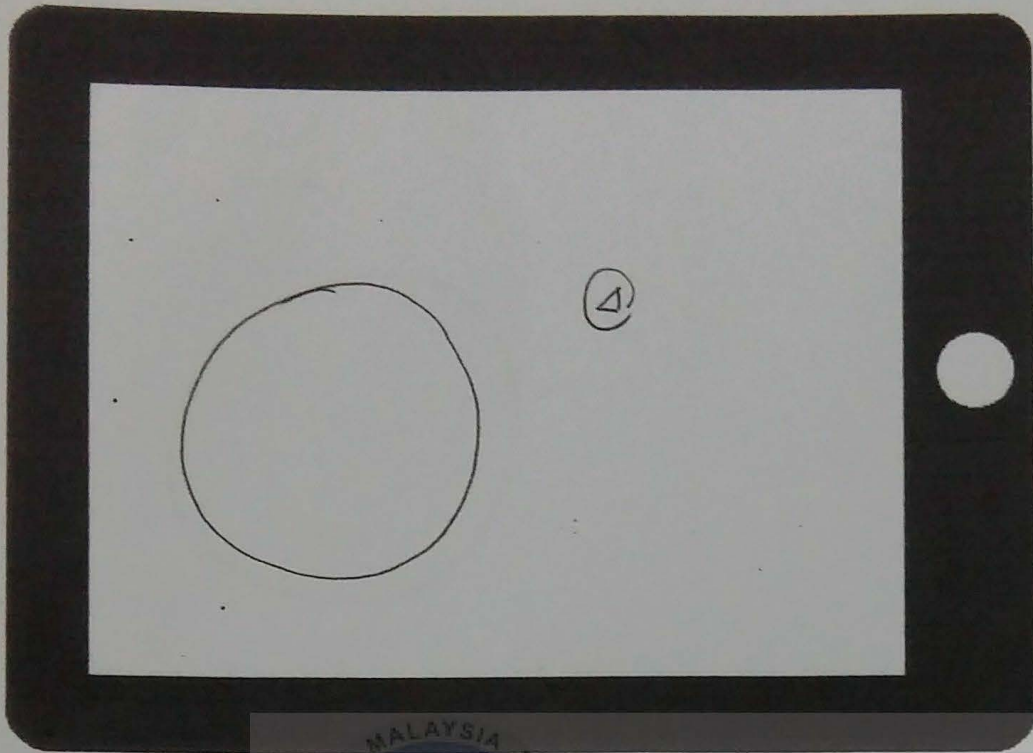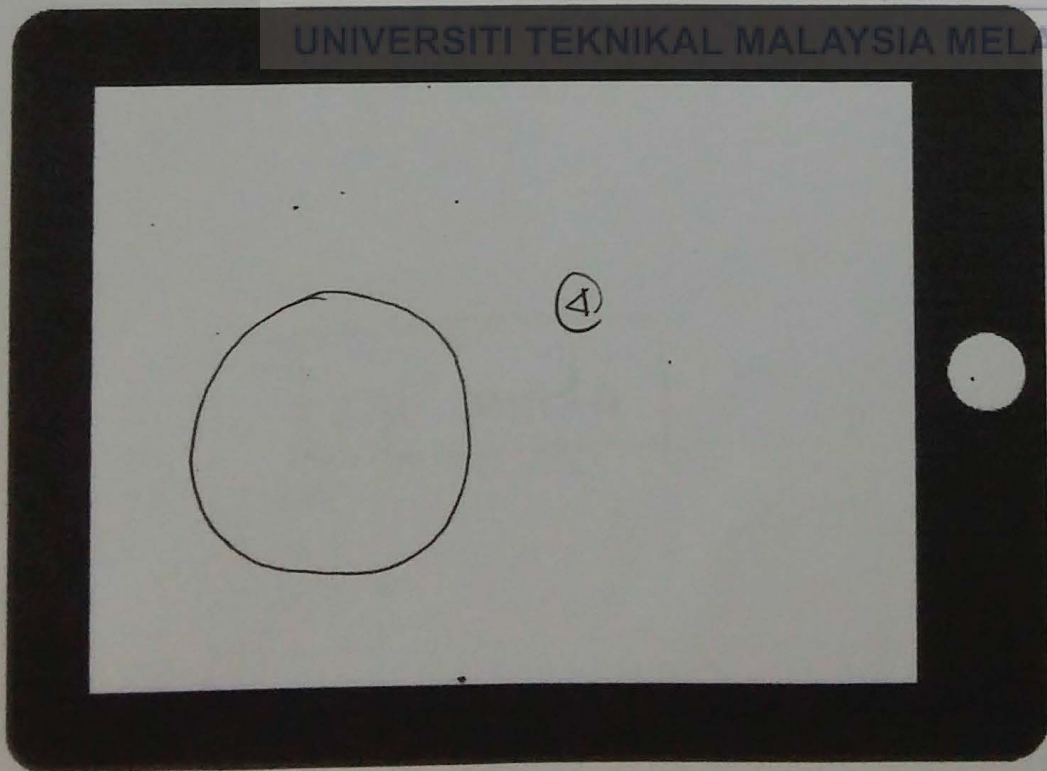**Narration :** Jam menunjukkan waktu subuh. Subuh ada 2 rakaat.

Description : Short animation on waqtu Solat

Narration : jam menunjukkan waktu Zohor. Zohor ada 4 rakaat.

page 23

Description : Short animation on cuakh solat.

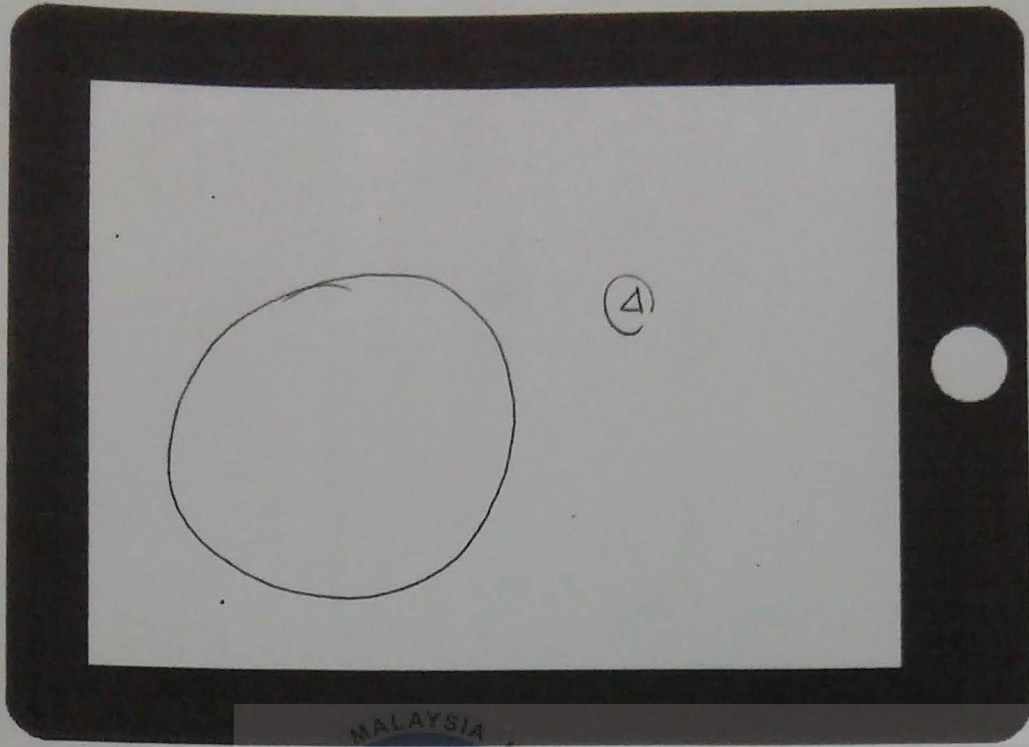Narration : Jam menunjukkan wakh Asar. Asar ada. 4 rakaat.

page 24

Description : Short animation on wakt solat.

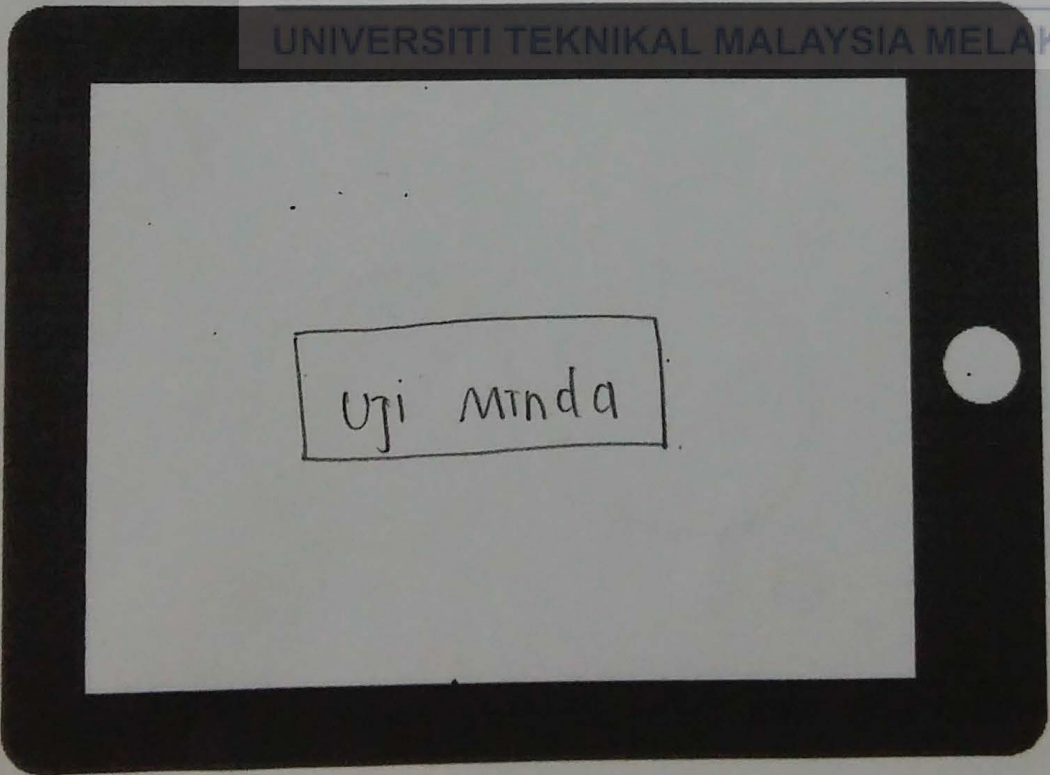Narration : Jam menunjukkan wakh meghuib. meghuib ada 3 rakaat.

page 25
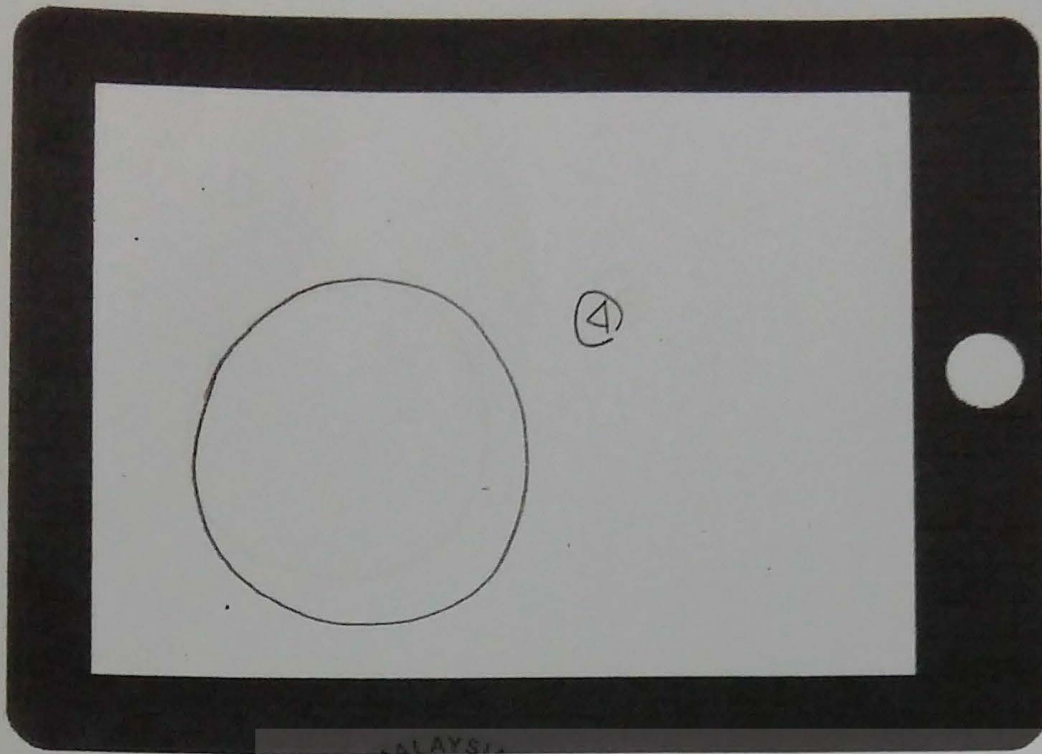
Description : show animation on waktu solat.

Narration : Jam menunjukkan waktu isya'.
Isya' ada 4 rakaat.

page 26

Uji Minda

Description :

Narration :

page 27
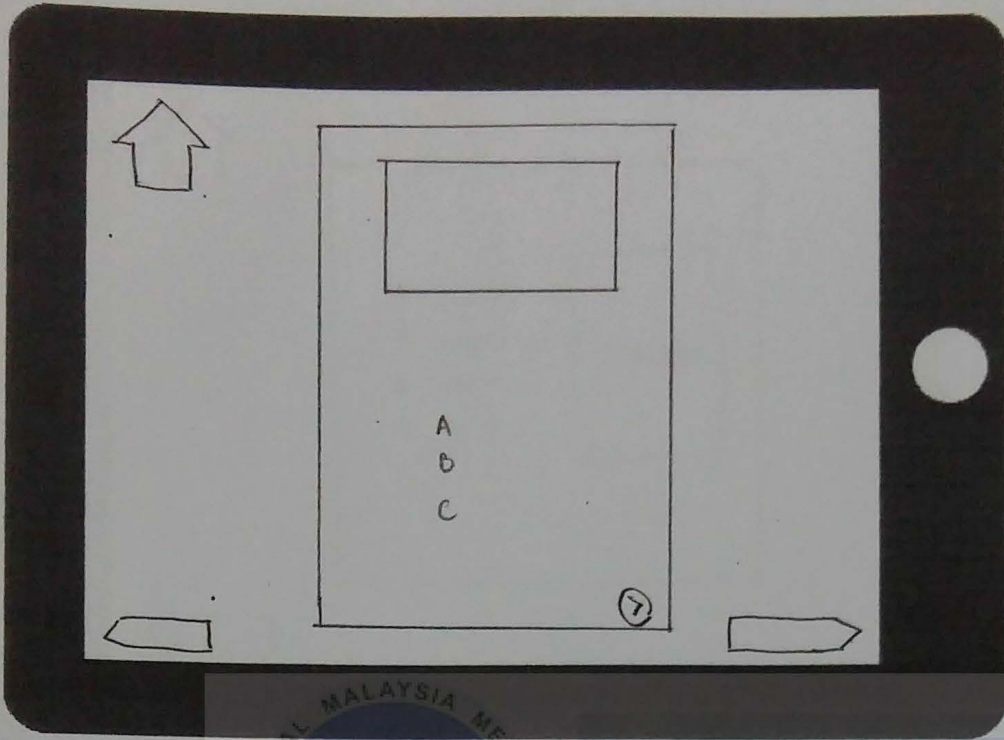
Description : Quiz on 'waktu pokf'

Narration : ―

page 27

Description : Quiz on 'waktu polat'

Narration :

page 29

A
B
C
D

gambar

Description : quiz on 'cara solat'

Narration : —

NIAT SOLAT
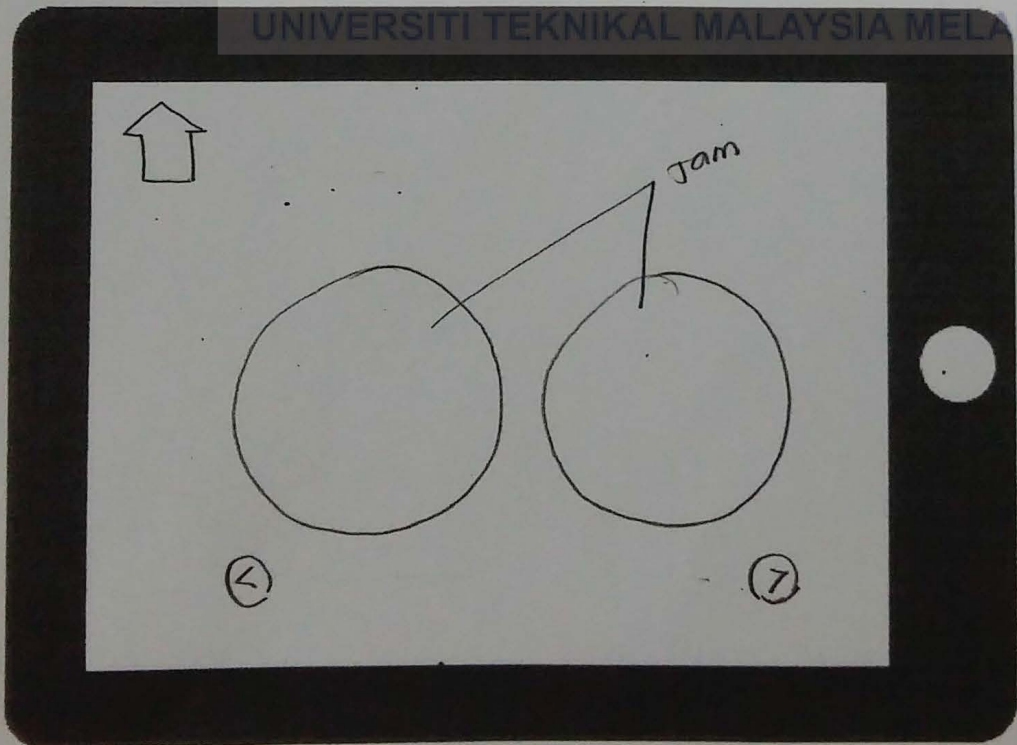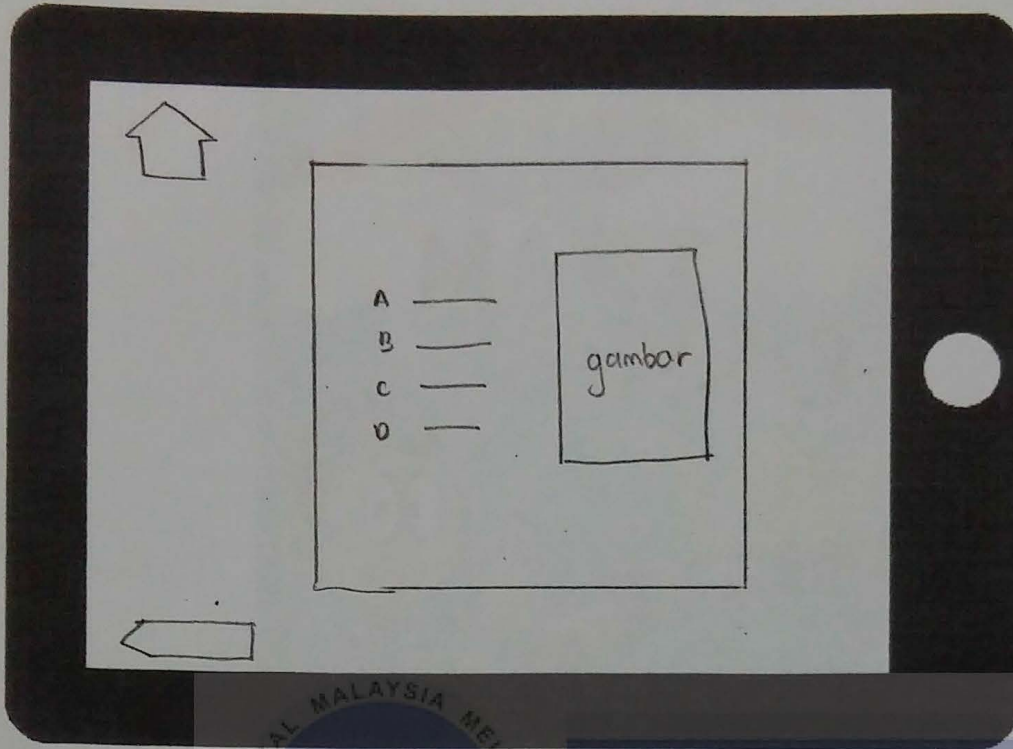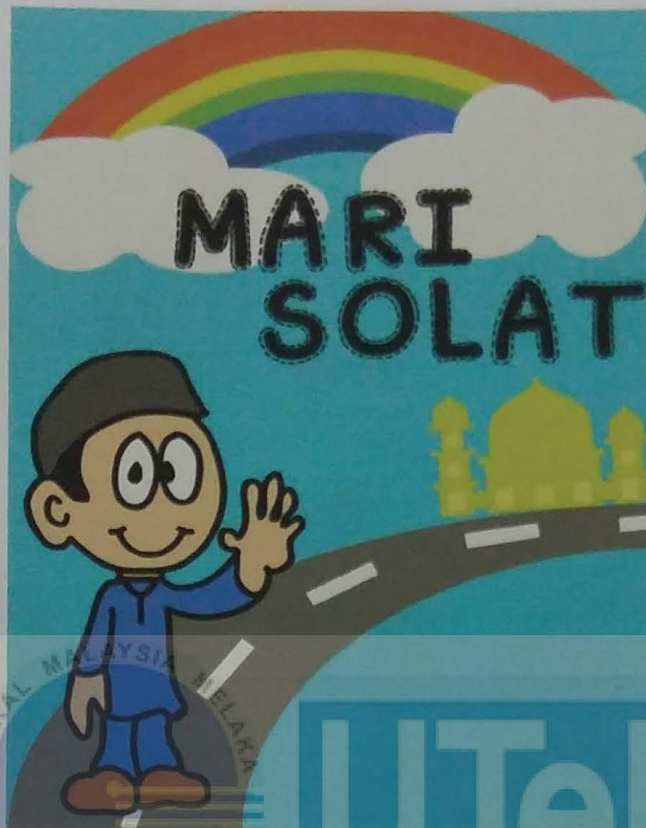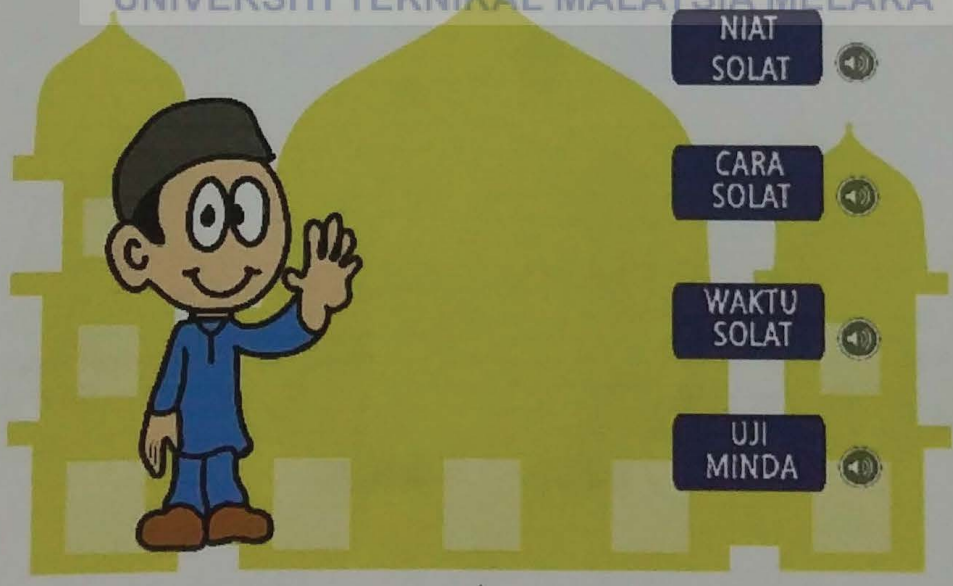
SUBUH

أُصَلِّى فَرْضَ الصُّبْحِ رَكْعَتَيْنِ أَدَاءً لِلهِ تَعَالَى

Sahaja aku solat fardhu Subuh dua rakaat
tunai kerana Allah taala

KEMBALI　　SETERUSNYA

ZOHOR

أُصَلِّى فَرْضَ الظُّهْرِ أَرْبَعَ رَكَعَاتٍ أَدَاءً لِلهِ تَعَالَى

Sahaja aku solat fardhu Zohor empat rakaat
tunai kerana Allah taala

KEMBALI　　SETERUSNYA

ASAR

أُصَلِّى فَرْضَ الْعَصْرِ أَرْبَعَ رَكَعَاتٍ أَدَاءً لِلهِ تَعَالَى

Sahaja aku solat fardhu Asar empat rakaat
tunai kerana Allah taala

KEMBALI　　SETERUSNYA

MAGHRIB

أُصَلِّى فَرْضَ الْمَغْرِبِ ثَلَاثَ رَكَعَاتٍ أَدَاءً لِلهِ تَعَالَى

Sahaja aku solat fardhu Maghrib tiga rakaat
tunai kerana Allah taala

KEMBALI　　SETERUSNYA

ISYA

أُصَلِّى فَرْضَ الْعِشَاءِ أَرْبَعَ رَكَعَاتٍ أَدَاءً لِلهِ تَعَالَى

Sahaja aku solat fardhu Isya' empat rakaat
tunai kerana Allah taala

KEMBALI

CARA SOLAT

Niat dan Berdiri Tegak

Takbiratul Ihram
اللهُ اَكْبَرُ

Membaca Surah Al-Fatihah

Rukuk
سُبْحَانَ رَبِّيَ الْعَظِيمِ وَبِحَمْدِهِ

Iktidal
سَمِعَ اللهُ لِمَنْ حَمِدَهُ

Sujud
سُبْحَانَ رَبِّيَ الْأَعْلَى وَبِحَمْدِهِ

Duduk di antara dua sujud
رَبِّ اغْفِرْلِي وَارْحَمْنِي وَاجْبُرْنِي وَارْفَعْنِي وَارْزُقْنِي وَاهْدِنِي, وَعَافِنِي, وَاعْفُ عَنِّي

Tahiyat awal

Tahiyat akhir

Memberi salam pertama iaitu ke kanan dan salam kedua ke kiri

TAKBIRATULIHRAM

WAKTU SOLAT

Jam menunjukkan waktu subuh. Subuh ada 2 rakaat

Jam menunjukkan waktu Zohor. Zohor ada 4 rakaat

Jam menunjukkan waktu asar. Asar ada 4 rakaat

Jam menunjukkan waktu maghrib. Maghrib ada 3 rakaat

Jam menunjukkan waktu isya. Isya ada 4 rakaat

UJI MINDA

Pilih jawapan yang sesuai

A. Rukuk
B. Sujud
C. Tahiyat Awal
D. Duduk Antara Dua Sujud

KEMBALI

SETERUSNYA

Gambarajah 2 : Pilih gambarajah yang betapa bagi soalan berikut.

Question 1 of 6
Antara berikut, yang manakah waktu waktu rosa?

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Gambarajah 1.1
Question 4 of 5
Nyatakan bilangan rakaat bagi waktu di bawah:

SUBUH

A. 4 rakaat
B. 3 rakaat
C. 2 rakaat

KEMBALI

SETERUSNYA

Appendix C

Questionnaire

<p style="text-align:center">**QUESTIONNAIRE**</p>

<p style="text-align:center">**The use of iBook as solah learning tools for Autism.**</p>

Student basic information

Name   :

Gender   :

Age   :

*Please circle the scale about the effectiveness of an iBook.

1= Strongly Disagree   2= Disagree   3=Neutral   4=Agree   5=Strongly Agree

Respond show by autistic children

Features		Scale			
They like to learn	1	2	3	4	5
They like to repeat the learning	1	2	3	4	5
They can learn easily	1	2	3	4	5
The iSolat attract them	1	2	3	4	5
They easily understand	1	2	3	4	5
They did not want to learn	1	2	3	4	5
They are bored	1	2	3	4	5
They get angry	1	2	3	4	5
They have difficulties in understanding the character	1	2	3	4	5
They have problem with screen display	1	2	3	4	5
They have problem with screen gesture	1	2	3	4	5

QUESTIONNAIRE

The use of iBook as solah learning tools for Autism.

Teacher basic information

Name   :

Gender   :

Age   :

School   :

Teacher perception on this iBook

*Please circle the scale about the effectiveness of an iBook.

1= Strongly Disagree   2= Disagree   3=Neutral   4=Agree   5=Strongly Agree

Features	Scale				
The use of this iSolat is understandable	1	2	3	4	5
This system is interesting	1	2	3	4	5
This system can be effective tools to help autistic children learn solah	1	2	3	4	5

Usability of iBook for autistic children

Features	Scale				
iBook is interesting	1	2	3	4	5
iBook is easy device to learn	1	2	3	4	5
iBook is easy to bring	1	2	3	4	5
Teacher can easily use iBook in teaching and learning	1	2	3	4	5

Usability of iSolat for autistic children

Features	Scale				
This iSolat easy to learn	1	2	3	4	5
This iSolat easy to understand	1	2	3	4	5
This iSolat attract them to learn	1	2	3	4	5
The graphic is attractive and appripriate for autism	1	2	3	4	5
The audio and video is suitable for autism	1	2	3	4	5

Comments and Perception

1. Did this system need to be improve?

    ☐ Yes   ☐ No

If yes, please state your reason and ideas of improvement.

……………………………………………………………………………………………

……………………………………………………………………………………………

2. Give your opinion about this iSolat.

……………………………………………………………………………………………

……………………………………………………………………………………………

THANK YOU ☺☺☺

Appendix D

Testing Part