DEVELOPING MULTIMEDIA COURSEWARE

ABOUT TAJWEED FOR KIDS

by

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
Business Information System Programme
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Approved by:

_____

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SEPTEMBER 2011

CERTIFICATION OF ORIGINALITY

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

Asyraf Nazmie Bin Abdul Halim

ABSTRACT

As Muslims, they have obligation to recite Al-Quran in proper ways to get rid from wrong meaning and interpretation. It actually refers to Tajweed principle or knowledge and application of recitation rules on reading the Al- Quran verses. As any languages in this world, wrong pronunciation will lead to wrong meanings. It will better if it starts to explore during young age as the mind still fresh and active. However, currently the students learn on Tajweed using books or paper-based materials which are boring and dull. Thus, with the growth of the technology, this project will be developed "Jom Belajar Tajwid" courseware that teaches Tajweed specifically custom made for children. With the support of suitable learning methods for kids, the developed multimedia courseware could be used for educational purposes in schools or home especially for Muslim students between 9 years old to 12 years old. The goal of this courseware is to demonstrate and provide activity session and lessons for Tajweed learning in attractive way. The courseware prototype will be developed using Adobe Flash as the main platform and supported with other software such as Adobe Photoshop and Audacity. The expected output for this project is a courseware which contains interesting and attractive design in order to attract users. It will be user friendly and contains interesting animations demonstrating in easy and fastest way. As the result, with redundant of texts, pictures and audio provided in the courseware will increase performance of information processing among kids to learn Tajweed supported by active involvement on their practices.

ACKNOWLEDGEMENTS

First and foremost, praised be to Allah The Almighty as for his blessing, I have completed this project, "Developing Multimedia Courseware about Tajweed for Kids".

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CHAPTER 1

INTRODUCTION

1.0   Introduction

Nowadays, multimedia has the potential to create high quality learning environments for everyone especially for kids. The key elements of multiple media, user control over the delivery of information, and interactivity can be used to enhance the learning process. For example, the complex explanation will be simpler with attractive illustrative, receive quick feedback from online assignments and opportunities to have practical and experiment repeatedly. A range of media elements use to convey a given message and user can study at a time and place convenient to them, taking as long as they need.

1.2   Background of Study

All Muslim have to obligation to read and understand the meaning of Al-Quran verses. Furthermore, they must have knowledge to read it with proper pronunciations to avoid different interpretation or meaning. The knowledge is known as Tajweed. According to statistics of Population and Housing Censuses 2010, about 61.3% from Malaysian populations are Muslims. Due to demand in the market, there a lot of books, compact discs and others medium as learning tools that focusing on Tajweed.

Traditionally, Tajweed will be only learned from teachers and just rely on them. All the material or text books will be provided while teaching period is usually fixed and limited, according to teacher's schedule. When the students get back from class, they have difficulty to do revision because the text book is not provides sound. Maybe, some parents have good basic knowledge will attempt to guide their kids. But, how about parent who not expert in this principles, their children will have obstacle to learn it easily. This environment creates dependable student that discourages them to active and explore by themselves.

Besides that, in the modern era, students preferred the quick and interesting way to learn something. Students can understand easier with the help of effective visualization through animation and audio-visual presentations. The courseware that will be developed will focus on four important factors which are; the contents of learning materials, the presentation of these materials, the way in which they are taught, and the overall functionality of the courseware. The contents of these materials have to be interesting. The learning materials will be taught using multimedia elements such as graphics, audio, and animation. The overall functionality of the courseware has to be satisfying to the users.

1.3 Problem Statement

- Lack of multimedia learning courseware on Tajweed for kids

There a lot of Tajweed book in the market. However, kids find paper-based interaction is too dull because books are static and contain long explanation. Books are least favorite medium preferred by them. Moreover, if the topics are hard to understand, text alone is not enough. Students can understand easier with the help of effective visualization through animation and audio-visual presentations.

At the moment, a courseware that focuses on the tajweed subject has not well marketable. There are a few existing courseware in the market teach to read Al-Quran but learn tajweed specifically for children is difficult to find. The current courseware developed generally for all age and usually fit with adult. Moreover, the existing courseware do not stress on the importance of effective visualization. The graphics used to explain about certain topics are static and boring. There is only little or no use of animation to explain the subject.

1.4 Objectives

The objectives of this project are:

- To research on methods of learning for kids
- To develop a courseware on Tajweed

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1.5 Scope of Study

Scope of study for the project involves in the various research paper and references book and come out with interactive courseware that suitable for children. Study on the research needs to be done and few modifications would need to take place. New technology provides a plenty of possible tools to develop the courseware. Adobe Flash is one of preferable software that can be used and meet the requirements of development of the product. It is also interactive and provides a fun learning platform.

The courseware will be divided to three sections. The first section will contain the introduction of this topic. The second section will include all definition of several types of tajweed and interactive lesson using audio and animation. The last section will contain quizzes or activity. Student will able to test their level of understanding on the subject by completing the quizzes. All sections will be presented with suitable animation, graphic, text, narration so that user will understand better with the help of effective visualization.

The targeted users for this courseware are Muslim students between 9 years old to 12 years old. Teacher also can use this courseware to help them in their teaching and even parents also can use it at home for home lessons to their children.

1.6 The Relevance of the Project

The project undertaken is in line with the important of Tajweed knowledge among Muslims especially for kids in Malaysia. With the growth of technology, it is capable to help the learning process more interesting and attractive. Moreover, the development of this multimedia supported with suitable learning ways for kids that increasing their memory performance during learning process.

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

Chapter 2 will be content of explanation on Tajweed and it's important to Muslim citizen. Moreover, it will be cover on preferable methods of learning for children which implement on multimedia learning courseware.

2.2   Multimedia

Multimedia has various definitions which portraits similar means depending upon someone's perspective. Normal definitions are following:

Sources	Definitions
Brooks, (1997)	combined use of several media, such as movies, slides, music, and lighting, especially for education or entertainment
Schwartz & Beichner, (1999)	use of multiple forms of media in a presentation
Greenlaw & Hepp, (1999)	information in the form of graphics, audio, video, or movies which a multimedia document contains a media element other than plain text
Neo,M and K.Neo (2001)	combination of various digital media types, such as text, images, sound, and video, into an integrated multisensory interactive application or presentation to convey a message or information to an audience
Maddux, Johnson, & Willis, (2001)	comprises a computer program that includes text with at least audio or sophisticated sound, music, video, photographs, 3-D graphics, animation, or high-resolution graphics
Mayer, R.E (2003)	presentation of content that relies on both text and graphics

Table 1: Definition of Multimedia

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Thus, the summary multimedia is a combination of various digital media used in the interactive presentation or application.

Using multimedia in the teaching and learning environment enables students to become critical thinkers, problem solvers, more apt to seek information, and more motivated in their learning processes (Neo & Neo, 2001). The integration of multimedia technology into the communication environment has the potential to transform an audience from passive to active participants in a multiple media learning process.

The exposure of multimedia is not intended to replace or substitute for a presenter. It is intended to provide compliment tool that can greatly enhance communication. Facilitators used it as an instructional strategy to achieve a planned purpose that meet students needs and interests (Mandinach & Cline, 1994). By using this technology, multimedia can be used in a directed model or constructivist model of learning.

2.3 Learning methods for kids

2.3.1 Learning with visual

Children would be more interested to deal with pictures compared texts. The presence of pictures relevant to the words will assist learning that extends human memory. Based on research, children acquire most of the new knowledge via pictures. It is used to increase a communication in some other medium (Kail, R.V., 2004). In general, people would prefer material which is illustrated (Levie & Lentz, 1982) and regard it as being of higher quality. Levin (1989) stated that pictures interact with text to produce higher levels of comprehension and memory than produced by text alone. Since of that, many of the findings from studies of the use of illustrations in printed material are manageable to the computer screen.

Photographic or eidetic memory is the individual's ability to recall images and events. Young children have a greater probability of having eidetic memory than adults. In an eidetic

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memory test, kids are exposed to a certain picture for 30 minutes. One out of twelve kids will explained given pictures with high accuracy. While for adults, this ratio comes down to 1:1000. The reason why kids have a memory closer to eidetic memory is that, they have a clutter-free mind, which enables them to concentrate in a better way (Florentyna, K., 2011).

2.3.2 Audio aid

One of the functions of audio is serves computer-controlled information as presentation for learner. Audio could contribute on various aspects of learning. It can use to catch and hold the attention, support on reading the text on screen, complement the visual information on the screen, reduce the information needed to be presented, announce on event or action and even help to motivate the student (Aarntzen D, 1993). Voice could give instruction and text could highlight the most important information. According to Heuvelman (1985), the aspect that should be considered is redundancy which simultaneous presentation of semantically identical information that will be processed by the receiver through multiple sensory channels. Simultaneous presentation of the same message supported with audio as well as visual might enhance the processing and storage of information presented. Moreover, Paivio (1979) already said memory will be increase directly with the number of alternative memory codes available for an item. It means that coding an item in two ways will better than one because could enhance the memory. Thus, presenting a stimulus audio and visual would lead to a better memory performance compare presented it separately.

2.3.3 Active involvement

The International Academy of Education conducted research and developed on Educational Practices Series on how children learn. The booklet is the seventh in the series on educational practices that show ways to improve learning who written by Stella Vosniadou (2001). As the results, it comes out with twelve principles and one of it is active involvement. From the research, teachers must guide students to become active and goal oriented by building on their natural desire to explore, to understand new things and to master them (Elmore, Peterson & McCarthy, 1996; Piaget, 1978; Scardamalia & Bereiter, 1991). Thus, one of the

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ways is allow students to take some control over their own learning. Taking control over one's learning means allowing students to make some decisions about what to learn and how. Moreover, teachers should provide them with hands-on activities, such as experiments, observations or projects.

2.3.4 Take time to practice

Stella Vosniadou (2001) stated that "Learning is a complex cognitive activity that cannot be rushed". To build expertise in an area, it requires significant time and periods of practice. Research shows that the reading and writing skills of students relate to the hours they have spent on reading and writing. Efficient reading and writing skills requires a lot of practice. There some recommendations for teachers that can help students spend more time on learning tasks. Students should have learning tasks that are consistent with the knowledge they have. Moreover, please do not cover too many topics at once and give time for them to understand the new information.

2.4   Tajweed

2.4.1 Definition of Tajweed

Tajweed is an Arabic word which is defines as the knowledge to pronounce all the letters in Al Quran, correctly (Abdullah al-Qabbani, 1990). It is a set of rules on how the Quran should be read. According to the books and dictionaries, tajweed define in similar concept of reciting the Quran with right pronunciation and in a beautiful way (Czerpenski, K.C., 2004; Glasse, 1999; Maqsood, 1998; Medina, 1973; and Husaini, 1996). The word تجويد has literal means 'adornment' or 'making beautiful' which it roots in the base word جاد meaning 'to be good, be excellent, or make a thing well (Omar, 2005).' Thus, a complete meaning of the phrase 'recitation with tajweed' must include all the components of the subject matter of tajweed. These are provided in figure below.
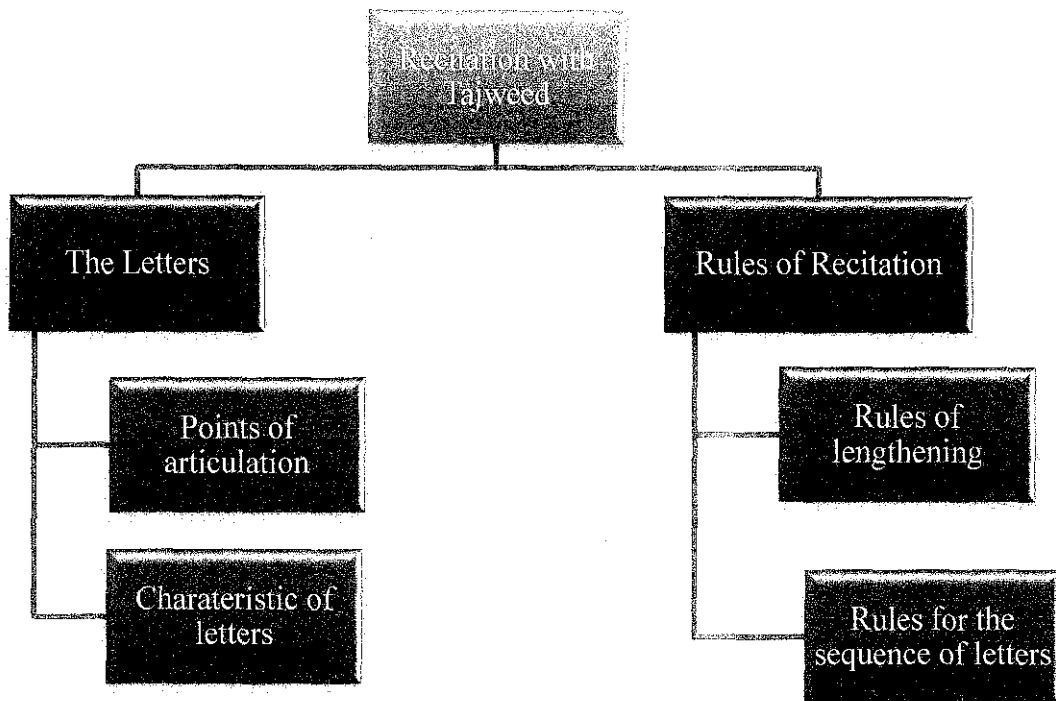
Figure 1: Components of Tajweed

2.4.2 The Obligation on Learning Tajweed

All Muslims believe that they should read the Quran with tajweed due to direct command from The Almighty. In the Quran (Surah Al-Muzammil 73:4) Allah s.w.t has commanded,

وَرَتِّلِ الْقُرْآنَ تَرْتِيلًا. From the verse, Siddiqui, M. A. M. (2003) intreprate as Al-Quran verses should be recited in slow, measured, rhythmic tones. It is very important to note that failure to observe proper pronunciation and Tajweed rules can result in changing the meaning of a word of the Quran. (Al Qattan, 2007). Therefore, it is obligation to all Muslims to be able to recite with tajweed.

Religious and social value placed on recitation with tajweed is very high. It is a matter of great admiration for all grownups as well as children who can recite with tajweed. Children who learn to recite with tajweed feel honored and privileged that they can recite so beautifully. It is a matter of high self-esteem for these children.

2.5   Courseware-based learning

The principles of Multiple Intelligences and Brain Based learning shows that children learn from combination of al senses which is by a process of absorption, by seeing, touching, hearing, smelling and by doing it. Computer-based learning has created stimulates and develop a new range of skills; from image and text processing to sifting and sorting; from single-task to multi-task acquisition; from passive receipt of material to active participation in the gathering of that material (Passantino, F., 2010).

Nowadays, kids are more excited in participating computer-based application learning like games. It allow learner to undergo tasks and experience which would otherwise impossible and undesirable for cost, time and logistical (Wortley, D., 2007). There are many education tools which have been developed in digital and multimedia form since children show more interest on it.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter will highlight the development process of the project. The methodology and project activities are important and to keep track the progress of the courseware. Furthermore, this chapter will also discuss the procedure identification, project work, key milestone, Gantt chart, and tools required. The methodology and project activities are based on experimental and consistent research.

3.2 Procedure Identification

Waterfall model is kind of methodologies used in the project. The methodology starts with planning of whole structure of the project. Then, it has relatively thorough analysis phase that is used to gather information and to develop ideas for the courseware concept. During the design, the prototype is build according to the requirement from the analysis output. The courseware will be tested after implementation.
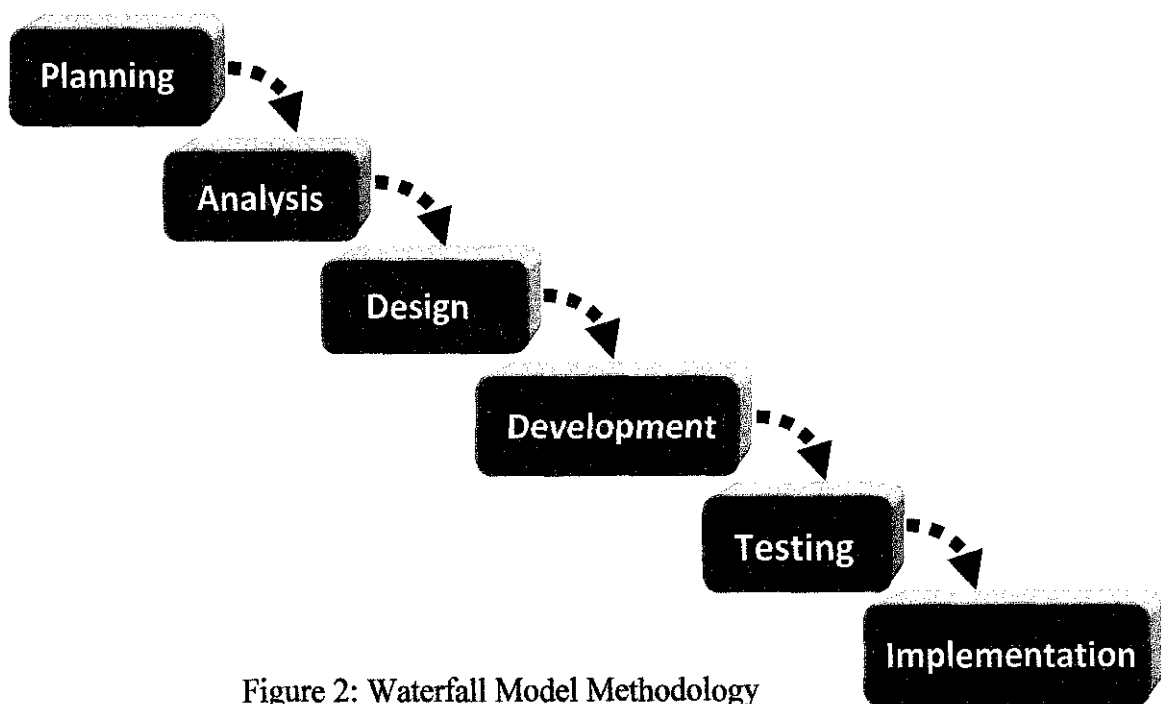

Figure 2: Waterfall Model Methodology

3.3 Project Activities

3.3.1 Project Planning

Planning part covered objective of the project, purposes, problem statement, possible solutions and tools to be used. Scope of stud and general idea of how to build the system together with the initial architecture for the system has been planned roughly during this period. To view all planned process, refer to Appendixes A for Gantt chart of the project.

3.3.2 Project Analysis

The purpose of this phase is to understand the requirements and build a logical model of the product. Moreover, a lot of research and analysis conducted to identify the important knowledge of Tajweed and the suitable way to present in the courseware. In addition, scopes have been narrowed down and identified a few characteristic that are suitable for the project. The best software or development tools to be used must be decided, therefore comparisons made to some software in term of capability and experiences, corresponds to the studied and developed user's requirements. The analysis developed as many as user requirements so that the design will not be out of scope.

3.3.2.1 Questionnaire

Questionnaire or survey is a simple and cheap way of retrieving and acquiring the information in order to proceed with the findings. Questionnaire method is and effective way to provide statistical data. The questionnaires will focus on primary student which is the potential user of the product. Besides, feedback from them could help in coming out with a better planned courseware the full-filled their need.

3.3.2.2 Data Interpretation

Next is interpreting data. To interpret the data, the main problems should be understand and analyzed. Each term used in the application should be interpreted properly because this will ensure the user's understandability. The way on how information or

knowledge is arranged and presentation format used should be clarified correctly so that the format will not be too awkward and no redundancy problems exist. All the information must presented with user friendly on the product.

3.3.2.3 Use case diagram

Use case diagram is one of the development models which show the interaction the user with the application. Figure below shows the use diagram of the courseware development.
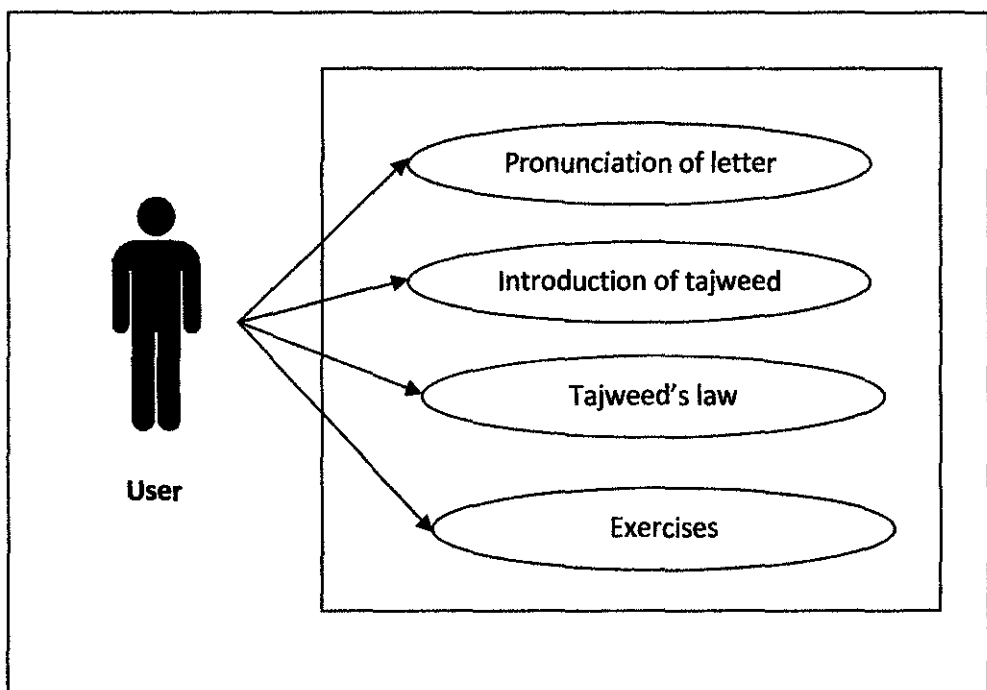

Figure 3: Use Case Diagram

3.3.4 Project Design

Then, the prototype of courseware will be designed based on the analysis. There some more aspects need to be defined including the program specification, the interface, information display, layout interactivity and exercise in the courseware. Next, the requirements that are categorized by input and output analysis is identified. After that, the story board is created based on the functional requirements. It is designed to show the process or flow of the courseware.

3.3.4.1 Activity diagram

Activity diagram shows the flow or the process of the courseware. It starts with the user open until they shut it down. Furthermore, it is like helicopter view of the whole courseware. Figure below shows the use diagram of the courseware development.
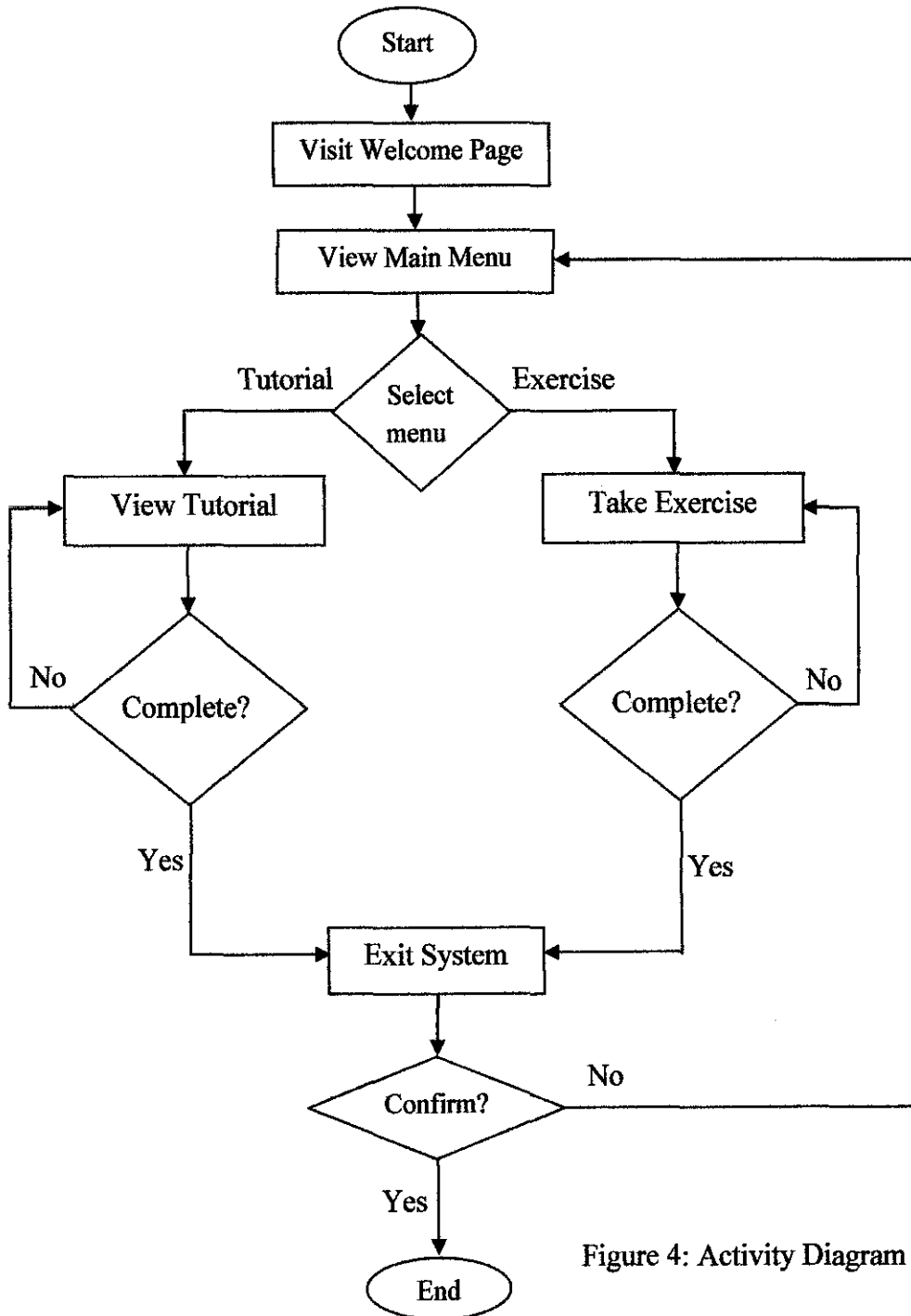

Figure 4: Activity Diagram

3.3.4.1 Story board

A storyboard was designed to provide a better view of the courseware to be developed. The overviews of the courseware are as below:
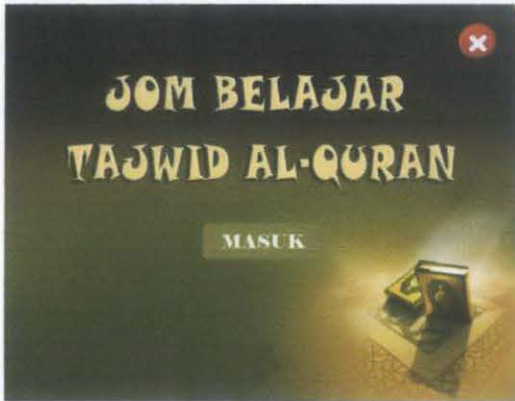

Figure 5: Welcome page screen

Figure 6: Main Menu screen

Figure 7: Tutorial screen (1)

Figure 8: Tutorial screen (2)

Figure 9: Tutorial screen (3)
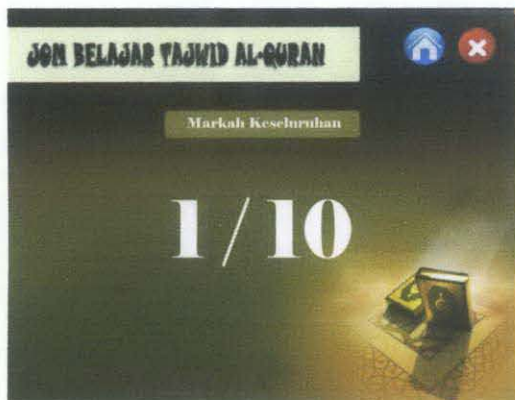

Figure 10: Exercise screen

Figure 11: Score screen   Figure 12: Exit screen

3.3.5 Project Development

The first thing to be considered is tools and software to be used to develop the project. The Adobe Flash will be used for the main development for the animation whiles the graphic from Adobe Photoshop software. While Audacity software use for audio editor.

The development or coding phase is started by developing simple code and main function first. The programming languages used are Action Script 2.0. The references of the syntax are based on the book and online tutorials. The programming languages or syntax will be gradually change or modified to make corrections and enhancement.

3.3.6 Project Testing

The purpose of testing is to find the errors or bugs and renovate the defected system from time to time. Each time when errors detected, the modification will occur. After the final testing, the product should run easily without crush and clinch. Moreover, user acceptance test is conducted to get feedback from potential user.

3.3.7 Project Implementation

After the product undergo and passed the testing process, it could be implemented or released to targeted user. It can be implemented trough offline in compacts disc or even online via internet.

PHASE	STEP	TECHNIQUE	OUTCOME
PLANNING Theoretical study and information collection	Develop working plan	Identify tasks Gantt Chart	Planner or outline of project
	Research on children behavior on learning, tajweed, multimedia and courseware	Research on existing research paper and journal	The findings of the existing studies such pros and cons, similarities and differences
ANALYSIS	Analysis	Analyze the problems	Planning analysis
	Information collection	Surveys	Raw data
	Modeling	Use case and activity diagram	Flow of the courseware
DESIGN Design prototype based on developed model	Build contents	Contents on recitation or Tajweed	Outline of courseware contents
	Develop story board	Story board	Story board
	Design interface	Basic structure of interface	Interface design of the courseware
DEVELOPMENT Build prototype according to story board	Develop prototype	Programming	Prototype
TESTING Assessment on prototype	Get feedback from potential user	User acceptance or user satisfaction test	Result from test
IMPLEMENTATION	Implement to potential user	Product in compact disc or via internet	User experience

Table 2: Methodology Summary

Hardware	Software
1. PC with Windows 2. Voice Recorder/Camera	1. Adobe Flash CS4 2. Adobe Photoshop CS4 3. Audacity

Table 3: Projects Tools

CHAPTER 4
RESULT AND DISCUSSION

4.1 Data Gathering

During the analyses, data gathering are conducted with the survey on sample of potential user of the courseware. The sample consists of 20 children aged from 9 to 12, Malaysian and Muslim with various backgrounds. The aim of this survey is to get information the behavior of user on Tajweed. Furthermore, it uses to look the relevancy of this project to this focus group.
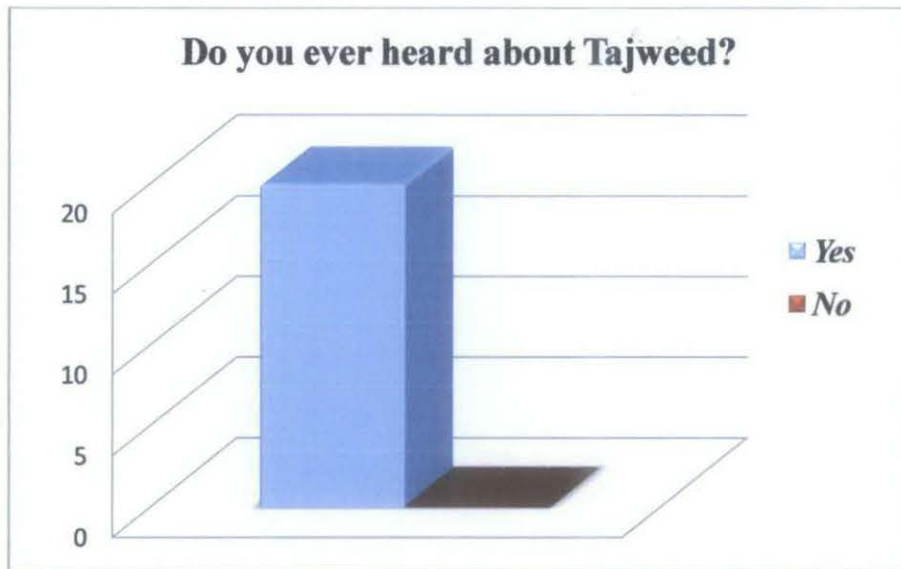

Figure 13: Awareness on Tajweed

According the graph, all respondents have heard the term of Tajweed. This shows all, 20 respondents (100%) already expose and know about the Tajweed. However, it is hard to portrait the whole population because not all Muslims student in Malaysia could have opportunities to learn and go to school. But yet, it is still a good indicator.
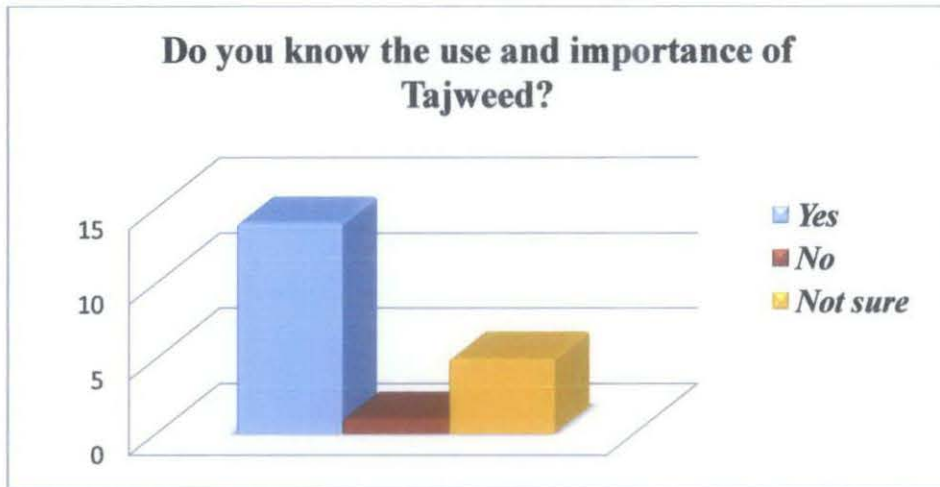
Figure 14: Awareness on the importance of Tajweed

From the survey, majority of sample know the use and importance of Tajweed which is about 70% (14). This is positive sign because most of students know about it. Meanwhile, about 5% (1) are did not now the usage of Tajweed. Others 25% (5) are not sure the use of Tajweed although they heard about this before.

Figure 15: Tajweed Learning

The graph above represented percentage of sample that had learned Tajweed. This shows 100% (20) respondents had learned about Tajweed. There is no respondent said NO. This could show that Tajweed learning really emphasize in Malaysia education system.

Do you still remember subjects learned in Tajweed?
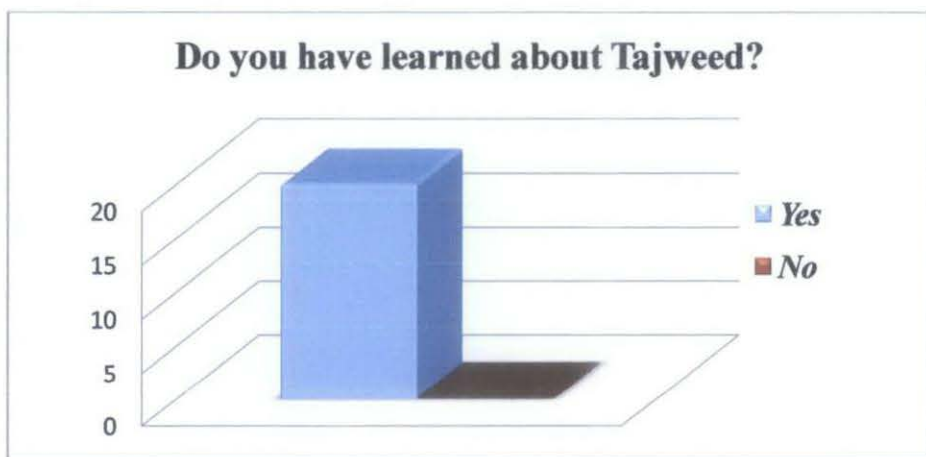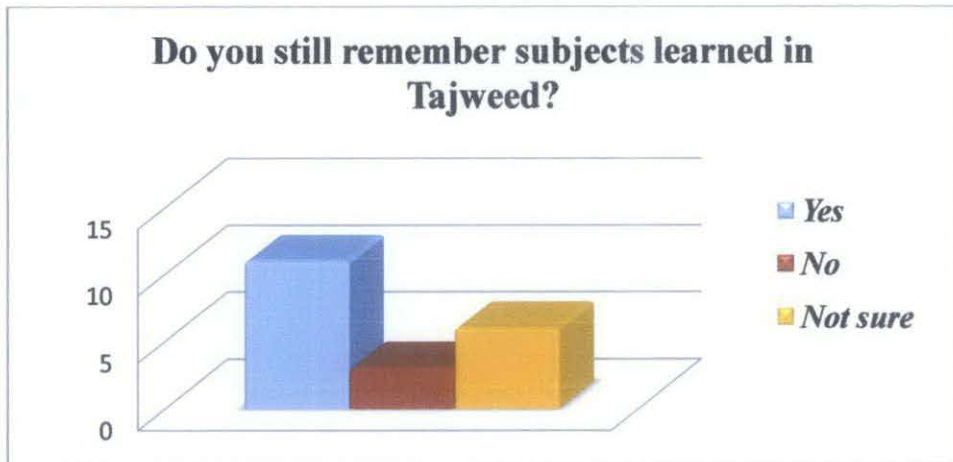
Figure 16: Memory on Tajweed knowledge

According to the graph, most of the respondent was still remember what had they learned about Tajweed. About 55% (11) respondents said "YES" while 15% (3) said they did not remember already the subject learned. Moreover, 30% or 6 respondents stated that they do not sure.

Do you attend any class that teaches Tajweed?

Figure 17: Formal learning on Tajweed

The graph represented the number of respondents that have formal lessons in any classes that teaches Tajweed. From the survey, about 95% (19) are attended formal classes and only small percentage did not. Just about 5% (1) from sample did not took part any formal lesson on Tajweed.

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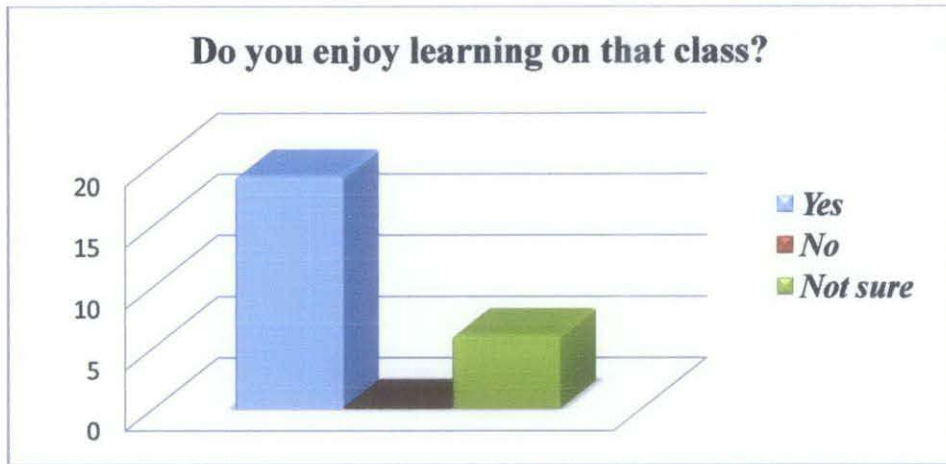
Figure 18: Excitement on Learning Tajweed

For respondents that answered "YES" on previous question, they have been asked whether they enjoy during the Tajweed lessons. According t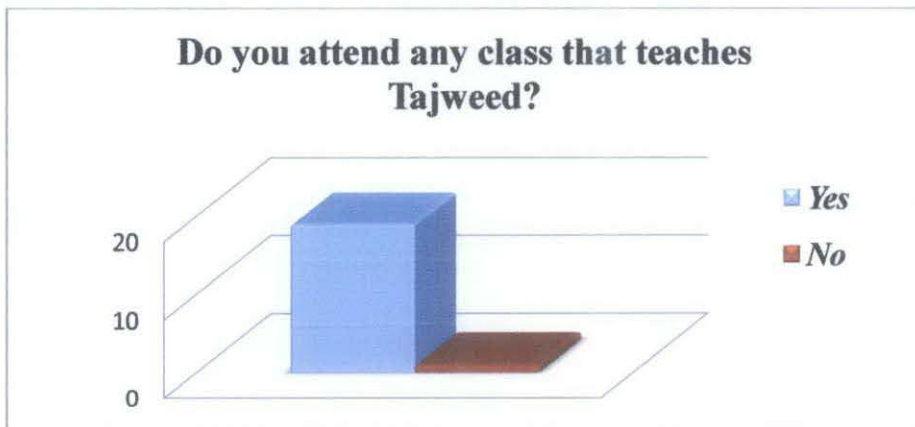o the graph, about 84% (16) was enjoying the lesson while no respondents said "NO". But, some of respondent not sure about it who 16% (3) from overall sample.
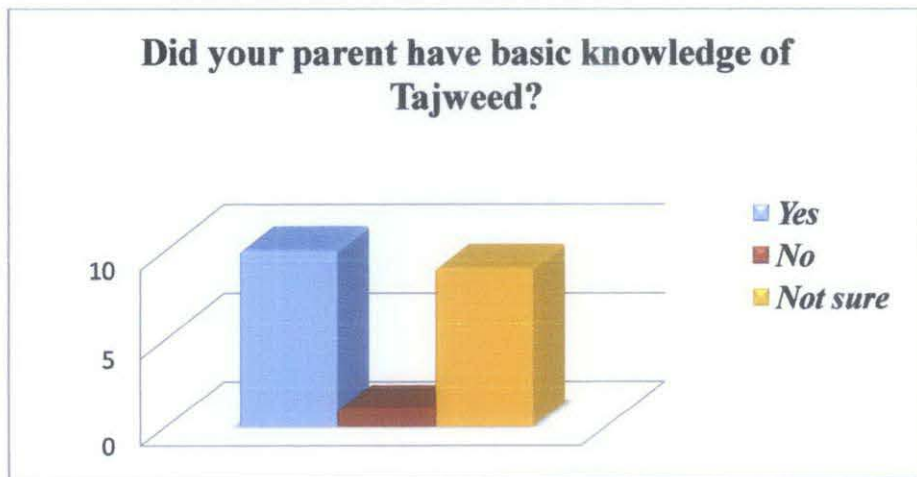
Figure 19: Tajweed knowledge among parents

This survey more focuses on respondents' parent. The graph shows whether the kids know about their parent's Tajweed knowledge. Most of respondent which is about 50% (10) believe their parent have basic knowledge of it. While, only 5% (1) said "NO" and others 45% (9) were not sure about it.

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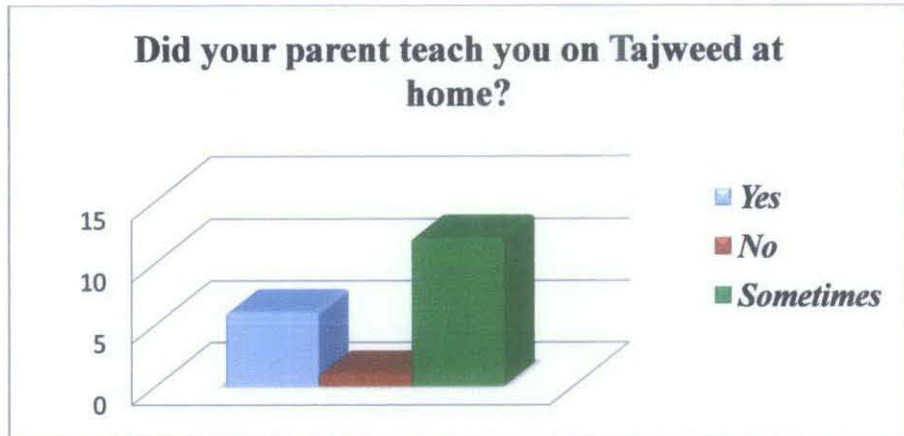
Figure 20: Informal learning on Tajweed

Normally, parents that have Tajweed knowledge will teach their children about it. This is continuity from previous question. The chart shows the number of parent give informal lesson to respondents. About 32% (6) respondents get lesson from their parent. Jus small percentage, 5% (1) said "NO". Majority of the respondents, they parent was teaching them but sometimes and not frequently.
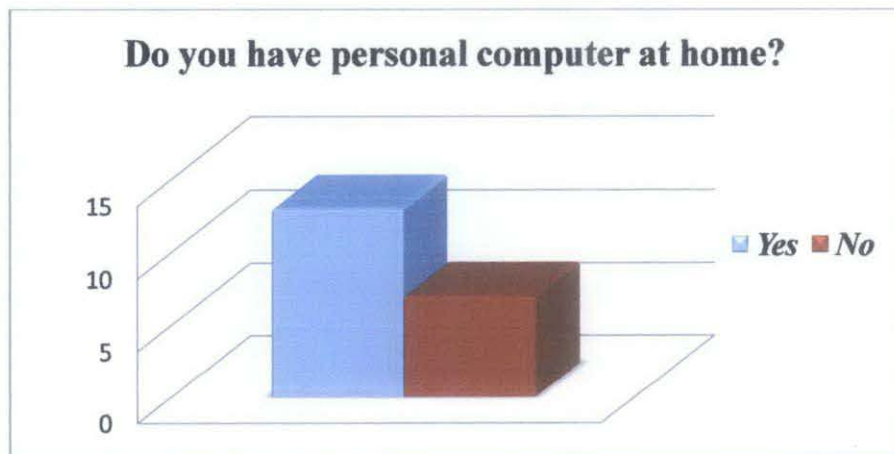
Figure 21: Personal computer at home

According to the graph, it shows that 65% (13) of respondents have personal computer at home. Meanwhile, 35% (7) respondents do not have any personal computer availability in their house.
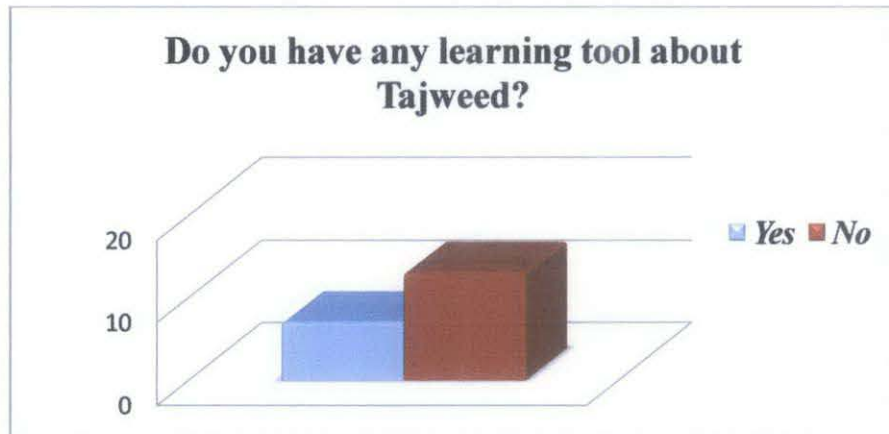
Figure 22: Learning Tools on Tajweed

From graph, it shows that 35% (7) of respondents have learning tool specifically on Tajweed. Moreover, if "YES", the respondent had to state the type of learning tools that they are used. Most of the answer is revision books. Meanwhile, about 65% (13) respondents do not have any own learning tools on Tajweed.
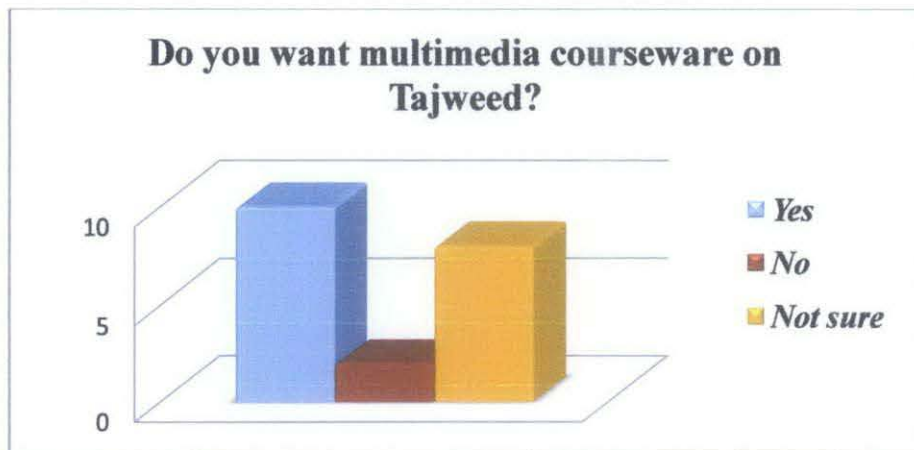
Figure 23: The need of Multimedia courseware

Next question is about whether the sample wanted to have multimedia courseware on Tajwee. From the graphs, about 50% (10) said "YES" which majority and 10% (2) picked "NO" as their answer. Besides that, about 40% (8) from respondents were not sure.

23
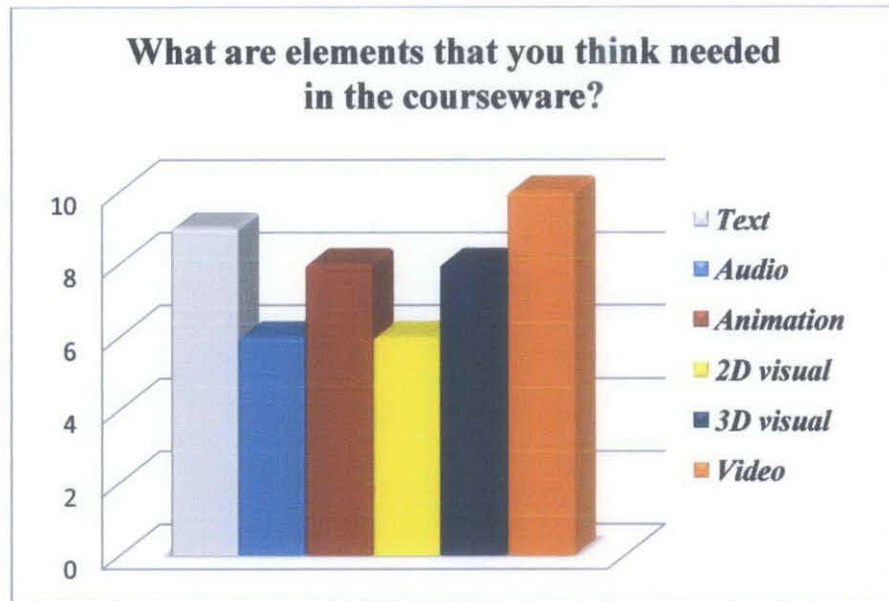
Figure 24: Elements in multimedia courseware

The last question is about the elements that the respondents think should have inside the multimedia courseware. For this question, they had allowed to choose more than one options. The options given are text, audio, animation, two dimensional (2D) visual, three dimensional (3D) visual and video. About 9 respondents picked text and 6 respondent ticked on audio. Moreover, there about 8 respondents that chooses animation elements. For visual, 6 respondents prefer 2D visual while 8 respondent more on 3D visual. For last options, about 10 respondents hope video will be embedded in the courseware as part on learning feature.

4.2 Prototype Design

During development phase, prototype interface was developed according the sketch in the design phase and also as the programming code for every action.
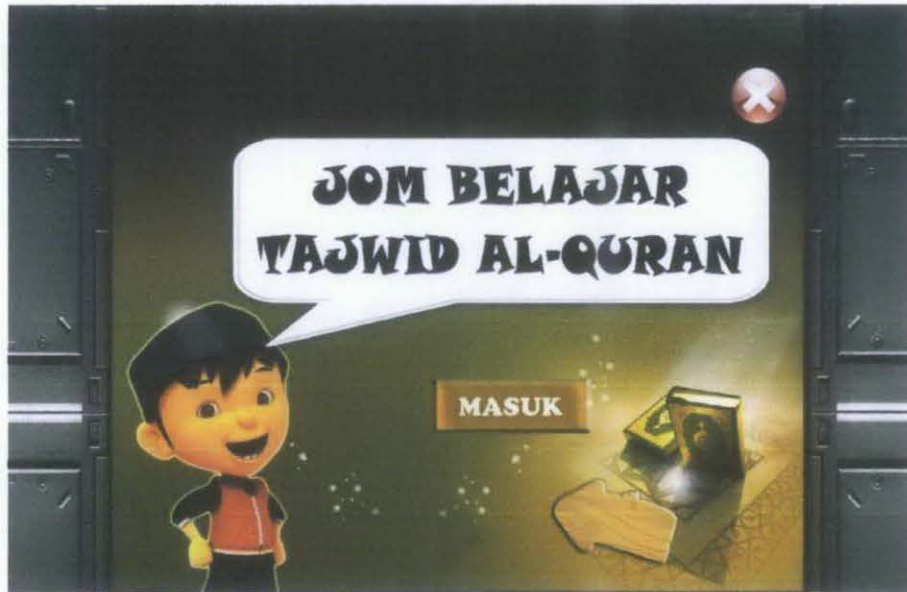
Figure 25: Welcome page

The welcome page is designed with the welcome text to the courseware, and button "MASUK" (ENTER) to enter the home page. It designed in simple interface but yet interesting to attract the user's attention.

Figure 26: Home page

Next, the Home page also has function as main menu. On the top left page contains of the courseware title, and at the top right there is "X" or close button which use to exit the courseware. Moreover, the main menu has three main options. The courseware's main options are "HURUF HIJAIYYAH", "HUKUM TAJWID" (TAJWEED PRINCIPLES) and "LATIHAN" (EXERCISE). User only has to click each button to enter the particular page.
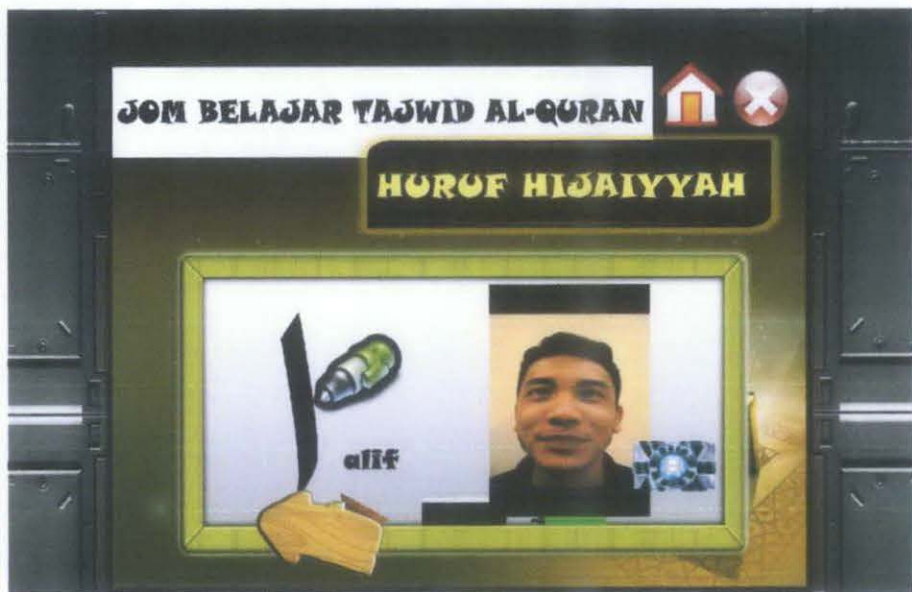
Figure 27: Huruf Hijayyah page

This page will be display if users click the "HURUF HIJAIYYAH"," button at the Home page. This page contains all Arabic characters because before learning Tajweed, users need to know first the characters involved. There are also home button and exit button at the top right of the page. User can learn all basic Arabic letters with the video that consist the ways to produce the sound. After watched the videos, the user can follow and pronounce back each letters view in the videos.

Figure 28: Hukum Tajwid menu

After user click on "HUKUM TAJWID" button on Home page, this page will be appeared. The page will list of few basic type of Tajweed principles such as "Izhar", "Idgham", "Iqlab", Ikhfa", "Waqaf","Mad" and "Qalqalah". User only has to click each button to enter the page.

Figure 29: Izhar tutorial main page

This page will be display if users click the "Izhar" button at the Home page. This page contains information about the types of the Izhar tajweed which users can explore to know more about it.

Figure 30: Izhar tutorial page (1)

Each principle, user can know further explanation about it especially the ways to pronounce the words. The will be a simple rule for each principle that must be follow. Moreover to have clear view, user can look and hear on the example words that refer on the principle.

Figure 31: Izhar tutorial page (2)

Figure 32: Quiz page

This page contained the mini quizzes that user can test their understanding after learn this subject. Users just need to click buttons to choose the answer, and then click "Seterusnya" (NEXT) button to go to the next questions.

Figure 33: Exit window

This is the end of the courseware. If users click close icon or button, small window will appeared. The system will ask if user really want to exit the courseware then if user clicks "YA" (YES) button, user will be then terminated from the system. Then if user click "TIDAK" (NO) button, it will be go back to the current page.

4.3 Usability Testing

Usability testing is a technique used to evaluate prototype by potential users. The goals are to identify usability problems and determine the participant's satisfaction with the courseware. The survey conducted after the user used the prototype of the courseware which consists of 20 children aged 9-12 with various background as the sample from real potential user.
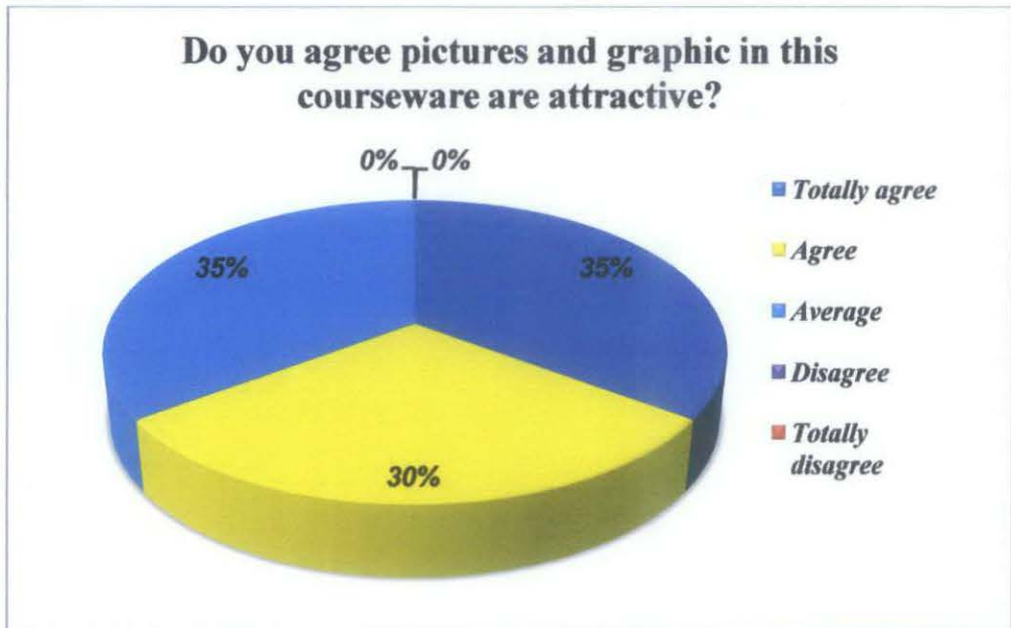
Figure 34: Visual element in courseware

From the pie chart above, 35% (7) of the sample totally agreed and 30% (6) agreed that the overall picture and graphic in the courseware are attractive to them. While, there are 35% (7) respondents just said average. Moreover, there is no respondent (0%) comment that they disagree or totally disagree with the statement. Since of that, the graphic should be enhance to be more attractive to the kids especially on the animation. Pictures and graphic are one of criteria to get attention from kids and sustain their interest to use the courseware.

31
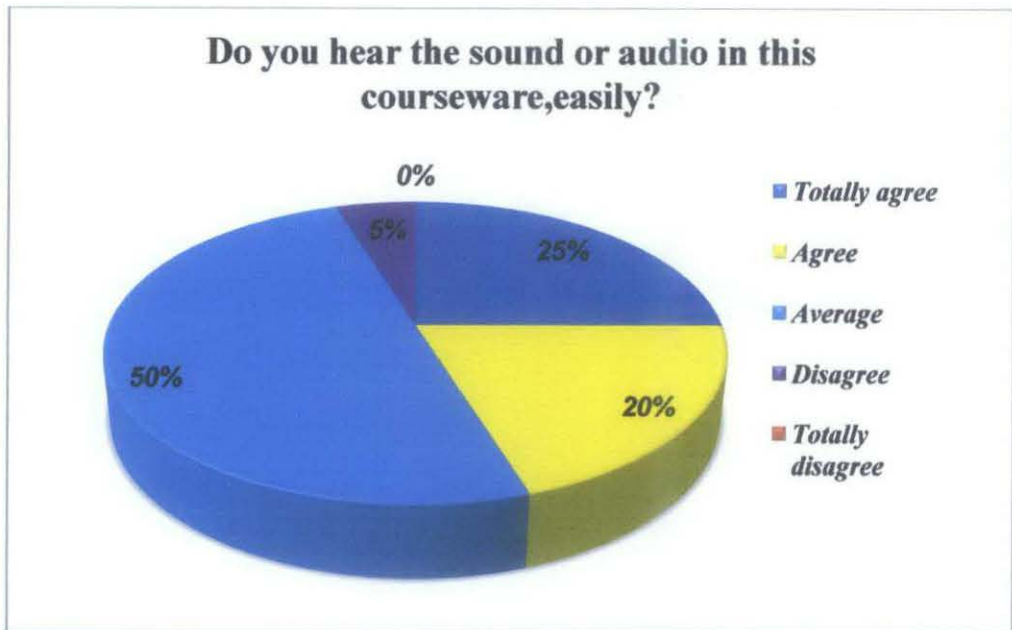
Figure 35: Audio element in courseware

According to the pie chart above, 25% (5) of the sample totally agreed and 20% (3) agreed that the sound or audio used in this courseware are clear and easily to be heard. Audio is main element of this learning courseware which user must repeat the sound produce. Majority of the respondent said average which is 50% (10) from the sample. While about 5% (1) of respondents disagreed and believed it quite difficult to hear. Maybe, it is the mistake during testing session because the sound will be clearer with use of earphones or headset. Furthermore, for further development, the sound should be increase in term of precision, frequency and avoid any noise.
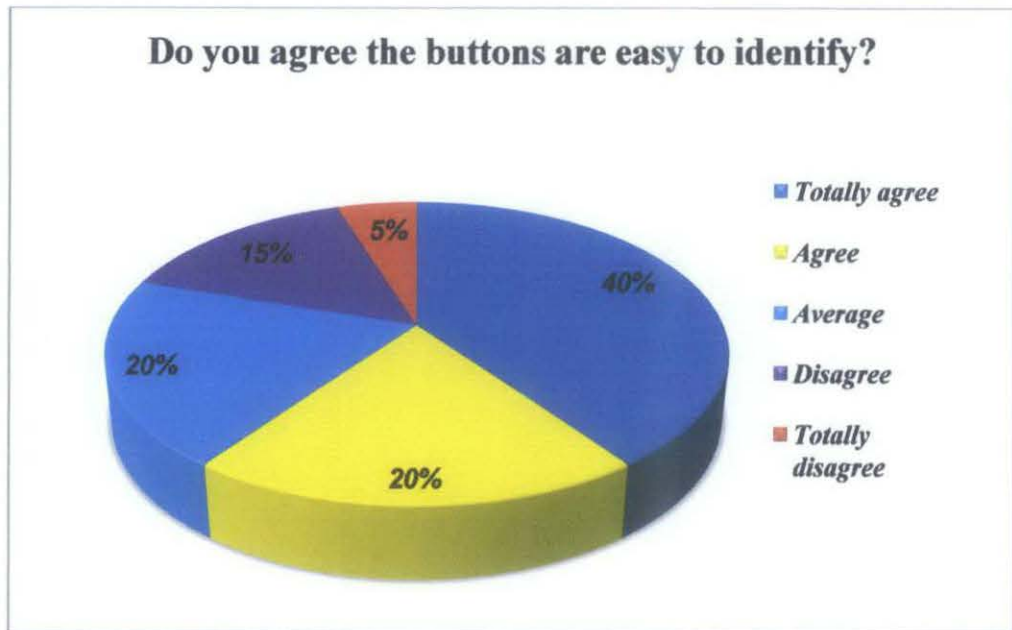
Figure 36: Button element in courseware

According to the pie chart above is the percentage on their comment on button or link feature in the courseware. From the survey, majority from respondent which is about 40% (8) said they totally agreed that buttons are easy to identify. Others 20% (4) are agreed. Meanwhile, 20% (4) of the respondent just comment average. Some of respondents also claimed that the linked buttons on the courseware are quite difficult to identify. About 15% (3) of respondents was disagreed and 5% (1) totally disagreed with the statement. In the courseware, all linked buttons already have hover action code which are appear in different form when user's mouse over them. For example, home button will be larger when the mouse over it. This is different from normal text. Maybe, there should be clear notification for each button especially on hover action to make sure user understand of use of each button.
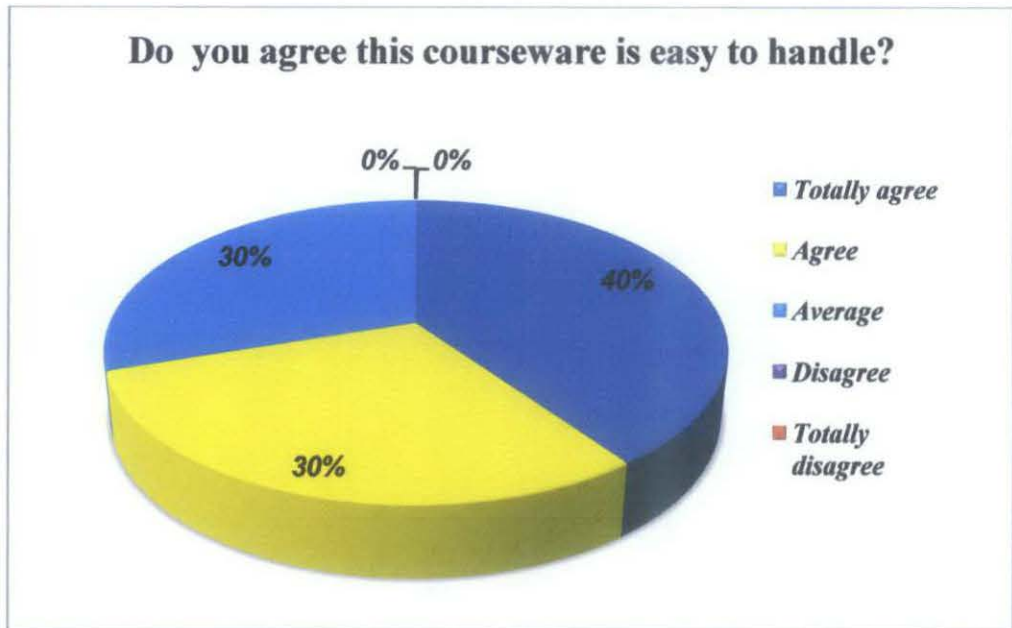
Figure 37: Usability elements in courseware

After took consideration on minor elements, respondent was tested on overall of the courseware. The pie chart above is portrait the percentage on sample whether they agree the courseware is easy to handle or not. From the survey, majority said totally agreed with the courseware which is about 40% (8). While other 30% (6) agreed the courseware is easy to use and manageable. From the whole sample, about 30% (6) just said average. The concept of courseware is the user has ability to control their action and active involvement on the courseware. If the courseware is easy to handle, it will be easier for user to use it. It is positive when there is no respondent or 0% that claimed it quite difficult to be handled.

Do you agree this courseware is more interesting than books?

- Totally agree — 40%
- Agree — 30%
- Average — 15%
- Disagree — 10%
- Totally disagree — 5%
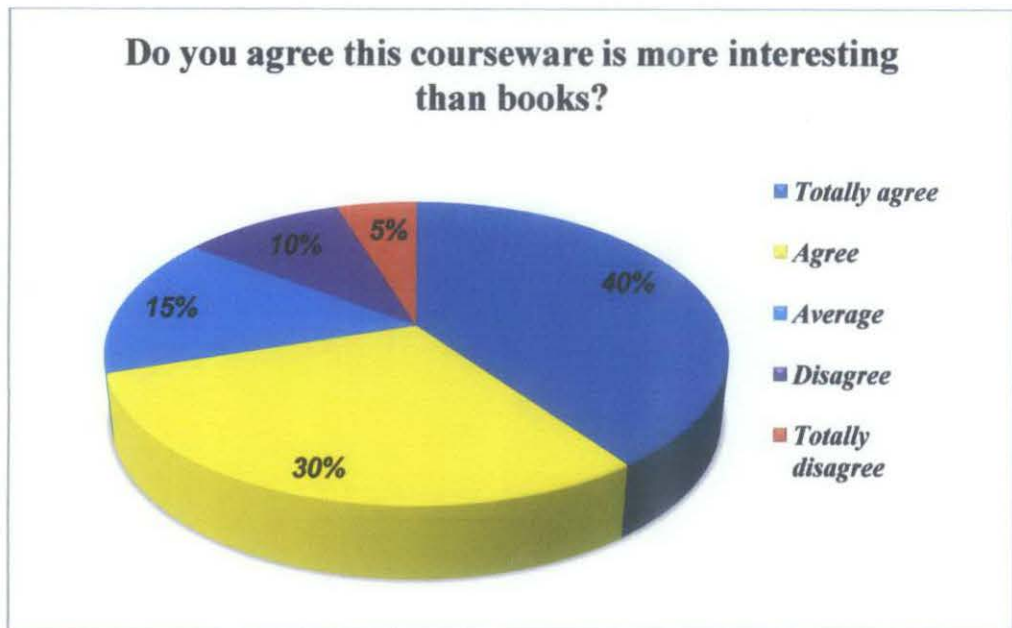
Figure 38: Attractive elements in courseware

The pie chart above shows the percentage whether the courseware is more interesting compare than education books. From the survey given, most of respondents totally agreed and 30% (6) agree which claimed this courseware is more interesting. There about 15% (3) said average or normal about this courseware. While, there also respondents from sample that do not agreed with the statement. From the sample, 10% (2) of respondents had disagreed and only 5% (1) totally disagreed with it. Children have synonym with the books as the tool of education. In schools, they normally use book or paper-based materials in their learning process. Thus, maybe some of them quite difficult to accept the courseware as their learning tools though in some situation it will be easier to use technology to compliment their need of studies.
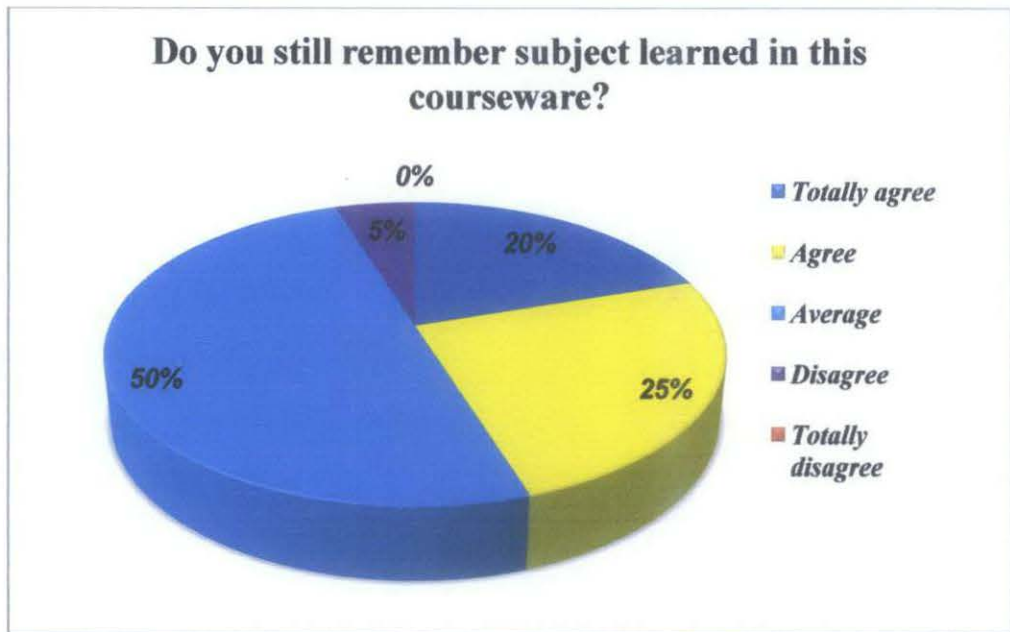
Figure 39: User performance

According to the pie chart above, it shows the percentage whether the user still remembers the subject learned in the courseware or not. From the survey, about 20% (4) are totally agreed and 25 % (5) respondents agreed and said they still remember what they had learned. Majority or 50% (10) from sample said average between agree and disagree. While only 5% (1) of from wholes sample had disagreed on this statement. It is positive feedbacks when there is no respondent or 0% that totally disagree with it. From the percentage, it shows that the courseware has increase the performance of the kids. By undergoing various tutorial and exercise, they could increase their memory and understanding. To be expert, frequent practices will be great.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

Chapter 5 is the last part of the research which is the conclusion part of the project includes benefits of the courseware. Then, it will contain recommendation that could be use for further enhancement or future research related with current project.

5.2 Project Conclusion

The aim of developing this project is to produce compliment product for Tajweed learning for children as this subject is essential to for each Muslim to have strong basic on this knowledge. The courseware considered basic elements on process of learning for kids such as visual, audio, practices and active involvement. It will be great if the courseware could improve user understanding after used it.

According to findings, the courseware should beneficial to user. The few benefits of this project to user are:

- **Improves learning**

    Interactive multimedia like courseware used in the classroom, will be more enjoyed and increased learning excitement. Research also found that learning was higher when information was presented via computer-based multimedia systems than traditional classroom lectures.

- **Attractive**

    This multimedia courseware will be more attractive than books. Moreover, the courseware can produce sound that book not capable to produce it. It can be used as revision before meet their tutors.

- **Flexible**

  This multimedia courseware can be used anytime and anywhere. Users only need to have computer and also can choose their own time to study. Thus, user could have flexible time to study and pick time that really suit to their mood.

- **Modular**

  Each topic or section can stand alone, so students can delve deeply into the topic areas they need to learn, and skip over the ones they do not want. They can go to other areas after expert on one area, step by step.

- **Practical**

  Learning will be faster if they have active involvement on their own learning. They can learn and practice by their own. With text, audio and simple animations help them to learn by doing or coaching. Methods like these are all effective ways to develop practical skills and increase information retention.

- **Engaging**

  With the courseware, it keeps students interested and reinforces their skills. Though this courseware is exciting and fun, they are challenging at the same time, and it makes the learners to return using it again and again. Through continual practice, learning is absorbed and integrated into daily performance.

- **Tighten the relationship**

  This is the indirect benefit that user can receive. Parent can help them during the learning lessons which actually spend times for them to have interaction with family members. This courseware can be used by more than one user on one time. It can be used together with their siblings that could directly create peace relationship between them.

- **Use leisure time wisely**

  The courseware could be education tool that user can be used during their leisure time or school holidays. It can reduce their time on watching television or playing video games.

In conclusion, redundant of texts, pictures, audio or video will increase performance of information processing for kids supported by active involvement on their practices. The multi used of different media will stimulate their senses and help the process of learning more quickly. Moreover, it can be used by teachers or parents as learning tools for their children.

5.3 Recommendation

By having this application, it will increase the knowledge among children on Tajweed principles. Moreover, learning is for everyone without count on ages or background. Even teenagers and adult can use it especially for beginners.

For project improvement, there are several things can be done:

- **Interface and animation**

  The interface and animation in the courseware could be improved to be more attractive and pleasant. There should be short research whether the animation is relevant with the courseware especially meet with their age. Too much unnecessary material will affect the user interest.

- **Voice recognition**

  The feature of voice recognition will be added value on the courseware. There already various research on this feature. However, because of time constraints it could not implement inside the courseware. Thus, for further improvement this feature could be used especially during the tutorials

- **Contents**

  The contents of this courseware could be added and also cover on high level of Tajweed principles. On this prototype, not all Tajweed principles are covered. There should be research on this matter because in the courseware, all the principles should present in simpler explanation.

- **Exercises**

  Practice makes perfect. The exercise should be polish and more useful for the user. It would better if exercise should come out according to the exiting syllabus.

5.4 Summary

With the conclusion, the research already complete and support with the recommendation, it could be continue for further development that could help Muslims children in Malaysia have strong knowledge in proper ways to pronounce Al-Quran verses without change it meaning.

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GANNT CHART

No	Activities	Months								
		FYP I					FYP II			
		Jan	Feb	Mar	Apr	May	Sept	Oct	Nov	Dec
	Planning									
1	Choose topic	X								
	Preliminary topic research	X	X							
	Develop working plan		X	X						
	Conduct research		X	X	X					
	Analysis									
2	Problems analyses			X	X					
	Information collection			X	X					
	Modeling			X	X					
	Design									
3	Build contents				X					
	Story board development				X					
	Interface design				X	X				
	Development									
4	Interface development					X	X			
	Programming					X	X	X		
	Testing									
5	Debug detection							X	X	
	User satisfaction Testing								X	

APPENDIX B

ANALYSES SURVEY

<u>TANDAKAN (X) DI DALAM KOTAK YG DISEDIAKAN / MARKS (X) INSIDE THE BOX</u>

A. HANYA PILIH SALAH SATU PILIHAN/PLEASE CHOOSE ONLY ONE ANSWER

1. Anda pernah dengar mengenai TAJWID? /Do you ever heard about Tajweed?

YA/ YES	
TIDAK/NO	

2. Adakah anda mengetahui kegunaan dan kepentingan TAJWID? /Do you know the use and importance of Tajweed?

YA/YES	
TIDAK/NO	
KURANG PASTI / NOT SURE	

3. Anda pernah belajar tentang TAJWID? (Jika TIDAK sila terus ke soalan NO.7) /

    Do you have learned about Tajweed? (If NO, please go to question NO.7)

YA/ YES	
TIDAK/NO	

4. Anda masih mengingati perkara yang di pelajari tentang TAJWID? / Do you still remember subjects learned in Tajweed?

YA/YES	
TIDAK/NO	
KURANG PASTI / NOT SURE	

5. Anda pernah menyertai sebarang kelas agama yang mengajar TAJWID? (jika TIDAK sila terus ke soalan NO.7) / Do you attend any class that teaches Tajweed? (If NO, please go to question NO.7)

YA/ YES	
TIDAK/NO	

6. Anda berasa seronok menyertai kelas TAJWID tersebut? / Do you enjoy learning on that class?

YA/YES	
TIDAK/NO	
KURANG PASTI / NOT SURE	

7. Adakah ibu bapa anda mempunyai ilmu TAJWID? (jika TIDAK sila ke soalan NO.9) Did your parent have basic knowledge of Tajweed? (If NO, please go to question NO.9)

YA/YES	
TIDAK/NO	
KURANG PASTI / NOT SURE	

8. Adakah ibu bapa anda mengajar TAJWID kepada anda di rumah? / Did your parent teach you on Tajweed at home?

YA/YES	
TIDAK/NO	
KURANG-KADANG/ SOMETIMES	

9. Anda menpunyai computer peribadi di rumah? / Do you have personal computer at home?

YA/ YES	
TIDAK/NO	

10. Adakah anda mempunyai alat bantuan belajar mengenai TAJWID? / Do you have any learning tool about Tajweed?

YA/ YES	
TIDAK/NO	

Jika YA, sila nyatakan / Please state if YES: _____

11. Adakah anda inginkan alat bantuan belajar (dalam perisian komputer) mengenai TAJWID? / Do you want multimedia courseware on Tajweed?

YA/YES	
TIDAK/NO	
KURANG PASTI / NOT SURE	

B. JAWAPAN LEBIH DARI SATU PILIHAN/TICK MORE THAN ONE ANSWERS

   12. Apakah ciri yang anda rasa diperlukan dalam perisian tersebut? What are elements that you think needed in the courseware?

TEXT		VISUAL-2DIMENSI (2D)	
AUDIO/SUARA		VISUAL-3DIMENSI (3D)	
ANIMASI/ANIMATION		VIDEO	

APPENDIX C

USER SATISFACTION SURVEY

<u>TANDAKAN (X) DI DALAM KOTAK YG DISEDIAKAN / MARKS (X) INSIDE THE BOX</u>

HANYA PILIH SALAH SATU PILIHAN/PLEASE CHOOSE ONLY ONE ANSWER

1 SANGAT TIDAK SETUJU/TOTALLY DISAGREE

2 TIDAK SETUJU/DISAGREE

3 NORMAL/ AVERAGE

4 SETUJU/AGREE

5 SANGAT SETUJU/TOTALLY AGREE

13. Adakah gambar atau grafik dalam perisian ini menarik? / Do you agree pictures and graphic in this courseware are attractive?

1	2	3	4	5

14. Adakah suara atau audio dalam perisian ini mudah untuk didengari? / Do you hear the sound or audio in this courseware,easily?

1	2	3	4	5

15. Anda mudah mengenali pasti butang yang digunakan perisian ini? / Do you agree the buttons are easy to identify?

1	2	3	4	5

16. Anda mudah mengendalikan perisian ini? / Do you agree this courseware is easy to handle?

1	2	3	4	5

17. Adakah perisian ini menarik daripada menggunakan buku? Do you agree this courseware is more interesting than books?

1	2	3	4	5

18. Anda masih mengingati perkara yang di pelajari dalam perisian ini? Do you still remember subject learned in this courseware?

1	2	3	4	5