

Android application to assist young children to learn Jawi interactively (I-Jawi)

by

Khairul Anuar Bin Ariffin

14040

Dissertation Report submitted in partial fulfillment of the
requirements for the Bachelor of Technology (Hons)

(Business Information System)

SEPTEMBER 2012

Universiti Teknologi PETRONAS

Bandar Seri Iskandar

37500 Tronoh

Perak Darul Ridzuan

CERTIFICATION OF APPROVAL

Android application to assist young children to learn Jawi interactively (I-Jawi)

by

Khairul Anuar Bin Ariffin

A project dissertation submitted to the

Business Information System Programme

Universiti Teknologi PETRONAS

In partial fulfillment of the requirement for the

BACHELOR OF TECHNOLOGY (Hons)

(BUSINESS INFORMATION SYSTEM)

Approved by,

(Dr. Shuib Bin Basri)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

SEPTEMBER 2012

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

SEPTEMBER 2012

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

(Khairul Anuar Ariffin)

ABSTRACT

Jawi is the writing script for Malay language that derived from the Arabic alphabets. It was a standard script that use for Malay language before being replaced by Latin alphabet called Roman alphabets. Since that, Jawi only use for religious and cultural purposes only. Jawi alphabets are considered to be difficult for children to recognize and read each of Jawi letters very well.

With the advancement of mobile phone technologies, mobile phone now is becoming a small size personal computer with the intelligent of smart phone and tablet. Old days, mobile phone usage limited to contacting friends by phone call or text messaging. But now, mobile phone is use for many purposes like internet browsing, playing games and educations.

The thesis is about developing an interactive and attractive mobile application for android as the platform to helps children at age 7 (seven) to learn Jawi based on J-QAF syllabus. The application provides basic Jawi alphabets, know, read and write open and close syllables.

ACKNOWLEDGEMENT

It is a pleasure to acknowledge people who give a hand that helps in order to complete the project.

First and foremost I would like to thank my supervisor Dr. Shuib Bin Basri for all his guidance, helps and kindness during my project development period while having very busy working hours. His supportiveness, tolerance and patients in guiding me through the semesters have motivated me tremendously.

I would like to thank all the people who encourage me in this project, my close friends dear to me, Ms. Nurul Hidayah Ishak and Mr. Luqman Afiq Razali and Mr. Nik Ahmad Bukhari who helps me in development of the project.

Last but not least, I would like to acknowledge people who involve and contribute directly or indirectly in the process of making the project.

Table of Contents

LIST OF FIGURES	i
LIST OF TABLE	ii
1. INTRODUCTION	1
1.1 Background of Study.....	1
1.2 Problem Statement	2
1.2.1 Problem Identification	2
1.2.2 Problem Significance.....	3
1.3 Objective and Scope of Study	3
1.3.1 Objective.....	3
1.3.2 Scope of Study.....	3
2. LITERATURE REVIEW	4
2.1 Learning	4
2.2 Background of Jawi and J-QAF.....	5
2.3 Technology and Application Aids in Jawi Learning.....	7
3. METHODOLOGY	9
3.1 Research Methodology.....	9
3.2 Prototyping Model.....	11
3.2.1 Planning Phase – Data Gathering	12
3.2.2 Analysis and Requirement Definition Phase – Data Analysis	13
3.2.3 Design Phase – System Development	14
3.2.4 Implementation.....	17
3.3 Project Activities	18
3.3.1 Key Milestone.....	18
3.3.2 Gantt Chart	19
3.4 Tools.....	19
3.4.1. Hardware	19
3.4.2. Software.....	20
4. RESULTS AND FINDINGS	22
4.1 Interviews Pre-test.....	22
4.1.1 Interview with Ustazah Baizura	22

4.1.2 Interview with Ustazah Mardiyah	23
4.2 System Flow	23
4.3 Storyboard Interface	25
4.3.1 Welcome Screen	25
4.3.3 Introduction Screen (Pengenalan)	27
4.3.4 Mengenal Jawi Screen	28
4.3.5 Menulis Jawi.....	29
4.3.6 Last Screen	30
4.4 Prototype Study.....	30
4.5 Post-Test.....	32
5. CONCLUSION.....	35
5.1 Conclusion.....	35
5.2 Recommendations	36
References.....	37

LIST OF FIGURES

- Figure 1 : Android OS on various brands of mobile phone and tablet
- Figure 2 : Jawi alphabets
- Figure 3 : Existing Jawi mobile application
- Figure 4 : Planning and Gathering Information Process
- Figure 5 : SDLC Life-Cycle Phases
- Figure 6 : The Prototyping Model
- Figure 7 : Use Case Diagram
- Figure 8 : Analysis and Requirement Definition
- Figure 9 : Interactive Jawi interface (propose)
- Figure 10 : Android Virtual Device Manager
- Figure 11 : First screen of Interactive Jawi application
- Figure 12 : Menu Screen
- Figure 13 : Pre-Test Technique
- Figure 14 : Post-Test Technique
- Figure 15 : Key Milestones
- Figure 16 : Hardware, Samsung Galaxy S
- Figure 17 : App Inventor process flowcharts
- Figure 18 : Interview with Pendidikan Islam (J-QAF) teacher
- Figure 19 : Interview with Pendidikan Islam (J-QAF) teacher

- Figure 20 : Project System Flowchart
- Figure 21 : Screenshot of Welcome Screen
- Figure 22 : Screenshot of Menu Screen
- Figure 23 : Screenshot of Pengenalan Screen
- Figure 24 : Screenshot of Mengenal Jawi
- Figure 25 : Screenshot of Mengenal Jawi
- Figure 26 : Screenshot of Menulis Jawi
- Figure 27 : Screenshot of Last Screen
- Figure 28 : Prototype feedback (Question1)
- Figure 29 : Prototype Feedback (Question 2)
- Figure 30 : Post-test Feedback (Question 1)
- Figure 31 : Post-test Feedback (Question 2)
- Figure 32 : Post-Test Feedback (Question 3)
- Figure 33 : Post-Test Feedback (Question 4)

LIST OF TABLE

- Table 1 : Project Gantt chart

CHAPTER 1

1. INTRODUCTION

1.1 Background of Study

Advancement of current technology has rapidly grown worldwide. The focus of technology development is in mobile devices such as smart phones and tablets. A smart phone is a mobile phone built on a mobile computing platform with more advanced computing ability and connectivity than a feature phone [1]. Along the way, as mobile devices is enhanced, mobile applications is introduced. A tablet computer, or commonly called as tablet is a mobile computer which is larger than a mobile phone or personal digital assistant. It is integrated into a flat touch screen and primarily operated by touching the screen rather than using a physical keyboard. It often uses an onscreen virtual keyboard, a passive stylus pen, or a digital pen. [2]. These smart phones and tablets are embedded with operating systems such as iOs, Android, Symbian and few more. However, this project report will only focus on Android operating system as the platform for Interactive Jawi (I-Jawi) application.

Interactive Jawi (I-Jawi) is an interactive mobile application to learn Jawi for children age 7 (seven). This particular application will guide them to have better understanding in Jawi by listening to the audio and read the text. According to Nik Yaacob (2007) in his book, he has emphasized that learning to write Jawi must be taught at an early age [3]. To make learning Jawi interesting, a proper and effective way must be conduct to assist the children.

The system aims to add functionality of mobile phone besides keeping in touch with family members and having access to a telephone in the event of an emergency to a device that can actually help children age 7 (seven) to learning Jawi interactively and effectively.

Apart from that, the application will contribute to the students' confidence and ease student for further study especially in Pendidikan Islam.

Android offers developers the ability to build innovative applications. Most mobile phone and smartphone manufacturers nowadays choose to develop their mobile phone to work on Android OS because of its offer a lot of advantages. The main advantage of Android based mobile phone is the OS is offered in various kind of nowadays popular mobile phone brand such as like HTC, Motorola and Samsung.



Figure 1: Android OS on various brands of mobile phone and tablet

1.2 Problem Statement

1.2.1 Problem Identification

The focus of this project report is to develop an Android application to ease learning of Jawi. In current system of learning, children lose interest in learning Jawi due to various factors such as dubbing program and uninteresting traditional learning. Children nowadays more interested in other activities such as playing games, and they impress with new technology that bring new experience such as touch screen technology.

Based on researches done, there is only one Android application in the market that provides assistance in learning Jawi. However, this existing application is not following J-QAF syllabus and less interactive, not user-friendly and not easy to navigate.

1.2.2 Problem Significance

This particular application will bring significance to students age 7 (seven) which is the users to learn and have better understanding in Jawi. Plus, it offer interactive Human Computer Interaction compared to existing application. The main idea of this project is to develop an Android application to cater this problem.

1.3 Objective and Scope of Study

1.3.1 Objective

- 1) To provide interactive learning platform for children age 7 (seven) in learning Jawi.
- 2) To identify basic guidance to learn Jawi using J-QAF syllabus.
- 3) To propose an android application based on the criteria/s of J-QAF standards in order to assist children in learning Jawi.

1.3.2 Scope of Study

The scope of this particular project is aim to student age 7 (seven) that learn Jawi language. With Interactive Jawi (I-Jawi) application students will have better understanding in Jawi. The application provides basic Jawi alphabets, know, read and write open and close syllables.

CHAPTER 2

2. LITERATURE REVIEW

2.1 Learning

Pick up a standard psychology textbook especially from the year 1960s and 1970s, people probably find learning defined as a change in behavior. By referring to University of Missouri St. Louise according to Birkenholz (1999), learning often defined as change in behavior which is demonstrated by people implementing knowledge, skills, or practices derived from education [4]. From an educator's perspective, learning involves helping people along the learning process and includes everything that people do to make a thing happen. As the result, learning occurs when people take new found information or knowledge and practice it into their life.

Learning at early age does give a huge impact and result in succeed or mastering a new language. In referring to Languagelizard website, there have some arguments and statements in one of Malcom Gladwell's famous book Outliers, that to learn something well, it takes at least 10,000 hours of time on task (based on a study by K. Anders Ericsson) as well as the opportunity to learn a given task. As for an adult, it is difficult to allocate 10,000 hours to learn a language [5]. By relating it to learning Jawi, even though it is not a totally learning a new language as a whole because the pronunciation are still same, but, learning Jawi needs to be learn at early age in order to help in future studies such as learning Pendidikan Islam. In addition, learning other language or bilingualism has huge advantage such as it can delay the onset of Alzheimer symptom.

While looking at definition of effective from Thesaurus.com, effective is the capability of producing a desired result. It consists of efficient, effectual and productive [6]. A journal

written by C Watkins (2002) is all of these at their best, plus the monitoring and review of whether approaches and strategies are proving effective for the particular goals and context [7].

2.2 Background of Jawi and J-QAF

History has explained that Jawi has been found in various artifacts such as letter of agreement, books and newspapers. Research done by Mohamad Faidzul, Khairudin, Mohamad Shanudin, and Liong (2008) finds Jawi is the writing script for Malay language since 15th century that originated from Arabic alphabets [8]. It consist of 36 characters which are 30 characters are originated from Arabic script and 6 addition characters were created in order to cater Malay sound system. Arabic language is known as one of the most difficult languages to be learnt in the world. Thus originating from Arabic, Jawi is difficult. It has existed a long time in the Malaysian history but unfortunately the full use of the Roman characters in communication has reduced interest in Jawi. This will lead to the art of writing in Jawi script will lost in the Malay world. The lacks of written sources using Jawi script make teenagers no longer recognize this heritage.

Figure 2 below explained the basic Jawi alphabets. The circle alphabets represent Malay words which are not adopted from Arabic alphabets.

ج jim	ث tha	ت ta	ب ba	ا alif
ذ dzal	د dal	خ kha	چ cha	ح ha
ص shad	ش shin	س sin	ز zai	ر ra
غ ghain	ع ain	ظ dzo	ط tho	ض dhad
ك kaf	ق qaf	ڤ pa	ف fa	ڠ nga
و wau	ن nun	م mim	ل lam	ڤا ga
ي ya	ء hamzah	لا lam alif	ه ha	ڤا va
				ڠ nya

Figure 2: Jawi alphabets

According to Norizan Mat Diah, Marina Ismail, Putri Mazliana Abdul Hami and Suzana Ahmad (2011), they claimed that even though Jawi currently taught at school but it is less interactive for school children [9]. Since the issue is recognized by Kementerian Pendidikan Malaysia, J-QAF is introduced in Pendidikan Islam syllabus to make it more interactive and increase students interest in learning Jawi. In addition, to enhance J-QAF syllabus author relate learning Jawi with the advancement of mobile application technology. According to Bahagian Kurikulum Pendidikan Islam & Moral, Kementerian Pelajaran Malaysia, J-QAF program is a way to enrich Islamic Education (Pendidikan Islam) subject with special emphasis in the teaching of Jawi, Al-Quran, Arabic and Fardu Ain conducted in primary schools. J-QAF is using its own syllabus and using its own module and model in the syllabus [10]. In context of J-QAF syllabus, teachers are used for recovery, counseling, skills, affirmation, and appreciation of student enrichment. As mentioned before J-QAF consists of four teaching elements and teaching JAWI is one of the elements.

2.3 Learning using Multimedia

According to Kommers (1996), multimedia is *"those computer-based applications that allow the user to see and hear different types of information via one screen with audio support"* [11]. Route (2000) said that multimedia may include texts, pictures and possibly other types of information [12]. According to Locatis (2001), multimedia programs employ two or more of the following types of information which are text, graphics, pictures, animation, audio and video [13]. It will combine all the graphics, video and audio to make the presentation more interesting where the pages are linked from one to another and it can interact with the human being just like the human interacting to each other. That is why sometimes people call the well good developed web-based multimedia especially on the interface is the one that is "user friendly".

In developing multimedia application especially for children, there are some considerations needs to undertake to tutor effectively. By referring to Alenka Kavcic (1998) [13], tutoring component includes three modules, which are:

- Domain model (represents knowledge about the teaching domain and explain what is being taught).
- User model (describes users and therefore explains who is being taught).
- Pedagogical model (takes care of all didactical decisions of the system and supervises the learning, thus explain how to teach).

From the three modules, it is clear that the content of what is being taught, which is Jawi alphabets represent the domain model, the children represent the user model while children learning behaviors and preferences together with the specific elements that must be included with, represent the pedagogical model. Besides that, there are some specific elements need to be included to attract them. According to Martijin Hoogeveen (1997), multimedia application develops for children must have music or sounds as attraction, pictures or images as metaphors and animation to make it lively.

As discussed above, technology has evolved rapidly and benefits human being directly. A smart phone is a mobile phone built on a mobile computing platform with more advanced computing ability and connectivity than a feature phone [14]. Even though using mobile phone or smartphone technology are now become a new platform for education, but there has only one learning Jawi application in Android market available which is Jom Jawi. This mobile application has similar function to the one proposed. However, this application is not user-friendly to children as a user and less attractive. Plus, it not follow latest syllabus used at primary school in Malaysia which is J-QAF. My proposed system would be more user-friendly and easy for children at age 7 (seven) to navigate, and attractive.



Figure 3: Existing Jawi mobile application

CHAPTER 3

3. METHODOLOGY

3.1 Research Methodology

Google Play as android market is used while doing the research on current mobile application that related to learning Jawi. Application on learning ABC also has been used by author as resource of reference because of the major similarities. In this context, a major similarity has been referring as the purpose of the application was same which is learning alphabets. Information and data were gathered while doing the research. Surveyed and interviewed has been conducted in order to get all data and information. Besides that, author also using J-QAF book as one of main resources and primary school's teacher as the guide to ensure the mobile application follow J-QAF syllabus.

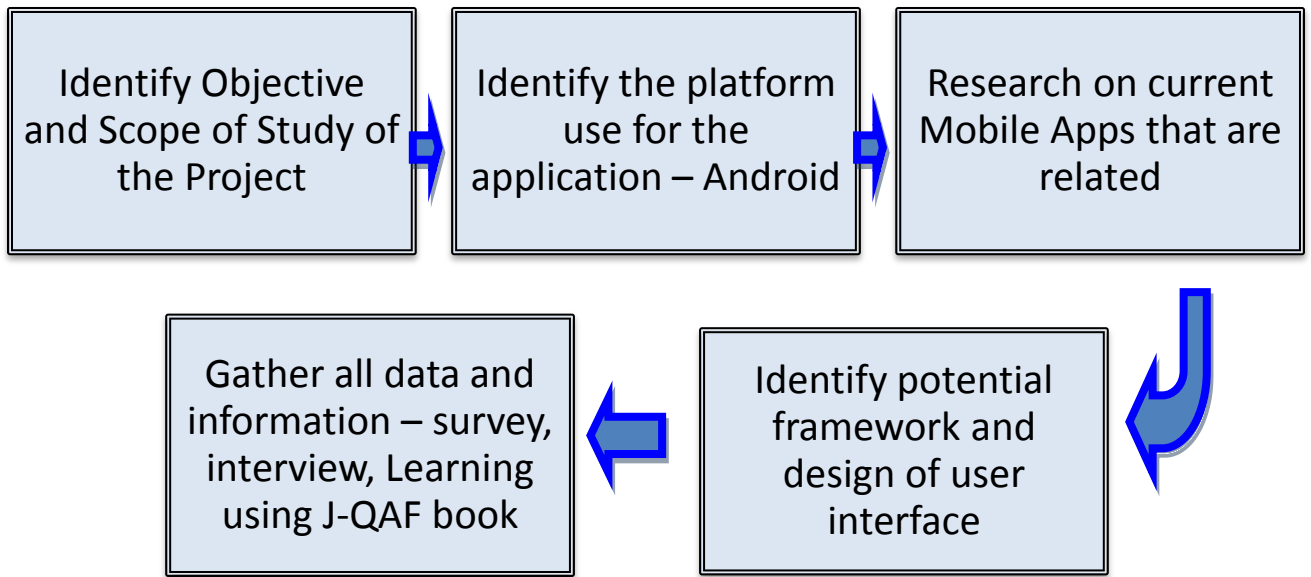


Figure 4: Planning and Gathering Information Process

From then on, the potential framework and set up design is sketched in this phase as well as generation of ideas to form the user interface. Further explanation as in sub chapter below:

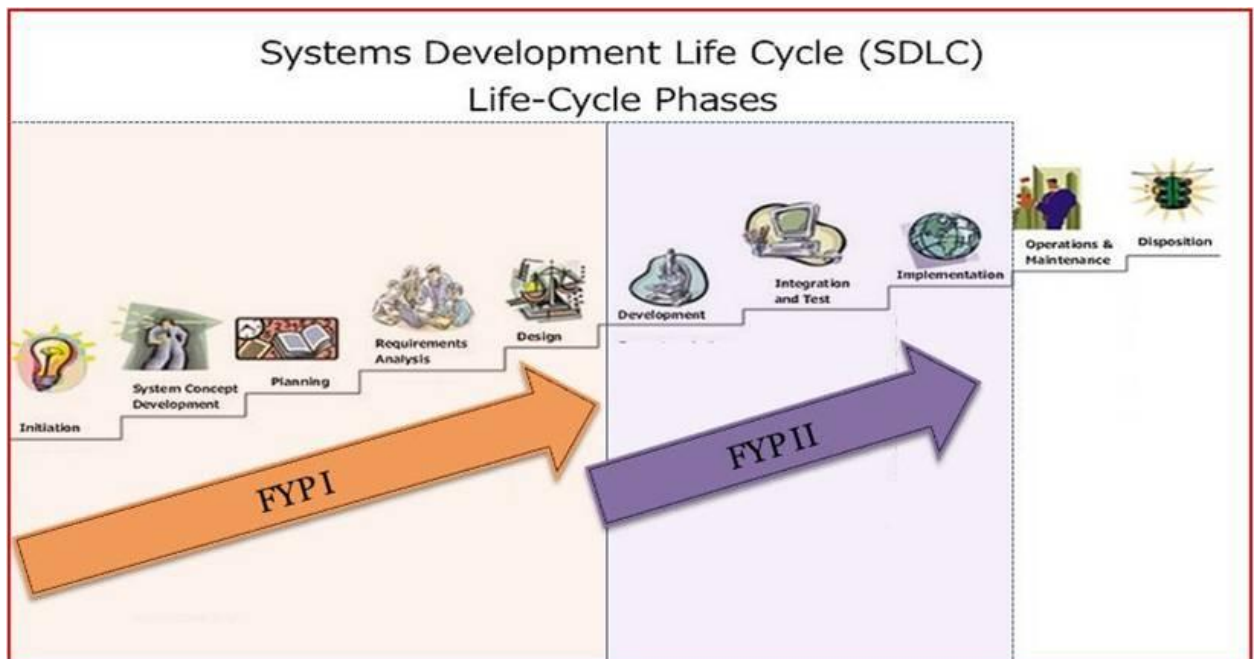


Figure 5: SDLC Life-Cycle Phases

Figure above shows the research flow in the System Development Life Cycle phase of the project that author developing. As seen above, several stages are completed in FYP I such as the planning, requirements definition, and design of the mobile application while in FYP II will be the development, testing packs and finally the implementation and maintenance of the developed project. RAD Prototyping Methodology has been choosing for the project as discuss further in this chapter.

3.2 Prototyping Model

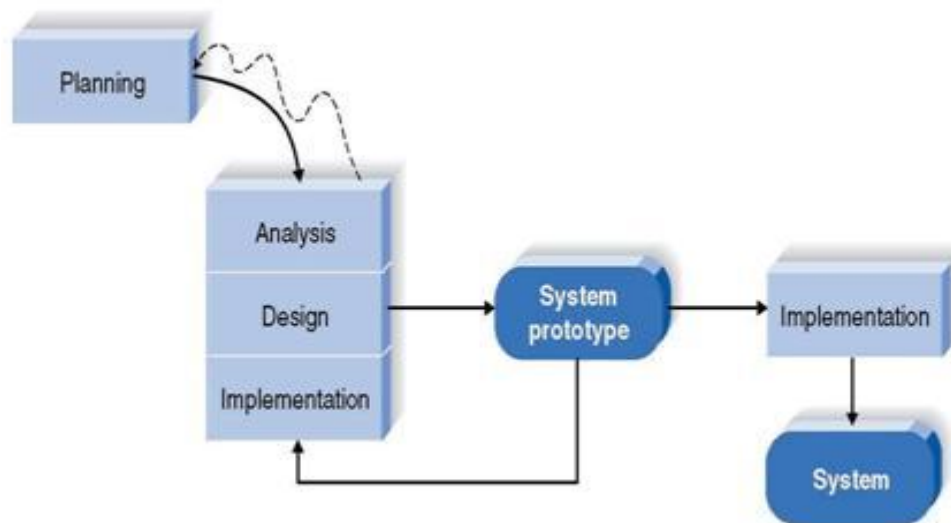


Figure 6: The Prototyping Model

Throw-Away Prototyping Methodology usually used when the process is likely to be changes as the project proceeds or when stakeholder have any changes or idea on the system. In order to producing a system prototype, all the Analysis, Design, and Implementation phase will perform at the same time and on each circle. Through all the system prototype development, the cycle will continually repeat based on comments until the system prototype successfully meets the requirements. After all the changes have been made, the last prototype will then be called the system. Prototyping development needs only initial basic analysis and design. Thus there is a possibility to

revise the initial design decision and start all over again from the beginning [14]. The advantage of using prototyping model is it can deliver system quickly to users, though it not exactly meeting the requirements.

As shown in figure above, this methodology are divided into 4 (four) phases which are Planning, Analysis, Design, and Implementation.

3.2.1 Planning Phase – Data Gathering

The first stage is planning where the author finds the main reason why system should be built as well as understanding its requirement by:

➤ **Primary Data**

Survey and questionnaires are generally a common way to collecting data and give a quantitative analysis as a result. The questionnaire will be designed to the level of awareness on the use of multimedia in learning Jawi effectively, market availability, and whether teachers or parents need the system.

➤ **Secondary Data**

Interview can be done to collecting data. Interview is one of the basis or guide to develop questionnaire. By conducting interview, author also can get additional information related to developing effective way to learn Jawi. In this case, interviewing Jawi's teacher will helps author to use or implement how Jawi's teacher teach their students learning Jawi in classroom to mobile application.

Other examples of secondary data are magazine, journals, and research articles.

➤ **Thinking-Aloud**

According to J. Nelson (1993) thinking aloud allows testers to understand how the user approaches the interface and what considerations the user keeps in mind when using the interface [15]. Users also have been asked to verbalize their thoughts, feelings, and opinions while interacting with the systems.

Use case diagram has been developed in planning process. Use case diagram will define the services provided by the application to the user. Figure 7 below shows interaction between users with the application.

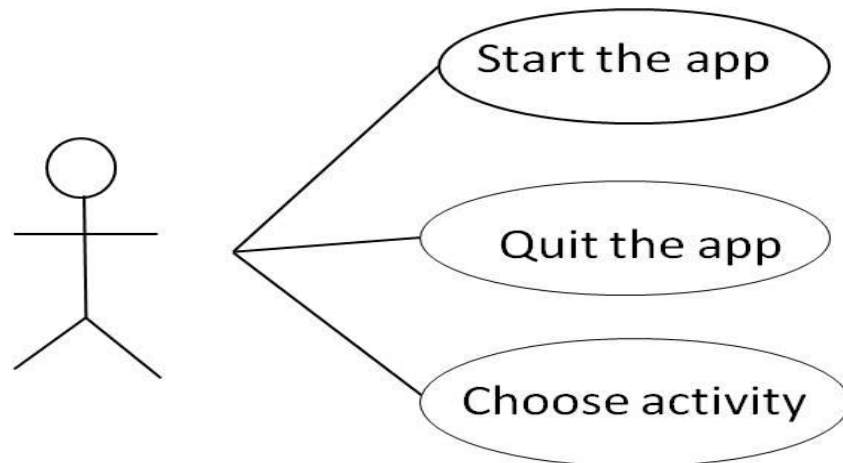


Figure 7: Use Case Diagram

As shown in Figure 7, when opening the application, user will able to choose either wants to start using the application or close it. When user click on start or "Mula", user will go to next screen which user will be able to choose several learning activities that will be mention further in System Development section.

3.2.2 Analysis and Requirement Definition Phase – Data Analysis

The purpose of doing analysis is to analyze and organize the data and information that has been gathered. When the analysis of the project has ended, the author should know what prototype will look like and its function (storyboard). This should give guidance to the developers when developing the product.

Mobile apps – J-QAF

- i-Jawi mobile application is designed according to J-QAF standard

Interactive and attractive HCI

- Simple interface, Colorful interface and Uses of image

Figure 8: Analysis and Requirement Definition

Other than that, during this stage, the author should identify the importance of mobile technology towards Jawi effective learning.

3.2.3 Design Phase – System Development

The design phase determines how the system will look like and how its work base on the interface designs. By referring to analyzed data will helps in developing or designing appropriate interface for attract students at age 7 (seven) to learning Jawi. Design and interface of the application are shows as below.



Figure 9: Interactive Jawi interface (propose)

In the development phase, before demonstrate through mobile devices, a personal computer will be used as a workstation to execute current android development process. To ensure compatibility to other Android phones with different screen resolutions, the android virtual device manager is used to emulate different phones from the computer.

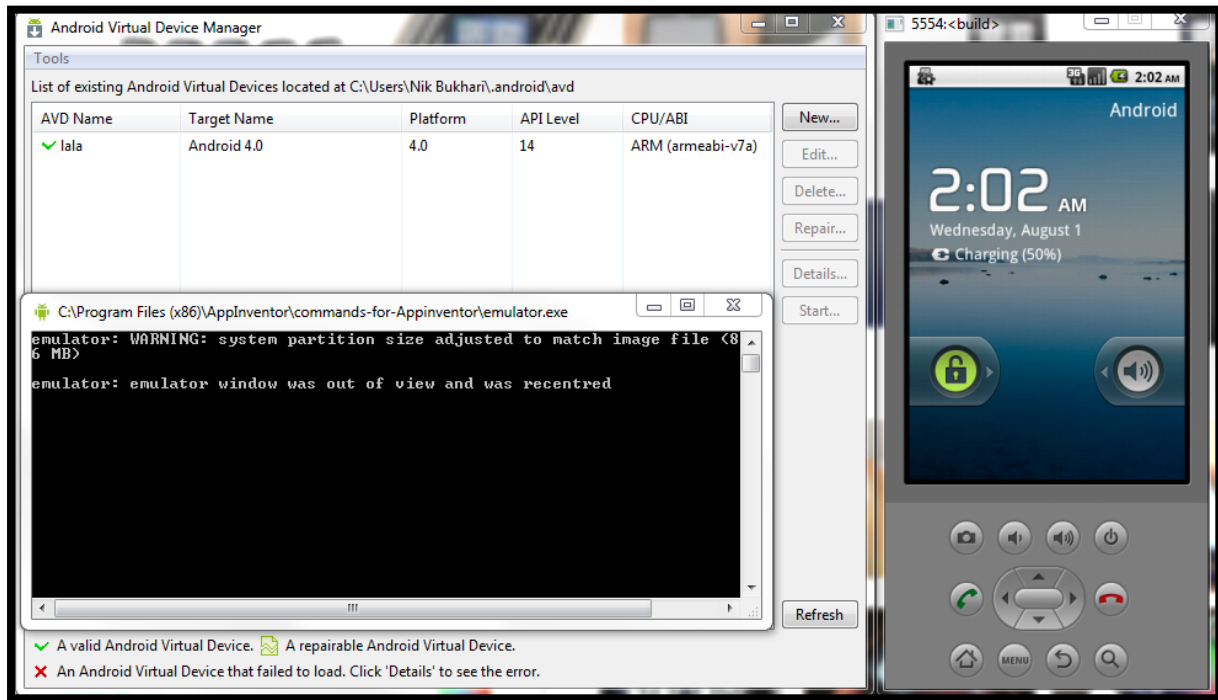


Figure 10: Android Virtual Device Manager

In developing Interactive Jawi, by using App Inventor author manage to come out with first screen of the application as shown in figure below.



Figure 11: First screen of Interactive Jawi application

Author has chosen background that able to attract children and familiar to them such as outdoor place which have green environment and sky plus using bear as a “friend” for children. Screen will move to Home screen that shows menu button that will be select by user base on their desire. Author manages to arrange the sequence of menu base on J-QAF syllabus which are introduction to Jawi (Apa Itu Jawi?), let’s learn Jawi alphabets (Mengenal Jawi), writing Jawi (Menulis Jawi), and a game called as wording arrangement (Susun Perkataan). Figure 11 below is a screenshot of the menu screen.

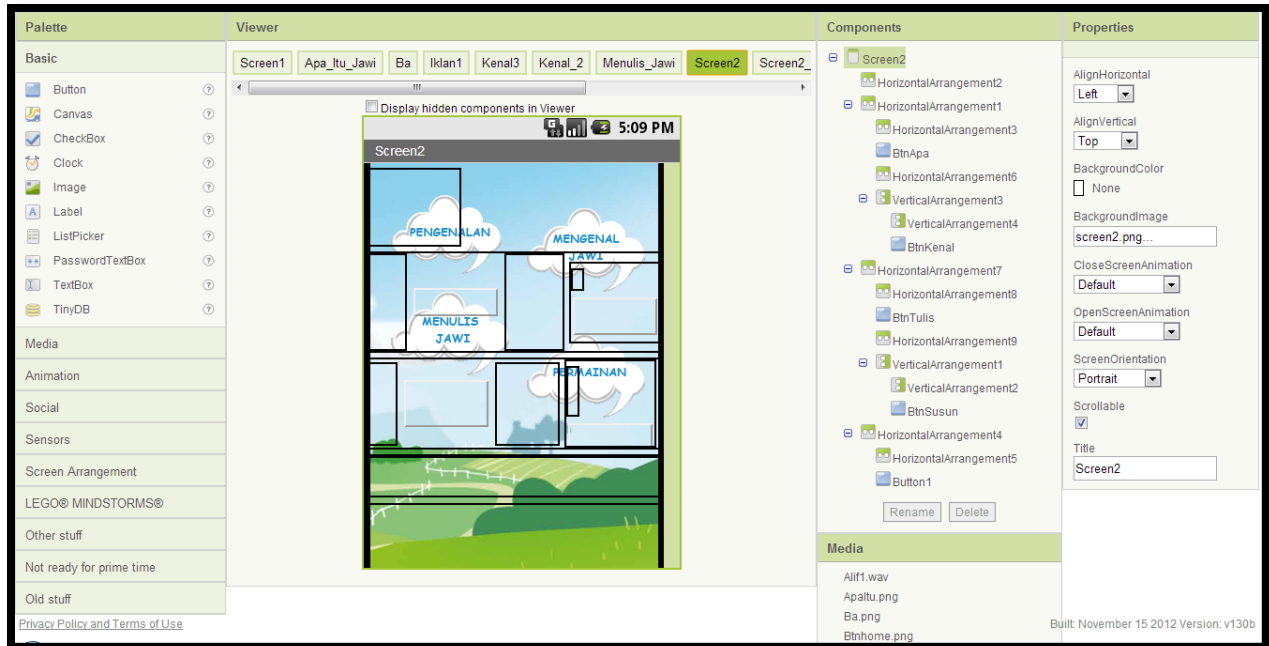


Figure 12: Menu Screen

3.2.4 Implementation

Implementation is a phase where the system is tested after several times of changes on prototype. In this stage, minimal changes usually occur. Opinion and more information get from target user after experienced with the prototype. Once the users satisfied with the prototype, final product now can be used for all users.

Two tests will be conduct in implementation phase which is pre-test and post-test.

- Pre-Test

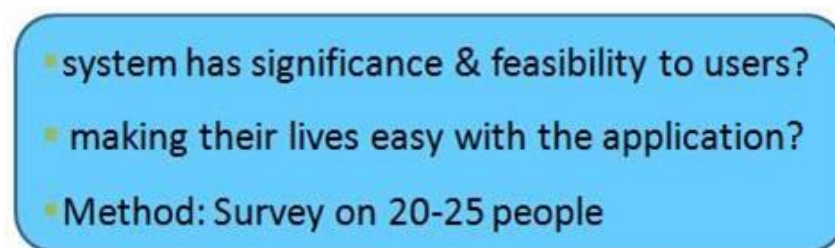


Figure 13: Pre-Test Technique

- Post-Test

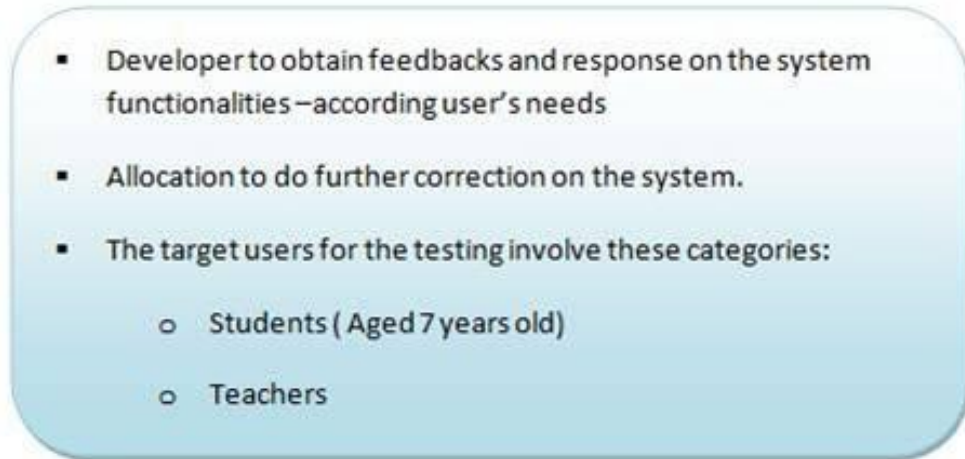


Figure 14: Post-Test Technique

3.3 Project Activities

The project activities from here on include the key milestone for the mobile app and the flow of Gantt chart.

3.3.1 Key Milestone

The purpose of having key milestone is to ensure the deliverable can be complete in time even problems occur during process of developing project.

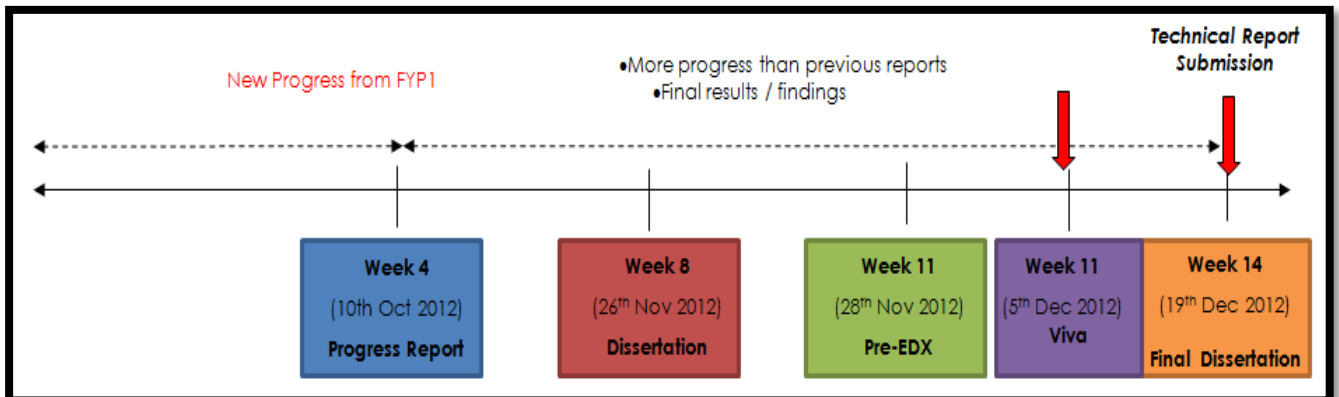


Figure 15: Key Milestones

3.3.2 Gantt Chart

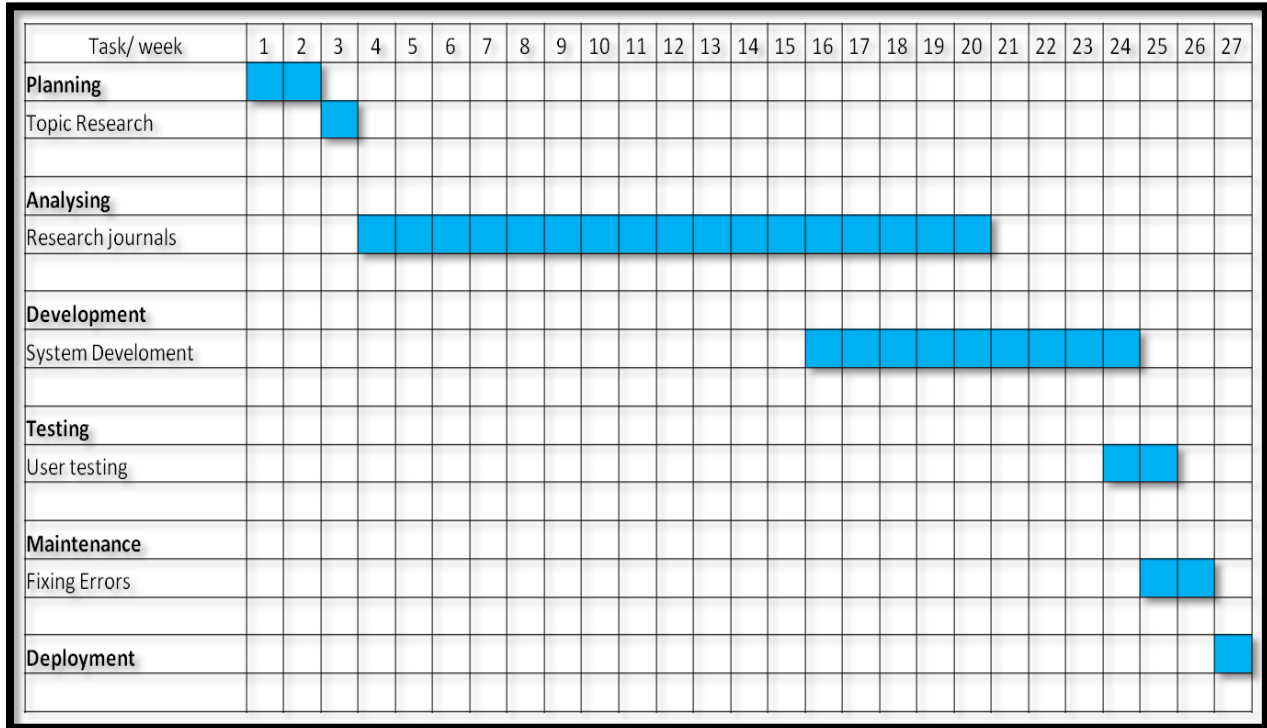


Table 1: Project Gantt chart

3.4 Tools

3.4.1. Hardware

For this project, author chooses to use mobile devices which is android compatible devices such as Samsung smartphone demonstrate the completed system. In the development phase, a personal computer will be used as a workstation before demonstrate through mobile devices.

Android platform- Samsung smartphone, Personal computer with processing speed of 1.5 GHz and sufficient RAM and hard disk space.



Figure 16: Hardware, Samsung Galaxy S

Items	Descriptions
Storage capacity	8 GB/16GB storage, 512 MB RAM, 2GB ROM and microSD slot
Memory	512 MB
Display	480 x 800 pixels, 4.0 inches (~233 ppi pixel density)
Graphics	PowerVR SGX 540
Input	Super AMOLED capacitive touchscreen
Weight	119 g

3.4.2. Software

For the software, the author had chosen Wireframe Sketcher Studio and Adobe Photoshop CS4 as the software to develop interface for the application. For developing android application, MIT App Inventor had chosen as the development tool of the prototype. App Inventor for Android is an application originally provided by Google and

now maintained by the Massachusetts Institute of Technology. It's let people to develop application for Android phone using web browser and using phone or emulator for connector. The App Inventor server is uses to store all the work and help in keep track on the project.

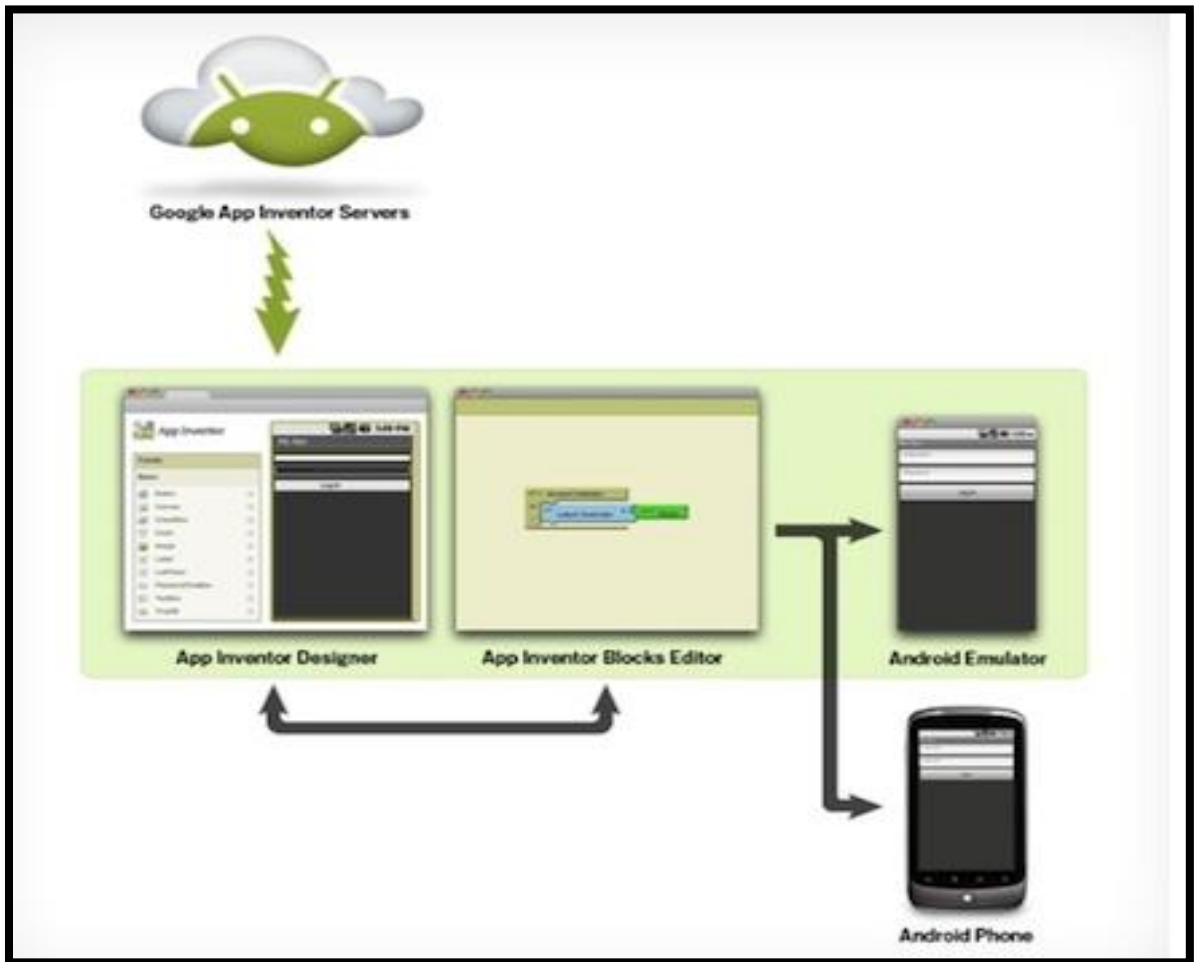


Figure 17: App Inventor process flowcharts

CHAPTER 4

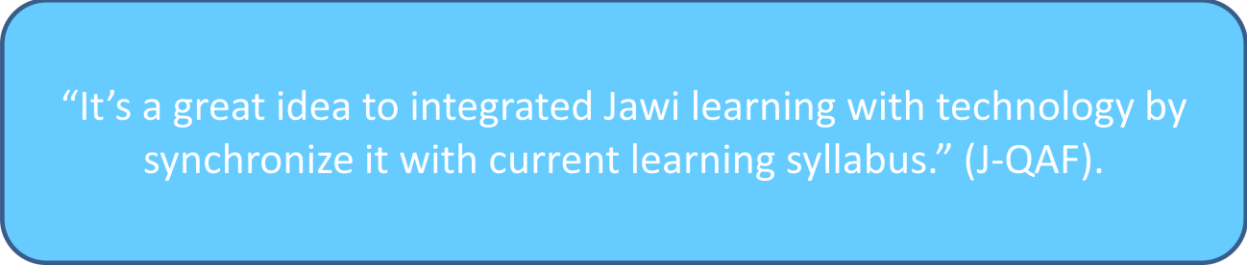
4. RESULTS AND FINDINGS

4.1 Interviews Pre-test

Interview has being conducted to identify and analyze all data gathered from Pendidikan Islam lecturers. By doing the interview, author able to get lecturers that involve in teaching J-QAF point of view. It will strengthen the fact and verify the worthiness of developing the project.

Objective of the interview is to gain more knowledge and information regards to Jawi learning which base on J-QAF syllabus. It will ensure process of developing project will align with the syllabus.

4.1.1 Interview with Ustazah Baizura



“It’s a great idea to integrated Jawi learning with technology by synchronize it with current learning syllabus.” (J-QAF).

Figure 18: Interview with Pendidikan Islam (J-QAF) teacher

According to Ustazah Baizura, Pendidikan Islam teacher from SK Seri Iskandar, while adopting education especially in context of learning Jawi with technology, it will give new experience to students. With that, it will encourage them to learn Jawi.

4.1.2 Interview with Ustazah Mardiyah

“This application will help children to have better learning experience however my main concern is either the content can cater the syllabus within their age.”

Figure 19: Interview with Pendidikan Islam (J-QAF) teacher

During the interview with Ustazah Mardiyah, Pendidikan Islam teacher from SK Seri Iskandar, she mentions the important of learning Jawi in current modern era. It is because if people tend to forget the writing script, it will vanish from the world. In addition, she also concern about how the content in J-QAF syllabus can be embedded in the application.

4.2 System Flow

System flowchart will show people on how each of the component in the system works. Figure below shows system flow of Interactive Jawi application.

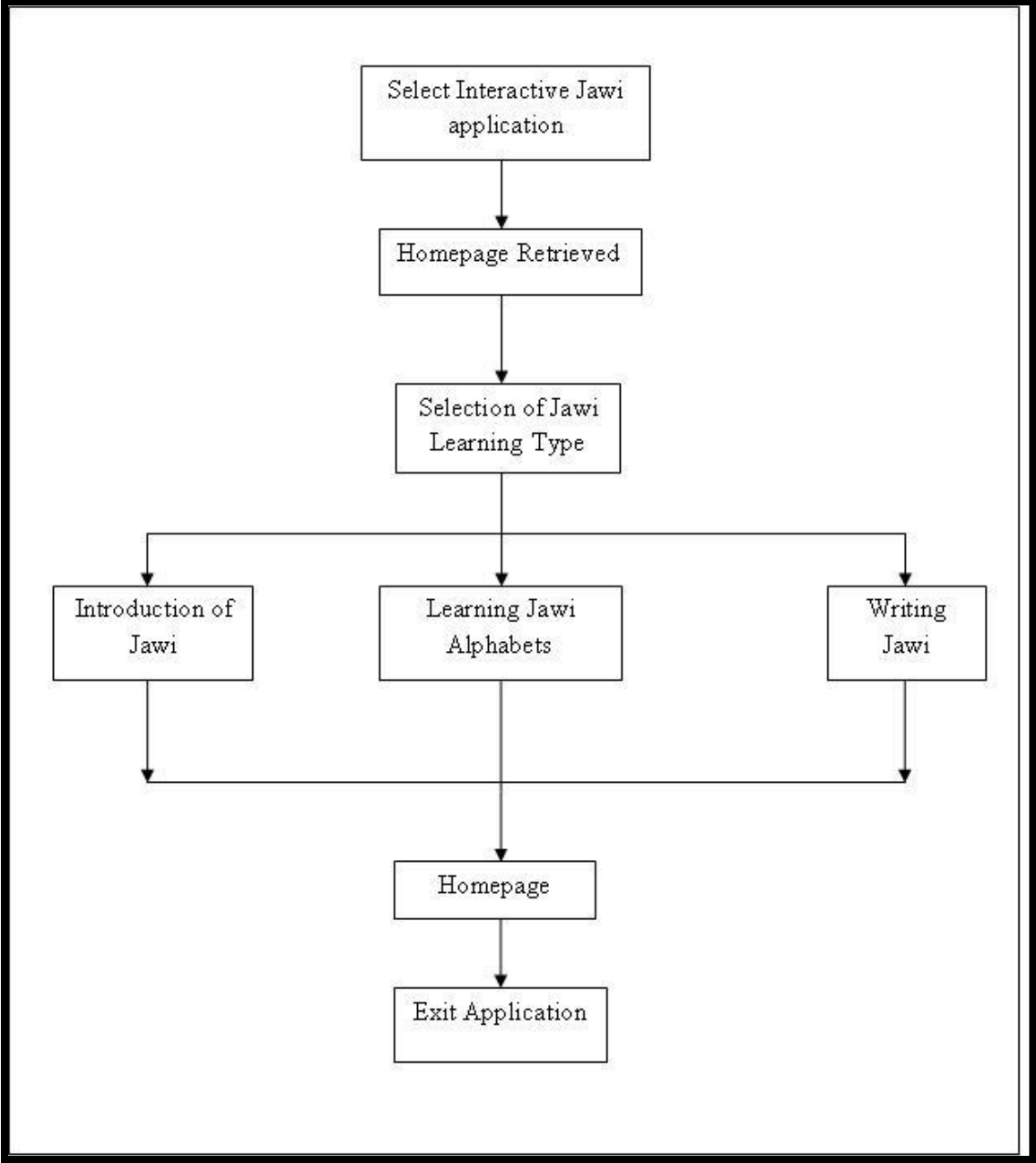


Figure 20: System Flow

4.3 Storyboard Interface

4.3.1 Welcome Screen

The system starts out in the welcome screen which contains the title of the application. Background music is play for make children attractive to the application when it opens. User click 'MULA' to continue.

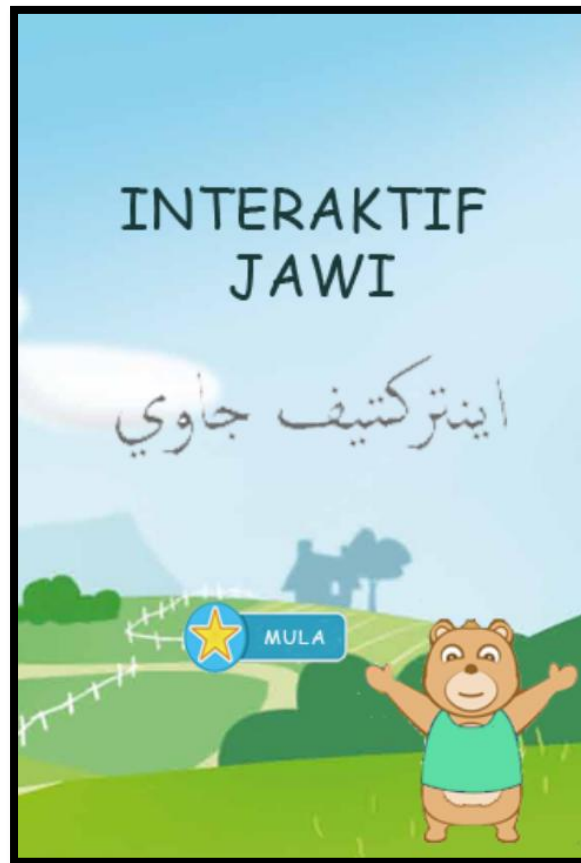


Figure 21: Screenshot of Welcome Screen

Welcome screen is an important screen of the application. The title of the application is clearly shown in the first screen. The background of the screen and also the whole application should be suitable with the topic and module to make it more interesting.

4.3.2 Menu Screen



Figure 22: Screenshot of Menu Screen

In menu screen, all selected topic are shown. It is the page to briefly explain the objective of the application. User can choose to any screen to start using the application. Menu are arrange base on stage of study which are Pengenalan, Mengenal Jawi, Menulis Jawi and Permainan.

4.3.3 Introduction Screen (Pengenalan)



Figure 23: Screenshot of Pengenalan Screen

Pengenalan is about introduction of the I-Jawi application. When user click on Pengenalan at Menu Screen, this screen will appear and narrator will read the introduction for user. The purpose of it is to catch children attention. User can click to home button to go back to menu screen.

4.3.4 Mengenal Jawi Screen



Figure 24: Screenshot of Mengenal Jawi

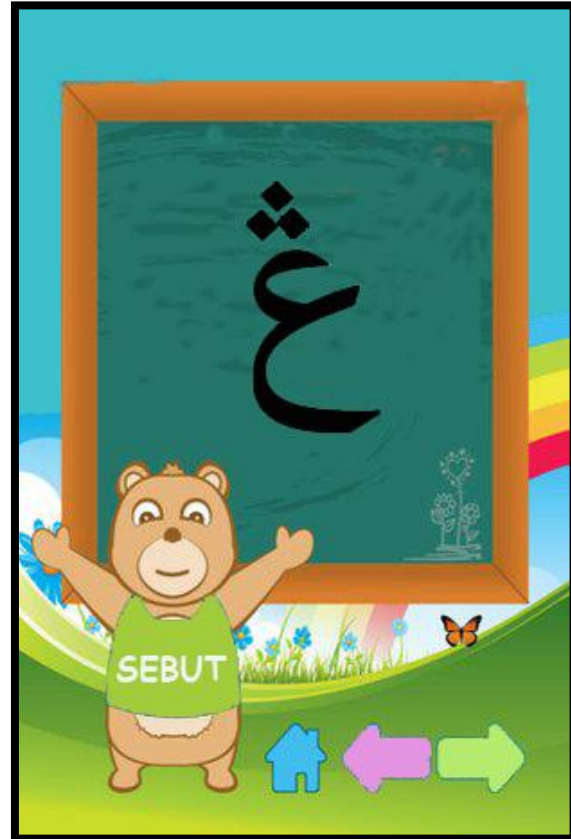


Figure 25: Screenshot of Mengenal Jawi

When user click Mengenal Jawi from menu screen, Figure 24 will appear and user need to click 'Seterusnya' to continue with learning jawi as example on Figure 25. In this section, user will learn jawi alphabets. When the screen appears, narrator will tell user pronunciation for the alphabets. User can click on 'Sebut' to play again sound for the alphabets. User can click on next button to continue the learning jawi alphabets.

4.3.5 Menulis Jawi

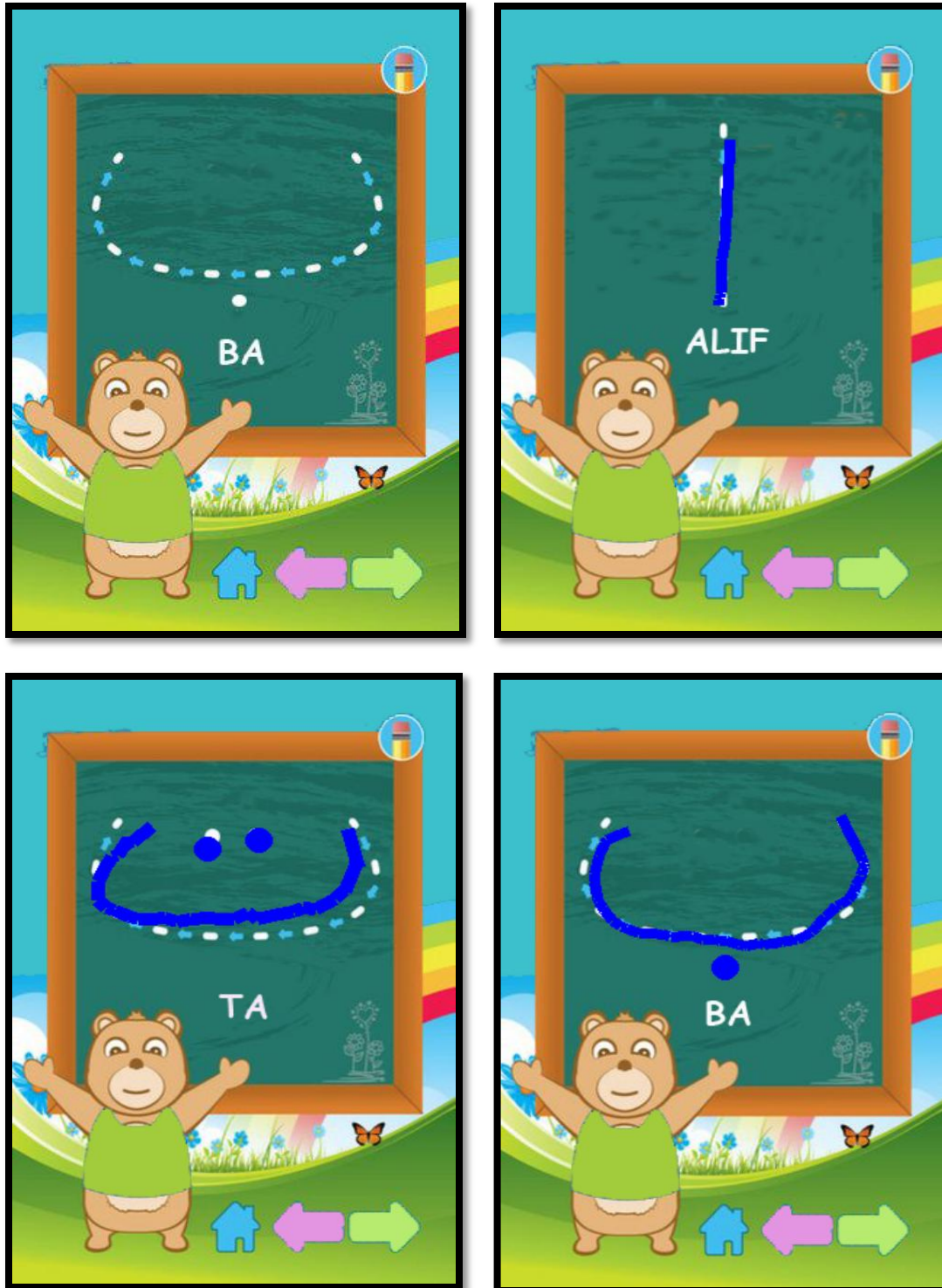


Figure 26: Screenshot of Menulis Jawi

In Menulis Jawi, user will able to learn how to write jawi alphabets. User can write on the smartphone screen by following the arrow. This is the method use for writing jawi. The eraser on the top right corner of the screen is use for delete the writing or as reset button.

4.3.6 Last Screen



Figure 27: Screenshot of Last Screen

4.4 Testing

For this section, author had invited 5 android developer cliques to test the prototype. 2 questions were given to the tester after tried the prototype. These questions aim to improve the prototype

model in order to help the end product meet the requirement. Tester need to rate based on scale 0 to 5 when 0 determine by “disagree’ and 5 is “very good”. Questions asked listed below.

Prototype Feedback Form:

1. What do you think about the GUI. Is it suitable for children at age 7?
2. How easy do you navigate through the application?

The analysis from the survey stated as per below:

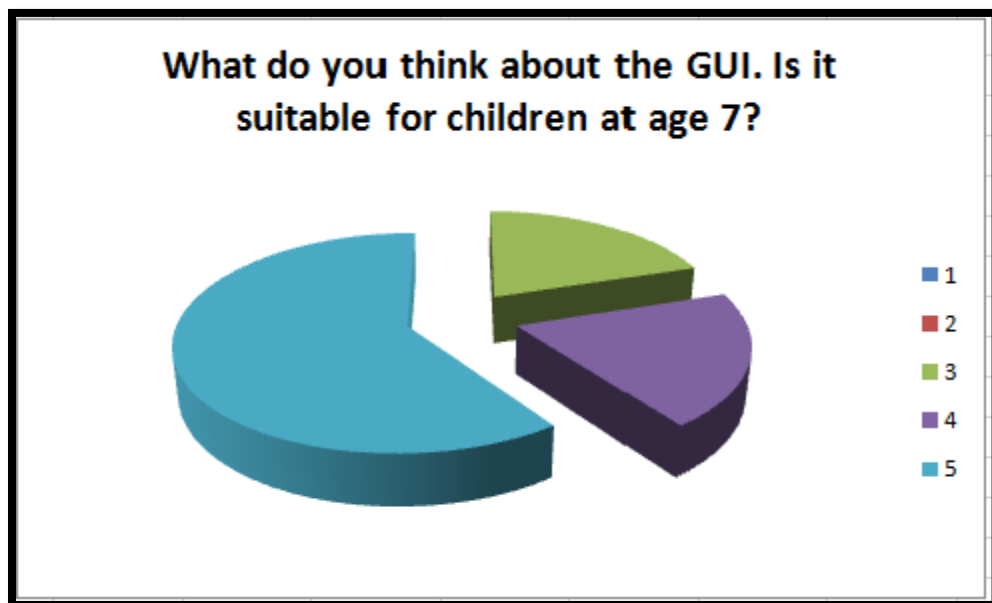


Figure 28: Prototype feedback (Question1)

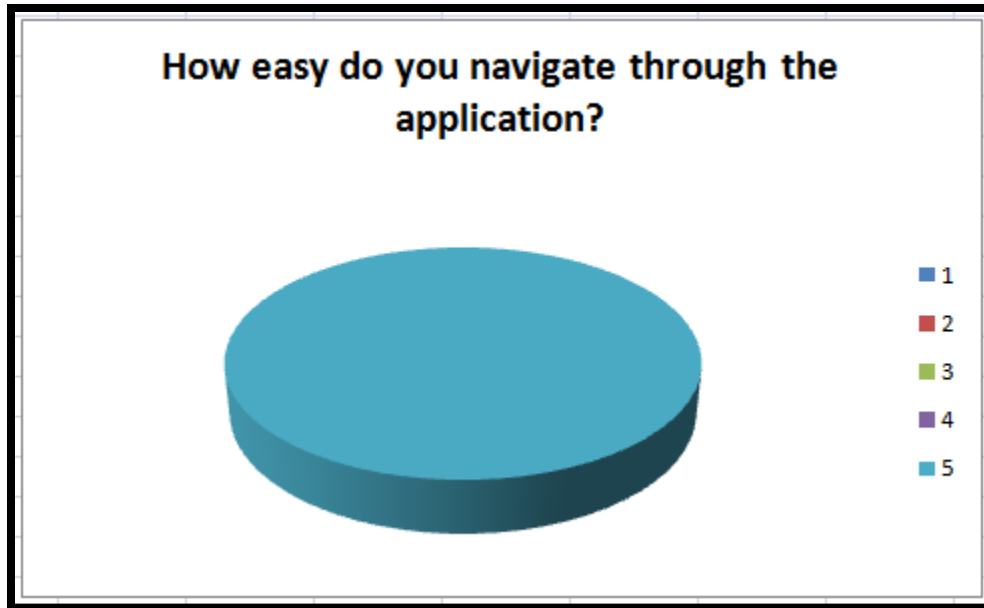


Figure 29: Prototype Feedback (Question 2)

4.5 Post-Test

Post-test interview was conducted in order to get feedbacks from users. All interviewees are school teacher. Participants require doing testing of the application regarding on how attractive, interactive and suitable the application for children in learning Jawi. All participants are aware with the objective of the project as it's already been briefed before. Four teachers from 2 different schools are involved in the pre-test session.

The questions of post-test are listed below:

1. Do you think the application is attractive, interactive and suitable for children at age seven? Agree or Disagree.
2. Do you think the application would help children at age seven to learn Jawi? Agree or Disagree.
3. Do you think the application follows J-QAF standards? Agree or Disagree.
4. As a teacher, do you think this application would benefits you? Agree or Disagree.

The results are shown below:

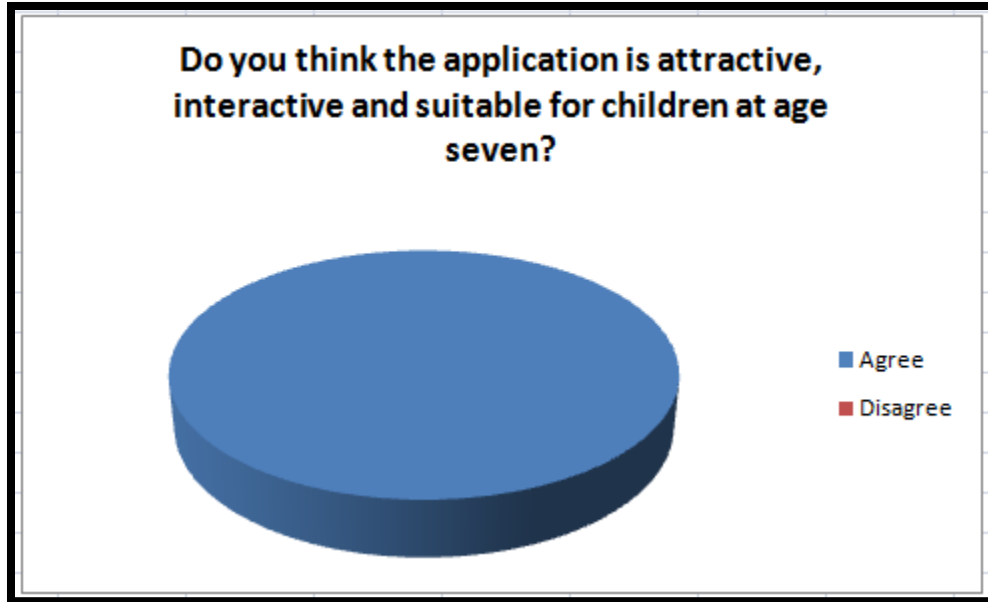


Figure 30: Post-test Feedback (Question 1)

All four participants agreed that the application is attractive, interactive and suitable for children at age seven.

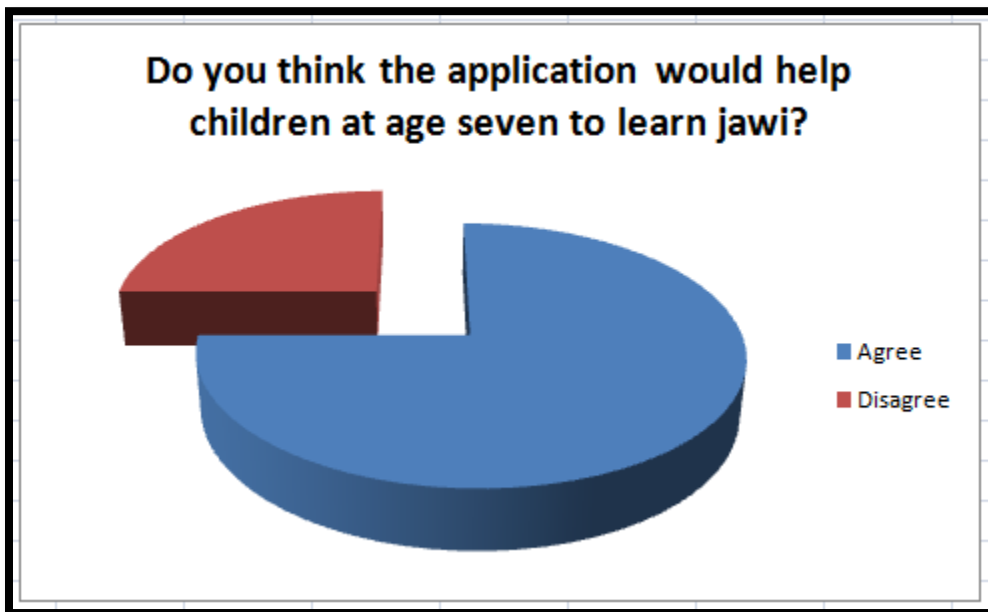


Figure x: Post-test Feedback (Question 2)

Three out of four participants agreed the application would help children at age seven to learn Jawi while one disagreed.

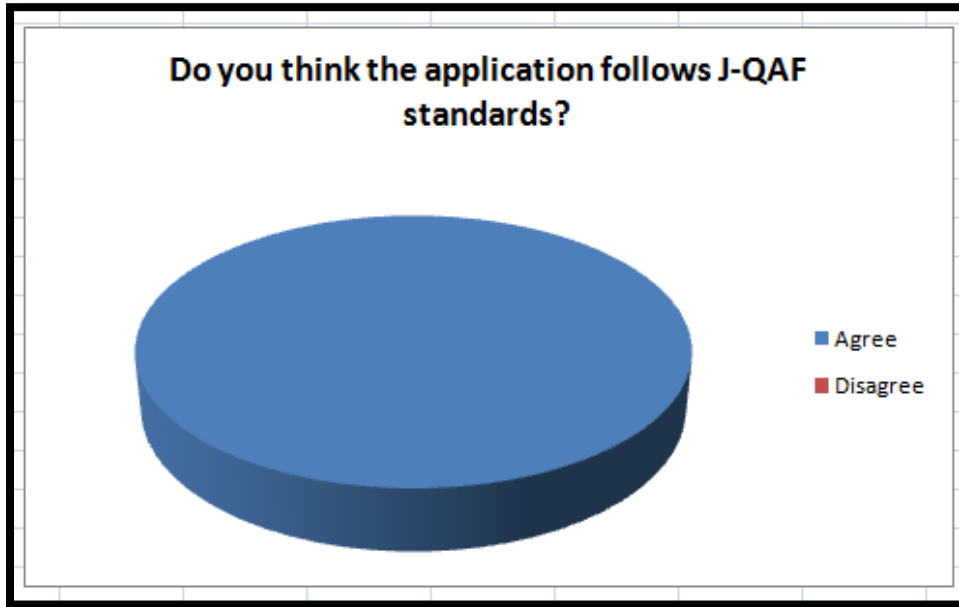


Figure 31: Post-Test Feedback (Question 3)

All of the participants agree that the application follows J-QAF syllabus and standards.

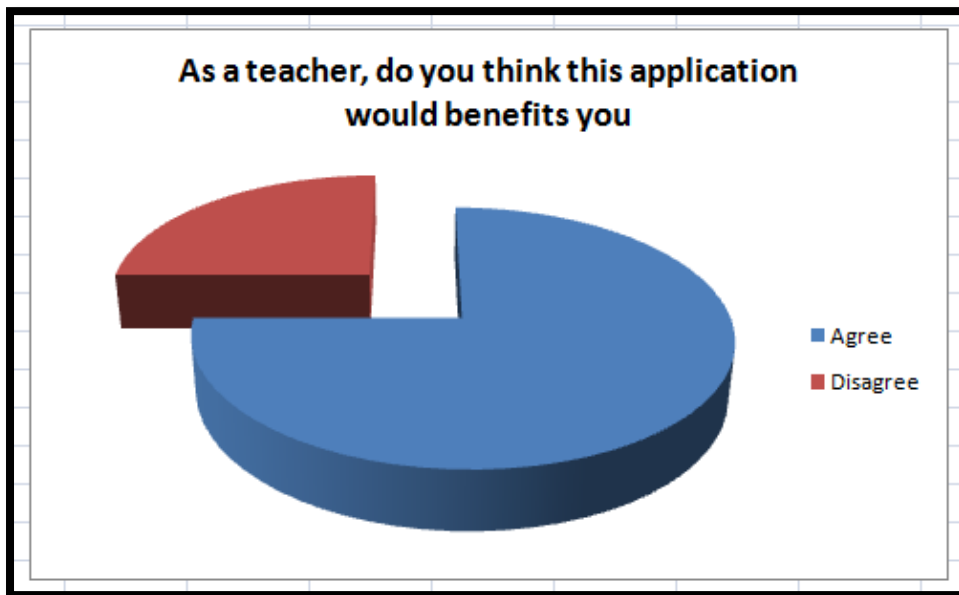


Figure 32: Post-Test Feedback (Question 4)

Three out of four participants agreed that the application would benefit them in teaching Jawi. Only one participant disagreed.

CHAPTER 5

5. CONCLUSION

5.1 Conclusion

In point of fact, the proposal of this project can be successful in term of planning because teachers agreed to help author to develop the application in term of content for the application. Interactive Jawi for children at age seven more focuses on interaction between user and the application itself. Many students at age seven still confuse with Jawi alphabets when at different position in word. While having difficulties on recognizing the alphabets, it makes them hardly to write Jawi.

As a whole, this report is focus to propose relevant topic that integrates between learn Jawi which base on standard of current syllabus which is J-QAF with the advancement of the current technology. Interactive Jawi application using current growing technology, android platform was develop in order to help students at age seven to learn Jawi.

The application provide element of multimedia that can make children attract to learn such as picture, animations, text, and audio. With this, it can make learning more interesting.

In the report, all research and investigation has been done to show how mobile application technology can ease people in their life. Along the report, methodology that been used were discuss in order to gather all data and information for succeed of developing the project. Furthermore, to support the data collected earlier, results and findings were shared in the report. Looking back to objectives of the project which are:

- 1) To provide interactive learning platform for children age 7 (seven) in learning Jawi.
- 2) To identify basic guidance to learn Jawi using J-QAF syllabus.
- 3) To propose an android application based on the criteria/s of J-QAF standards in order to assist children in learning Jawi.

5.2 Recommendations

In the near future, the following will be where this project will be heading to be implied and how will it grow from its current status:

- To widen the scope to children at age 8 and above.
- Add more activities into the application.
- To develop android using other platform because of its limitation.
- More sounds and narration would improve the project in the future.
- To further develop the mobile application and ready to be published into the android market itself ready to be used worldwide.
- Extend the abilities of the application and make it ready to even be published for android tablet.
- Extend the abilities of the application and make it ready to even be published in the iOS platform.

References

- [1] Wikipedia, "Wikipedia," Tuesday June 2012. [Online]. Available: <http://en.wikipedia.org/wiki/Smartphone>. [Accessed Saturday June 2012].
- [2] E. P. Magazine, "PC Magazine," 17 April 2010. [Online]. [Accessed 5 June 2012].
- [3] N. R. N. Yaacob, "Penguasaan Jawi dan Hubungan dengan Minat dan Pencapaian Pelajar dalam Pendidikan Islam," 2007. [Online]. Available: [http://web.usm.my/education/publication/JPP%20Nik%20Rosila%20ART%2010%20\(161-172\).pdf](http://web.usm.my/education/publication/JPP%20Nik%20Rosila%20ART%2010%20(161-172).pdf). [Accessed 14 July 2012].
- [4] Birkenholz, "UMSL," 1999. [Online]. Available: <http://www.umsl.edu/services/ctl/DEID/destination2adultlearning/2blearning.html>. [Accessed 1 August 2012].
- [5] LANGUAGELIZARD, "blog.languagelizard," September 2011. [Online]. Available: <http://blog.languagelizard.com/2011/09/27/6-reasons-why-children-should-learn-languages-as-early-as-possible/>. [Accessed 24 June 2012].
- [6] Thesaurus, "Thesaurus.com," 2012. [Online]. Available: <http://thesaurus.com/browse/effective>. [Accessed 24 July 2012].
- [7] C. Watkins, "Effective Learning," *NSiN Research Matters*, vol. Summer 2002, p. 17, 2002.
- [8] M. F. Nasharudin, K. Omar, M. S. Zakaria and & L. C.Y., 4 November 2010. [Online]. Available: <http://ieeexplore.ieee.org.eserv.uum.edu.my/stamp/stamp.jsp?tp=&arnumber=4627015&tag=1>. [Accessed 14 June 2012].
- [9] N. M. Diah, M. Ismail, P. M. A. H. Mazlan and & S. Ahmad, "Academia.edu," Uitm, 25-28 September 2011. [Online]. Available: http://uitm.academia.edu/norizanmatdiah/Papers/1002821/Assisted_Jawi-Writing_AJaW_Software_for_Children. [Accessed 11 July 2012].
- [10] Jabatan, Pendidikan, Islam and & Moral, "Buku Panduan Pelaksanaan Pengurusan

- Kurikulum Dan Kokurikulum Program J-QAF," in *Buku Panduan J-QAF*, 2008, pp. vi-vii.
- [11] Kommers, "Journal of Computer Assisted Learning," 1996. [Online]. Available: <http://www.jcal.info/abstracts/2000/v162/index.htm>. [Accessed 14 July 2012].
- [12] Route, "ptar.uitm.edu.my," 2002. [Online]. Available: http://eprints.ptar.uitm.edu.my/1763/1/NOR_FADHILLAH_ABD_MANAP_05_24.pdf. [Accessed 14 July 2012].
- [13] Nor, Fadhilah, Abd and Manap, "ptar.uitm.edu.my," 2001. [Online]. Available: http://eprints.ptar.uitm.edu.my/1763/1/NOR_FADHILLAH_ABD_MANAP_05_24.pdf. [Accessed 14 July 2012].
- [14] W. Adi, "Slepi.net," March 2008. [Online]. Available: <http://www.slepi.net/blog/system-development/system-development-life-cycle-sdlc-methodologies.html>. [Accessed 15 July 2012].
- [15] J. Nielsen, "Usability Engineering," *Academic Press*, pp. 195-198, 1993.
- [16] A. J. Production, "Google play," amirjunior Production, 21 May 2012. [Online]. Available: https://play.google.com/store/apps/details?id=air.JomJawi&feature=search_result#?t=W251bGwsMSwxLDEsImFpci5Kb21KYXdpII0.. [Accessed 13 June 2012].
- [17] MIT App Inventor, "MIT App Inventor," 2012. [Online]. Available: <http://appinventor.mit.edu/explore/learn.html>. [Accessed 25 November 2012].
- [18] Channel 5 Broadcasting Ltd, 2012. [Online]. Available: <http://milkshake.channel5.com/programmes/bananas-in-pyjamas/fun-stuff/bananas-in-pyjamas>. [Accessed 17 October 2012].

