DESIGN AND DEVELOPMENT OF INTERACTIVE BOOK FOR *JAWI*

SUBJECT: PRIMARY SCHOOL

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DESIGN AND DEVELOPMENT OF INTERACTIVE BOOK FOR *JAWI*

SUBJECT: PRIMARY SCHOOL

NORADILAH BINTI MD YUSOF

This report is submitted in partial fulfilment of the requirements for the

Bachelor of Computer Science (Multimedia)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2017

DECLARATION

I hereby declare that this project report entitled

Design and Development of Interactive Book for *Jawi* Subject: Primary School

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

without citations.

STUDENT   :_____ Date : 28/8/2017

(NORADILAH BINTI MD YUSOF)

I hereby declare that I have read this project report and found

this project report is sufficient in term of the scope and quality for the award of

Bachelor of Computer Science (Interactive Media) With Honours.

SUPERVISOR   :_____ Date : 28/8/2017

(ASS. PROF. DR. NORASIKEN BINTI BAKAR)

DEDICATION

First, to my beloved family especially my beloved parents in completing this project and give full support for me to do this project. Thank you for all the support when I need them the most. Always pray for me also give me a lot of advice during the process to develop this project.

Second, to my supervisor, Ass.Prof. Dr Norasiken Binti Bakar, thank you for your guidance support during project implementation. Thank you for give me a chance to prove and improved myself during the process to develop this project.

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ABSTRACT

Interactive book is an electronic or digital book designed to include active reader participation via links or embedded reader-enacted functions. Jawi skills among children are important as the skills will help them in their Islamic education and it is required when reading the Qur'an, learning the Arabic language and all other Islamic religious subjects in Jawi. The aim for this interactive book are To identify the effectiveness elements of multimedia to interact the children and student in learning *jawi* such as video, animation, image, text and sound. Next, to design an interactive book about learning *jawi* including the elements of multimedia. Then, to develop an interactive book about learning *jawi* including the activity to learn *jawi* in effective way such as notes and quiz. Lastly, to evaluate the effectiveness of interactive book for learning *jawi* for children and students. This project development involves ADDIE model. The testing for this project was done at UTeM, Sekolah Kebangsaan Tun Syed Ahmad Shahbuddin Melaka and Sekolah kebangsaan Bandar Endau Johor. There are two types of testing. The first one is pilot test and the second one is per-test and post-test. Pilot test was done to find the Cronbach 'Alpha. After that can continue with the pre-test and post-test. The results are for Cronbach' alpha was accepted and the results from pre-test and post-test are proved that that learning with interactive book is more effective compared to learning the subject by teachers. As conclusion, this interactive book for *Jawi* subject is an alternative way to learn *Jawi* subject in digital. This is another version of *Jawi* subject for student standard 1. This interactive book gives a variety for student in learning since this interactive book meets its objective conclusively. Student should be able to differentiate and memorize the *Jawi* alphabets and the spelling.

ABSTRAK

Buku interaktif adalah buku elektronik atau digital yang direka untuk memasukkan penyertaan pembaca aktif melalui pautan atau fungsi terbaca pembaca yang terbenam. Kemahiran Jawi di kalangan kanak-kanak adalah penting kerana kemahiran akan membantu mereka dalam pendidikan Islam dan diperlukan apabila membaca Al-Quran, mempelajari bahasa Arab dan semua mata pelajaran agama Islam yang lain di Jawi. Tujuan buku interaktif ini adalah untuk mengenal pasti elemen keberkesanan multimedia untuk berinteraksi dengan kanak-kanak dan pelajar dalam pembelajaran jawi seperti video, animasi, imej, teks dan bunyi. Seterusnya, untuk merancang buku interaktif mengenai pembelajaran jawi termasuk unsur-unsur multimedia. Kemudian, untuk membangunkan buku interaktif tentang pembelajaran jawi termasuk aktiviti belajar jawi dengan cara yang berkesan seperti nota dan kuiz. Akhir sekali, untuk menilai keberkesanan buku interaktif untuk pembelajaran jawi untuk kanak-kanak dan pelajar. Pembangunan projek ini melibatkan model ADDIE. Ujian untuk projek ini dilakukan di UTeM, Sekolah Kebangsaan Tun Syed Ahmad Shahbuddin Melaka dan Sekolah Kebangsaan Bandar Endau Johor. Terdapat dua jenis ujian. Yang pertama ialah ujian perintis dan yang kedua ialah ujian per ujian dan pasca ujian. Ujian perintis dilakukan untuk mencari Cronbach 'Alpha. Selepas itu dapat diteruskan dengan pra-ujian dan ujian pasca. Hasilnya adalah untuk Cronbach 'alpha diterima dan hasil dari pra-ujian dan ujian pasca terbukti bahawa pembelajaran dengan buku interaktif lebih efektif dibandingkan dengan mempelajari subjek oleh guru. Sebagai kesimpulan, buku interaktif ini untuk subjek Jawi adalah cara alternatif untuk mempelajari subjek Jawi dalam digital. Ini adalah satu lagi versi mata pelajaran Jawi untuk taraf pelajar 1. Buku interaktif ini memberikan pelbagai untuk pelajar dalam pembelajaran kerana buku interaktif ini memenuhi objektifnya secara ringkas. Pelajar harus dapat membezakan dan menghafal huruf Jawi dan ejaan.
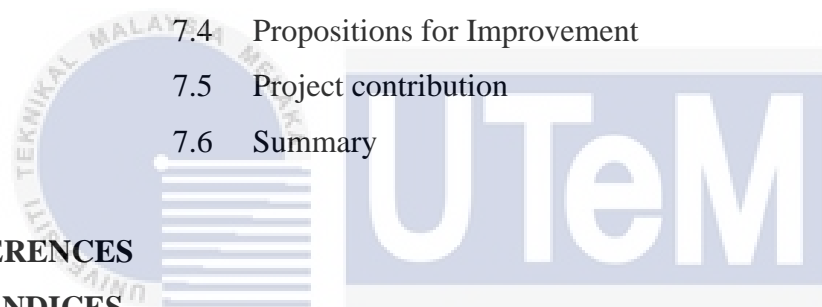
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CHAPTER 1

INTRODUCTION

1.1   Introduction

Interactive book is an electronic or digital book designed to include active reader participants via links or embedded reader-enacted functions. Interactive book allows the user to interact with the characters in a way that makes the experience more real and fun (Stephan, 2011).

The aim of this project is to recommend a learning process to young learner to recognize alphabets, numbers, spell and read in *Jawi*. *Jawi* skills among children or student are important as the skills will help them in their Islamic education. It is required when reading the Qur'an, learning the Arabic language and the other entire Islamic religious subject in *Jawi* (Ahmad, 2014)

The Qur'an and hadith nowadays are using Rumi words. *Jawi* commonly used by teachers as a tool or medium to teach these subject in school and teach them to use it all the time to make sure they can read and write in *Jawi* fluently (Ahmad, 2014)

This interactive book has all types of multimedia that can attract the children in learning process. The skills that used in this interactive book design to attract children by video, animation, text, sound, and graphic. This interactive book is full with colour to attract children or student in their learning process.

Jawi is a Malay Language writing system whose characters are similar to Arabic characters. However, not all people can read and recognize each *Jawi* alphabets very well (Noor, 2011). This interactive book aims to help children and student to read and write *Jawi* letters and fluently.

1.2   Problem Statement

Children nowadays do not know how to read in *Jawi* words. It is difficult to them to read the Qur'an and hadith because nowadays the Qur'an and hadith are using the Rumi words instead of jawi is commonly used by teachers as a tool or medium to teach these subject in school and teach them to use it all the time to make sure they can read and write in *Jawi*. (Ahmad, 2014)

Learning *jawi* in school are not interesting with element of multimedia such as video, audio, image, text and animation. Generation nowadays low interest in *Jawi* and gradually forgotten either in writing or reading. They used Rumi words to read all the religion subjects in Rumi. As we know, *Jawi* is not important and that subject is not assessed in the national level examinations.

Many children and student do not interest toward *Jawi* because they found it to be very difficult, felt it is not important and that subject is not assessed in the national level examinations. (Ahmad, 2014)

1.3   Objectives

This project embarks on the following objectives:

i)   To identify the effectiveness elements of multimedia to interact the children and student in learning *jawi* such as video, animation, image, text and sound

ii)   To design an interactive book about learning *jawi* including the elements of multimedia.

iii)   To develop an interactive book about learning *jawi* including the activity to learn *jawi* in effective way such as notes and quiz.

iv)   To evaluate the effectiveness of interactive book for learning *jawi* for children and students.

1.4   Scope

1.4.1   User

Target user for this project is basically for all users but especially it is for primary school student in age 7 to 9 to them learn and understanding about the basic learning *jawi*

1.4.2   Module

The project will cover 4 modules as presented in table 1.1:

Table 1.1: Jawi for Primary School Student

Chapter	Content
Chapter 1	Learn *jawi* alphabet
Chapter 2	Learn *jawi* numbers
Chapter 3	Learn to spell in *jawi*
Chapter 4	Learn to read in *jawi*

1.4.3 Element of multimedia

The projects cover the elements of multimedia as presented in table 1.2:

Table 1.2: Element of multimedia involved in this interactive book

Multimedia Elements	Chapter involved
Audio	All chapter
Video	Chapter 1
Animation	Chapter 2
Text	All chapter
Graphic	All chapter

1.5   Project Significant

This research is carried out to improve the understanding of learning *jawi* in primary school; children and student enjoyed using this interactive book.

1.6   Expected output

The expected output of this project is interactive book that has been develop with fulfil the entire objective and achieved the entire requirement. Interactive book can help children in their learning process and can gain children understanding about *jawi*.

1.7   Summary

In conclusion, the explanation about this project has been cover in this chapter. The objectives was stated and explained. The Gantt chart will be the guidance to develop the project until the end. In the next chapter, it will cover the project methodology that been used for the development of this project.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

There are many methods that used to learn in *jawi* words such as from book, YouTube, Facebook video, webpage and so on. From there, can learn, spell, read and can practice it when reading the Qu'ran, hadith and all other religion subject in *jawi* without referring to *Rumi* and no need to translate to other language. Interactive book is the one of the way that children nowadays can learn with all type of multimedia elements in this interactive book such as audio, video, animation, text and image. Interactive is the easy learning for kids because it is offline learning and it is free and no need to connect with the internet and can have it in smartphones, iPad and other gadget. Many researches have been done in a few sectors to understand and explain on every sector in detail. The related sources have read and understand to filter out important facts from each sector. Those facts then were extracted to be used as supporting factors of this project.

2.2 Domain

Interactive books are a sub-genre in children's literature that required participation by the reader. Reader interaction is vital to the progression of the story. Interactive books engage the reader and pull them into the story. This includes books that incorporate the use of modern technology or computerized books.

An eBook, i.e. a book in digital format, may have purely textual content, or could be enriched with any type of multimedia material, such as pictures, animations, sounds, videos, games, etc. in this article "*Interactive e-Books for Children IBooC2013 Workshop at IDC Interaction Design and Children New York City, June 24-27 2013*" tells that design interactive e-books for children in order to create effective tools for increasing the achievement of educational and cognitive benefits, as well as fostering children' engagement, enjoyment, and fun (Nadia, 2013)

Interactive book allowed us to gather some interesting information on how children use an enhanced eBook and also some useful indication on how to organize a more significant experiment. From their research they found that not all the children activate animations when reading an enhanced Interactive book and those who activate no or very few animations are those who better understood and memorized the story. As future work, propose a longitudinal test with at least 30 children, reading more than one enhanced eBook (Nadia, 2013)

In the next article title Development of an Interactive textbook for command-shaping control methods stated that the success of the iPad has led to a revolution in portable computing. Many universities, high schools and elementary school are capitalizing on this revolution by generating curricula to exploit portable touchscreen devices. Important goals that achieved are integrating tablet computers into classrooms and improved learning.

An interactive textbook offers many capabilities, and it requires both authors and students to reconsider how a book looks and works. Interactive textbook can provide significant features that traditional textbooks cannot (Singhose, 2014).

Next article title Creating Interactive IBook for Academic Writing among Undergraduate Students in a Malaysian University stated that exploring the development and use of an interactive iBook, which includes opportunities for readers to read independently (Adelina, 2015)

The iPad iBooks software, iBooks and iBooks Author, offer an innovative way for students to explore and learn about the world; it is interactive, potentially sensitive to learner accessibility with features like text-to-speech and highlighting of critical information, and may be useful in advancing the executive functioning performance of students with disabilities (Barkley, 1997; Meltzer & Krishnan, 2007).

2.3   Elements of multimedia

2.3.1   Audio

The concept of interactive audio aims to combine complex narratives with multimedia elements from adventure and from the audio can attract people to listen to the audio (Nikhlas, 2006). Audio also makes it possible to present knowledge in different ways and enables different forms of interaction with learners (Deakin, 2014).

2.3.2   Video

Video is also a popular tool used to engage learners and enhance a learning experience. Anyone with a digital camera, webcam, tablet or smartphone can now create and edit a movie. YouTube statistics highlight the widespread use of video online, with more than 4 billion hours of video watched each month and 72 hours of video being uploaded every minute (YouTube 2013, statistics). Videos are an excellent way to present and elaborate concepts, demonstrate a procedure or gain an understanding of learning in action. (Deakin, 2014)

2.3.3 Text

Interactive writing can be demonstrated concepts about print, develop strategies, and learn how words work. It provides children with opportunities to hear sounds in words and connect those sounds with corresponding letters. Students are engaged in the encoding process of writing and the decoding process of reading, all within the same piece of text. Interactive writing is a unique opportunity to help children see the relationship between reading and writing (Marc, 2000).

2.3.4 Animation

Animation usually brings to mind images of cartoon figures, particularly created for children. Animations were at one time created manually, a frame at a time and transferred onto film. The computer has long been used to assist in the creation of individual frames, and is now being used for the interactive display of animations. Computer animations have become relatively common (Regula, 2012)

2.3.5 Image

The images are important to attract the children and student in their learning process. For image, children and student can imagine the image and can make them understand more along their learning.

2.3.6 Implication of element of multimedia to this research

From this research, this interactive book will apply all the element of multimedia to attract children and student in their learning process. From the audio, children and student can listen to the audio and learn. From video,

children and student can see the video with the audio provided in the video while learning.

From the animation, they can see how the movement in the animation with the audio provided in the animation. The text are also important in this interactive because from the text font, children and student can read in clearly. Lastly, the image is important to attract the children and student in their learning process. For image, children and student can imagine the image and can make them understand more along their learning.

2.4   Type of model

2.4.1   Water Fall Model

A)   Advantages of Waterfall Iterative Model

i) Waterfall model is simple to implement and also the amount of resources required for it are minimal.

ii) In this model, output is generated after each stage (as seen before), therefore it has high visibility. The client and project manager gets a feel that there is considerable progress. Here it is important to note that in any project psychological factors also play an important role.

ii) Project management, both at internal level and client's level, is easy again because of visible outputs after each phase. Deadlines can be set for the completion of each phase and evaluation can be done from time to time, to check if project is going as per milestones.

B) **Disadvantages of Waterfall Iterative Model of SDLC**

i) Real projects rarely follow the sequential flow and iterations in this model are handled indirectly. These changes can cause confusion as the project proceeds.

ii) It is often difficult to get customer requirements explicitly. Thus specifications can't be freeze. If that case arises baseline approach is followed, wherein output of one phase is carried forward to next phase. For example, even if SRS is not well defined and requirements can't be freeze, still design starts. Now if any changes are made in SRS then formal procedure is followed to put those changes in baseline document.

iii) In this model we freeze software and hardware. But as technology changes at a rapid pace, such freezing is not advisable especially in long-term projects.

2.4.2 ADDIE Model

Instructional System Design (ISD): Using the ADDIE Model

i) **Analysis**

The analysis phase is the foundation for all other phases of instructional design. During this phase, you must define the problem, identify the source of the problem and determine possible solutions. The phase may include specific research techniques such as needs analysis, job analysis and task analysis.

The outputs of this phase often include the instructional goals, and a list of tasks to be instructed. These outputs will be the inputs for the Design phase

ii)   Design

The design phase involves using the outputs from the Analyse phase to plan a strategy for developing the instruction. During this phase, you must outline how to reach the instructional goals determined during the Analyze phase and expand the instructional foundation. Some of the elements of the Design Phase may include writing a target population description, conducting a learning analysis, writing objectives and test items, selecting a delivery system, and sequencing the instruction. The outputs of the Design phase will be the inputs for the Develop phase.

iii)   Development

The develop phase builds on both the Analyze and Design phases. The purpose of this phase is to generate the lesson plans and lesson materials. During this phase you will develop the instruction, all media that will be used in the instruction, and any supporting documentation.

iv)   Implementation

The implementation phase refers to the actual delivery of the instruction, whether it's classroom-based, lab-based, or computer-based. The purpose of this phase is the effective and efficient delivery of instruction. This phase must promote the students' understanding of material, support the students' mastery of objectives, and ensure the students' transfer of knowledge from the instructional setting to the job.

v)   Evaluation

This phase measures the effectiveness and efficiency of the instruction. Evaluation should actually occur throughout the entire instructional design process - within phases, between phases, and after implementation. Evaluation may be Formative or Summative (Stefan, 2000).

2.4.3   Agile Model

Agile Modelling (AM) is a chaordic, practice-based methodology for effective modelling and documentation of software-based systems. The AM methodology is a collection of practices, guided by principles and values, for software professionals to apply on a day-to-day basis. AM is not a prescriptive process. In other words, it does not define detailed procedures for how to create a given type of model; instead it provides advice for how to be effective as a modeller.

A data model helps to communicate the structure of your database to people writing Java source code that interacts with that database. A user interface flow diagram communicates the overall structure of your system's user interface to the people working on individual screens, web pages, or reports. An activity diagram communicates the business processes that your system proposes to support to the project stakeholders providing funding to your project team. In short, modelling is critical to your project team's success. (Scoot, 2002)

2.4.4   Implication of type model to this research

For this interactive book, the type of model that chooses is ADDIE Model. This is because Instructional design aims for a learner-centered rather than the traditional teacher-centered approach to instruction, so that effective learning can take place. This means that every component of the instruction is governed by the learning outcomes, which have been determined after a thorough analysis of the learners' needs.

2.5 Existing System

2.5.1 Case Study 1: Rainbow *Jawi*

This app is the easy and fun new way to learn *Jawi* because it is full of multimedia elements and it is very user friendly. Children will understand by learn *Jawi* in this app. This app encourages children to learn *Jawi* quickly. In this app have two sections which are learn *Jawi* and Games and quiz. In learn *Jawi*, there are 5 sections more which is *Jawi* alphabets, writing *Jawi*, animals, human body and numbers in *Jawi* while in games and quiz there are a few section which is memorize the card, case *Jawi* alphabets and arrange the words.
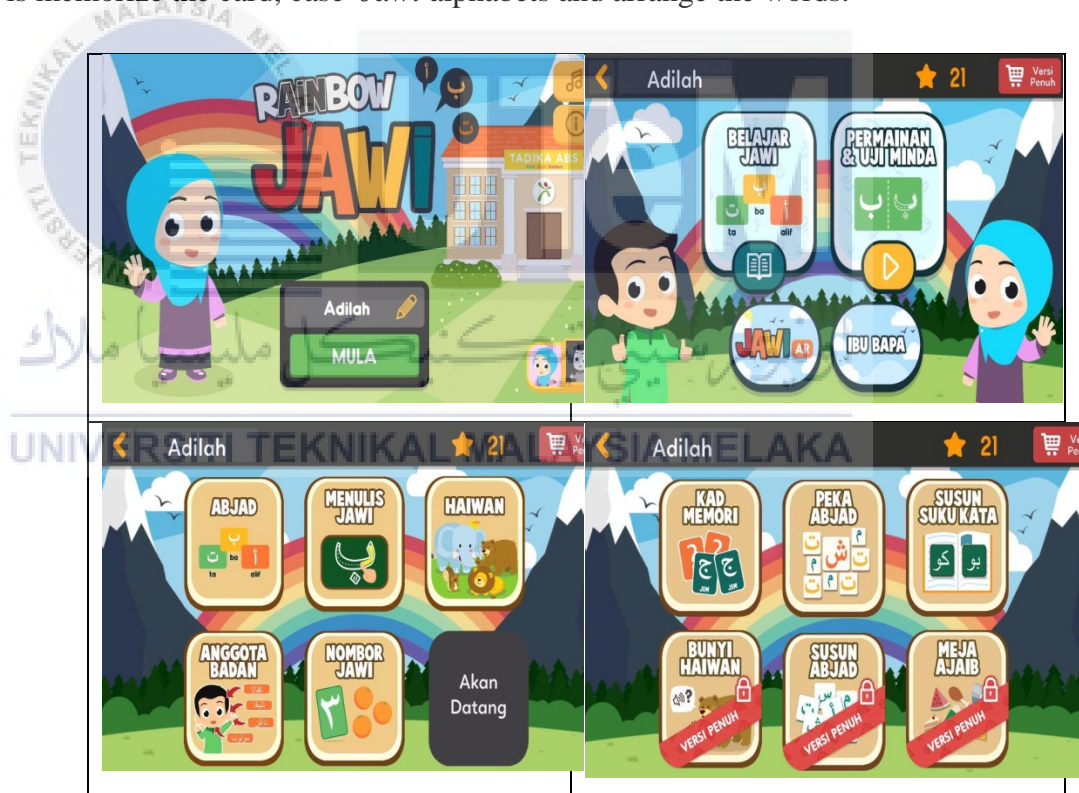
Figure 2.1: Rainbow *Jawi*

2.5.2 Case Study 2: School of *Iman*

This app is learning process of basic Islam such as *Iqra*, prayers, fasting, manners, and *doa*. In every section have their own sections that will teach children about Islam. In *Iqra* it teaches *Jawi*, in prayers it teaches children how to pray and how to take *wuduk*. In fasting it teach children the tips for fasting while in manner it teaches children how manners in daily life like while eating, entering mosque, before sleep and many more. In *doa* it teach to recite *doa* before do anything like *doa* before and after entering toilet, looking at the mirror and many more. This app is easy for children to use it because there are games in certain section.
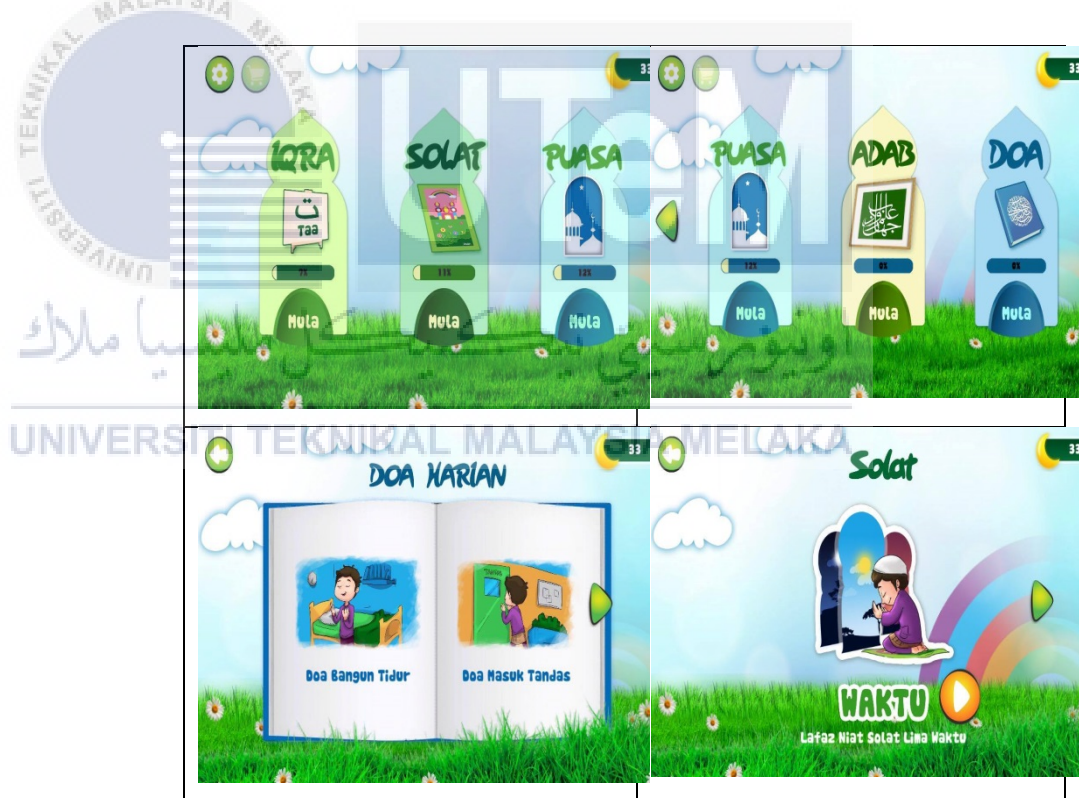
Figure 2.2: School of *Iman*

2.5.3 Case Study 3: Alif Ba Ta

This app is learning *Jawi* alphabet by read the description how to pronounce the alphabets. This app is not fully with multimedia elements. No sound, video, and animation. It only has text and image.

Figure 2.3: Alif Ba Ta

2.5.4 Comparison between the existing systems

Table 2.1: The comparison between existing applications

Title	Year	Format	Elements of multimedia				
			Audio	Text	Animation	Video	Image
Rainbow *Jawi*	2017	Mobile Apps	Yes	Yes	No	Yes	Yes
School of *Iman*	2016	Mobile Apps	Yes	Yes	No	No	Yes
Alif Ba Ta	2016	Mobile Apps	No	Yes	No	No	Yes
Interactive Book for *Jawi*	2017	Interactive book	Yes	Yes	Yes	Yes	Yes

2.6 Methodology

The methodology is the general research strategy that identified the methods to be used in every project. It is the way in which research is to be undertaken and among other things. These methods, described in the methodology, define the means or modes of data collection and how a specific result is to be calculated. Methodology also describes the techniques and instruments used for qualitative and quantitative measurements. These include the approaches to the teaching of the subject, instructional methods, teaching or learning activities and how the required skills are develop. Methodology that used in this project is ADDIE model.

Analysis → Design → Development → Implementation → Evaluation

Figure 2.4: ADDIE Model

i)   **Analysis**

The Analysis phase is the foundation for all other phases of instructional design. During this phase, must define the problem, identify the source of the problem and determine possible solutions. The phase may include specific research techniques such as needs analysis, job analysis and task analysis.

The outputs of this phase often include the instructional goals, and a list of tasks to be instructed. The purpose of the analysis of the system is to improve the style of learning *Jawi* skills to be in interactive way. It is to change from learning using books to interactive book. Then, it is to make the users used the latest gadget and technology to learn something new in this interactive book in smartphone, iPad and other gadget.

ii)   **Design**

The Design phase involves using the outputs from the analysis phase to plan a strategy for developing the instruction. During this phase, must outline how to reach the instructional goals determined during the analysis phase and expand the instructional foundation.

This phase is to design the project to give the user to more attract to interactive book. It is easy to design the interface if you understand what type of interactive book that you want to build. The design is to help the users to understand the instructions in the interactive book.

iii) Development

This phase is developing the designed model using the multimedia software. The phase is related to prototype that needs to build in the interactive book, gathered and use all the data from the analysis phase. The software that used in developing this interactive book are Adobe Photoshop CC, Adobe Illustrator CC, Adobe InDesign CC, and Adobe Premiere Pro CC.

iv) Implementation

In the implementation phase, the project will be sent to target users to get the response from them about what methods were used while building an interactive book. The purpose of this phase is the effective and efficient delivery of instruction. This phase must promote the user understanding, user objectives, and ensure the user enjoy using this interactive book.

v) Evaluate

In this phase, the product will be evaluated based on effectiveness of the interface design, the course structure, and the curriculum and learning objectives.

If there are some problems through the target users, everything will be recorded, analyses and used for improvement if it required.

2.7   Project Requirement

The software needs to be used for this project is based on the phases of which have been described as well as the objectives to be achieved**.**

2.7.1   Software Requirement

- Adobe InDesign CC 2017
    - Used to develop the interactive book
- Adobe Premiere Pro CC 2017
    - Used to edit video
- Adobe Illustrator CC 2017
    - Used to create button, logo and characters
- Adobe Acrobat Reader DC
    - Used to display PDF format files
- Adobe Flash CS6
    - Used to develop a quiz
- Microsoft Word 2010
    - Used for documentation
- Microsoft Power Point 2010
    - Used for presentation

2.7.2   Hardware Requirement

- Personal Laptop
    - Brand: Lenovo ThinkPad
    - Processor: Intel® Core™ i5 CPU M 460 @ 2.53 GHz 2.53 GHz
    - RAM: 8.00 GB
    - System Type: 64-Bit OS
    - OS: Windows 7
- CD-R/DVD-R
    - Used to submit the final project.

2.8   Summary

For this chapter describes how the information and facts related to the product. The comparison with the existing system for the future improved and uses the suitable methodology and use a methodology to do this product. In addition, this chapter also describes how to get as much information as possible. It is also important to make a comparison of the existing system to help in the manufacture of new project. Among the parts that have to get a lot of information is analyses. In the next chapter will discuss and covers about the analysis.

CHAPTER III

ANALYSIS

3.1   Introduction

In this chapter will be discussing about analysis of this system that is to analyses the existing system of this project. Current scenario analysis is analyzing the problems that happen in that scenario. Then, the current scenario analysis can determine the future of the product or system for better used. The important of this process is to let the user know and understand this project and understand what the developer wants to tell the audience. It is because developer can know the problem and effect of this project through the user. Every interactive book has their way to make the interactive book more interesting and more attract to children and student to used interactive book in their studies. Every project has its own target need to achieve. Type of interaction in this project used the element of multimedia such as audio, video, animation, text, and image that can attract and gain the interest to the children and student to use this interactive book. From that can identify the output and easy to developer to develop the project.

3.2   Problem analysis

The problem that has to face up is when develop this project are the usage of element of multimedia in this project because the entire element can make the children and student attract to learn. Use the suitable colour for children and student in primary school. Colour can be divided into many characters, for example, for kids their have their own suitable colour that can make them attract to something and same goes to children, teenagers and adult.

Other more, the size and the type of font are more important because wants to get their attention for them to read. Then, the arrangement of pages on this interactive book, every page need to arrange with flow to make them more understanding while learn and attract them to continue the next page.

3.3   Requirement Analysis

This is the process of collecting data that are need in this project. From the data collection can identify the requirement that need by the user and by the technical part of this project.

The data collection can be done by interview, questionnaire, experiments and observation. For this project, the data collection will be interview and questionnaire.

3.3.1   Project Requirement

3.3.1.1 Need Analysis

In need analysis, the process are identifying and evaluating need in a community or other defined the analysis of interactive book. From identification, the process needs to analysis are describing problems of a target and possible solutions of that problem because we need to know about usability of interactive

book for the users when they use it. From that, we can evaluate the project.

3.3.1.2 User Analysis

User analysis based on target users in objective project. The target users in this project are for children 7 years old which is primary one and anyone that want to learn *Jawi.*

3.3.1.3 Technical Analysis

This part describes about authoring tools that be used to develop this interactive book. Authoring tools that be used to develop this interactive book is using Adobe InDesign CC 2017.

3.3.1.4 Resource Analysis

This resource analysis is a strategic planning tool which considers the resources required to support particular strategies. The resources that an organization has are important, as important is its ability to effectively use and manage those resources.

The resource analysis used in this project is based on the book that teaches children *Jawi.*

3.4 Project Requirement

The software needs to be used for this project is based on the phases of which have been described as well as the objectives to be achieve.

3.4.1 Software Requirement

- Adobe InDesign CC
  - Used to developed the interactive book PDF
- Adobe Premiere Pro CC
  - Used to edit video
- Adobe Illustrator CC
  - Used to create button and logo
- Microsoft Word 2010
  - Used for documentation
- Microsoft Power Point 2010
  - Used for presentation
- Adobe Acrobat Reader DC
  - Used to display PDF format files

3.4.2 Hardware Requirement

- Personal Laptop
  - Brand: Lenovo ThinkPad
  - Processor: Intel® Core™ i5 CPU M 460 @ 2.53 GHz 2.53 GHz
  - RAM: 8.00 GB
  - System Type: 64-Bit OS
  - OS: Windows 7
- CD-R/DVD-R
  - Used to submit the final project.

3.5 Project Schedules and Milestones

Table 3.1: Gant chart

No	Task	Week														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Proposal PSM : Submission and presentation	■														
2.	Proposal correction		■													
3.	Chapter 1		■	■	■											
4.	Chapter 2					■	■									
5.	Chapter 3						■	■								
6.	Chapter 4								■	■						
7.	Project demo							■	■	■			■	■	■	
8.	PSM report										■	■	■	■	■	
9.	Presentation															■

Table 3.2: Milestones and Date

Interactive book of learning *Jawi*	Start Date	Finish Date
Make a research about interactive book and *jawi*	26/12/2016	28/12/2016
Proposal submission and presentation	6/1/2017	7/1/2017
Proposal correction and improvement	8/1/2017	9/1/2017
Report chapter 1 & 2	13/2/2017	17/2/2017
Analysis the content	18/2/2017	24/2/2017
Make a design	2/3/2017	10/3/2017
Report chapter 3	18/3/2017	24/3/2017
Demo Project	27/3/2017	29/3/2017
Update Interactive book	30/3/2017	7/4/2017
Make second editing	10/4/2017	21/4/2017
Project demo	24/4/2017	25/4/2017
Report chapter 4	28/4/2017	4/5/2017
Project Demo and PSM report	5/5/2017	12/5/2017
Presentation PSM 1	26/5/2017	26/5/2017
Report chapter 5	3/7/2017	7/7/2017
Project demo	10/7/2017	15/10/2017
Meeting with supervisor about testing	10/7/2017	15/7/2017
Make a questionnaire for testing and get approval from supervisor	18/7/2017	22/7/2017
Do a pilot testing	26/7/2018	7/8/2017
Do a pre and post test	7/8/2017	9/8/2017
Report Chapter 6&7	10/8/2017	14/8/2017
Presentation PSM 2	16/8/2017	16/8/2017

3.6   Summary

In conclusion, the analysis part is important to get the real data about project. This part must be getting the good information because it can determine whether the project is right or wrong. This part is important before design the product. This chapter has been discussing about the requirement needed in this project. In this chapter discussing about analysis of this system that is to analyses the existing system of this project. Next chapter will explain about the design.

CHAPTER IV

DESIGN

4.1 Introduction

The second phase in developing a project in project development is design. In design phase, usually one or more design is developed in order to produce a good design. A design phase of product is dependent on the type of the project being developed. In developing an interactive book, the product design phase is inclusive of the user storyboard design and interface design. In this chapter, the design phase of interactive book will be discussed. The preliminary design, system architecture, and user interface design are focus in the discussion.

4.2   System Architecture

This project is an interactive book for children about learning *Jawi*. This interactive book can be view by smartphones and all types of gadget. In this part, the overall flow of this developed project's system architecture will be discussed.

These interactive books *"Mari Belajar Jawi"* is show an interactive learning with multimedia elements such as text, image, audio, video and animation. There are four chapter in this interactive book such as chapter 1 *"Huruf-Huruf Jawi",* chapter 2 *"Nombor-nombor Jawi"*, chapter 3 *"Mari Mengeja"* and lastly chapter 4 *"Mari Membaca"*.

The beginning of each chapter 1 it provided an audio, text, image and video. The video and audio will introduce to children how to pronounce the *jawi* alphabets. The next chapter is chapter 2 that teach children the number of *jawi*. In this chapter there is an audio and animation to make the children more understand and more fun.

Chapter 3 teaches about spelling *Jawi* and there have an audio how to spell the word. In the last chapter will teach children to read in *Jawi*. There is also an audio. Chapter 4 only have an audio that can them learn and understand.

For the quiz session there will be guessing the *Jawi* alphabet, number in *Jawi* letters and syllable the words. This will let the children recall back what they have learned. At the end of the quiz will show the marks they get from answering the quiz.

4.3   Preliminary Design

The preliminary design is a high level design architectural design of the application. High level design explained the architecture design of the system including the user interface of interactive book.

User interface design is one of the most important parts for developer to implement the interface design and there will explain about Storyboard Design, User Interface Design, Navigation Design, Input Design and Output Design.

4.3.1   Storyboard Design

Storyboard design is the part of development phase. This design will be a draft for a view of a project. By using this view, developer can study the details of the design which is used for a user as a platform in delivering the information.
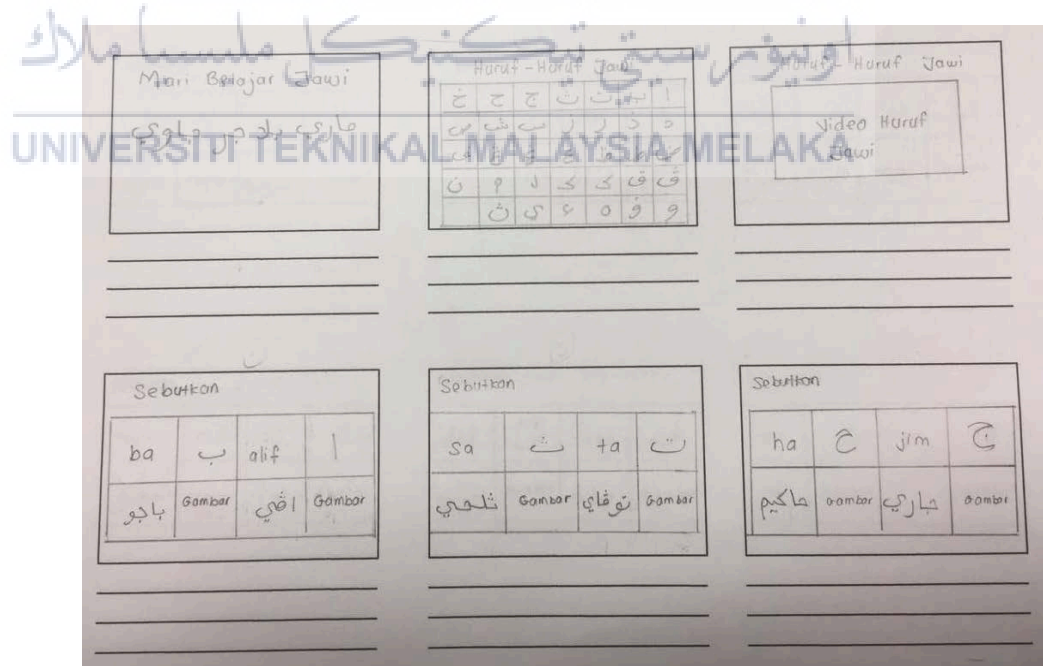
Figure 4.1: Storyboard Design 1
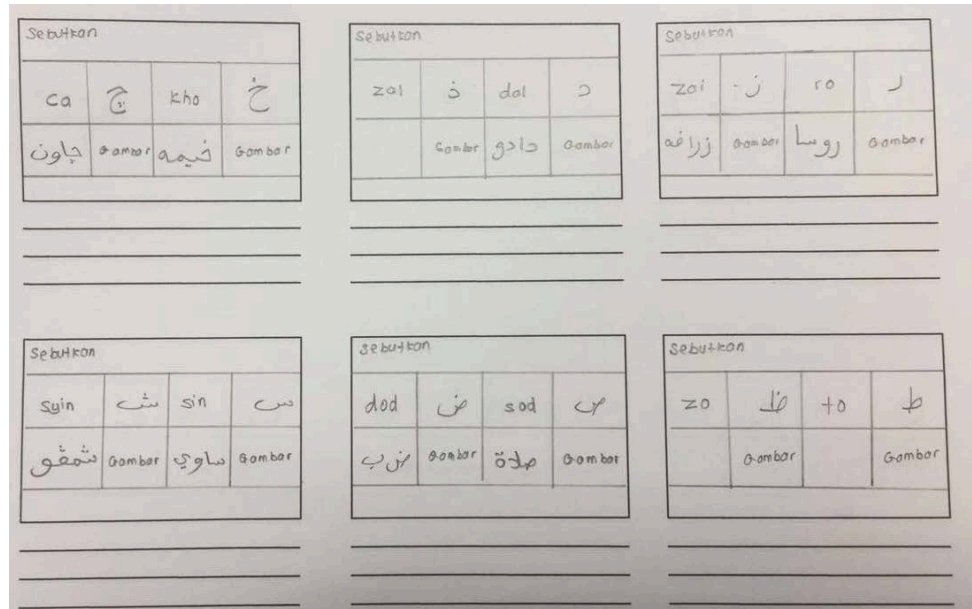
Figure 4.2: Storyboard Design 2
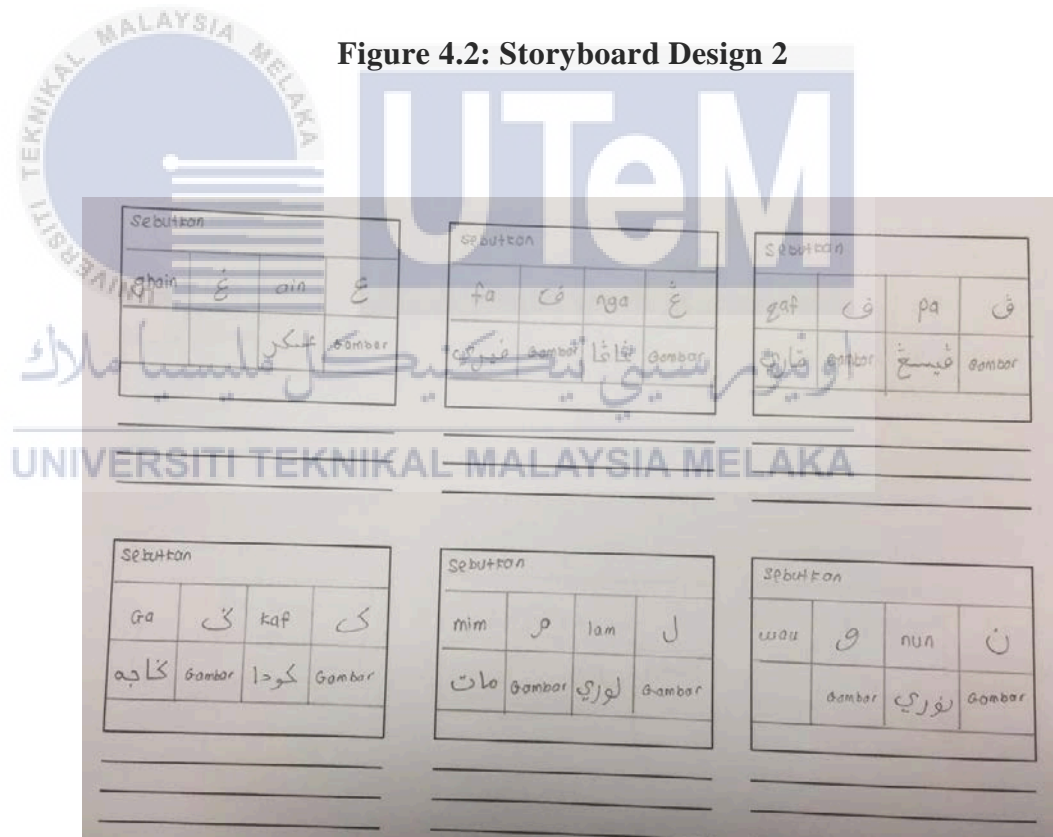
Figure 4.3: Storyboard Design 3
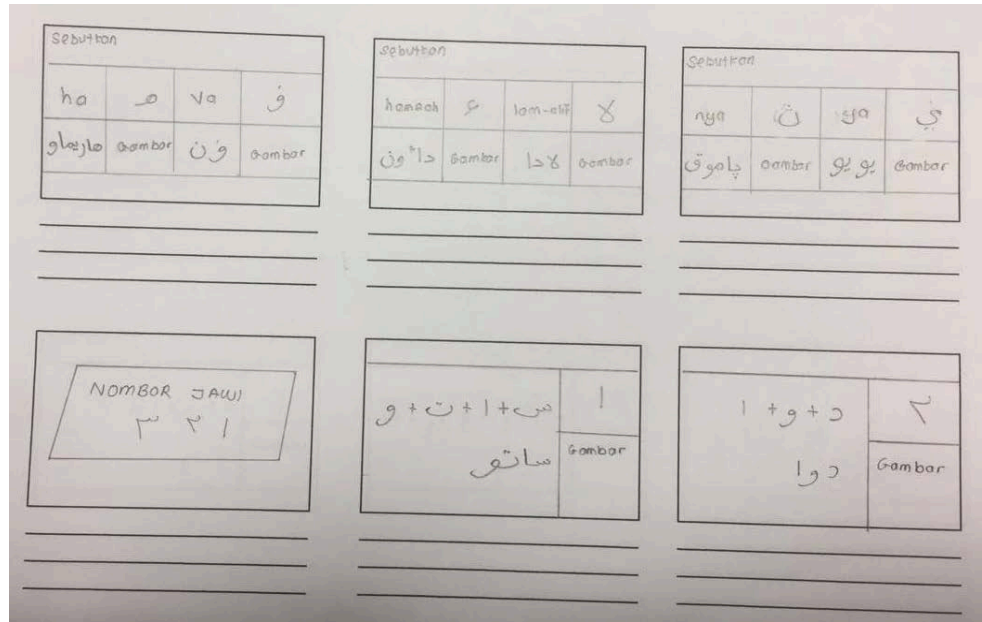
Figure 4.4: Storyboard Design 4
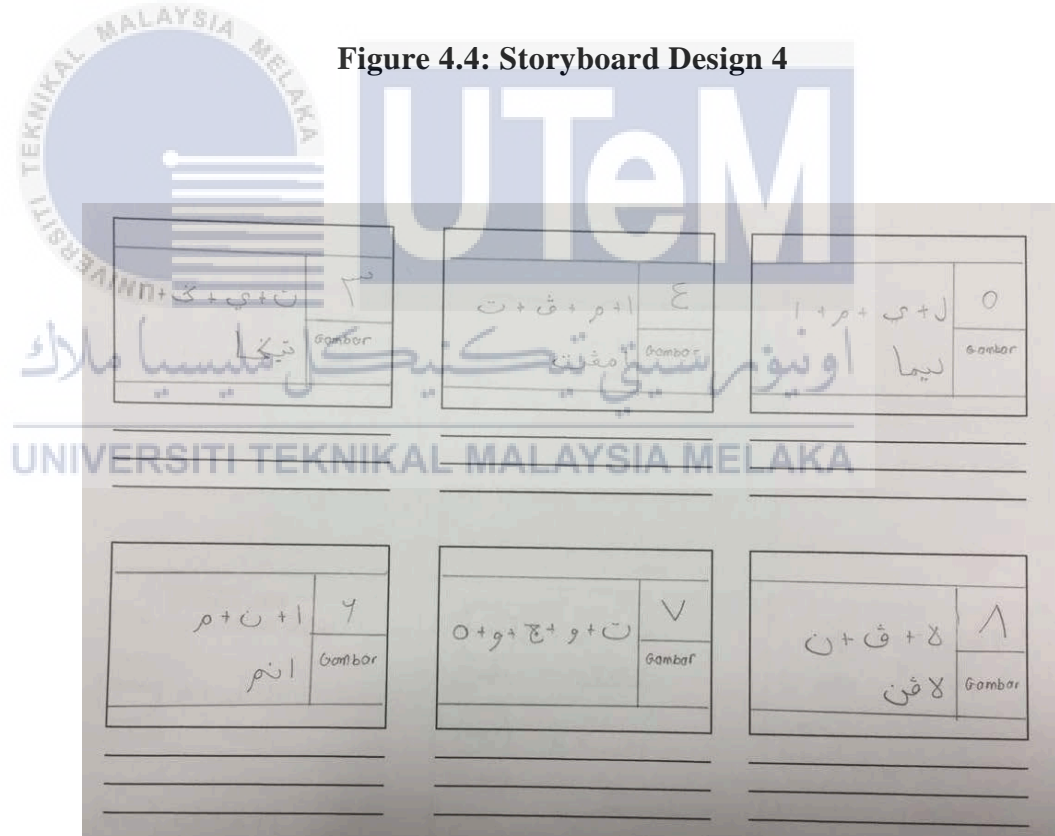
Figure 4.5: Storyboard Design 5
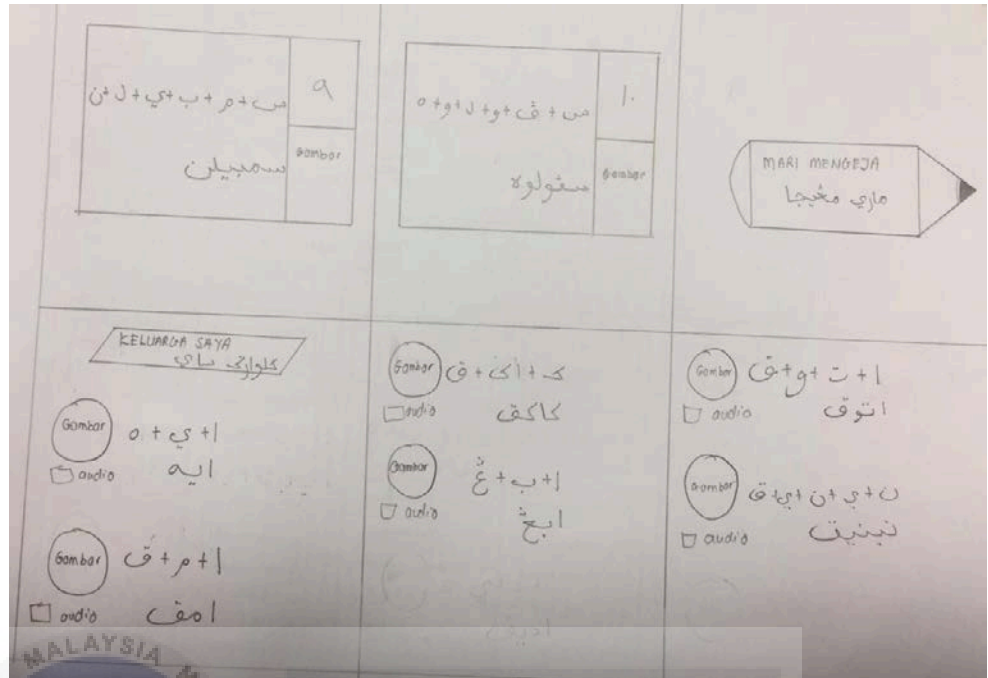
Figure 4.6: Storyboard Design 6
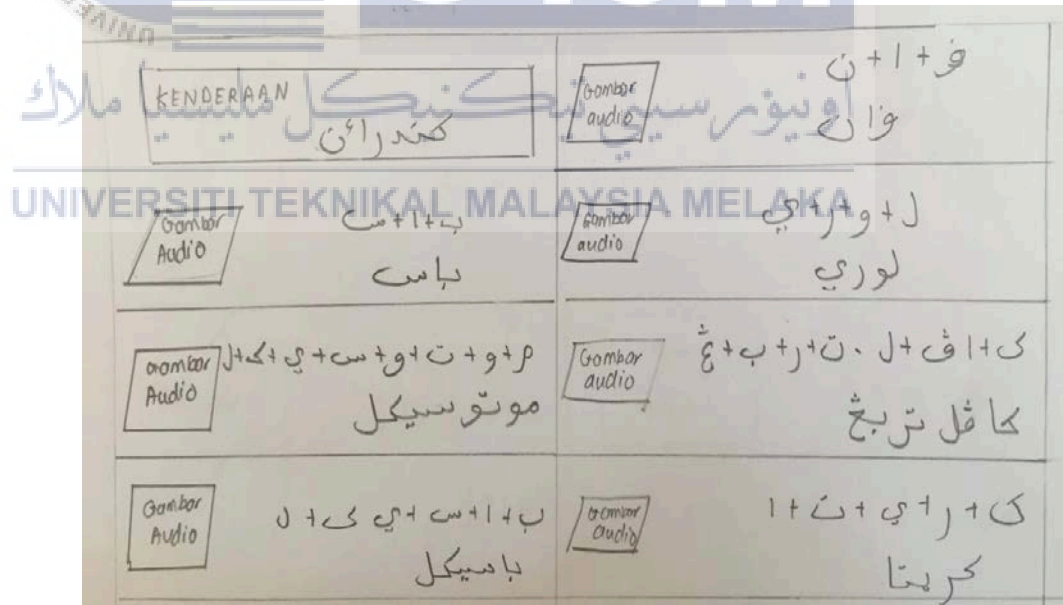
Figure 4.7: Storyboard Design 7
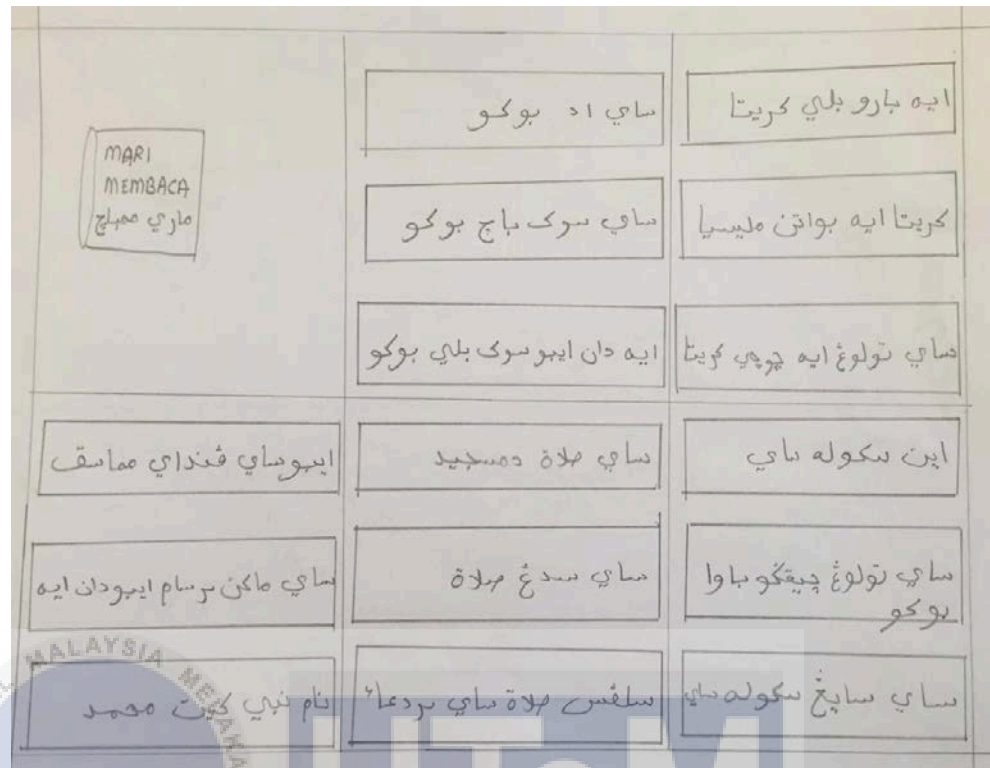
Figure 4.8: Storyboard Design 8

4.4   User Interface Design

User interface acts as medium that allow the user to interact with the system. It is important because mostly the good system is depending how many user can understand way to use the system. So, when to designed user interface must be properly in order to make the interaction between the user and the system effective. The three fundamental parts of user interface are navigation design, input design and output design.

4.4.1   Navigation Design

In this interactive book, navigation design in video. There have play button, resume button, pause button and stop button. For audio also have the button for children to click it to hear the sound.

This navigation design will attract children and more interesting. For animation also have the play button for the children to see the animation.

4.4.2   Input Design

This application is developed children. It create for them to learning *Jawi* in effective ways and easy for them to understand and have fun during the learning process. In this interactive book have a video, an animation and audio to make children more understanding about *Jawi*. In this interactive book also have a quiz for them to gain their understanding in learning process. There is no input design in this interactive book. Children only learn and answer the quiz.

4.4.3   Output Design

The output is to create an Interactive book learning *Jawi* for children. Basically in every interactive book have their own creativity for the user to explore the interactive book like video, audio, animation, text and image.

4.4.4   Metaphor

This project is focused on the interactive learning and exercise. Other more it is also providing student with the audio that speak the *Jawi* words. From the audio children will understand the word and become more interesting in learning process. Next, children also can improve themselves to more understand that character with easily. Next is this interactive book

provides color that suitable for children. By that it can help them to study and learn with more comfortable and interesting.

4.5   Summary

In conclusion, the design of system architecture, storyboard design and user interface design have been discussed in this chapter. Design phase is vital in developing a system as the developer will have the idea of the desire design and provide more effective outcome. This chapter it acts as an outline on the flow of this project. With all the design discussed in this chapter, developer can have a better understanding of the system design of this project. In the next chapter, the implementation phase will discuss about the usage of multimedia elements such as text, audio, video, image and animation.

CHAPTER V

IMPLEMENTATION

5.1   Introduction

This implementation chapter will be discussing in this chapter. In this chapter will implement by using the previous data from the previous chapter and in this chapter need to be implement the objectives and goal that need to achieve. This chapter will explained all storyboard with detailed explanation. This implementation phase let the developer produce their product to user. All content suitable, fine and interesting when it is implementing in the gadget.

5.2   Media Creation

This part is discuss about the multimedia has been used in this interactive book. All the multimedia elements need to design by the developer by using software that has been discussed in the previous chapter. All the software have been explained in the previous chapter that what software that used for interactive book.

5.2.1   Production of text

This project is font to develop this mobile application. The type of font is choosing based on the scope of this project which is referring to student for primary school. The font chooses with the suitable font for kids and student. Font is very important to choose because this will be interacting with the children to read and learn in this interactive book. All the font can be download and it is free on internet. The type of font is used in this mobile application such as Times New Roman.

ايه بارو بلي كريتا

كريتا ايه بواتن مليسيا

ساي تولوغ ايه چوچي كريتا

Figure 5.1: Text used in Interactive book 1

اين سكوله ساي
ساي سوك بلاجر دسكوله
ساي سايغ سكوله ساي

Figure 5.2: text used in Interactive book 2

Huruf-Huruf Jawi
حورف٢جاوي

Nombor Jawi
نومبور جاوي

Mari Mengeja
ماري مغيجا

Mari Membaca
ماري ممباچ

Figure 5.3: text used in Interactive book 3

5.2.2   Production of audio

This interactive book used audio to interact children to gain their interest and understanding in the learning process by this interactive book. The audio was recorded by voice recorded in smartphones and was edited in Audacity to remove the noise. After editing done the audio was import to the Adobe InDesign CC 2017. The use of sound in this project is the sound for *Jawi* word sound. This is to let children enjoy learning by using this interactive book.

Figure 5.4: Audio used in Interactive book 1

Ba ب 🔊

ب + ا - ج + و

با ← جو 🔊

باجو
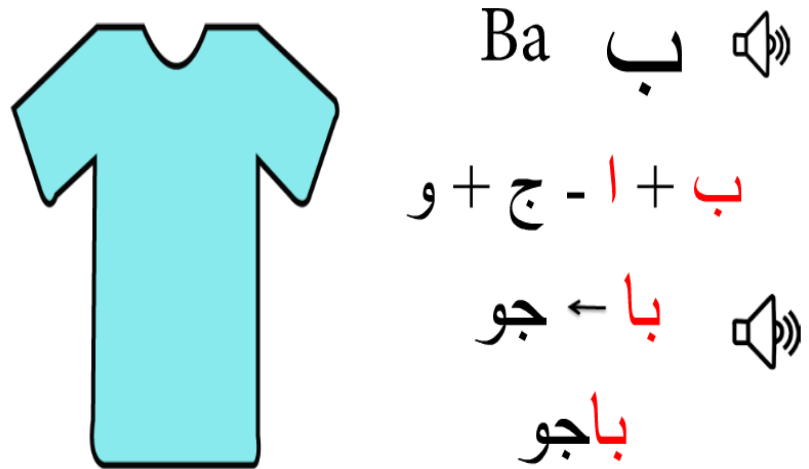
Figure 5.5: Audio used in Interactive book 1

🔊 ابۤغ

🔊 اين ابۤغ ساي

🔊 ابۤغ ساي سوك تولوۤغ ايه

🔊 نام ابۤغ ساي فايذ

Figure 5.6: Audio used in Interactive book 3

5.2.3   Production of image

The image or graphic has been used in this interactive book edited in Adobe Illustrator CC 2017. In this adobe illustrator, developer can design the background, button, note, exercise template and other more. The use of colour and style is important because it can help to get intention and attraction children to read and learn with this interactive book. The image will save in .ai and .png. After that, import the image into Adobe InDesign CC 2017.

Figure 5.7: Image used in Interactive book 1

Kenderaan

كندراعن 🔊

Figure 5.8: graphic used in Interactive book 2

Haiwan

حيوان 🔊

Figure 5.9: graphic used in Interactive book 3

5.2.4 Production of video

The video in this interactive book is produce to introduce children the *jawi* alphabet in learning process. The movement in this video include the audio and image to gain their understanding and make it more interesting to learn *jawi*. The video in this interactive book edit in Adobe premiere pro CC 2017 and saved .prproj and .mp4 and import in Adobe InDesign CC 2017.

Figure 5.10: Video used in Interactive book 1

5.2.5   Production of animation

The animation in this interactive book produce to introduce the children the movement of something and make them more understanding and interesting while used this interactive book. The animation used in chapter 2 *"Nombor jawi"*. This animation edited in Adobe after effect CC 2017 and saved in .aep and .mp4. The usage of animation is to let children enjoy the learning process in this interactive book.

Figure 5.11: Animation used in Interactive book 1

Nombor Jawi

نومبور جاوي

د - و - ا

دو ← ا

دوا
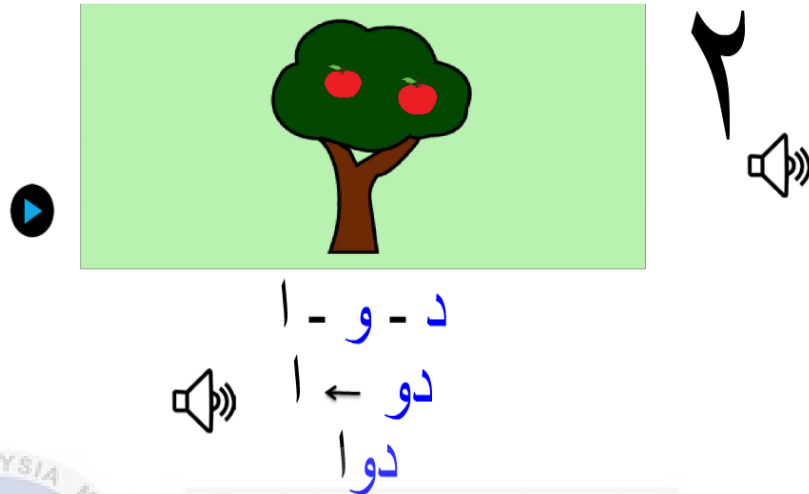
Figure 5.12: animation used in Interactive book 2

Nombor Jawi

نومبور جاوي

ل + ي + م + ا

لي ← ما

ليما

Figure 5.13: animation used in Interactive book 3

5.3   **Media Integration**

Media integration is the process of combining all multimedia elements such as text, audio, video, image and animation. The animation is created by using Adobe after effect CC 2017. The audio is edited in Audacity. The image was edited in Adobe Illustrator CC 2017. Video edited in Adobe premiere pro CC 2017. The quiz is edited in Adobe Flash C6 and Adobe Animate CC 2017. Adobe InDesign CC 2017 is edited to develop the interactive book.
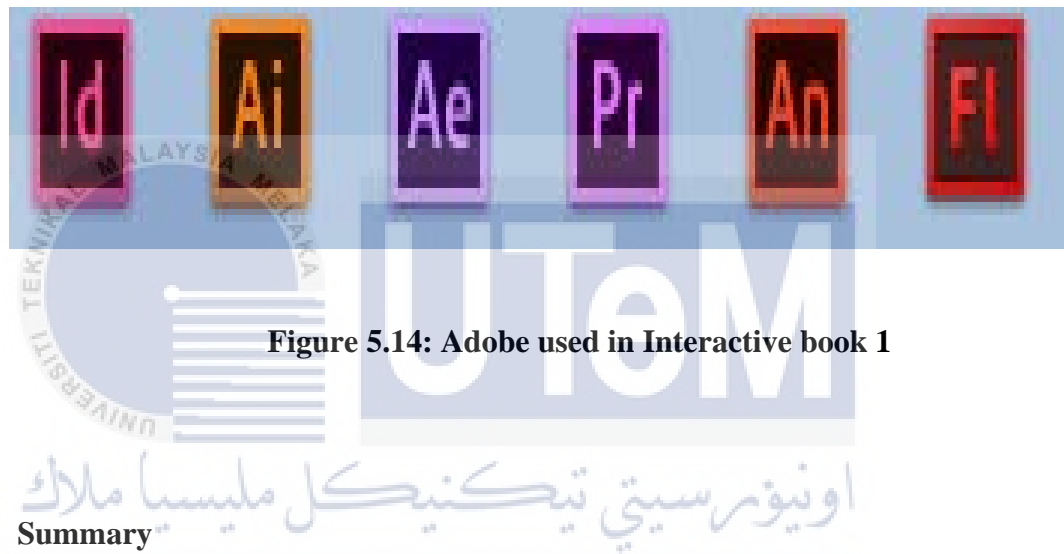
Figure 5.14: Adobe used in Interactive book 1

5.4   **Summary**

In conclusion, this chapter had been discussing about implementation phase. This phase is important to produce the product. This chapter show all the element multimedia that been used in this interactive book. This chapter explains the details of the implementation phase to develop an interactive book. For the next chapter where chapter 6 will be discuss about the target user, and environment of the testing. In testing phase the result will be analyses and plot the graph to experiment the effectiveness of using this interactive book.

CHAPTER VI

TESTING AND EVALUATION

6.1   Introduction

In this phase the products are tested in order to find its effectiveness and its suitableness to be used for students. The ways to test a product is to test it to its target user. This is to ensure that the products meet the user requirements and any weakness of the product can be detected and improved. Tests that will be conducted during this phase are user testing, environment testing and test plan. Every result that is gathered during testing process will be gathered in this phase and combine in order to see whether the product achieve its objectives or not.

6.2   Test Plan

In test plan it will discuss about the target user that going to use the product. The developer must be at the time when the testing process is done in order to set up several categories for each test. During the testing can find whether the product can be used or not. The test must be conducted at specific, limited and of time given.

6.2.1   User Testing

In orders to get the accurate results from testing of the interactive book, there are 4 types of testing need to consult in this interactive book. The testing are multimedia expert, expert content, student that already taking *Jawi* subject and student that will be going to take the *Jawi* subject.

a) **Multimedia Experts**

Multimedia expert will be testing about the interface of interactive book. They need to test all the multimedia elements use to develop the interactive book for its suitability to target users for this interactive book teach *Jawi* subject. This test was done by 3 lecturers at Faculty of information and communication technology UTeM

b) **Content Experts**

The content experts are the teacher in school who teach this subject. They will be testing about all the content whether it suitable and fulfil the curriculum for student to used it in their learning material. This test was done by 2 teachers at Sekolah kebangsaan Tun Syed Ahmad Shahbuddin Melaka. Another 2 teachers at Sekolah Kebangsaan Bandar Endau Johor.

c) **Student that already taking *Jawi* subject**

This group of student that already takes *Jawi* subject will be evaluating all the elements and contents of this interactive book. They can compare their experiences learning this subject using this interactive book with their experiences learning with teachers. This test was done by 20 students in standard 5 at Sekolah Kebangsaan Bandar Endau Johor

d) **Student that will be going to take the *Jawi* subject.**

This group of student that will be going to take the *Jawi* subject will test this interactive book for the first time during the testing session and they will be going answer same question regarding the subject based on their knowledge. This test was done by 20 students which is 10 boys and 10 girls at Sekolah Kebangsaan Bandar Endau Johor

6.2.2   Environment Testing

The testing was held at Faculty of information and communication technology UTeM for multimedia expert. The expert content was held at Sekolah Kebangsaan Tun Syed Ahmad Shahbudin Melaka and Sekolah Kebangsaan Bandar Endau Johor. For user testing was held at and Sekolah Kebangsaan Bandar Endau Johor. That was for pilot test. For the pre-test and post-test, the same school which is Sekolah Kebangsaan Bandar Endau Johor will be tested.

Before the testing started with the interactive book, the student that will be going to take the Jawi subject, they were given the pre-test question paper. They need to answer the questions paper with the knowledge they have.

After they have finished the pre-test, they can continue with the interactive book and can use that for learn and explore. After they finish exploring and understanding the interactive book, they need to answer the questions paper for post-test whether the interactive book given an impact on learning the subject.

6.2.3   Test Schedule

Test schedule is done in order to control and manage the duration of the testing process is carried out. The testing was done in three levels. The first level is pilot test. The second level is pre-test. The third level is post-test.

i)   **Level 1: Pilot Test**

a)   **Multimedia Expert**

Table 6.1: Multimedia expert

Age	No of Respondent	Duration	Place	Date
18 And above	3	15-20 minutes	Faculty of information and communication technology UTeM	26.7.2017-27.7.2017

b) **Expert Content**

Table 6.2: Expert Content

Age	No of Respondent	Duration	Place	Date
18 And above	2	15-20 minutes	Sekolah Kebangsaan Tun Syed Ahmad Shahbudin Melaka	28.7.2017- 7.8.2017
18 and above	2	15-20 minutes	Sekolah Kebangsaan Bandar Endau Johor	28.7.2017- 7.8.2017

c) **Student That Already Taking Jawi Subject**

Table 6.3: Student That Already Taking Jawi Subject

Age	No of Respondent	Duration	Place	Date
11 years old	20	2 hours	Sekolah Kebangsaan Bandar Endau Johor	7.8.2017

ii) **Level 2: Pre-Test**

Table 6.4: Student That Will Be Going Taking Jawi Subject

Age	No of Respondent	Duration	Place	Date
7 years old	20	2 hours	Sekolah Kebangsaan Bandar Endau Johor	7.8.2017

iii) **Level 3: Post-Test**

Table 6.5: Student That Will Be Going Taking Jawi Subject

Age	No of Respondent	Duration	Place	Date
7 years old	20	2 hours	Sekolah Kebangsaan Bandar Endau Johor	7.8.2017

6.3   Test Strategy

The testing phase consists of 2 parts which are pilot testing and pre and post testing. Pilot testing consists of multimedia experts, expert content and student that already taking the *Jawi* subject.

The first test was pilot test before the pre and post testing. In this test all the mean, media and mode for multimedia expert, expert content, and student that already taking the *Jawi* subject are calculated to proceed with pretest and post-test for student that will be going to take the *Jawi* subject.

6.4   Test Implementation

Before continuing with the implementation phase, pilot study should be conducted to determine the reliability of the interactive book constructs. The pilot study is between multimedia experts, expert content and student that already taking the *Jawi* subject. This pilot test was done to find the Cronbach's Alpha. From the result of Cronbach's Alpha was acceptable can continue with the pre-test and post-test.

6.4.1   Test Description

Before conducting the testing, the respondents are given the interactive book for them to explore it using laptop and questionnaire. After they are exploring the interactive book and satisfy using the interactive book they need to answer the questionnaire regarding the interactive book that they have explored it.

In the questionnaire have three and four part. In multimedia expert and content expert the questionnaire are about learnability testing, effectiveness, ease to use and flexibility. For student that already taking the *Jawi* subject the questionnaire are about investigate the suitableness of the usage of interactive book in conveying *Jawi*, objective interactive book, which multimedia element that given huge impact in the interactive book and flexibility.

6.5   Test Data

For the pilot testing, there will be three type of group of respondents were involved. They are multimedia experts, expert content and student that already taking the *Jawi* subject. For multimedia expert the numbers of respondents were 3 people. For expert content there were 4 people involved in this testing. Lastly, for student that already taking the *Jawi* subject the number of respondent were 20 people.

Table 6.6 List of name of the Multimedia Expert and Expert Content

NO	Name	Academic Qualification	Company
1	Dr. Ahmad Naim Bin Che Pee @ Che Hanapi	Senior Lecturer, Faculty of information and communication technoloy	UTeM
2	Nazreen bin Abdullasim	Lecturer, Faculty of information and communication technoloy	UTeM
3	Dr Ibrahim Bin Ahmad	Senior Lecturer, Faculty of information and communication technoloy	UTeM
4	Nor Azah binti Mohamad	Teacher (pendidikan islam)	Sekolah Kebangsaan Tun Syed Ahmad Shahbudin Melaka
5	Ibrahim bin Ahyead	Teacher (pendidikan islam)	Sekolah Kebangsaan Tun Syed Ahmad Shahbudin Melaka
6	Nor Hafilah binti Hashim	Teacher (pendidikan islam)	Sekolah Kebangsaan Bandar Endau Johor
7	Nurul Huda Hayati bin Ibrahim	Teacher (pendidikan islam)	Sekolah Kebangsaan Bandar Endau Johor

6.6   Pilot Test

Pilot test were test to whether this interactive book are success and accept or not. To get the result, there are 5 different mark given that is from 1 – 5. 1 is strongly disagree, 2 is disagree, 3 is not sure, 4 is agree and 5 is strongly agree. To test the analyzed this application, it will used Cronbach's Alpha to get the result.

By comparing the reliability of a summated, multi-item scale versus a single-item question, the authors show how unreliable a single item is; and therefore it is not appropriate to make inferences based upon the analysis of single-item questions which are used in measuring a construct. Any research based on measurement must be concerned with the accuracy or dependability or, as we usually call it, reliability of measurement. Need to show why single-item questions pertaining to a construct are not reliable and should not be used in drawing conclusions.

This is the formula for Cronbach's Alpha (Joseph, 2003).

Cronbach Alpha, R = $\dfrac{K}{K-1}$ $\left(1 - \dfrac{\text{Total of Questions Variance}}{\text{Total of Test variance}}\right)$

Figure 6.1: Formula of Cronbach's Alpha

The level of Cronbach's Alpha (Joseph, 2013)

Cronbach Alpha	Scale
Less than 0.60	Weak
0.61-0.79	Acceptable
More than 0.80	High

Table 6.7 Reliability Value – Cronbach's Alpha

6.6.1 Multimedia Expert

Table 6.8 Test Data for Learnability Testing (Multimedia Expert)

Multimedia Expert (ME)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
ME1	4	4	4	4	4	4	5	4	4	4
ME2	4	4	4	3	4	4	4	4	4	5
ME3	2	3	3	4	4	4	5	4	4	3

Table 6.9 Test Result Learnability (Multimedia Expert)

Question	Mean	Median	Mode
Q1	3.33	4	2
Q2	3.67	4	4
Q3	3.67	4	4
Q4	3.67	4	4
Q5	4	4	4
Q6	4	4	4
Q7	4.67	5	5
Q8	4	4	4
Q9	4	4	4
Q10	4	4	4
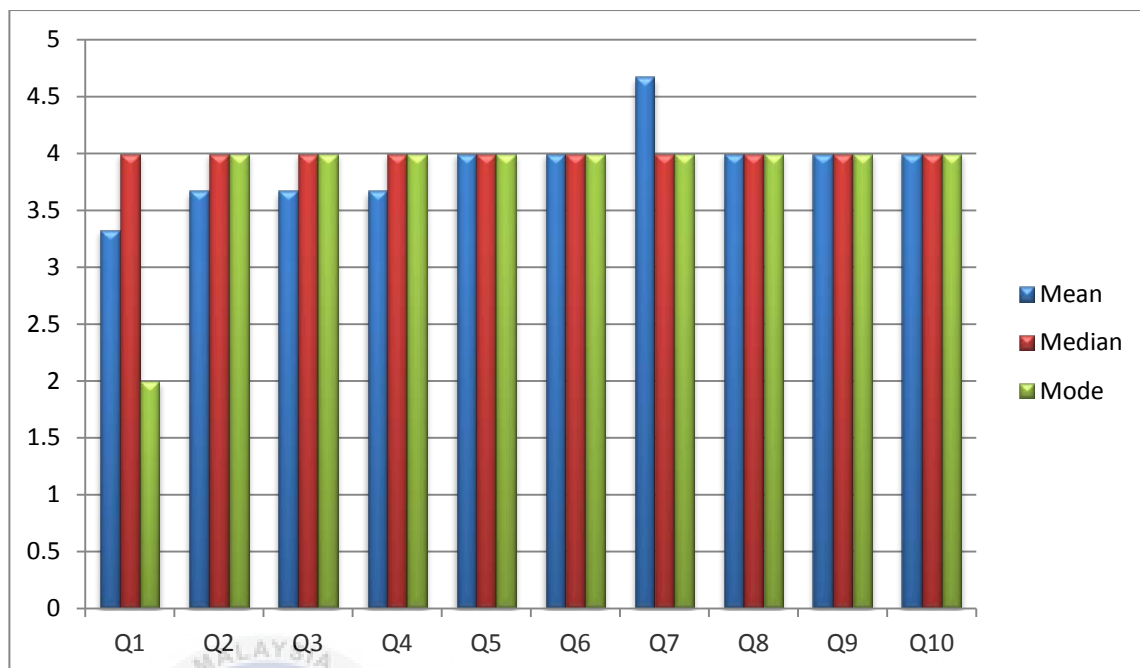
Diagram 6.1: Graph of Test Result Learnability (Multimedia Expert)

From the graph, can see that 10 of the questions were answered by the multimedia expert has mean, median and mode achieve 4 and above. Only 4 questions did not achieve above 4. This shown that the multimedia elements that use in this interactive book were suits for the students. For the question 7, the mean has the highest marks of mean. This shown that the test result for learnability was accepted. As conclusion, all the three multimedia experts respondent of this interactive book were approved to be used for students.

Table 6.10: Test Data for Effectiveness (Multimedia Expert)

Multimedia Expert (ME)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
ME1	5	4	4	4	4	4	4	4	3	4
ME2	3	4	4	4	5	4	4	5	2	4
ME3	2	4	1	4	4	3	4	4	2	4

Table 6.11: Test Result Effectiveness (Multimedia Expert)

Question	Mean	Median	Mode
Q1	3.33	3	3
Q2	4	4	4
Q3	3	4	4
Q4	4	4	4
Q5	4.33	4	5
Q6	3.67	4	4
Q7	4	5	5
Q8	4.33	4	4
Q9	2.33	2	2
Q10	3.33	4	4
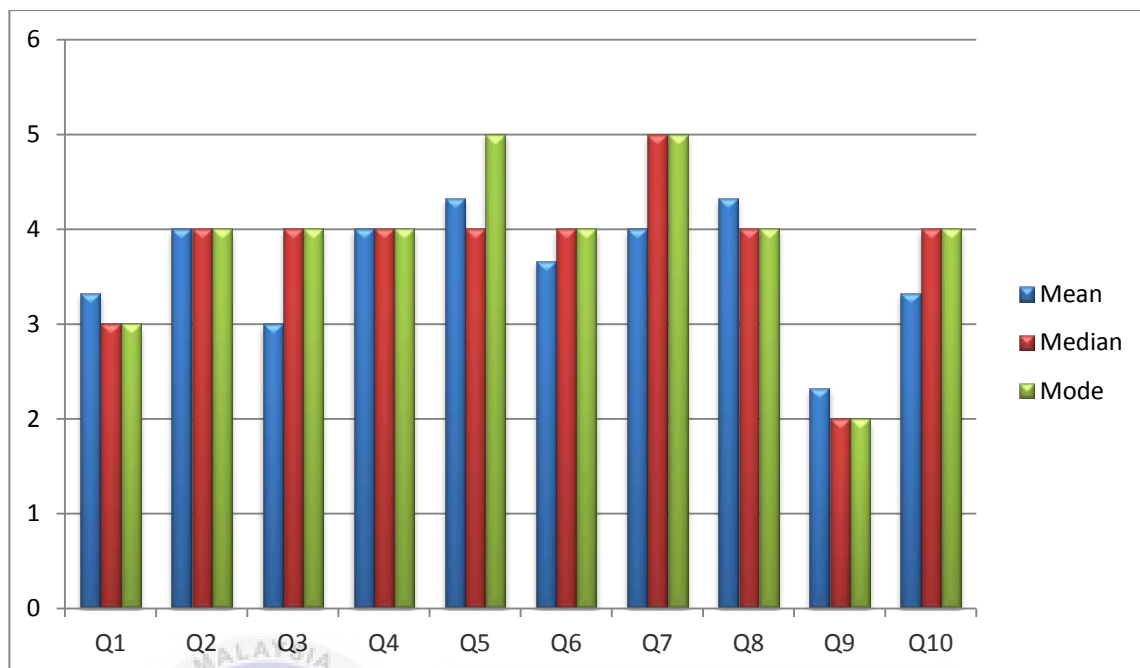
Diagram 6.2: Graph of Test Result Effectiveness (Multimedia Expert)

From the graph, 10 of the questions were answered by the multimedia expert has mean, median and mode achieve 4 and above. There were 4 questions did achieve above 4. This shown that the multimedia elements that use in this interactive book were suits for the students. For the question 5 and question 8, the result for mean has shared the same result which is 4.33. From that, the result for effectiveness was accepted. Conclusion, all the three multimedia experts respondent of this interactive book were approved to be used for students for their learning process.

Table 6.12 Test Data for Ease to Use (Multimedia Expert)

Multimedia Expert (ME)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
ME1	4	4	4	4	3	4	4	4	4	4
ME2	4	3	5	4	4	4	4	5	3	5
ME3	2	3	5	4	1	4	4	4	2	3

Table 6.13 Test Result Ease to use (Multimedia Expert)

Question	Mean	Median	Mode
Q1	3.33	3	3
Q2	3.33	3	3
Q3	4.67	5	5
Q4	4	4	4
Q5	2.67	3	4
Q6	4	4	4
Q7	4	4	4
Q8	4.33	4	4
Q9	3	3	4
Q10	4	4	4
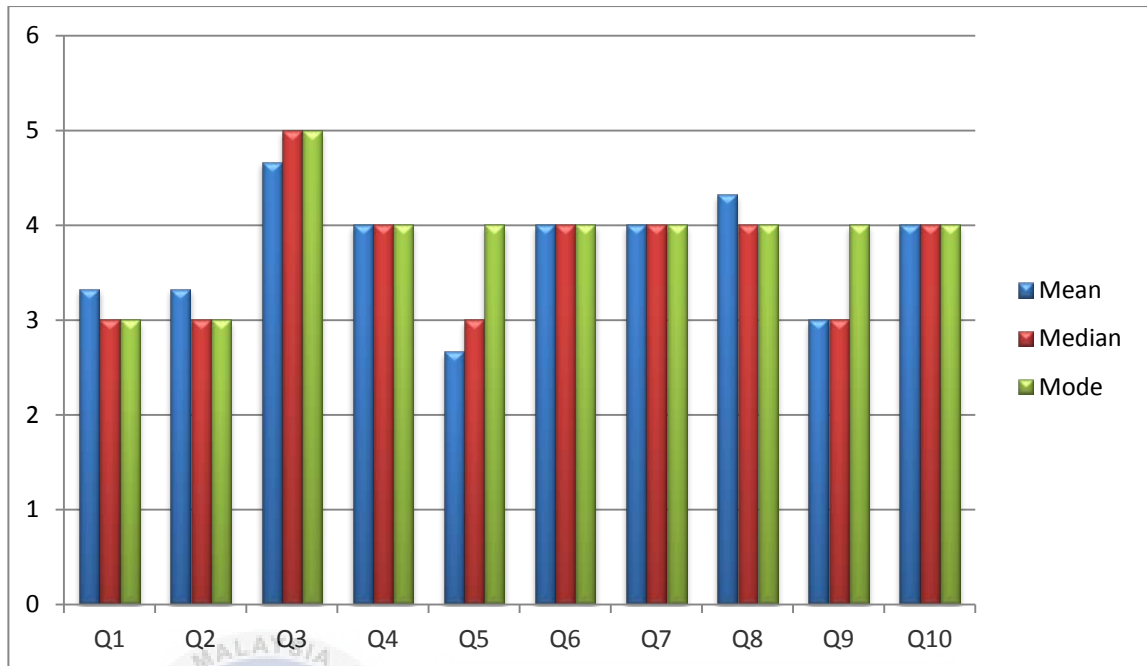
Diagram 6.3: Graph of Test Result Ease to Use (Multimedia Expert)

From the graph, there were 10 of the questions were answered by the multimedia expert has mean, median and mode achieve 4 and above. There were only 3 questions did not achieve above 4. This shown that the multimedia elements that use in this interactive book were suits for the students. For question 3, all the mean, median and mode get the highest marks for ease to use part. Conclusion, all the three multimedia experts respondent of this interactive book were approved the interactive book to be used for students.

Table 6.14 Test Data for Flexibility (Multimedia Expert)

Multimedia Expert (ME)	Q1	Q2	Q3	Q4
ME1	4	4	4	4
ME2	5	4	5	5
ME3	2	4	5	3

Table 6.15 Test Result Flexibility(Multimedia Expert)

Question	Mean	Median	Mode
Q1	3.67	4	4
Q2	4	4	4
Q3	4.67	5	5
Q4	4	4	3

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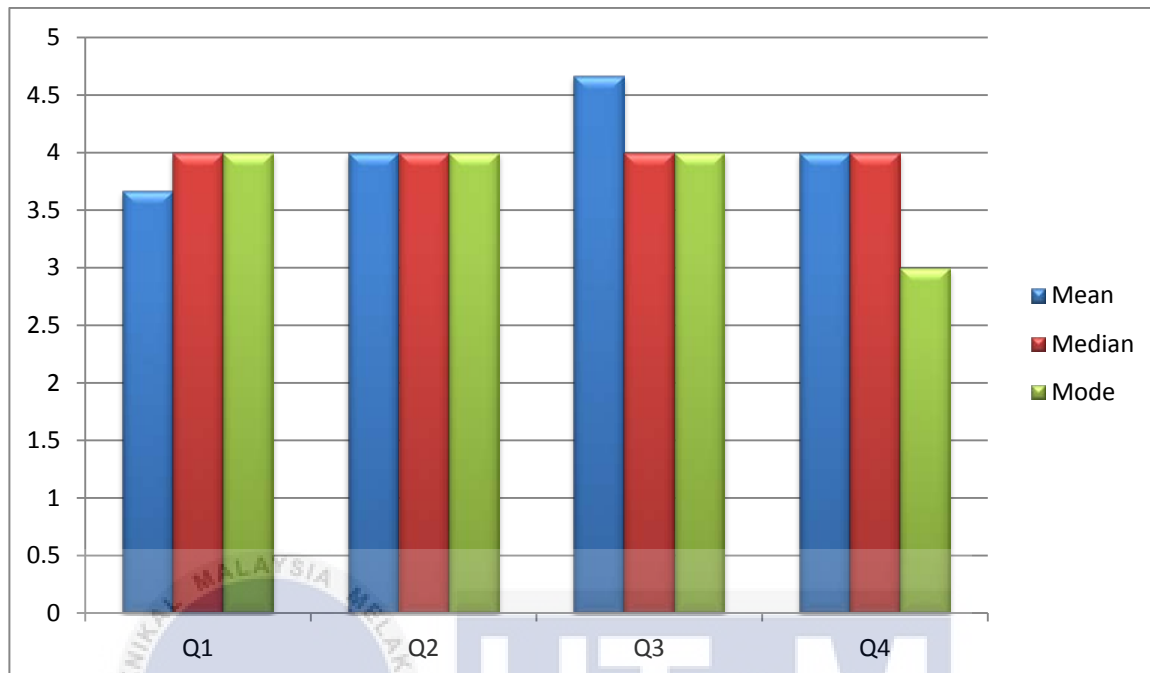
Diagram 6.4: Graph of Test Result Flexibility (Multimedia Expert)

From the graph, 10 of the questions were answered by the multimedia expert has mean, median and mode achieve 4 and above. Only one question did not achieve above 4. This shown that the multimedia elements that use in this interactive book were suits for the students. For question 3, the mean marks were the highest which is 4.67 while the lowest mark for mean from question 1 which is 3.67. This shown that this part for flexibility was accepted. Conclusion, all the three multimedia experts respondent of this interactive book were approved the interactive book to be used for students.

Cronbach's Alpha for Multimedia expert

Table 6.16 Cronbach's Alpha for Multimedia expert

Part A	Learnability testing	0.7407
Part B	Effectiveness	0.7407
Part C	Ease to use	0.7407
Part D	Flexibility	0.8899
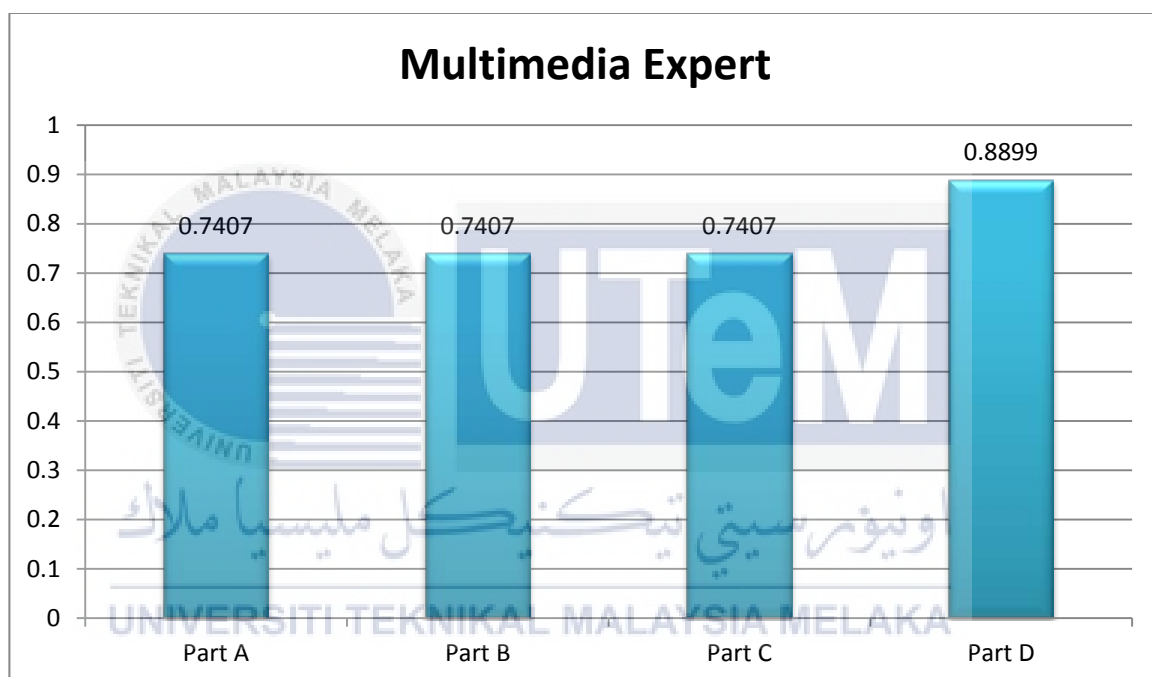
Diagram 6.5: Graph of Cronbach's Alpha for Multimedia expert

The result shows the Cronbach's Alpha in part A is learnability, part B is effectiveness, part C ease to use and lastly part D flexibility in this testing. All the part is upper than 0.6. It is means that all testing is work well and can be accepted. For learnability, effectiveness, and ease to use shared the same result which is 0.7407 while the flexibility was 0.899. All the result will conclude that this interactive book can be accepted to use.

6.6.2   Expert Content

Table 6.17 Test Data for Learnability Testing (Expert Content)

Expert Content (EC)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
EC1	4	4	5	5	5	5	5	4	4	4
EC2	5	5	5	5	5	5	5	5	5	5
EC3	4	4	4	4	4	4	4	4	4	4
EC4	5	5	5	5	5	5	5	5	5	5

Table 6.18 Test Result Learnability (Expert Content)

Question	Mean	Median	Mode
Q1	4.5	4.5	4
Q2	4.5	4.5	4
Q3	4.5	4.5	4
Q4	4.5	4.5	4
Q5	4.5	4.5	4
Q6	4.5	4.5	4
Q7	4.5	4.5	4
Q8	4.5	4.5	4
Q9	4.5	4.5	4
Q10	4.5	4.5	4
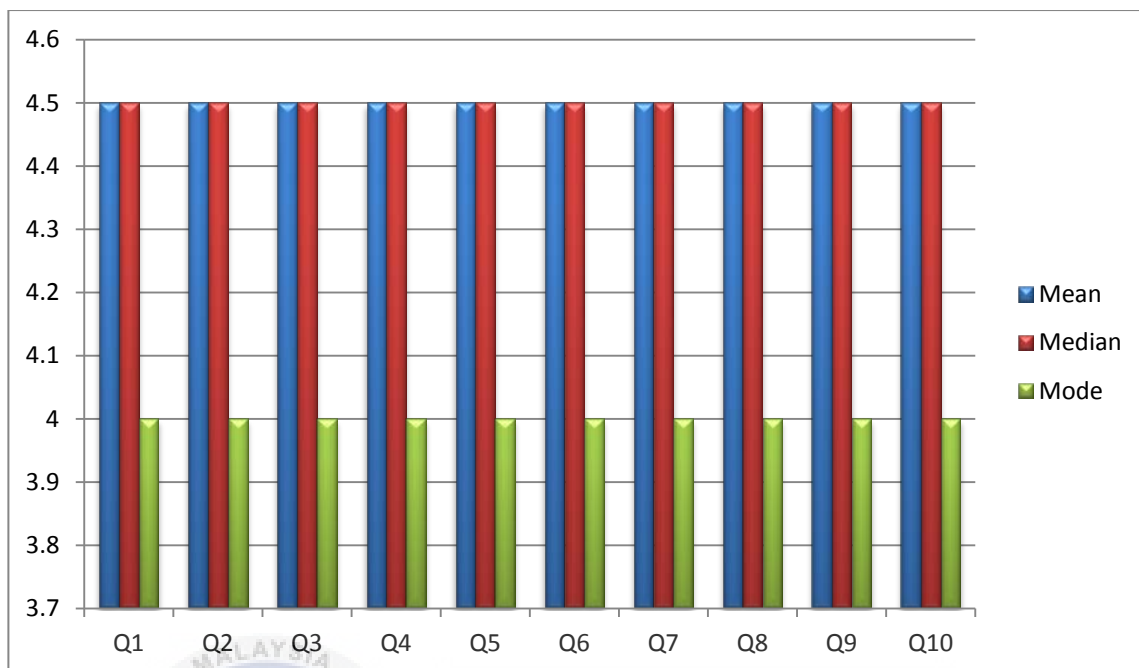
Diagram 6.6: Graph of Test Result Learnability (Expert Content)

From the graph, 10 of the questions were answered by the expert content has mean, median and mode achieve 4 and above. All the result had the same results for all questions which are mean is 4.5, median is 4.5 and mode is 4.This shown that the multimedia elements and content in this interactive book were same like textbook in school and were suits for the students. Conclusion, all the four expert contents respondent of this interactive book were approved the interactive book to be used for students.

Table 6.19 Test Data for Effectiveness (Expert Content)

Expert Content (EC)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
EC1	4	5	4	5	5	5	5	4	3	5
EC2	3	4	4	4	4	4	4	4	4	4
EC3	5	5	5	5	4	5	5	5	5	4
EC4	5	5	5	5	5	4	4	5	5	5

Table 6.20 Test Result Effectiveness (Expert Content)

Question	Mean	Median	Mode
Q1	4.25	4.5	5
Q2	4.75	5	5
Q3	4.5	4.5	4
Q4	4.75	5	5
Q5	4.5	4.5	4
Q6	4.5	4.5	4
Q7	4.5	4.5	4
Q8	4.25	4.5	5
Q9	4.25	4.5	5
Q10	4.5	4.5	4
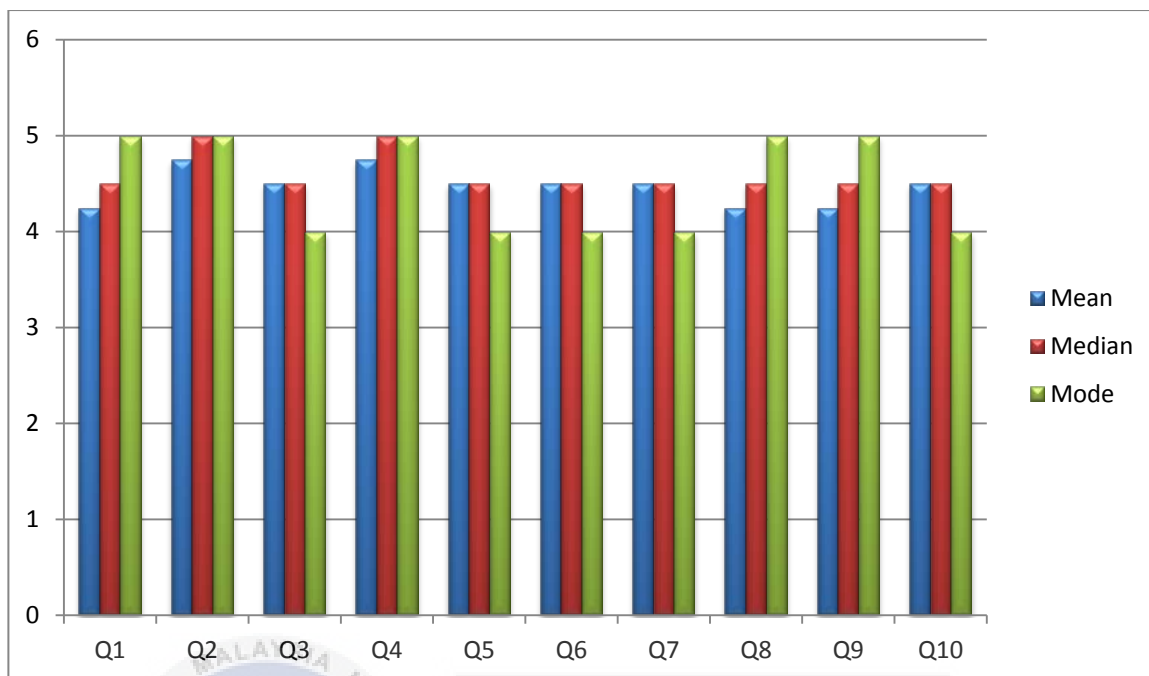
Diagram 6.7: Graph of Test Result Effectiveness (Expert Content)

From the graph, we can see that 10 of the questions were answered by the expert content has mean, median and mode achieve 4 and above. All the result had the same results for all questions were above 4. This shown that the multimedia elements and content in this interactive book were same like textbook in school and were suits for the students. Conclusion, all the four expert contents respondent of this interactive book were approved the interactive book to be used for students.

Table 6.21 Test Data for Ease to Use (Expert Content)

Expert Content (EC)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
EC1	5	5	5	5	4	4	4	5	4	4
EC2	5	5	5	5	5	5	5	5	5	4
EC3	4	4	4	4	4	4	4	4	4	4
EC4	4	4	5	5	5	5	5	5	5	5

Table 6.22 Test Result Ease to use (Expert Content)

Question	Mean	Median	Mode
Q1	4. 5	4.5	5
Q2	4.5	4.5	5
Q3	4.75	5	5
Q4	4.5	4.5	5
Q5	4.5	4.5	4
Q6	4.5	4.5	4
Q7	4.5	4.5	4
Q8	4.5	4.5	4
Q9	4.5	4.5	4
Q10	4.25	4	4
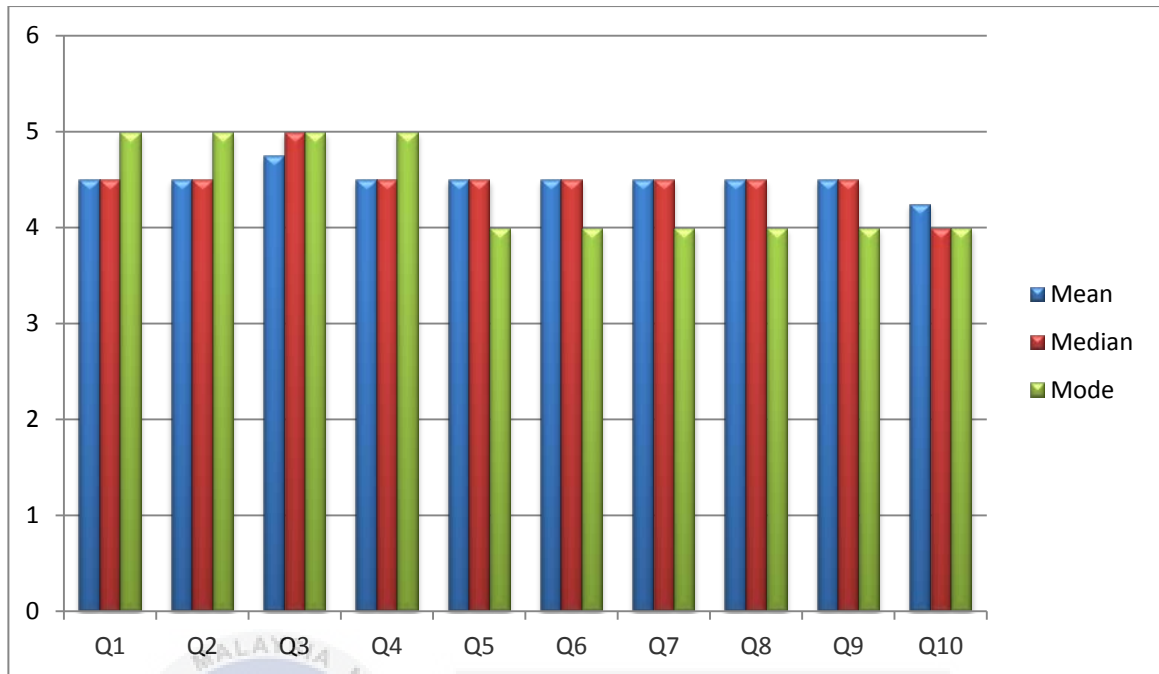
Diagram 6.8: Graph of Test Result Ease to use (Expert Content)

From the graph, we can see that 10 of the questions were answered by the expert content has mean, median and mode achieve 4 and above. All the result had the same results for all questions were above 4. This shown that the multimedia elements and content in this interactive book were same like textbook in school and were suits for the students. Conclusion, all the four expert contents respondent of this interactive book were approved the interactive book to be used for students.

Table 6.23 Test Data for Flexibility (Expert Content)

Expert Content (EC)	Q1	Q2	Q3	Q4
EC1	5	4	5	4
EC2	5	5	5	4
EC3	5	4	5	4
EC4	5	4	5	4

Table 6.24 Table of Test Result Flexibility (Expert Content)

Question	Mean	Median	Mode
Q1	4.5	4.5	4
Q2	4.5	4.5	4
Q3	4.5	4.5	4
Q4	4.5	4.5	4

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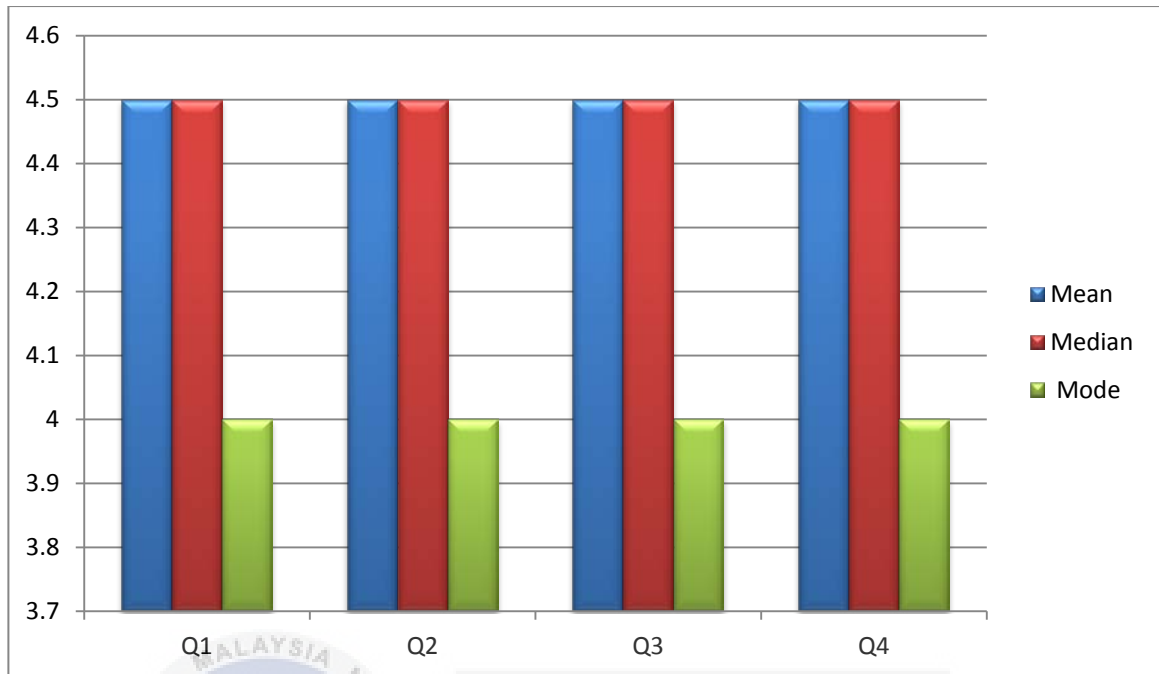
Diagram 6.9: Graph of Test Result Flexibility (Expert Content)

From the graph, we can see that 10 of the questions were answered by the expert content has mean, median and mode achieve 4 and above. All the result had the same results for all questions which are mean 4.5, median 4.5 and mode 4. This shown that the multimedia elements and content in this interactive book were same like textbook in school and were suits for the students. Conclusion, all the four expert contents respondent of this interactive book were approved the interactive book to be used for students.

Cronbach's Alpha for Expert Content

Table 6.25 Cronbach's Alpha for Expert Content

Part A	Learnability	0.833
Part B	Effectiveness	0.833
Part C	Ease to use	0.833
Part D	Flexibility	1.000
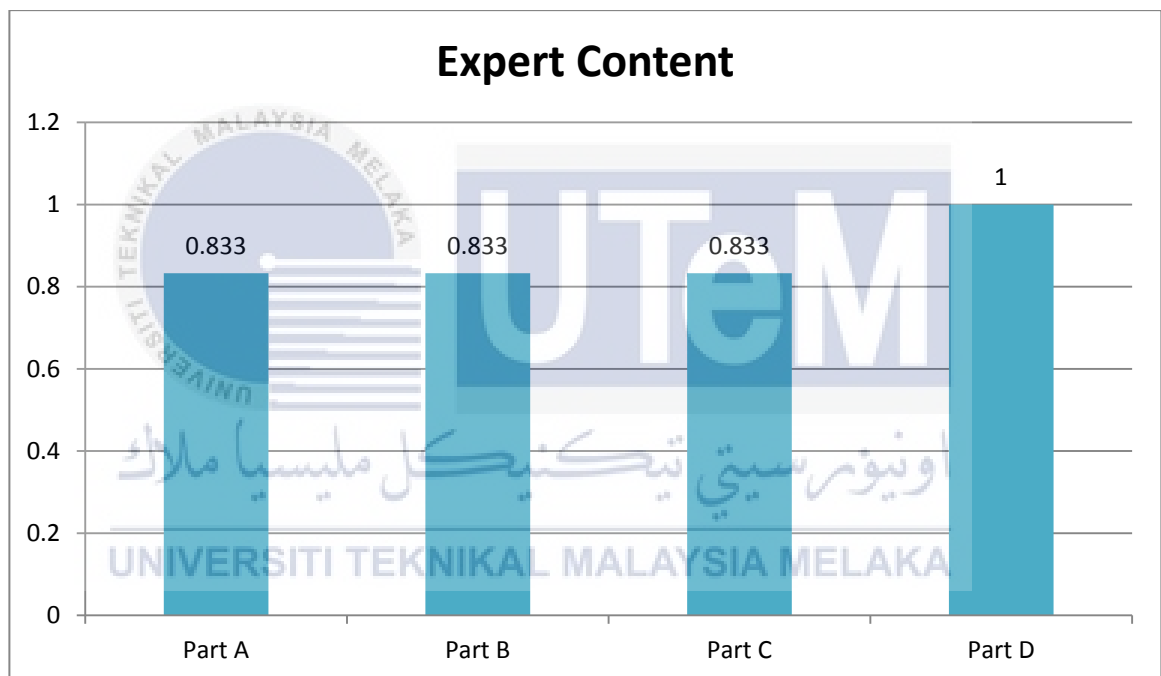
Figure 6.10: Graph of Cronbach's Alpha for Expert Content

The result shows the Cronbach's Alpha in part A is learnability, part B is effectiveness, part C ease to use and lastly part D flexibility in this testing. . For learnability, effectiveness, and ease to use shared the same result which is 0.833 while the flexibility was 1. All the result will conclude that this interactive book can be accepted to use. All the part is upper than 0.6. It is means that all testing is work well and can be accepted.

6.6.3 Student That Already Taking *Jawi* Subject (Standard 5)

Table 6.26: What is your opinion towards *Jawi*? (Student)

	Too difficult	Difficult	Average	Easy	Very easy
Student			2	10	8

For this question, the average of the opinion students toward *Jawi* is easy. This can see from the table the total of student answer easy is 10 students while the other answer is very easy answered by 8 students and average is 2 students.

Table 6.27 Have you ever heard of interactive book application? (Student)

	Yes	No
Student	7	13

From the table, the question about ever heard of interactive book only 7 students answer is yes while the other 13 students answer is no.

Table 6.28: Do you ever use an interactive book application? (Student)

	Yes	No
Student	6	14

From the table, the question about ever use an interactive book only 6 students answer is yes while the other 14 students answer is no.

Table 6.29: Based on your experience in learning *Jawi*, what do you think of the learning process for this subject? (Student)

	Boring	Difficult to understand	Interactive	Easy	Not Sure
Student		2		15	3

For this question, the average of the question is easy. This can see from the table the total of student answer easy is 15 students while the other answer is not sure answered by 3 students and difficult to understand is 2 students.

Table 6.30: Which elements might help you for better understandings *Jawi*? (Student)

	Interactive	Quiz	Text	Picture	All above
Student	1	5	4	3	7

For this question, all the elements attract the student to understand more. This can see from the table that all the option of answer have been selected by the student.

Table 6.31 Investigate the suitableness of the usage of interactive book in conveying
***Jawi* (Student)**

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
S1	3	4	3	4	5	2	3	4
S2	2	4	3	3	3	2	3	3
S3	2	3	3	3	5	5	5	5
S4	3	4	3	3	3	5	5	5
S5	2	5	4	5	5	5	5	5
S6	5	5	5	5	5	5	4	5
S7	5	5	5	5	5	5	4	5
S8	5	5	5	5	5	5	4	5
S9	5	5	5	5	5	5	4	5
S10	5	5	5	5	4	4	4	4
S11	5	5	5	5	4	5	4	5
S12	5	5	5	5	4	5	5	5
S13	4	3	2	3	3	3	5	3
S14	5	5	5	5	4	4	5	5
S15	3	2	5	3	3	4	3	5
S16	5	5	5	5	4	4	5	5
S17	3	3	3	3	3	3	4	5
S18	3	5	4	5	3	5	4	5
S19	5	3	5	5	4	3	3	5
S20	4	3	3	5	4	3	5	5

Table 6.32 Test Result of Investigate the suitableness of the usage of interactive book in conveying *Jawi*.

Question	Mean	Median	Mode
Q1	3.89	4	5
Q2	4.2	5	5
Q3	4.15	5	5
Q4	4.35	5	5
Q5	4.1	4	4
Q6	3.9	4	4
Q7	4.35	5	5
Q8	4.6	5	5
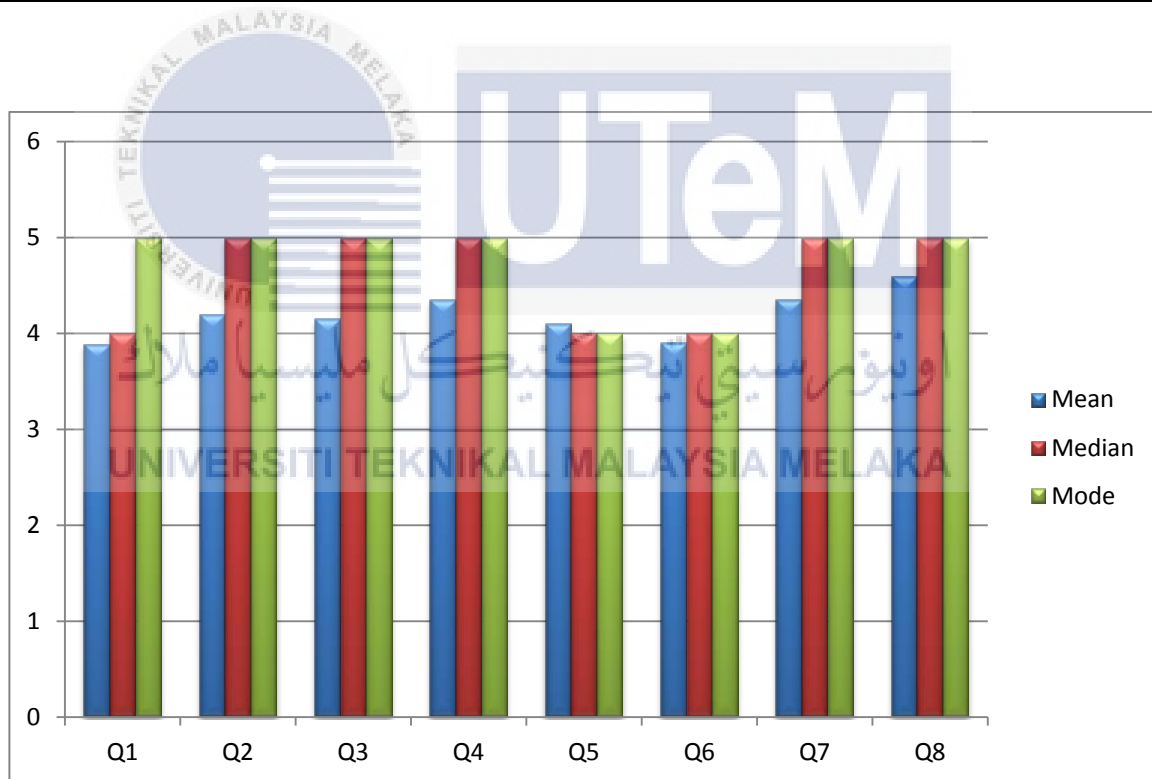
Diagram 6.11: Graph of Investigate the suitableness of the usage of interactive book in conveying *Jawi*.

From the graph, we can see that 8 of the questions were answered by the user has mean, median and mode achieve 4 and above. Only 2 questions did not achieve above 4. This shown that the multimedia elements that use in this interactive book were suits for the students. Conclusion, all the 20 respondent of this interactive book were approved the interactive book to be used for students.

Table 6.33: Objective interactive book which multimedia element that given huge impact in the interactive book (Student)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
S1	4	3	5	3	5	2	5
S2	2	3	4	3	5	3	4
S3	3	5	5	4	4	3	5
S4	5	5	3	3	3	3	3
S5	4	4	2	3	3	5	5
S6	3	3	3	3	3	3	3
S7	4	5	5	4	4	4	4
S8	5	4	3	3	4	5	4
S9	4	5	5	4	3	3	3
S10	3	4	3	2	3	1	4
S11	5	4	5	5	5	4	4
S12	5	5	5	5	5	5	5
S13	5	4	5	5	5	5	5
S14	5	5	5	5	5	5	5
S15	5	5	5	5	5	5	5
S16	5	5	5	4	5	2	5
S17	5	5	4	5	5	4	5
S18	5	5	4	5	5	4	5
S19	3	3	5	3	3	2	3
S20	5	5	5	3	3	5	5

Table 6.34: Test Result of objective interactive book, which multimedia element that given huge impact in the interactive book.

Question	Mean	Median	Mode
Q1	4.25	5	5
Q2	4.35	5	5
Q3	4.2	5	5
Q4	3.85	4	3
Q5	4.15	4.5	5
Q6	3.7	4	5
Q7	4.35	5	5
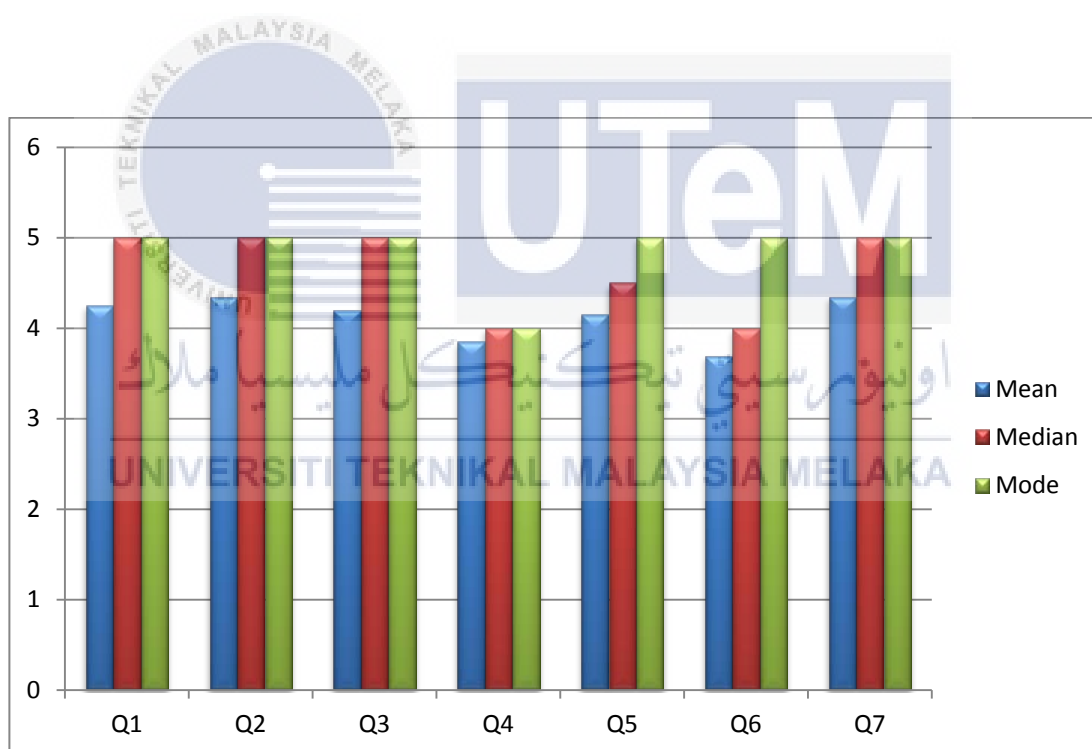
Diagram 6.12: Graph of objective interactive book, which multimedia element that given huge impact in the interactive book

From the graph, we can see that 7 of the questions were answered by the user has mean, median and mode achieve 4 and above. Only 2 questions did not achieve above 4. This shown that the multimedia elements that use in this interactive book were suits for the students. Conclusion, all the 20 respondent of this interactive book were approved the interactive book to be used for students.

Table 6.35: Flexibility (Student)

	Q1	Q2	Q3	Q4
S1	4	4	3	4
S2	5	4	4	5
S3	3	3	3	2
S4	4	5	3	5
S5	5	5	5	5
S6	5	5	5	5
S7	5	5	4	5
S8	5	5	4	5
S9	5	5	4	5
S10	5	5	4	5
S11	5	5	5	4
S12	5	3	4	4
S13	3	5	2	3
S14	2	1	4	2
S15	4	5	3	5
S16	3	4	3	3
S17	4	5	4	3
S18	4	4	4	5
S19	5	4	3	2
S20	3	4	3	3

Table 6.36: Test Result of flexibility

Question	Mean	Median	Mode
Q1	4.2	4.5	5
Q2	4.3	5	5
Q3	3.7	4	4
Q4	4	4.5	5
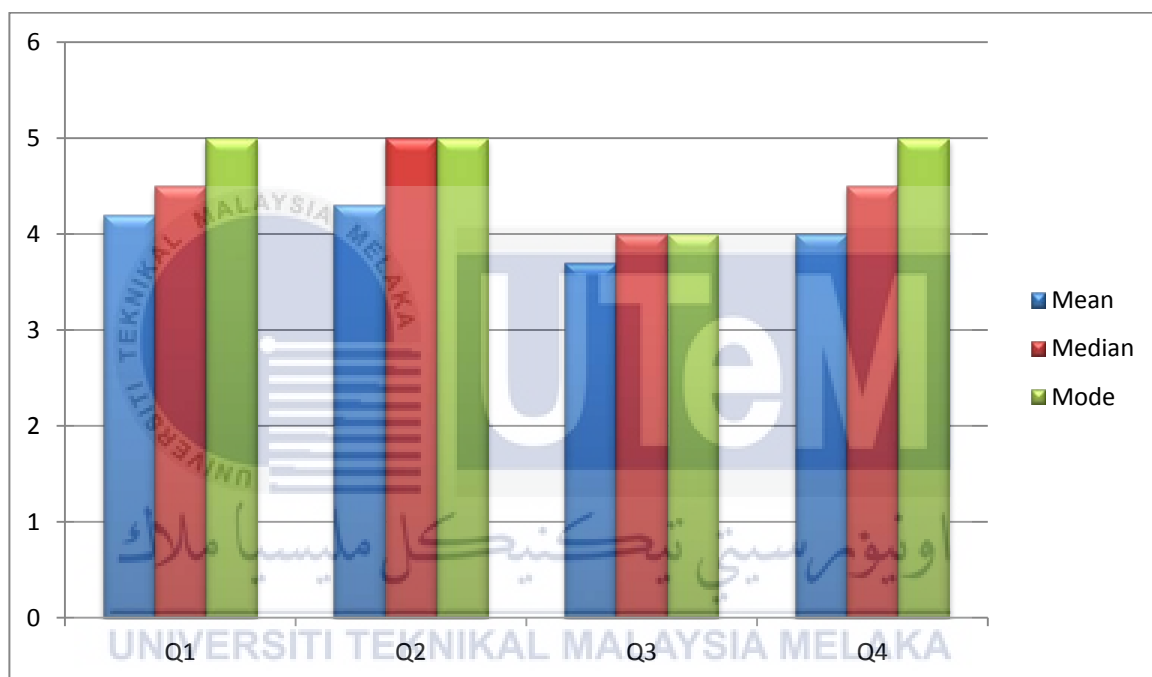
Diagram 6.13: Graph of test result of flexibility

From the graph, we can see that 4 of the questions were answered by the user has mean, median and mode achieve 4 and above. Only one question did not achieve above 4 for the mean. This shown that the multimedia elements that use in this interactive book were suits for the students. Conclusion, all the 20 respondent of this interactive book were approved the interactive book to be used for students.

Cronbach's Alpha for Student That Already Taking *Jawi* Subject (Standard 5)

Table 6.37: Test Result Cronbach's Alpha for Student That Already Taking *Jawi* Subject (Student)

Part A	Investigate the suitableness of the usage of interactive book in conveying *Jawi*.	0.6387
Part B	Objective interactive book, which multimedia element that given huge impact in the interactive book.	0.6437
Part C	Flexibility	0.82288
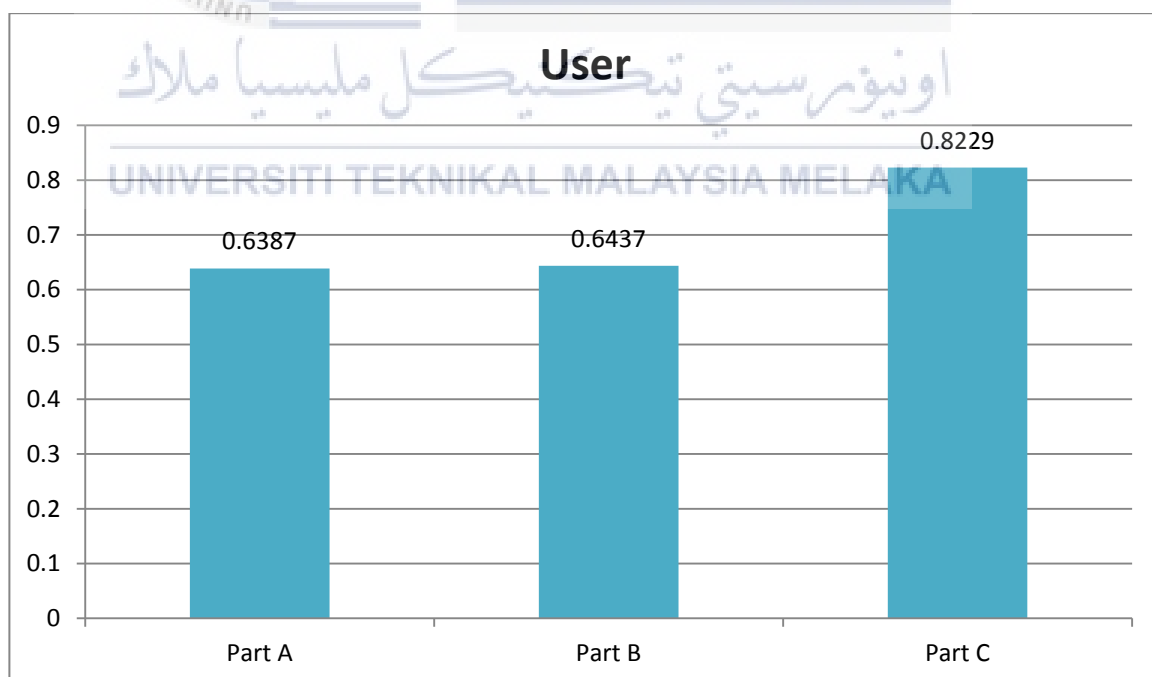
Diagram 6.14: Graph Cronbach's Alpha for Student That Already Taking *Jawi* Subject (Standard 5)

The result shows the Cronbach's Alpha in part A is investigate the suitableness of the usage of interactive book in conveying *Jawi*, part B is the objective interactive book, which multimedia element that given huge impact in the interactive book, and lastly part C flexibility in this testing. All the part is upper than 0.6. It is means that all testing is work well and can be accepted. For investigate the suitableness of the usage of interactive book in conveying *Jawi* the results are 0.6387, for the objective interactive book, which multimedia element that given huge impact in the interactive book, the results are 0.6437 and flexibility are 0.8229. All the result will conclude that this interactive book can be accepted to use.

6.7   Testing

From the Cronbach's alpha result, the results were accepted because the results are above 0.6. After that, continue with the real testing which is pre-test and post-test. In this test was divided into two groups which are control group and experimental group.

Control group are the students that have more knowledge about *Jawi* subject and learn *Jawi* by their teachers while experimental group are the student that have little knowledge about *Jawi* subject and learn *Jawi* by interactive book.

First, both groups are given the pre-test where they need to answer the questions based on their knowledge. After they have done the testing the control groups are going to learn *Jawi* by their teacher while the experimental groups are going to learn *Jawi* with interactive book. Both groups are given 1 hour to study the subject. Then both groups are given the second test which is post-test to test their knowledge about the subject after studying it with teacher and interactive book.

The result that has been collected from student year five is show the positive feedback from them. There are 20 students from Sekolah Kebangsaan Bandar Endau answers the question given. The collective result is get from pre testing and post testing. The table below shows the result.

Table 6.38: Number of student (standard 1)

Gender	No of respondents
Male	10
Female	10

6.7.1 Control group

Control group are the students that have more knowledge about *Jawi* subject and learn *Jawi* by their teachers. For this group, only 10 students were selected to test. First, they need to answer the testing. The testing was like an examination. This called pre-test. They were given 1 hour to answer the question. After that, they continue learning *jawi* by their teachers. Then they continue with the post-test to see whether they understand or not by learning from their teachers.

The results for pre-test and post-test:

Table 6.39: Results for Pre-test and Post-Test Control group

Pre Test		Post Test		Different Marks
Control Group (C)	Marks	Control Group (C)	Marks	
C1	29.2% (E)	C1	70.8% (B)	+41.6%
C2	37.5% (E)	C2	70.8% (B)	+33.3%
C3	4.2% (G)	C3	8.3% (G)	+4.1%
C4	41.67% (D)	C4	75.0% (B)	+33.33%
C5	100% (A)	C5	100% (A)	0%
C6	79.2% (B)	C6	83.3% (A)	+4.1%
C7	100% (A)	C7	100% (A)	0%
C8	100% (A)	C8	100% (A)	0%
C9	100% (A)	C9	100% (A)	0%
C10	100% (A)	C10	100% (A)	0%
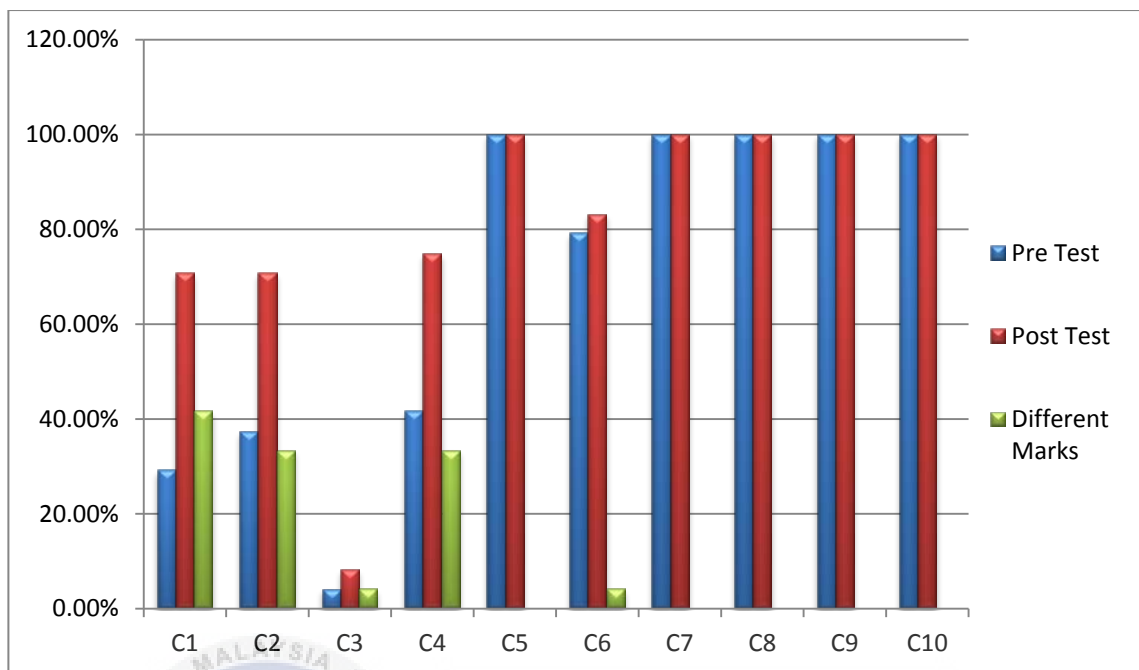
Diagram 6.15: Graph of Pre-test and Post-Test Control group

From the graph, shows the results of different marks from pre-test and post-test done by student (standard 1) for control group. The different marks are having a lot of percentage increase after the post test. From the different marks can see that the student get their understanding by their teachers more than they learn it themselves. The highest different marks are 41.6% and the lowest different marks are 0%.

6.7.2 Experimental group

Experimental group are the student that have little knowledge about *Jawi* subject and learn *Jawi* by interactive book. For this group, only 10 students were selected to test. First, they need to answer the testing. The testing was like an examination. This called pre-test. They were given 1 hour to answer the question. After that, they continue learning *jawi* by interactive book. Then they continue with the post-test to see whether they understand or not by learning from interactive book.

The results for pre-test and post-test:

Table 6.40: Results for Pre-test and Post-Test Experimental group

Pre Test		Post Test		Different Marks
Experimental Group (E)	Marks	Experimental Group (E)	Marks	
E1	66.7% (B)	E1	76% (B)	+9.3%
E2	95.8% (A)	E2	100% (A)	+4.2%
E3	95.8% (A)	E3	100% (A)	+4.2%
E4	83.3% (A)	E4	100% (A)	+16.7%
E5	95.8% (A)	E5	100% (A)	+4.2%
E6	97.2% (A)	E6	70.8% (B)	-2.8%
E7	100% (A)	E7	100% (A)	0%
E8	100% (A)	E8	100% (A)	0%
E9	100% (A)	E9	100% (A)	0%
E10	100% (A)	E10	100% (A)	0%
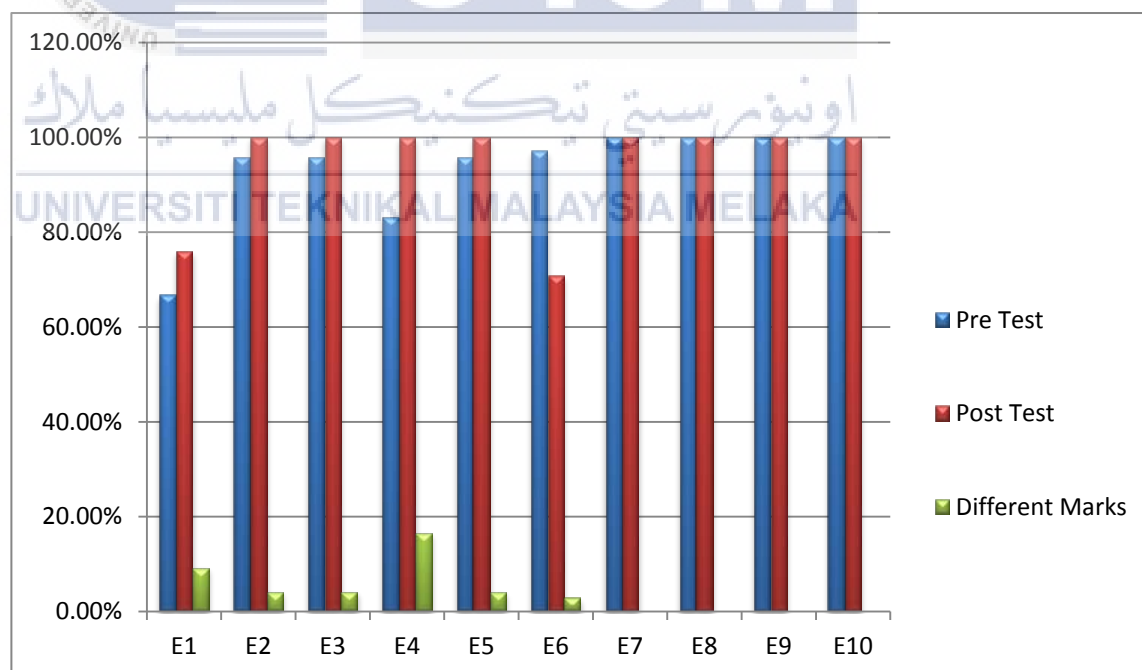
Diagram 6.16: Graph of Pre-test and Post-Test Experimental group

From the graph, shows the results of different marks from pre-test and post-test done by student (standard 1) for control group. For experimental group the different marks increased slightly compared to control group.

6.7.3   Comparison between control group and experimental group.

For this part, the comparison between control group and experimental group can be seen from the different marks and the number of student who gets an A for this *jawi* subject.

The results of post-test for control group and experimental group:

Table 6.41: Results for Post-test and Post-Test for both group

Post Test		Post Test	
Control Group (C)	**Marks**	**Experimental Group (E)**	**Marks**
C1	70.8% (B)	E1	76% (B)
C2	70.8% (B)	E2	100% (A)
C3	8.3% (G)	E3	100% (A)
C4	75.0% (B)	E4	100% (A)
C5	100% (A)	E5	100% (A)
C6	83.3% (A)	E6	70.8% (B)
C7	100% (A)	E7	100% (A)
C8	100% (A)	E8	100% (A)
C9	100% (A)	E9	100% (A)
C10	100% (A)	E10	100% (A)
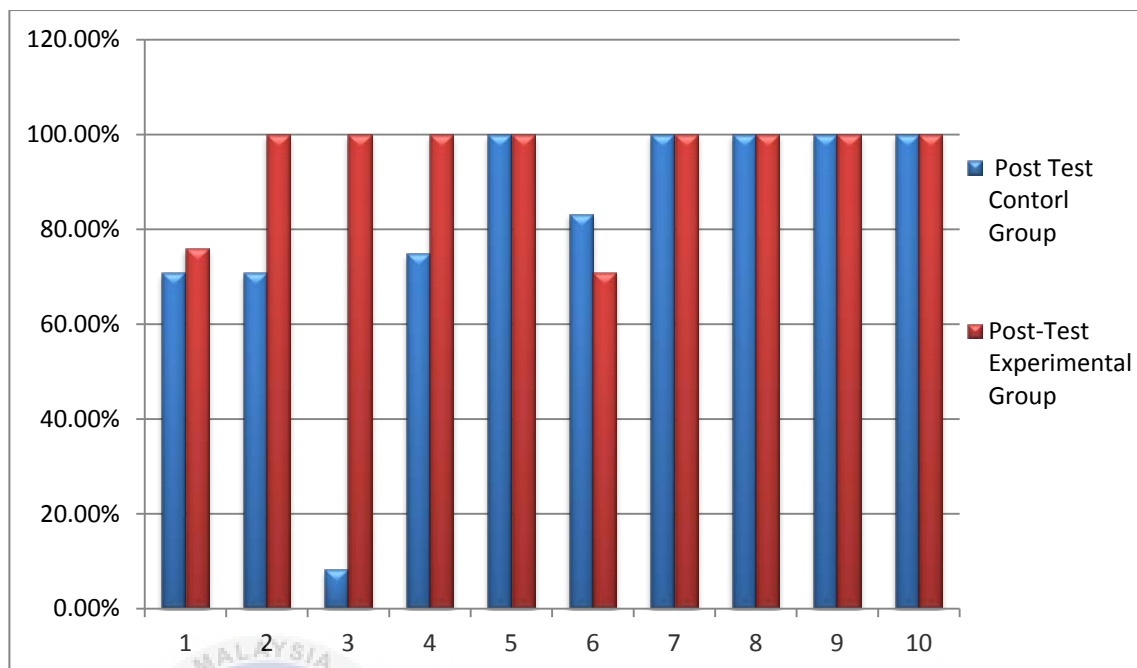
Diagram 6.17: Graph of Post-test and Post-Test for both groups

From the graph, control group and experimental group there are 10 students for each group; only 6 students get the highest grade in control group while in experimental group there are 8 students get the highest grade. This is shows that the experimental group learning *jawi* by interactive book are more effective compare to control group learning *jawi* by their teachers. As conclusion, the interactive book help the students to more understand. From the tested, it proved that learning with interactive book is more effective compared to learning the subject by teachers.

6.8   Summary

This chapter was discussed about the result and the analysis of the testing with details. All the testing has been explained in this chapter. From the testing, multimedia expert and expert content gave their feedback towards this interactive book. All the data collection has been analyze and from that will know the strong and weakness of this interactive book. From the data collection, can conclude that this interactive book is suitable for student to learn this Jawi subject in more interactive way. In the next chapter will discuss about the strength and weakness of this interactive book.

CHAPTER VII

CONCLUSION
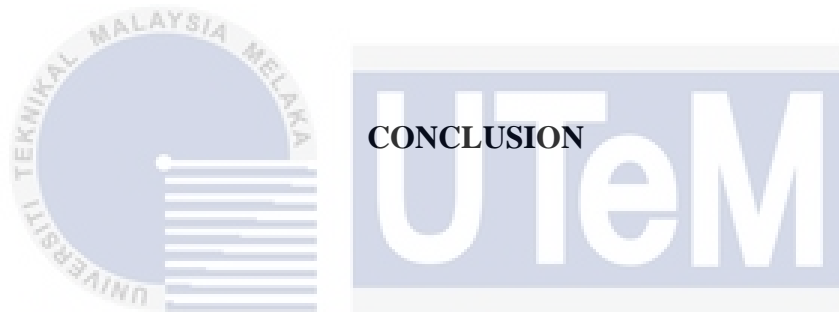
7.1   Introduction

The interactive book that been develop have its own strength and weakness. Strength is used to determine what does the product offer the best whereas weakness is the flaw that will increase the risk of a failure but still can be improve it for the future. From this strength and weakness, can improve this interactive book in the future.

7.2   Discussion

7.2.1   To identify the effectiveness elements of multimedia to interact the children and student in learning *jawi* such as video, animation, image, text and sound.

In this interactive book, the effectiveness element of multimedia are needed in this interactive book because it can attract anyone especially children and student in learning process. From the identifying, elements of multimedia needs in this interactive book are video, animation, image, text and audio.

7.2.2   To design an interactive book about learning *Jawi* including the elements of multimedia.

In this interactive book, to design the element of multimedia are needed in this interactive book so it can attract anyone especially children and student in learning process. From the designing, elements of multimedia needs in this interactive book are video, animation, image, text and audio. From that, children and student can learn it with more excited (Bakar, N. & Zaman, H.B., 2007).

7.2.3   To develop an interactive book about learning *Jawi* including the activity to learn *Jawi* in effective way such as notes and quiz.

To develop the interactive book with full element of multimedia to attract anyone especially children and student in learning process. From the developing, elements of multimedia needs in this interactive book are video, animation, image, text and audio (Bakar, N. & Zaman, .H.B., 2006). Children and student will understand more about the *jawi* subject.

7.2.4   To evaluate the effectiveness of interactive book for learning *Jawi* for children and students.

In this interactive book, the effectiveness element of multimedia are needed in this interactive book because it can attract anyone especially children and student in learning process. From the evaluation, elements of multimedia needs in this interactive book are video, animation, image, text and audio. Hope this interactive book will help children and student to learn it in interactive way.

7.3   Observation on Strengths and Weakness

7.3.1   Strengths

The strengths of this application are listed as following:

i)   The content is suit with the requirement of the subject

The content in this interactive can be understand and easily learning this subject by the student. The notes provided in this interactive help the student to think and focus during using this interactive book.

ii)   The video and animation related to the subject

The video and animation provided in this interactive book attract the student to understand more about this *Jawi* subject. The graphic use in this interactive book gives a better explanation to the student.

iii)   The flow of interactive are easy understand

The flow from the first page are neatly arranged to easy understand while using this interactive book. The fonts used in this interactive book are easy to read and clear for the student.

7.3.2   Weakness

i)   The sound need more clearly and loud

When the user runs this interactive book, the sound was not clearly heard and the sound. When the sounds are not clearly heard it can make the student cannot understand and focus with the sound.

ii)   The duration of the animation is short

The duration of animation is short but still user can understand it by click the button to play it again. However, there are still a few of student cannot understand and cannot reached the explanation in the animation.

iii)   The quiz provided are not friendly

The quiz does not have instruction what to do and where need to click while answer the quiz. But, some students are known and understand what to do.

7.4   Propositions for Improvement

From strengths and weakness are given from the user, there are a few improvement that this interactive book need to be improved. The improvements are:

i)   The sound need to improvement for more clearly and loud

ii)   Enhance the animation video with the long duration and more realistic movements.

7.5   Project contribution

This interactive book was created for student Standard 1 in learning about *Jawi* without referring any textbook or any references. Student can learn *Jawi* by using this interactive book clearly with all the content and the information provided in this interactive book. Student also can more understand the topic easily and faster compared learning it with teachers at the school. Besides, the information provided in the application is sufficient for the public knowledge and it meets the objectives to study

about *Jawi*. Elements of audio, graphics, animation and text will be applied in this interactive book to make it more interesting and enjoyable. By applying more interactive animate, teaching and studying techniques can motivate student to study smart. Then, this interactive book can be improve by add more animation and video to interact student to learn this subject.

7.6   Summary

As conclusion, this interactive book for *Jawi* subject is an alternative way to learn *Jawi* subject in digital. This is another version of *Jawi* subject for student standard 1. This interactive book gives a variety for student in learning since this interactive book meets its objective conclusively. Student should be able to differentiate and memorize the *Jawi* alphabets and the spelling.
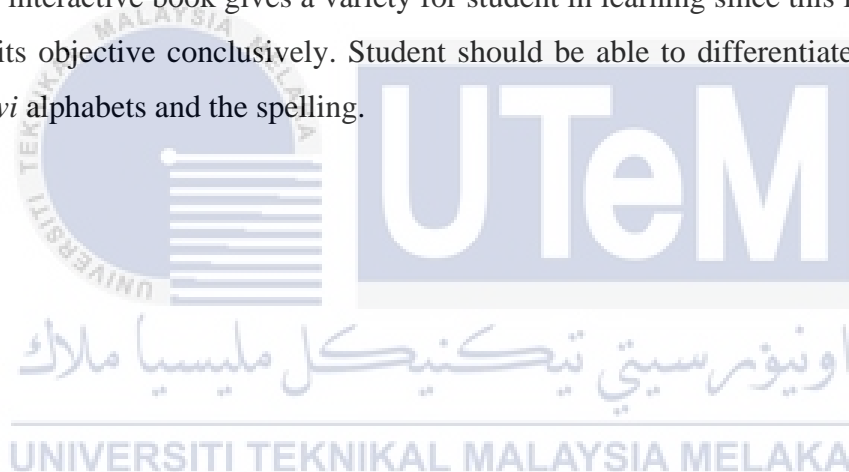
REFERENCES

Adelina. A, Mariani.M.N, Esther. D & Farah.D.F (2015). "Creating Interactive Ibook For Academic Writing Among Undergraduate Students In A Malaysian University"

Ariffin.M, Rohani, K, Adnan. A.R (2012). "Student's perception towards the teaching and learning Jawi under J-QAF Programme: A case study at selected government primary school in the district of Hulu Selangor"

Bakar, N. & Zaman, H.B. (2007) "Development of VLAB-CHEM for Chemistry Subject based on Constructivism-Cognitism-Contextual Approach". School of Electrical Engineering and Informatics, Institue Teknologi Bandung.

Bakar, N. & Zaman, .H.B.(2006) "Development and Design of 3D Virtual Laboratory for Chemistry Subject based on Constructivism-Cognitism-Contextual Approach". Innovations in 3D Geo Information Systems.

Deakin (2014), " Using audio and video for educational purposes"

Hussain, K. & Abdullah, A.N., Bakar, N., Shahbodin, F., Ishak, N.H. & Hasan, H. (2011) "Comparing Students' Perceptions of Blended Learning and Traditional Classroom Deliveries in an English Professional Communication Course in a Technical University". Malaysian Journal of Educational Technology, Vol 11.

Ishak, N.H., & Bakar, N., Md Lani, S., Salam, S. & Shahbodin, F. (2011) "A Conceptual Framework for the Design of a 3D Courseware on Electromagnetic Theory". Malaysian Journal of Educational Technology, Vol 11.

Mohd Hatta, N. & Bakar, N. (2011) "3D Design of Chemistry Subject at UTeM: Atom
    Cubic". Malaysian Journal of Educational Technology, Vol 11.

Muhammad Z.A.M , Siti. S.M.S, Salina. M.R, Nazariyah.S & Kasmah. J (2016),

"Reconnoitring the Effectiveness use of "Double Bubble Map" in Learning Jawi Script
    among Pupils in Malaysian Primary Schools"

Nadia .M, Ornello.M, Antonella. D.A & Allison. D (2013). "Interactive e-Books for
    Children IBooC2013 Workshop at IDC Interaction Design and Children New
    York City, June 24-27 2013"

Norasiken, B., Halimah, B. Z., Faaizah, S. & Syariffanor, H. (2009) "Pembangunan dan
    Keberkesanan Makmal Maya Kimia". School of Electrical Engineering and
    Informatics, Institue Teknologi Bandung.

Norhasnira. I (2015) " Jawi Script in Hadith Literatures in Malaysia: Issues and

Challenges"

Regula. S, Rene. S, Olaf, S & Andreas. N (2012) "Animation and Interactivity"

Scott. A (2002), "Agile Modeling: Effective Practices for extreme Programming and

Unified Process"

Singhose. W, Arto. K, Warren, S (2014). "Development of an Interactive textbook for
    command-shaping control methods"

School(Sekolah Kebangsaan Tun Syed Ahmad Syahbuddin)
    -    Mrs. Azzah binti Mohammad

APPENDICES A

QUESTIONAIRE

(To be completed by student)

TITLE: INTERACTIVE BOOK OF LEARNING JAWI FOR PRIMARY SCHOOL FOR YEAR ONE STUDENT

TAJUK **:** BUKU INTERAKTIF PEMBELAJARAN JAWI UNTUK SEKOLAH RENDAH PELAJAR DARJAH SATU

PART A : BACKGROUND

BAHAGIAN A : LATAR BELAKANG

Please tick (/) on the questions provided.

Sila tandakan (/) pada soalan yang disediakan.

1. **Gender** (Jantina) :
   ☐ **Men** / Lelaki   ☐   **Girl** / Perempuan

2. **Race** (Kaum) :

   ☐ **Malay** / Melayu   ☐ **Chinese** / Cina

   ☐ **Indian** / India   ☐ **Other** / Lain-lain

3. **Have you ever used an application related to Learning Jawi?**

   Adakah anda pernah menggunakan aplikasi berkaitan dengan pembelajaran jawi?

   ☐ **Yes** / Ya
   ☐ **No** / Tidak

A. LEARNIBILITY TESTING

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1 – Strongly Disagree   2 - Disagree   3 - Neutral   4 -Agree   5 - Strongly agree

1. **The interactive book can be use without any problem**

   Buku interaktif boleh digunakan tanpa sebarang masalah.

   1   2   3   4   5

2. **The interactive book is easy to use and handle during the learning**

   Buku interaktif ini senang digunakan semasa pembelajaran.

   1   2   3   4   5

3. **This interactive book is suitable to be used in class**

   Buku interaktif in sesuai digunakan di dalam kelas.

   1   2   3   4   5

4. **The use of this interactive book is interesting.**

   Penggunaan buku interaktif ini menarik.

   1   2   3   4   5

5. **I can understand what is the topic being discussed in this interactive book.**

   Saya faham akan tajuk yang dibincangkan di dalam buku interaktif ini.

   1   2   3   4   5

6. The content displayed with clearly.

Kandungan yang ditunjukkan jelas

1 2 3 4 5

7. The video and animation used in this interactive book are related to the topic.

Video dan animasi yang digunakan dalam buku interaktif berkait dengan topik

1 2 3 4 5

8. Learning is easy with the interactive book application.

Pembelajaran menjadi mudah dengan aplikasi buku interaktif

1 2 3 4 5

9. The use of this application can attract attention.

Penggunaan aplikasi ini boleh menarik perhatian.

1 2 3 4 5

10. Student should enhance the usage interactive book in learning Jawi.

Pelajar perlu meningkatkan penggunaan buku interaktif dalam pembelajaran Jawi.

1 2 3 4 5

B. EFFECTIVENESS

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1 – Strongly Disagree   2 - Disagree   3 - Neutral   4 - Agree   5 - Strongly agree

 1 - Sangat Tidak Setuju 2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

1. **The information provided in the interactive book is sufficient.**

    Informasi yang disediakan di dalam buku interaktif mencukupi.

    1   2   3   4   5

2. **This interactive book makes me understand the topic more effectively**

    Buku interaktif ini membuatkan saya memahami topik dengan lebih berkesan

    1   2   3   4   5

3. **The use of colour for this interactive book is appropriate.**

    Penggunaan warna yang sesuai.

    1   2   3   4   5

4. **The content can be read and understand with easily.**

    Kandungan Maklumat boleh dibaca dan difahami dengan mudah.

    1   2   3   4   5

5. **Notes and quiz provided is interesting.**

    Nota dan kuiz yang disediakan menarik.

    1   2   3   4   5

6. The notes provided help you to think and focus during using the interactive book.

Nota yang diberikan membantu anda berfikir dan fokus semasa menggunakan buku interaktif.

1   2   3   4   5

7. The quiz provided helps you to think and focus during using the interactive book.

Nota yang diberikan membantu anda berfikir dan fokus semasa menggunakan buku interaktif.

1   2   3   4   5

8. The graphics use in explaining certain topic gives you a better explanation.

Penggunaan grafik dalam menerangkan topik tertentu memberi anda penjelasan yang lebih baik.

1   2   3   4   5

9. I need to find extra information in the textbook while using the interactive book.

Saya perlu mencari maklumat tambahan dalam buku teks semasa menggunakan buku interaktif.

1   2   3   4   5

10. I am satisfied with this interactive book.

Saya berpuas hati dengan buku interaktif ini.

1   2   3   4   5

C. EASE TO USE

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1. **– Strongly Disagree   2 - Disagree   3 - Neutral   4 - Agree   5 - Strongly agree**

1 - Sangat Tidak Setuju   2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

1. **The colour used in the textbook suits with you**

   Warna yang digunakan dalam buku teks sesuai dengan anda

   1   2   3   4   5

2. **The graphics use in the interactive book is clear**

   Penggunaan grafik dalam buku interaktif adalah jelas

   1   2   3   4   5

3. **The font used in the interactive is easy to be read and clear.**

   Fon yang digunakan dalam interaktif adalah mudah dibaca dan jelas

   1   2   3   4   5

4. **The flow of the interactive book is easy to understand.**

   Aliran buku interaktif mudah difahami.

   1   2   3   4   5

5. The flow of the interactive book is easy to navigate through the whole book.

Aliran buku interaktif adalah mudah untuk menavigasi seluruh buku.

1 2 3 4 5

6. The structure of content in the interactive book is well organized.

Struktur kandungan dalam buku interaktif disusun dengan baik.

1 2 3 4 5

7. The content displayed with clearly.

Kandungan dipaparkan dengan jelas.

1 2 3 4 5

8. The text on the screen in this interactive book is easy to read.

Teks di skrin dalam buku interaktif ini mudah dibaca.

1 2 3 4 5

9. The interface of this interactive book is well organized.

Antara muka buku interaktif ini adalah teratur.

1 2 3 4 5

10. All the function in the interactive book is working well.

Semua fungsi dalam buku interaktif berfungsi dengan baik.
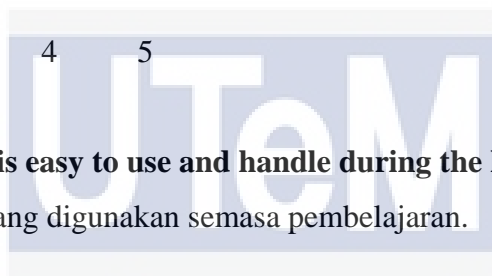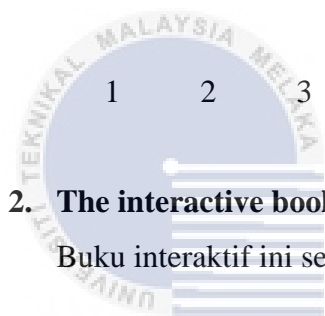
1 2 3 4 5

D. FLEXIBILITY

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1. **– Strongly Disagree   2 - Disagree   3 - Neutral   4 - Agree   5 - Strongly agree**

1 - Sangat Tidak Setuju 2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

1. **This interactive book does not have any problem**

   Buku interaktif ini tidak mempunyai masalah

   1   2   3   4   5

2. **This interactive book is very suitable for student.**

   Buku interaktif ini sangat sesuai untuk pelajar

   1   2   3   4   5

3. **The interactive book not easy to crash when loading it.**

   Buku interaktif tidak mudah runtuh apabila memuatkannya.

   1   2   3   4   5

4. **All the function is working when I use the interactive book.**

   Semua fungsi berfungsi apabila saya menggunakan buku interaktif.

   1   2   3   4   5

I suggest this interactive book: Approve / Reject / Postponed / Improved

Saya mencadangkan buku interaktif ini: Meluluskan / Menolak / Menunda / Meningkatkan

Signature: _____

Lecturer's Content Stamp: _____

Date: _____

APPENDICES B

QUESTIONAIRE

(To be completed by student)

TITLE: INTERACTIVE BOOK OF LEARNING JAWI FOR PRIMARY SCHOOL FOR YEAR ONE STUDENT

TAJUK **:** BUKU INTERAKTIF PEMBELAJARAN JAWI UNTUK SEKOLAH RENDAH PELAJAR DARJAH SATU

PART A : BACKGROUND

BAHAGIAN A : LATAR BELAKANG

Please tick (/) on the questions provided.

Sila tandakan (/) pada soalan yang disediakan.

1. **Gender** (Jantina) :

   ☐ **Men** / Lelaki ☐ **Girl** / Perempuan

2. **Race** (Kaum) :

   ☐ **Malay** / Melayu ☐ **Chinese** / Cina
   ☐ **Indian** / India ☐ **Other** / Lain-lain

3. **Have you ever used an application related to Learning Jawi?**

   Adakah anda pernah menggunakan aplikasi berkaitan dengan pembelajaran jawi?

   ☐ **Yes** / Ya
   ☐ **No** / Tidak

B. LEARNIBILITY TESTING

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1 – Strongly Disagree   2 - Disagree   3 - Neutral   4 -Agree   5 - Strongly agree

3. **The interactive book can be use without any problem**

Buku interaktif boleh digunakan tanpa sebarang masalah.

1   2   3   4   5

4. **The interactive book is easy to use and handle during the learning**

Buku interaktif ini senang digunakan semasa pembelajaran.

1   2   3   4   5

3. **This interactive book is suitable to be used in class**

Buku interaktif in sesuai digunakan di dalam kelas.

1   2   3   4   5

4. **The use of this interactive book is interesting.**

Penggunaan buku interaktif ini menarik.

1   2   3   4   5

5. **I can understand what is the topic being discussed in this interactive book.**

Saya faham akan tajuk yang dibincangkan di dalam buku interaktif ini.

1   2   3   4   5

6. The content displayed with clearly.

Kandungan yang ditunjukkan jelas

1   2   3   4   5

7. The video and animation used in this interactive book are related to the topic.

Video dan animasi yang digunakan dalam buku interaktif berkait dengan topik

1   2   3   4   5

8. Learning is easy with the interactive book application.

Pembelajaran menjadi mudah dengan aplikasi buku interaktif

1   2   3   4   5

9. The use of this application can attract attention.

Penggunaan aplikasi ini boleh menarik perhatian.

1   2   3   4   5

10. Student should enhance the usage interactive book in learning Jawi.

Pelajar perlu meningkatkan penggunaan buku interaktif dalam pembelajaran Jawi.

1   2   3   4   5

B. EFFECTIVENESS

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1 – Strongly Disagree   2 - Disagree   3 - Neutral   4 - Agree   5 - Strongly agree

1 - Sangat Tidak Setuju 2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

6. **The information provided in the interactive book is sufficient.**

    Informasi yang disediakan di dalam buku interaktif mencukupi.

    1   2   3   4   5

7. **This interactive book makes me understand the topic more effectively**

    Buku interaktif ini membuatkan saya memahami topik dengan lebih berkesan

    1   2   3   4   5

8. **The use of colour for this interactive book is appropriate.**

    Penggunaan warna yang sesuai.

    1   2   3   4   5

9. **The content can be read and understand with easily.**

    Kandungan Maklumat boleh dibaca dan difahami dengan mudah.

    1   2   3   4   5

10. **Notes and quiz provided is interesting.**

    Nota dan kuiz yang disediakan menarik.

    1   2   3   4   5

6. The notes provided help you to think and focus during using the interactive book.

Nota yang diberikan membantu anda berfikir dan fokus semasa menggunakan buku interaktif.

1   2   3   4   5

7. The quiz provided helps you to think and focus during using the interactive book.

Nota yang diberikan membantu anda berfikir dan fokus semasa menggunakan buku interaktif.

1   2   3   4   5

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1   2   3   4   5

9. I need to find extra information in the textbook while using the interactive book.

Saya perlu mencari maklumat tambahan dalam buku teks semasa menggunakan buku interaktif.

1   2   3   4   5

10. I am satisfied with this interactive book.

Saya berpuas hati dengan buku interaktif ini.

1   2   3   4   5

C. EASE TO USE

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1– Strongly Disagree   2 - Disagree   3 - Neutral   4 - Agree   5 - Strongly agree

1 - Sangat Tidak Setuju   2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

1. **The colour used in the textbook suits with you**

    Warna yang digunakan dalam buku teks sesuai dengan anda

        1   2   3   4   5

2. The graphics use in the interactive book is clear

    Penggunaan grafik dalam buku interaktif adalah jelas

        1   2   3   4   5

3. The font used in the interactive is easy to be read and clear.

    Fon yang digunakan dalam interaktif adalah mudah dibaca dan jelas

        1   2   3   4   5

4. The flow of the interactive book is easy to understand.

    Aliran buku interaktif mudah difahami.

        1   2   3   4   5

5. The flow of the interactive book is easy to navigate through the whole book.

Aliran buku interaktif adalah mudah untuk menavigasi seluruh buku.

1 2 3 4 5

6. The structure of content in the interactive book is well organized.

Struktur kandungan dalam buku interaktif disusun dengan baik.

1 2 3 4 5

7. The content displayed with clearly.

Kandungan dipaparkan dengan jelas.

1 2 3 4 5

8. The text on the screen in this interactive book is easy to read.

Teks di skrin dalam buku interaktif ini mudah dibaca.

1 2 3 4 5

9. The interface of this interactive book is well organized.

Antara muka buku interaktif ini adalah teratur.

1 2 3 4 5

10. All the function in the interactive book is working well.

Semua fungsi dalam buku interaktif berfungsi dengan baik.

1 2 3 4 5

D. FLEXIBILITY

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

2. **– Strongly Disagree   2 - Disagree   3 - Neutral   4 - Agree   5 - Strongly agree**

1 - Sangat Tidak Setuju 2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

3. **This interactive book does not have any problem**

   Buku interaktif ini tidak mempunyai masalah

   1   2   3   4   5

4. **This interactive book is very suitable for student.**

   Buku interaktif ini sangat sesuai untuk pelajar

   1   2   3   4   5

3. **The interactive book not easy to crash when loading it.**

   Buku interaktif tidak mudah runtuh apabila memuatkannya.

   1   2   3   4   5

4. **All the function is working when I use the interactive book.**

   Semua fungsi berfungsi apabila saya menggunakan buku interaktif.

   1   2   3   4   5

I suggest this interactive book: Approve / Reject / Postponed / Improved

Saya mencadangkan buku interaktif ini: Meluluskan / Menolak / Menunda / Meningkatkan

Signature: _____

Lecturer's Content Stamp: _____

Date: _____

APPENDICES C

QUESTIONAIRE

(To be completed by student)

TITLE: INTERACTIVE BOOK OF LEARNING JAWI FOR PRIMARY SCHOOL FOR YEAR ONE STUDENT

TAJUK **:** BUKU INTERAKTIF PEMBELAJARAN JAWI UNTUK SEKOLAH RENDAH PELAJAR DARJAH SATU

PART A : BACKGROUND

BAHAGIAN A : LATAR BELAKANG

Please tick (/) on the questions provided.

Sila tandakan (/) pada soalan yang disediakan.

   1. Gender (Jantina) :

      ☐ **Men** / Lelaki   ☐   **Girl** / Perempuan

2. Race (Kaum) :

      ☐ **Malay** / Melayu   ☐ **Chinese** / Cina

      ☐ **Indian** / India   ☐ **Other** / Lain-lain

3. Have you ever used an application related to Learning Jawi?

   Adakah anda pernah menggunakan aplikasi berkaitan dengan pembelajaran jawi?

   ☐ **Yes** / Ya

   ☐ **No** / Tidak

PART B : This session will answer objective of developing an interactive book application for Jawi

1. **What is your opinion towards Jawi ?**

   Apa pendapat anda terhadap Jawi?

   ( ) Too difficult (Sangat susah)

   ( ) Difficult (Susah)

   ( ) Average

   ( ) Easy (Senang)

   ( ) Very easy (Sangat senang)

2. **Have you ever heard of interactive book application?**

   Pernahkah anda mendengar buku interaktif?

   ( ) Yes (Ye)

   ( ) No (Tidak)

3. **Do you ever use an interactive book application?**

   Adakah anda pernah menggunakan aplikasi buku interaktif?

   ( ) Yes (Ye)

   ( ) No (Tidak)

4. **Based on your experience in learning Jawi, what do you think of the learning process for this subject?**

Berdasarkan pengalaman anda dalam mempelajari Jawi, apa yang anda fikirkan mengenai proses pembelajaran untuk subjek ini?

(　) Boring (Membosankan)

(　) Difficult to understand (Susah untuk difahami)

(　) Interactive (Interaktif)

(　) Easy to learn (Senang untuk belajar)

(　) Not sure (Tidak pasti)

5. **Which elements might help you for better understandings Jawi?**

Unsur-unsur mana yang boleh membantu anda memahami Jawi yang lebih baik?

(　) Interactive video (Video Interaktif)

(　) Quiz (Kuiz)

(　) Text (Teks)

(　) Pictures (Gambar)

(　) All above (Semua diatas)

PART C: These questions are to investigate the suitableness of the usage of interactive book in conveying Jawi.

Please circle (O) based on your observation of the application function developed.
Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1 – Strongly Disagree   2 - Disagree   3 - Neutral   4 -Agree   5 - Strongly agree

1 - Sangat Tidak Setuju 2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

1. **It is simple to use this interactive book**

   Mudah untuk menggunakan buku interaktif ini

   1   2   3   4   5

2. **The content provided in this interactive book is easy to understand**

   Kandungan yang disediakan dalam buku interaktif ini mudah difahami

   1   2   3   4   5

3. **It is fun to learn with this interactive book**

   Menyeronokkan untuk mempelajari buku interaktif ini

   1   2   3   4   5

4. **Learning Jawi can be easily understanding just by using interactive book.**

   Belajar Jawi mudah difahami hanya dengan menggunakan buku interaktif.

   1   2   3   4   5

5. **By using this interactive book in Jawi subject it makes the subject become less complex compare to the traditional learning process.**

   Dengan menggunakan buku interaktif ini dalam subjek Jawi ia menjadikan subjek menjadi lebih kurang kompleks dibandingkan dengan proses pembelajaran tradisional.

   1   2   3   4   5

6. **The minimum usage of text use in the interactive book for conveying the subject is still understandable with the help of other multimedia elements**

   Penggunaan minimum penggunaan teks dalam buku interaktif untuk menyampaikan subjek masih difahami dengan bantuan elemen multimedia yang lain

   1   2   3   4   5

7. **Learning was easy with the interactive book application.**

   Pembelajaran adalah mudah dengan aplikasi buku interaktif.

   1   2   3   4   5

8. **Student should enhance the usage interactive book in learning Jawi subject.**

   Pelajar perlu meningkatkan penggunaan buku interaktif dalam mempelajari mata pelajaran Jawi

   1   2   3   4   5

PART D: This section will answer the objective interactive book, which multimedia element that given huge impact in the interactive book

Please circle (O) based on your observation of the application function developed.

Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1 – Strongly Disagree   2 - Disagree   3 - Neutral   4 -Agree   5 - Strongly agree

1 - Sangat Tidak Setuju 2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

1. **The interactivity of the interactive book captures your interest in using the interactive book as one of the learning material**.

   Interaktiviti buku interaktif menangkap minat anda dalam menggunakan buku interaktif sebagai salah satu bahan pembelajaran.

      1   2   3   4   5

2. **The video and animation in the interactive book helps you to understanding the content of learning.**

   Video dan animasi dalam buku interaktif membantu anda memahami kandungan pembelajaran.

      1   2   3   4   5

3. **I can learn the subject through the interactive book without any helps of teachers.**

   Saya dapat mempelajari subjek melalui buku interaktif tanpa bantuan guru.

      1   2   3   4   5

4. **I am satisfied with this interactive book.**

Saya berpuas hati dengan buku interaktif ini.

    1   2   3   4   5

5. **Multimedia elements used on this interactive book are very useful in understanding the subjects.**

Unsur-unsur multimedia yang digunakan pada buku interaktif ini sangat berguna dalam memahami subjek-subjek.

    1   2   3   4   5

6. **I need to find extra information in the textbook while using the interactive book.**

Saya perlu mencari maklumat tambahan dalam buku teks semasa menggunakan buku interaktif.

    1   2   3   4   5

7. **The graphics use in explaining gives you a better explanation.**

Penggunaan grafik dalam menerangkan memberi penjelasan yang lebih baik.

    1   2   3   4   5

PART E: Flexibility

Please circle (O) based on your observation of the application function developed.
Sila bulatkan (O) berdasarkan pemerhatian anda terhadap fungsi aplikasi yang dibangunkan.

1 – Strongly Disagree   2 - Disagree   3 - Neutral   4 -Agree   5 - Strongly agree

1 - Sangat Tidak Setuju 2 - Tidak setuju 3 - Neutral 4 - Setuju 5 - Sangat setuju

1. **This interactive book does not have any problem**

   Buku interaktif ini tidak mempunyai masalah

   1   2   3   4   5

2. **This interactive book is very suitable for students**

   Buku interaktif ini sangat sesuai untuk pelajar

   1   2   3   4   5

3. **I get quick response when I click on the function**

   Saya mendapat tindak balas apabila saya tekan pada fungsi

   1   2   3   4   5

4. **All the function is working when I use the interactive book.**

   Semua fungsi berfungsi apabila saya menggunakan buku interaktif

   1   2   3   4   5