

**TAJWEED LEARNING EDUCATIONAL COURSEWARE
FOR CHILDREN**

by

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Dissertation submitted in partial fulfillment of
the requirement for the
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CERTIFICATION OF APPROVAL

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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.

NUR NABILAH BINTI MD TAIB

ABSTRACT

It is compulsory for every Muslim to pray five times a day as it is the second pillar of Islam. In fact, children also have to pray as early as ten years old. Thus, parents should ensure that their children are able to pray with correct pronunciation of prayer recitation. Prayer recitation should be pronounced correctly with its stipulated attributes called Tajweed. However, a research conducted found many children have a problem in the rule of Tajweed. The survey result proves that many of students and children have a problem in Tajweed rule either in pronunciation or the meaning of each rule. Also, children dislike learning facts and theory therefore by using multimedia and graphic tutorial approaches; it might enhance the level of excitement to learn and the also level of understanding on Tajweed rule. Thus, the project aims to develop a courseware for children age five to twelve years old with the integration of objectivism teaching theory and multimedia elements. In addition, in order to visualize the pronunciation to the users, the 2D approach will be used to make the pronunciation clear compared to lesson in classroom. The scope of the project is only covered Introduction to Tajweed, Hijaiyah letter and Nun and Tanwin classes. The system is being developed by using all information gathered from surveys, interviews and researches. Bahasa Melayu is chosen to be the intermediate language in the courseware. The Instructional System Design methodology is been chosen to develop the courseware.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

It is an obligation for Muslims to pray five times a day. At early age of ten, it is a must for the children to pray otherwise they will be punished. In the Holy Quran (4:103), Allah says “When ye have performed the act of worship, remember Allah, standing, sitting and reclining. And when ye are in safety, observe proper worship. Worship at fixed times hath been enjoined on the believers.” Daily prayers is the second pillars of Islam which Islamically defined to worship Allah through certain known and prescribed saying and actions starting with Takbeer (saying Allahu Akbar) and ending with Tasleem (saying as-salaamu’alaykum wa Rahmatul-lahi wabarakaatuh). Muslims must learn the proper way to pray, the rules and also the prayer recitation since children. The recitation should be pronounced correctly as it is one of the principles in a prayer. In addition, wrong pronunciation leads to different meaning of recitation. Therefore, Muslims need to learn proper way to pronounce every letter in Holy Quran correctly with its stipulated attributes called Tajweed.

According to **Surur Shihabuddin Hassan An-Nadawi al-Hafiz (2010)** in in his book, Ilmu Tajwid Jilid I, tajweed is defined as knowledge on how to pronounce Holy Quran letter in a proper way. Allah says in Holy Quran (73:4) “Or add (a little) thereto - and chant the Qur’an in measure,” which mean Allah ask Prophet Muhammad to recite Holy Quran with Tartil (proper way, rule of Tajweed). Muslim must first learn the basic knowledge of Tajweed which is Hijayah letter with its pronunciation. The rules of Tajweed can be classified into ten classes which are *waqaf, hamzah, qalqalah, nun and tanwin, nun and mim, mim sukun, lam sukun, lam ta’rif, sukun, tafkhim and tarqiq, and mad*. This project will only cover *nun and tanwin* class.

Current method to learn tajweed such as books, television, classroom and radios are not attractive enough for children to learn Tajweed consistent. Nowadays, children are more attracted to technology based application such as animation games.

Thus, integration objectivism theory and multimedia presentation might help children to understand Tajweed in an effective way. The use of multimedia elements like animation, sound, graphic and video might make the learning process effective to children and make the learning much more fun.

1.2 Problem Statement

Holy Quran acts as guidance in Muslim's life. It is an indication of any action, words or habits to become a good *khalifah* on this world. Therefore, Muslims should read Holy Quran and follow what is prescribed in the Holy Quran. Reading Holy Quran in a proper way is claimed in Islam. Even though learning Tajweed is *fardhu kifayah* for Muslims but reading Holy Quran in a proper way is *fardhu ain*. Hence, knowledge of Tajweed should be learned since childhood. At the moment, parents are aware on the importance of Holy Quran in their children's life. However, there are many children have problems to read Holy Quran in a proper way in Malaysia.

According to research done by **Mustapha Kamil Che'Pa (2001)**, many student have problem in pronunciation and rules of tajweed. They have less understanding on how to pronounce the letters with its attributes. Therefore, reading with wrong pronunciation will affect the meaning given in Holy Quran which led to false understanding. Thus, does not matter where you live, Tajweed rule is very important in Muslims' life.

The current learning methods such as books, radios, television and classroom for children are efficient for a better reading but not effective to improve the pronunciation and understanding. Most of these method focus on one way communication which the users cannot interact with the system. The system use dull interfaces and plenty of text approaches which makes children bored and hard to memorize. There are also online applications in the Internet which provide sounds and video. However, these applications are more suited for adults because of their use of high level English and absent of multimedia element.

As a result, this project called Tajweed Learning Educational Courseware is developed to integrate Objectivism Teaching Theory and multimedia elements in order to help Muslim children in learning Tajweed. The interactive design of

interface, two way system, and multimedia elements used to develop the courseware. This approach aims to attract children to learn and enable them to interact to the system.

1.3 Objective

1. To develop an interactive courseware of Tajweed Learning for children range five to twelve years old which more effective and efficient.
2. To integrate the Objectivism teaching theory and multimedia elements in the courseware.

1.4 Scope of Study

The scope of this project is focuses on Introduction of Tajweed, Hijaiyah letter and *Nun and Tanwin* class which comprise of *Iqlab* and *Izhar Halqi*.

1.5 Project Relevancy

This project aims to help children or Muslim society in improving their Tajweed. The target age of children is between five to twelve years old. This project also aims to be a kit for parents and teachers in teaching rule of Tajweed to their children.

Government provides many kinds of Islamic education as early as children school. As example, an Islamic school provide from basis Islamic information until intermediate level of information to the children. In Johor, it is a compulsory for children to attend an Islamic school. Thus, children have opportunity to learn Tajweed early from their classroom. However, the teaching approach used in classroom is one-to-many approach. Practically, it is not efficient in learning Tajweed. This is because a teacher has to ensure every student pronounce the right pronunciation for every letter or rules. With twenty and above students and in one or two hour class, it is impossible for teachers to check every student pronunciation. As a result, up to thirty percent of student still do not understand each rules of Tajweed and lead to wrong pronunciation. Hence, the existence of this courseware in market may open the opportunity for them to learn Tajweed.

With that limitation, parents also may use this courseware as a kit to teach their children Tajweed rule at home. Besides parents, teachers also might use this courseware as teaching kit in classes. Thus, by developing this courseware, it might help and indirectly compliment their knowledge for a better understanding.

1.6 Time Feasibility

The project is expected to due somewhere in December 2012. The duration of the project completion will be seven months starting from the project initiation on second week of May 2012. The project has 5 different phases which are analysis, design, development, implementation and evaluation. Currently, the project is still under development process. The project is planning to be implemented by early December 2012.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Rule of Tajweed is essential for every Muslim for reciting Holy Quran in a proper way. Tajweed is the correct way in pronouncing the Arabic letter with its correct attributes. There are several issues in learning Tajweed for Muslim. Some examples included limited time to learn this knowledge from expert or teachers in school, less medium to enhance the understanding of Tajweed, lack of awareness and others. In the present paper, the new approach for teaching and learning Tajweed is investigated. It is hypothesized that, multimedia and courseware approaches will leads to higher level of understanding of theory and also practically. The following five literature review attempts to decent rate and support the hypothesis.

2.2 Tajweed

Tajweed linguistically is to improve and make better. The technical definition is the correct recitation of the Qur'an that is achieved by giving each letter its due through the vowel movement (*Harakaat*), prescribed point of exit (*Makhrāj*) and the manner of articulation (*Sifa*) (**Muhammad Fathi, 2012**).

According to **Ad-Durrul Mukhtar**, Mazhab Hanafi and most of Scholar Syafie have a certain view that reciting Holy Quran with wrong pronunciation in prayer is completely not accepted. However, if he repeats and corrects the pronunciation, then the prayer will be accepted. Imam ibn Al-Jazari, one of the earliest scholars of Tajwid, maintained in his *Tufatul-Atfal*, a famous beginner style Tajwid manual, that it is incumbent to observe the rules of Tajwid, those who fail to do so are incurring a sin because the Holy Quran was revealed by Allah and transmitted to us with the rules of Tajwid (**Muhammad Fathi, 2012**).

In a research article by **Rohaya (2005)**, she investigated on the application of Objectivism concept in teaching Rule of Tajweed to Muslims. Objectivism concept emphasizing that fact is facts, which cannot be altered simply. The concept is

integrated with multimedia elements in order to enhance the understanding of the users. The surveys are conducted at bookstores and through Internet to approve the hypothesis. This project has excellent objectives in enhance the users understanding by using specified teaching method. However, the limitations for this research are sample group of studies. This project is not specifying to specific group of age, meaning it is for general. The courseware might useful to certain level of age but not so efficient maybe for few level of age because no specification in term of target market. This project only aims to create the 'easy' way to enhance users understanding but then, the developer not focusing into one segment which is very important in order to meet the user requirement. Other limitation is the research methodology for the project, survey which conducted in bookstore. Survey can be conducted everywhere, but as for the research observation; survey must be conducted in several places. Logically, people who come to the bookstore usually look for reading materials which are very helpful in gathering information. But somehow, the developer has to expand the location and target respondent. These kind of information is very helpful in develop a system which meets users requirement.

Researchers found that students are not being able to pronounce correctly is because they have less understanding on how to pronounce. In class, most of the students are just repeating the pronunciation from their teachers and they are not sure whether they pronounce correctly or wrong. Thus, one to one approach like CD-ROM might helpful in order for them to learn and listen to the audio clips many times.

2.3 Introduction to Multimedia

Multimedia is presenting words such as printed text or spoken text and pictures such illustrations, photos, animation or videos (**Mayer, 2005**). He claimed the wording material in multimedia is presented in verbal form such as using printed text. On the other hand, picture is presented in pictorial form such as using static or dynamic graphic. Thus, information is being present in an attractive way to the user.

Referring to **Hofstetter (2001)**, multimedia is the use of computer to present and combine text, graphic, audio, and video with links and tools that let the user navigate, interact, create and communicate. It means the integration of multimedia elements in a system enable the user to interact with by using the computer.

According to **I.T.L Education Solution Limited (2009)**, word multimedia is made up of two separate word, *multi* meaning many and *media* meaning materials through which information may be transmitted. Therefore, multimedia can be defined as technique that supports the physical and logical coexistence and interactive use of heterogeneous media classes such as print, audio and video in specific application environment.

Using video, audio and CD-ROM to deliver information is most effective way than through paper based and face to face communication. The multimedia application is actually creating hybrid pedagogy which utilizes technology. The usage of Multimedia technology is actually widely used in teaching to enhance the learning environment. (**Kachian & Wieser, 1999**)

In this era globalization, multimedia is widely use in most of the industry include education. **Steinmetz and Nahrstedt (2004)** analysed there are strong interest in existing multimedia system in various sector such as telecommunication industry, electronic industry, TV and radio broadcasting and also in education. The effects of multimedia system on people are grouped into knowledge transfer, entertainment, and data processing. Multimedia paradigm, the dominant conviction among multimedia system developed and users that adding multimedia functionality to information systems always leads to improved information and knowledge transfer (**Martijn, 1997**).

2.4 Courseware

According to **whatis.com (2008)**, courseware is an educational material intended as kits for teacher or tutorial for students, usually packaged for use with a computer. The most common knowledge area encompass in courseware is information technology.

Courseware learning supports individual learning with consideration of the different of individual. Courseware provides Learner initiated learning. While the instructor chooses the content and gives a lecture to learners on a massive scale through his own intentions in classical learning, the learner can choose the content and can study at his learning pace, at his level and according to his interest in

Courseware learning. Courseware provides self-directed, self-paced learning, and learning based on various media.

The developer of courseware has to ensure the users of multimedia elements are not overshadow the text element which is the main ingredient for learning. A research conducted by specialist of Multimedia Design, **Schitai (1998)** shows that majority of the courseware programs include information, computation and multimedia components by making use of the computer's operational capabilities, however instructional design considerations need to be applied to each one of these components to ensure learning has indeed occurred. The table below describes how instructional design principles can complement the operational capabilities of computers:

Operational Capability	Instructional Design Link To Learning
Information Delivery	Design information strategies
Performance Computation	Provide individualized feedback
Multimedia	Define media combinations and interactivity level

Table 1: Instructional Design complement Operational Capability (Schitai, 1998)

Courseware benefits through simulation learning, it supports learning activities that cannot be accessed in classical learning due to limitations, cost and danger. In addition, it allows the learner to repeatedly practice the things that he learns. In classical learning the teacher has limitation in giving a lecture repeatedly, but courseware learning allows the learner to repeat the lecture and practices as many times as is necessary. Furthermore, it makes learning interesting by combining the content with games and activities. This is especially useful for children. Other researchers conducted in few studies found that courseware produces positive effects in logical learning such as mathematics and science subjects. Multimedia learning is effective by supporting multi-sensory learning (**Heinich et al. 1996**). Learning is best facilitated through combination of complementary visual and auditory information (**Mayer, 2005**). Multimedia learning produces positives result in foreign language learning. However, courseware design should adapt to the learners' skill and knowledge.

Alessi and Trollip (1991) list down ten step of courseware development process. In order to develop a courseware, firstly, the developers need to *determine goal* for a single lesson. The users should understand what they learned throughout the end of the lessons. Second step is *searching for resource materials* include books, journal, films, substitute products or survey. Resource materials are group into resources materials for instructional design and for delivery system. The computer, operation manual and references guide are the example of resource materials for delivery system. Step three is to *learn the content*. The developer should learn the content as familiar with the users' environment or challenges will be helpful in designing the interfaces and delivering the information. The developers must have deep knowledge and understanding on users' behaviour, problems and requirement to develop a high-quality courseware. After learning the content, the developers have to *brainstorm to generate creative ideas* with the assistance from experts or others. Next step is *designing the instruction* from brainstorming outcome. The ideas may vary in term of the quality. Thus, the developer should filter and re-list the ideas according to users' priority. Afterwards, *describe the flow of system or learning in a flowchart*. The flowchart is important to visualize the presentation especially to computer based instruction because of the iterative process. While flowchart depict the sequence of a lesson, *storyboard* take place the process of preparing textual and images display in a lesson. The storyboard is needed to understand the whole presentation of the lessons. After drafting and designing the ideas on papers, the developers have to *convert the ideas into programmable software*. The software might be Flash, Macromedia, or any multimedia software to develop the application. It is advisable to have some supporting materials for computer based instruction. The technical manuals and users' guideline are the example of supporting materials. Finally, the lesson and support materials should be *evaluated by experts and target users*.

2.5 Children Education

A child is a fast learner compared to an adult especially during early age of six. They learned from the surrounding environment. According to **Graham (2008)**, based from survey conducted, there are three basic learning styles for children which are auditory, kinaesthetic and visual learner. *Auditory learners* prefer listening to explanation over reading and may like to study by reciting the information aloud. They might want to have background music while studying or quiet space or maybe

distracted by noises. On the other hand, *kinaesthetic learners* learn by doing and touching. They prefer writing down the information or doing hands-on activities rather than sitting while studying. Children who choose to look at graphics, watching a demonstration or reading are in *visual learners* group. They can easily grasp information presented in a chart or graph.

Montessori Philosophy stated there are three stages of learning for children age three to twelve years old. First stage is introduction to a concept by means of a lecture, lesson, something read in a book or sources of information. Then, processing the information, developing an understanding of the concept through work, experimentation, and creation will occur in second stage. Last stage of learning “knows”, to possessing an understanding of, demonstrated by the ability to pass a test with confidence, to teach another or to express with ease (**Stephenson, 2011**).

Children are more attracted to image, sounds, colour, graphic rather than text. It will be easier for them to memorize information. In addition, children also are more appealed to computer based learning than reading books. Classroom occupied with computers is actually improving the confidence level of children. This is because children become more competent in a classroom and they pretend to be an adult. Computer based learning also attract children to learn and improve the creativity skill in solving problems (**Cohen, Cowan 2007**).

2.6 Conclusion

Multimedia is combination of text, sound, graphic and picture into an application for an interactive effect to attract the audience. The usage of multimedia in an application create ‘live’ interface, user friendly and enables users to interact throughout learning process. As an example, users can navigate from one chapter to another without limitation. Users might turn off the background music or repeat the same lesson many times as they wish.

Multimedia is one of the components in a courseware. It provides self-learning based on various media. Even though, the information or lesson needs to be highlighted more than multimedia elements, it actually compliments each other. The delivery of information will be more attractive and interesting to the users in this

project which are children with the combination of colourful text, background music, animation and graphic.

Current method of teaching Tajweed through website, books and CD are not suitable for children education. Website or online software in internet is complicated for children to grasp the knowledge. The interface and teaching approaches are more focus on adult compare to children. On the other hand, books provide comprehensive information and theory which are too complex for them to memorize. Picture and color give more impact than lengthy text to the children.

Children have three different basic learning styles. They might love listening than reading, picture than text and may 9be hate music background and choose to stay in a quite space to study. Courseware is a flexible learning tool that might suit all different kind of children learning style. As an example, children who love listening than reading may play the sample pronunciation many times until they understand and being able to pronounce correctly rather than reading the theory. Imam Al-Ghazali pointed out that children learn from observation and experiment (**Mastura Badzis, 2012**). In addition, children play all the times except during sleeping. Hence, the storyboard of lesson in courseware is actually design according to users' interest. Majority of courseware for children uses multimedia and game based learning to cater their attention. To ensure their understanding is being evaluated at the end of lesson, the assessment will be in game form.

As a conclusion, the interactive design of courseware can make learning process more interesting to children. They may be able to memorize and understand the rule of Tajweed in a short time. The courseware will be available anywhere and whenever they want to study. The courseware also can be used as revision tools and supporting medium for parent to teach their children.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 PROJECT ACTIVITIES

ACTIVITIES	PURPOSE
Conducting Surveys	To observe and collect data from parents, teachers and student.
Interviews	To collect data from expert in Tajweed domain and feedback from system testing.
Multimedia Class	To enhance basic skill in FLASH and ACTION SCRIPT 3.0.

3.2 REQUIREMENT

3.2.1 Developer Requirement

The requirements needed for the developer to build this courseware are software and hardware requirement.

The hardware requirements are:-

1. Pentium IV 1.6
2. 256 MB of RAM
3. Hard Disk Drive 4Gb
4. CDRW Drive
5. SVGA Color Monitor
6. Speaker

The software requirements are:-

1. Macromedia Director MX 2004
2. Lightwave 3D version 8.0
3. Adobe Photoshop CS3
4. Macromedia Flash MX
5. Microsoft Office
6. Sound Recorder

3.2.2 User Requirement

The hardware requirements needed for the user to use this courseware are:

1. Pentium IV 1.6
2. 256 MB of RAM
3. Hard Disk Drive
4. CD/CDRW Drive
5. SVGA Color Monitor
6. Sound card connected to the speaker
7. Display Card with at least 8MB of memory

The software requirements needed for the user to use this courseware are:

1. Flash Player 9
2. Arabic Fonts; Amien01 and Stnask

3.3 Instructional System Design

This project used Instructional System Design (ISD) as a methodology to develop the courseware. Based from all research done, the best approaches for this project is by using courseware and multimedia elements in order to enhance the users understanding.

ISD is commonly used as a guideline to create a course, instructional materials, programs, training session and product for educational program. This method ensures the process of software development is design systematically, using step by step approach with specific measurable outcomes. The model for ISD is

ADDIE which referring to Analysis, Design, Development, Implementation and Evaluation. These processes are sequential and interactive as shown in Figure 1.

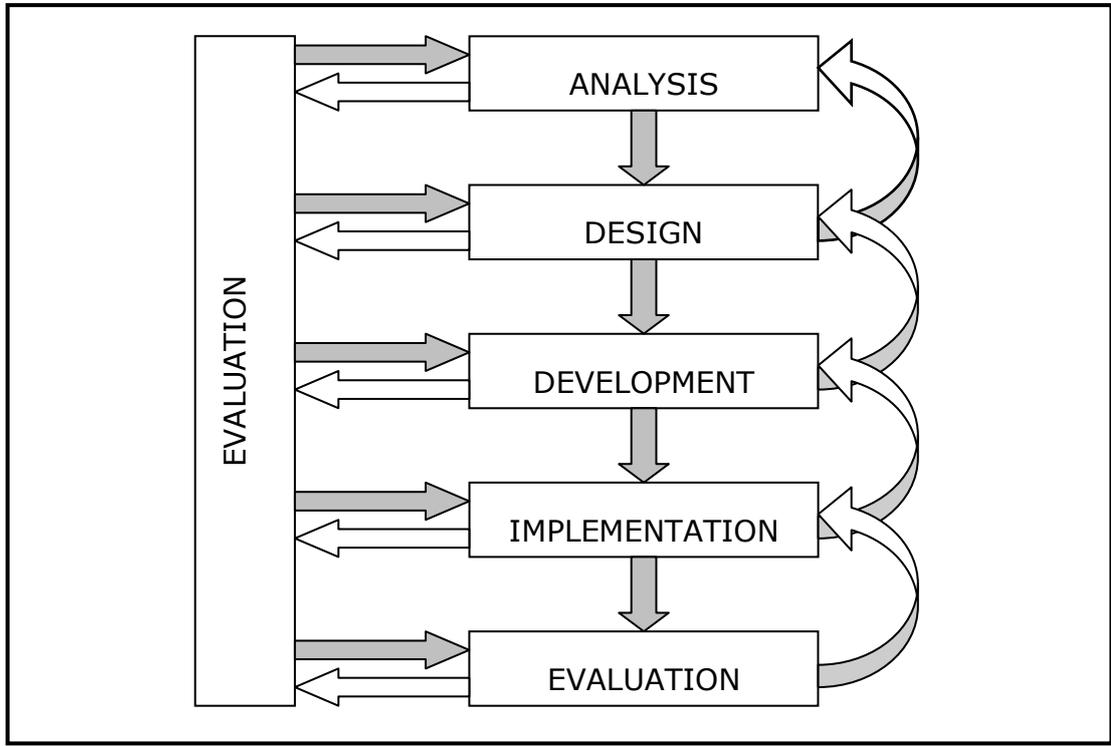


Figure 1: ADDIE model of ISD

As in Figure 1, the iterative aspect is represented vertically down the model by arrows in both directions between each phase. On the left side of model, evaluation is accompanying each phase to test the adequacy of the decision and progress made during that phase. As an example, the precision of the instructional strategy or plan for the project after designing phase is evaluated by experts. The evaluation is take place after each phase.

Phase 1: Analysis

Analysis is the first stage of ADDIE model. Identification of audiences, verification of audiences' behavior and characteristic are the first task in analysis phase. Thus, online survey, interview and research study are the main medium and tools to extract information for the requirement and project planning. The survey is distributed to parents, teachers and students through online surveys and by hand. The total respondents are 25 people. The survey objective is to extract knowledge and information from target market and also retain their feedback. Other than survey,

interview also being held with an expert in Tajweed domains. The expert is Madam Rashidah bt Dahlan, a headmaster of Sekolah Agama Sungai Suloh located in Batu Pahat, Johor. The thirty minutes interview session was arranged in order to get her recommendation and also their view on Tajweed problem in children as a headmaster. In fact, she also gives his fully support to develop this courseware. Based from the survey and interviews, the target audiences or users are children age between six until twelve years old. Based on studies, children have problems in pronunciation of Holy Quran letters. In addition, they are not attracted to the current method of Tajweed learning through books, television and radios. These methods are not interesting enough for them to grasp the knowledge. The objectives and outcomes for this project are also determined during this phase. The project aims to develop an interesting learning approach for children and improve the learning process for children to memorize rule of Tajweed. .

Phase 2: Design

The design phase identifies all of the details of training material to meet the specific needs of the target audience and achieve learning objectives. The flowchart is design to plan the flow of courseware activities and help to understand what elements to include and when to transition from one scene to another. The ideas and strategies on how to deliver the information and content is also take part in this phase. The graphical tutorial learning based will be the delivery teaching form to the audience using step by step sequencing content. The tutorial is to deliver the knowledge and audience or user will be evaluated by playing the simple quiz assessment.

Phase 3: Development

The development phase converts the blueprints in the design phase into instructional material. Creating the prototype uses Adobe Flash CS3, Adobe Photoshop CS3, Wavepad Sounds Editor and sounds recorder as the development tools. ActionScript 3.0 is an object-oriented languages use to control 2D animation made in Adobe Flash. The activities, performance aids, content and context are created to ensure the courseware provide best learning environment. Every part and section in the courseware is combined into a coherent whole so that it best integrates the information and activities into a learning platform that fosters performance. The

graphical user interface is design based on user requirement from analysis and design phases for prototype. The interface involves many color, simple animation, graphic and sounds. It includes background music for every transition interface. There are three main menus; Introduction to Tajweed, Introduction to Hijaiyah letter and Nun Mati and Tanween. The proper pronunciation for every Hijaiyah letter is provided in the presentation demo. The 2D picture of the image on the prescribed point of exit is shown for them to get clearer picture of the exit point. The users can play the sounds clip many times as they wishes. The teaching plan for this project is dividing into two sections which are tutorials and assessment. The tutorials are mainly explanation on specific rule of Tajweed and how to pronounce correctly with the sample of pronunciation. Then, users will be evaluated in the assessment in a simple game format.

Phase 4: Implementation

A pre-test is conducted with student from Sekolah Kebangsaan Iskandar Perdana to determine whether the audience can already perform some of the objectives. In addition, pre-test is to ensure whether this teaching materials and plan is helpful to improve understanding on Tajweed among children. The result from pre-test will be used to improve and revise the course before it fully implemented. The result can be read from user reaction and satisfaction, the effect from the courseware and user performance level.

Phase 5: Evaluation

Evaluating the success of any training implementation is important as a learning tool for the developer. In fact, evaluation is the systematic determination of merit, worth and significance of a learning process by using criteria against a set of standards. Evaluation takes places in every phase from analysis until implementation. In the first phase of evaluation, the ADDIE process is reviewed to assess how each step was conducted and look for ways to maximize development of the current project. The second phase of evaluation is taken farther by ensuring the audience or user can actually meet the new performance standards once they have completed their training and being assessed by their teacher or parent.

3.4 Gantt Chart

	Task	Assigned To	Start	End	Dur	%	2012			
							Q1	Q2	Q3	Q4
	<u>TAJWEED</u> LEARNING COURSEWARE		1/15/12	12/25/12	239					
1	Analysis Phase		1/15/12	5/24/12	92					
1.1	Problem Statement		1/15/12	4/3/12	55					
1.2	Analyses previous researches and current product		2/23/12	4/20/12	42					
1.3	Target Market		4/24/12	5/24/12	23					
2	Design Phase		9/26/12	10/15/12	13					
2.1	Flowchart		9/26/12	10/1/12	4					
2.2	Storyline		10/2/12	10/15/12	9					
2.3	Story board		10/13/12	10/15/12	1					
3	Development Phase		10/7/12	11/20/12	31					
3.1	Translate into flash animation		10/7/12	10/25/12	13					
3.2	Import sound		10/26/12	11/20/12	18					
4	Implementation Phase		11/21/12	12/21/12	22					
4.1	Combining all scene into a tutorial lesson		11/21/12	12/21/12	22					
5	Evaluation Phase		1/15/12	12/25/12	239					

CHAPTER FOUR

RESULT AND DISCUSSION

4.1 Data Collection

Data collection is the method used to prepare and collect data in order to develop a prototype that meets user requirement. The purpose of data collection is to obtain information from users and making decisions on a specific topic. For this project, the methods involve are research and observation, surveys or questionnaires and interview.

4.2 Research and Observation

4.2.1 Rule of Tajweed

There are ten major rules in reading Holy Quran. Every rule is equally important for Muslim to preserve from any mistakes and changes of actual meaning. Table below describes all major rules of Tajweed.

No.	Name of Rules	Description / Example
1	Nun sakinah and Tanwin (ن) <ul style="list-style-type: none"> • Izhar Halqi • Idgham • Iqlab • Ikhfa' Haqiqi 	<p style="text-align: center;">ء ه ع غ ح خ ى ن م ي ب ص ذ ث ك ج ش س ق د ط ز ف ت ض ظ</p>
2	Mim sakinah (م) <ul style="list-style-type: none"> • Ikhfa' Syafawi • Idgham Mislain • Izhar Syafawi 	<p style="text-align: center;">ب م ذ د ج ح خ ه ع غ ف ق ث ص ض ط ك ن ت ا ل ي س ش ز و ة ي ر ء</p>
3	Mim tasydid and Nun Tasydid	ن م

4	Lam Takrif (ال) <ul style="list-style-type: none"> • Izhar Qamariyah ال • Idgham Syamsiyah ال 	ء ب غ ح خ ج ك و ف ع ق ي ه م ط ث ص ر ت ض ذ ن د س ظ ز ش ل
5	Lam	فزادهم الله
6	Rule of Idgham <ul style="list-style-type: none"> • Idgham Mutamasilain • Idgham Mutaqaribain • Idgham Mutajanisain 	ب + ب قل ربي بست pronounce as بسطت
7	Mad	وما كادوا
8	Ra'	والفرقان
9	Qalqalah <ul style="list-style-type: none"> • Qalqalah Sughra • Qalqalah Kubra • Qalqalah Akbar 	يدخلون اذا وقب لهب وتب
10	Waqaf في ضلل ميين

Table 2: Major rule of Tajweed

Table above describe all major rule with simple example. As the rule is equally important, no one can neglect any rule of Tajweed. However, for this simulation, the developer will only choose basic *Introduction of Tajweed, Hijaiyah letter* and *Nun and Tanwin rules*; *Izhar Halqi and Iqlab* for the prototype. Focusing only this rule for the prototype not meant that it is the most important. This is done because of narrowing down the teaching scope as for the sample of prototype.

Furthermore, the first lesson after familiar with Hijaiyah letter is Nun and Tanwin rule. In every school syllabus, Nun and Tanwin will be taught first before any rules. Hence, this development of prototype will use the same syllabus arrangement.

4.3 Surveys

This project uses the survey method to observe and analyses the current level of knowledge on Tajweed from target market and also their feedback for this proposed project. The respondents for this survey are divided into few categories. There are teachers, parents and Muslim students' .These people are related to this study. They have lot information on this project domain which essential to develop a useful system.

Teachers deal with children at school. Thus, they are very familiar and know the patterns of children's' behavior and learning style. Their information is useful in order to prove the Montessori philosophy for children style and stage of learning are still relevant in this era globalization. Other than that, the teaching syllabus also helpful in order to make the courseware as the teaching kit for teacher in schools. In order to compliment the result from teachers, it will be supported by respondent entitled parents.

Parents know what their children hate or like and they are very particular on what is the best for their kids. Parents are the main source to assess level of children's understanding beside teachers. Parents can assess their kids at home through Holy Quran reading. Thus, their feedbacks and suggestions for this project will directly improve the learning approaches and ways to enhance users understanding based from their experiences and suggestions.

Apart from teachers and parent, students also take part in this survey. This is because need to assess their level of understanding of Tajweed rule. Parent and teachers may give different reason why their children or students have low level of understanding on rule of Tajweed. Thus, the student feedback and comment are also valid and accurate in develop the courseware that will solve their problem.

Figure 2 below illustrates the percentage of survey's respondent.

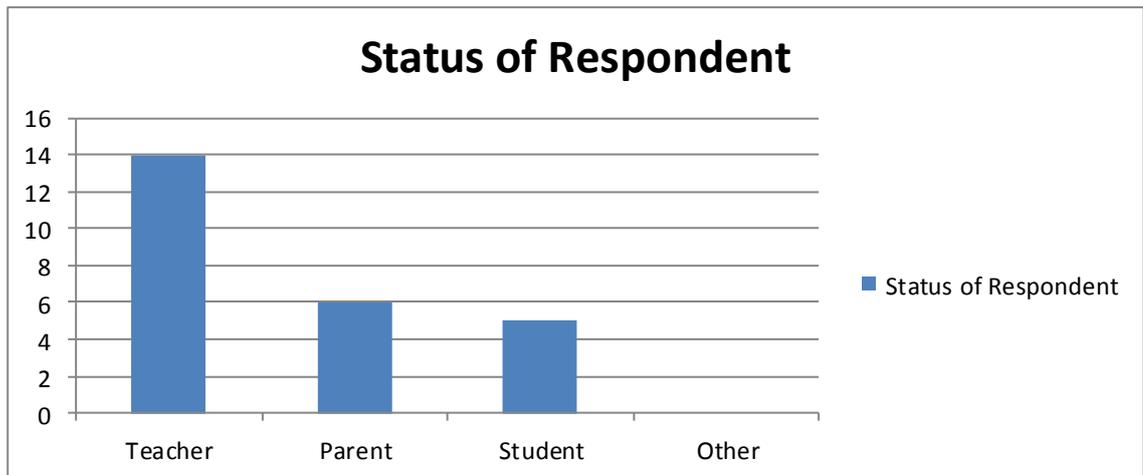


Figure 2: Status of Respondent

Based from Figure 2, fourteen respondents are teachers, six are parent and five of them are students. Even though the numbers from three different users are diverse, the important thing is all respondent participated in this survey is related to this project. Thus, information given from them is very useful for the project.

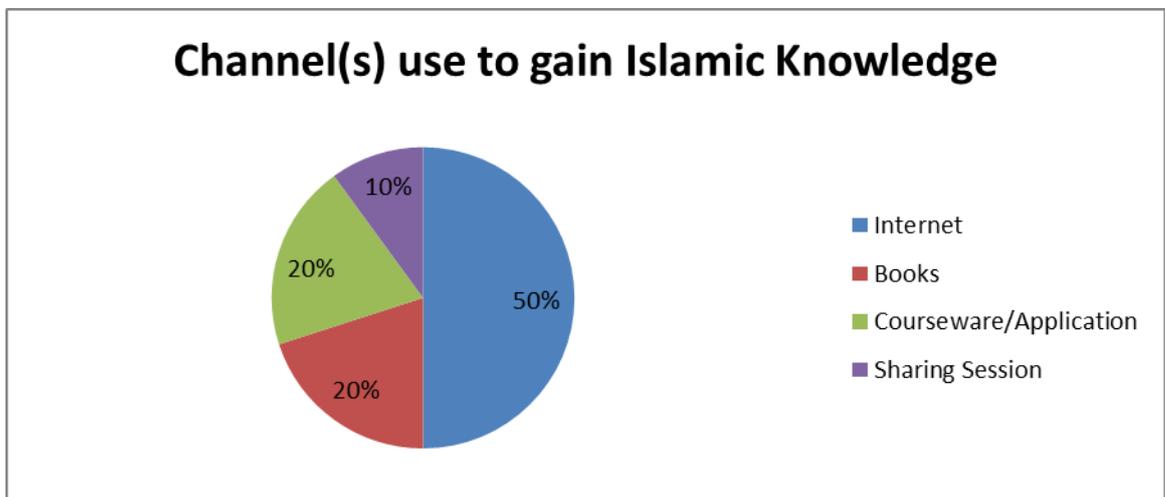


Figure 3: Channels use to gain Islamic Knowledge

Figure 3 shows percentage of channels use to gain Islamic Knowledge. Based from the result, most of respondent chose Internet with fifty percent vote. Internet cannot be denied as the major sources for any information because of its mobility and worldwide coverage. The least percentage is sharing session. It might because of the respondent is career people thus they have no time to attend course like sharing session program. Books and courseware or application has equal percentage which is

twenty percent. Thus, apart from Internet, they still gain information from other sources especially courseware and application. It is very relevant to develop project as a courseware for the platform.

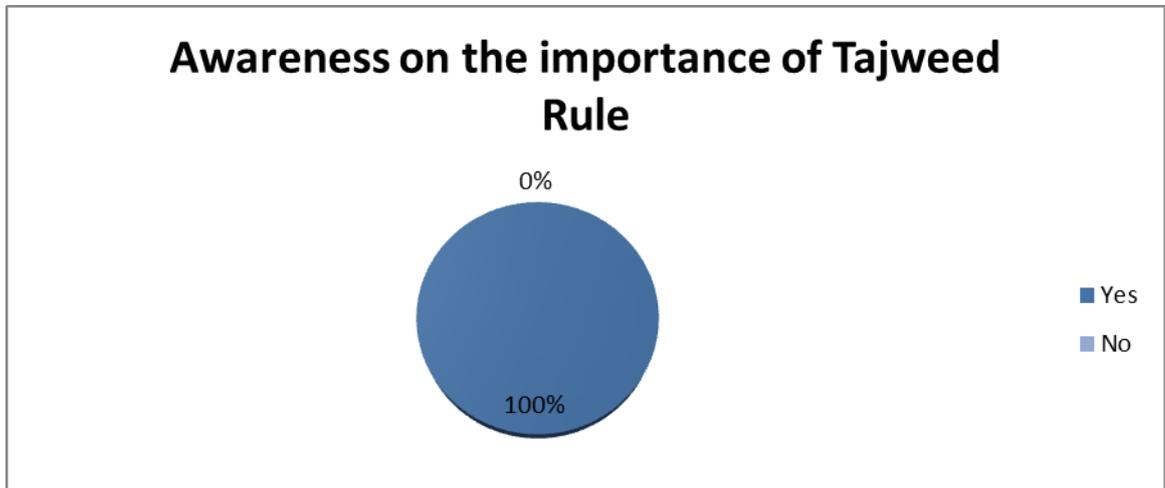


Figure 4: Percentage of the awareness on the importance of Tajweed rule.

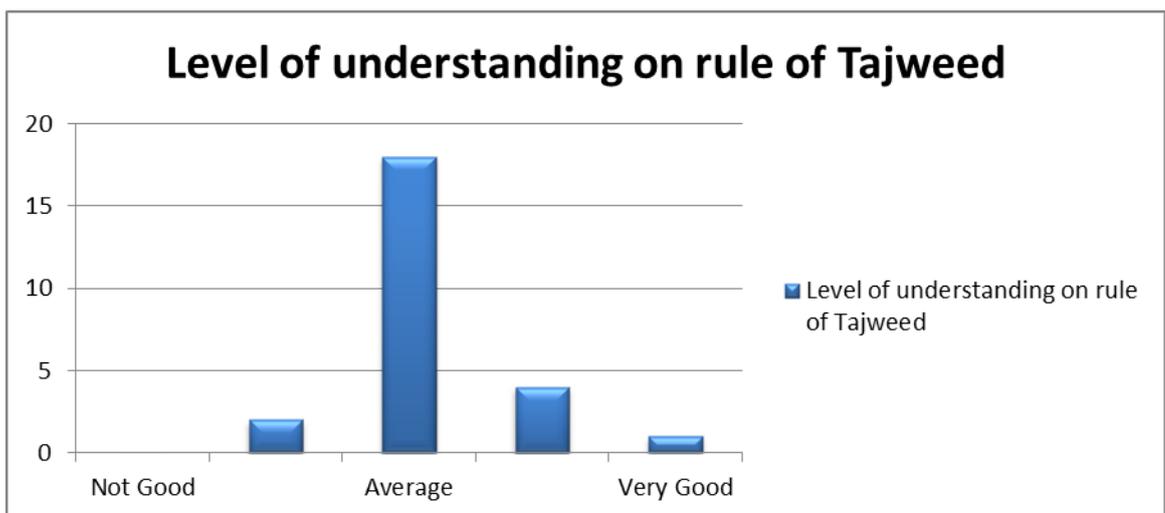


Figure 5: Level of understanding on rule of Tajweed

Figure 4 shows every respondent aware on the important of Tajweed rule, nevertheless Figure 5 illustrate the level of understanding on rule of Tajweed which has highest number in average column. Even though, they are fully aware on the importance of rule of Tajweed, the level of understanding of this rule is quite low.

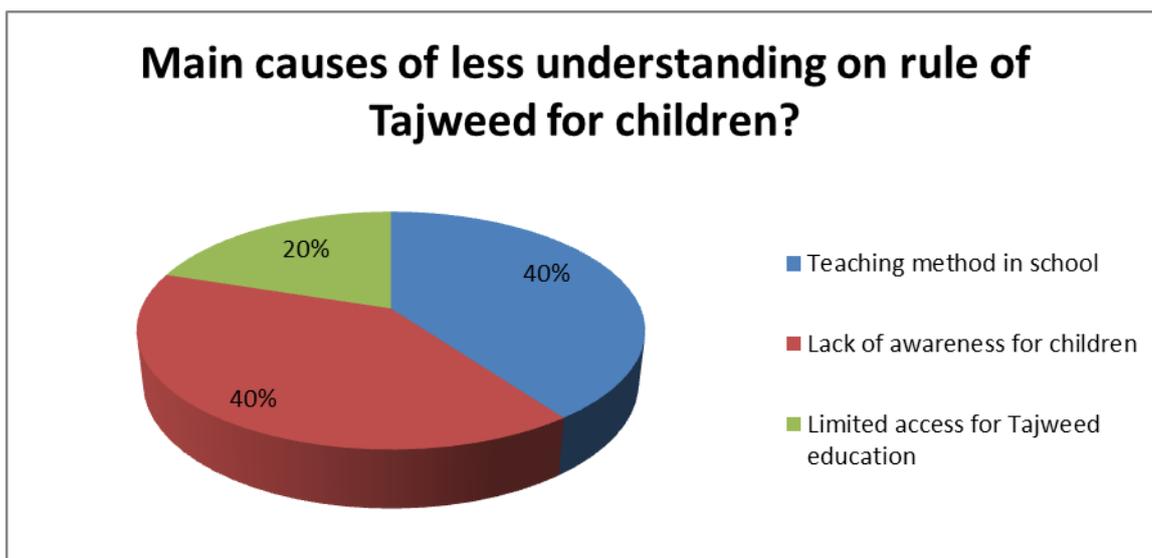


Figure 6: Main causes of less understanding on rule of Tajweed for children

Based on Figure 6 above, lacks of awareness for children and teaching method have highest number of forty percent. Both become the main causes of less understanding on rule of Tajweed for children. Teacher only have one hour period to teach Tajweed in class. It is too short for teachers to deliver the information as well as to ensure all students understand the course. On the other hand, lack of awareness for children is actually referring for parents. Nowadays, parents put priority for their children on subject like algorithm, sciences and others. Similar priority does not imply to religion courses like Tajweed for their children, moreover this kind of courses is more or less like an additional courses for children. In fact, both are important for children to excel.

Thus, the development of this project is very relevant based from the survey result. This project might help teachers and parents to educate Tajweed in their children or students.

4.4 Interview

The second method for this project in order to obtain information is interview. This method is defined as a qualitative research interviews seeks to describe and meanings of central theme in the life world of subjects. The main objective in interviewing is to capture the information and understanding the meaning of what the

interviewees say (Kvale, 1996). The interviewee for this method is expert for Tajweed, main domain for this project and also from kindergarten teachers.

This expert is very important in order to gain precise information on the main theme for this project which is Tajweed. The expert is acquainted with any related issues related to her domain. As an example, for this project, the expert for Tajweed will be Rashidah bt Dahlan, a Headmaster of Sekolah Agama Sungai Suloh. Her domain is Arabic language and Tajweed. She is very supportive and put her recommendation for this project.

Open-Ended Question for expert.

1. What do you think about Tajweed awareness among children?
2. What are the main causes for Tajweed problem among children?
3. What kind of improvement do you like to do to solve this problem?
4. What is your opinion regarding Tajweed learning educational courseware?

Person Interviewed: Madam Rashidah bt Dahlan (Headmaster of Sekolah Agama Sungai Suloh, Batu Pahat, Johor)

Interviewer : Nur Nabilah bt Md Taib

Purpose of Interview:

- Understand the importance of Tajweed in Muslim life
- Determine information requirements for project development
- Identify the problem arise from the target market for project.

Summary of Interview :

- The lack of awareness on the importance of Tajweed among Muslims since children.
- The issues faced by teachers:
 1. Limited time given for Tajweed course in classroom
 2. Parents have lack of awareness on the importance of Tajweed for children.
 3. Lack of interactive material for teachers and parents to attract

children learn Tajweed.

- The criteria of the courseware that help to attract children and student:
 1. A courseware which use colorful image and background sound.
 2. A courseware emphasize on the clear pronunciation for each rule of Tajweed

Table 3: Interview Report of Expert

4.5 Flowchart

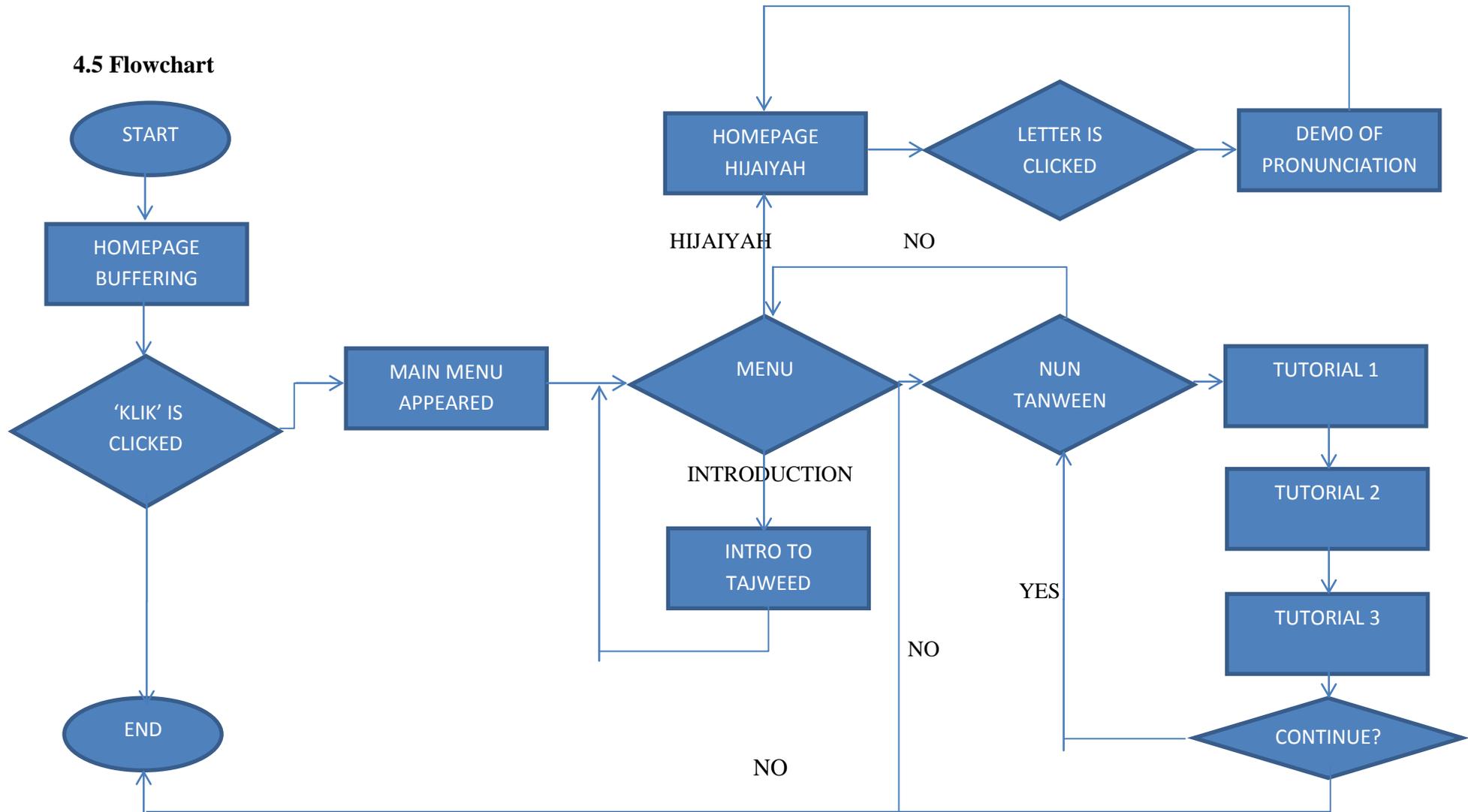


Figure 7: Flowchart of Tajweed Learning Courseware

Figure 7 above shows the process flow of this courseware learning. The application will start with homepage buffering. The buffering will take about maximum three to five seconds before the homepage being load. There will be introduction song and appearance of animal icons in the homepage to attract the children. The theme background for this courseware is nature. User need to click 'KLIK' button to continue the learning process to Main Menu. In the Main Menu, there are three options for user to begin the lesson either Introduction to Tajweed, Introduction of Hijaiyah Letter and Nun and Tanwin classes. Under Nun and Tanwin classes there will three submenus to complete one lesson of Nun and Tanwin rules including quiz.

4.6 Storyboard



Figure 8: Homepage

Bahasa Melayu is the intermediate language for the courseware. The reason is based from the survey result, many children and parent prefer Bahasa Melayu to be an intermediate language compared to English language. Furthermore, teaching Tajweed is clearer to use Malay language for children to brace up the basic. Nature theme comprises of animals, fruit, and green forest background makes the courseware livelier than current method. Children love animals and colorful environment compared to dull interface. Colorful background play important role in order to sustain the interest of the children. User will click 'KLIK' button to begin the tutorial. This courseware is also use some popular kids song like 'Alif Baa Taa', chicken dance, row row the boat and If you are happy.



Figure 9: Main Menu

Main menu consist of three menus; ‘Apa itu Tajweed?’, ‘Pengenalan Huruf Hijaiyah’ and ‘Hukum Nun Mati dan Tanwin’. These three main menus is the most important to brace the basic for children.



Figure 10: Introductions to Tajweed

Figure 10 shows the snapshot for 'Apa itu Tajweed' interface. The interface shows the simple meaning clarification with addition of background narration. The introduction of Tajweed also will cover the tutorial for Tanween sign and Arabic terms.

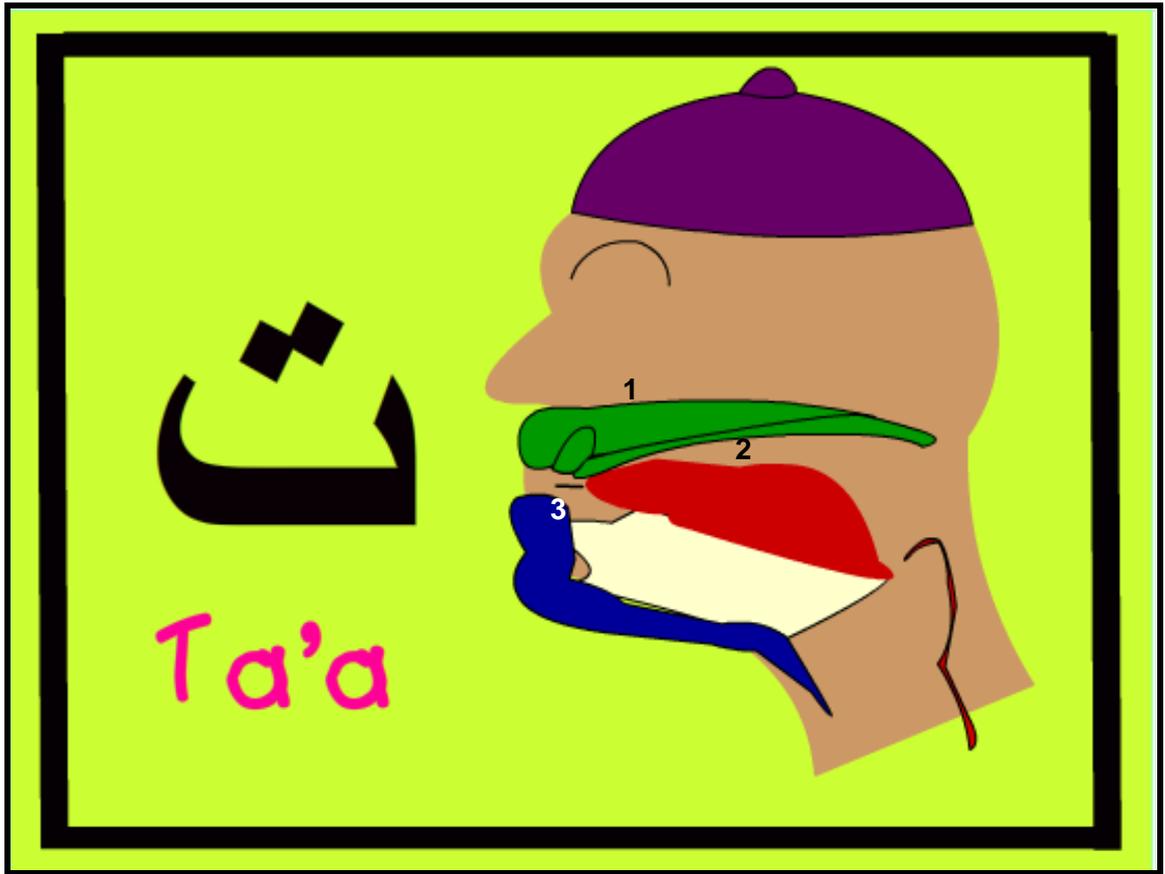


Figure 11: Pronunciation Demo

In order to show the correct and proper way to pronounce each Hijaiyah letter, the 'Pengenalan Huruf Hijaiyah' will demonstrate how to pronounce each letter using diagrams as shown in Figure 11. Referring to Figure 11, layer labeled with number 1 is the upper part of mouth, layer labeled with number 2 is the tongue and layer labeled with number 3 is the lower part of the mouth. These 3 layers are the main parts of pronunciation order to pronounce Hijaiyah letter with correct articulation and manners.

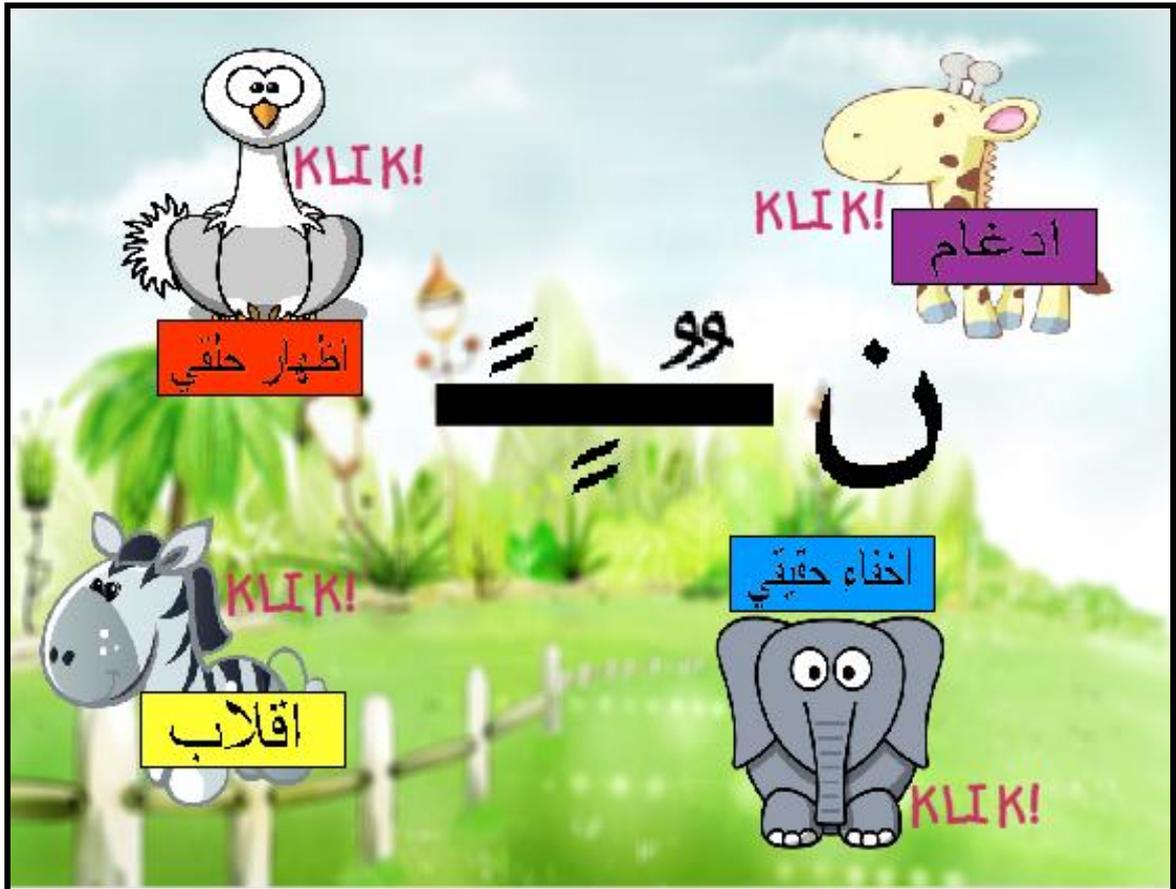


Figure 12: Menus for Tanween and Nun Sakinah

‘Tanween and Nun mati’ has four submenus exclude quiz tutorial. Users may choose either one of the submenus. Every cartoon animals represent each lesson. As the instructional system design methodology is used in the development of the courseware, every instruction to the users has to make it clear and obvious in order to avoid any misguided. The example of clear and obvious instruction is a ‘KLIK’ word is use when user needs to click.



Figure 13: Outline for Tutorial

Figure 13 shows the outline for Izhar Halqi lesson. Every lesson will have a brief outline for the tutorial at the beginning of the modules. This is important to acknowledge the users on the lessons. The elephant cartoon represent the Izhar Halqi menu previously, thus elephant cartoon will be the main image for this module. If none of the lesson toy or cartoon is clicked, the application ends



Figure 14: Example of Tutorial 1

Figure 14 shows the first lesson for Izhar Halqi. First lesson user need to know the meaning of Izhar Halqi and how to pronounce the rules correctly and with a proper way.

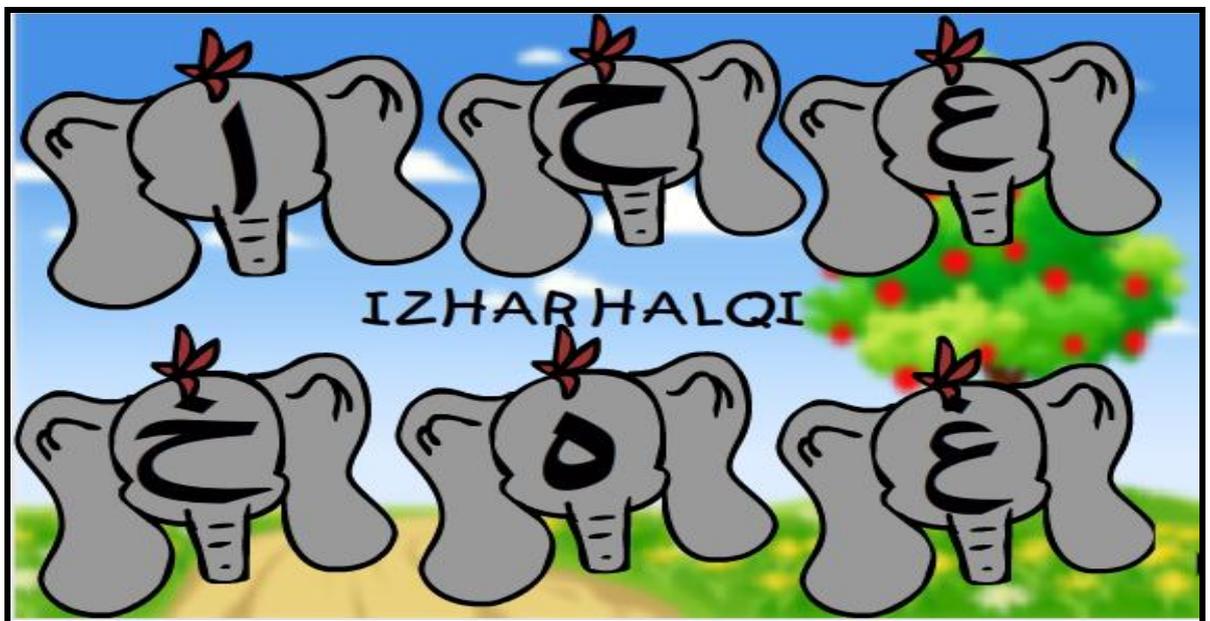


Figure 15: Tutorial 2

Figure 15 shows the continuation of lesson from previous lesson. Using same approach and multimedia elements play big role in this courseware.

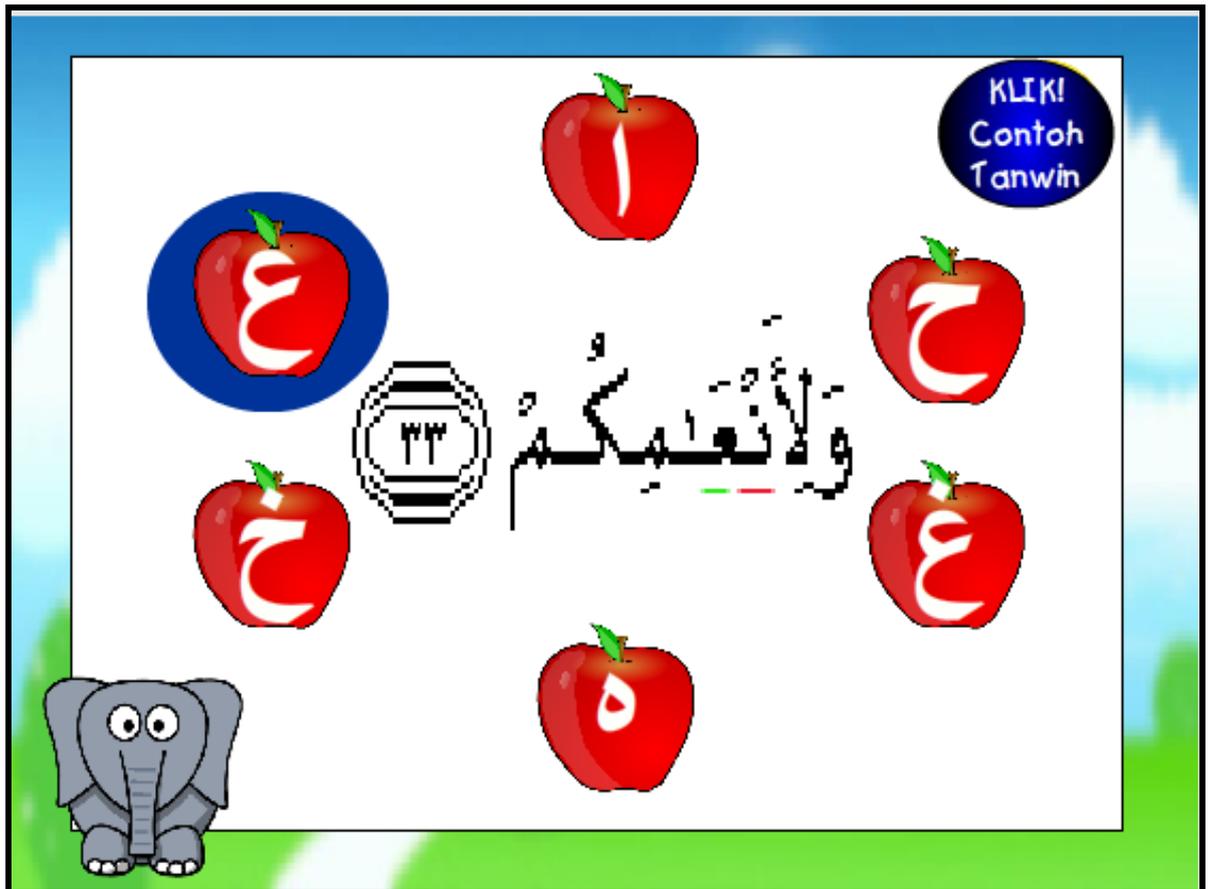


Figure 16: Example Tutorial 3

Figure 16 shows the last lesson for Izhar Halqi module. Each letter for each rule will be provided by one example of verse from Holy Quran. User may click any letter to hear the correct pronunciation. Each module or submenu has three lessons which are meaning of the rules, Hijaiyah letter for each rule and the example of verse from Holy Quran.



Figure 17: Option for user

There are some situation user ends the application before finish up the lesson. If so, the application will go back to Main Menu before ends the application. Users who go through all lesson with success is qualify to next stage which is assessment. Assessment is made in the form of simple interactive quiz for kids. The objective using interactive quiz as the approach is to maintain the level of user interest to continue until the application assesses the level of their understanding. Tutorial and game lesson is a two in one learning concept, thus only users who gone through both tutorial and game are consider success.

Completing one whole lesson does not mean the application is end. The application will ask user whether the user want to continue for next major lesson or not as shown in Figure 17. If yes, Main Menu is pop up or else, user has ended the lesson and application.



Figure 18: Introduction for Simple Game



Figure 19: Game Platform

Figure 18 and Figure 19 show the interface for a simple game named 'Permainan Kenal Huruf'. This game is made to create more enjoyable learning approach for children. This avoiding game may help them to remember better on every letter for each rule.

4.7 Usability Testing

A usability testing was conducted to test the usability of Tajweed learning education courseware. This testing conducted with the help of sample group of students from Sekolah Kebangsaan Iskandar Perdana. The sample groups are students range age six to twelve years old. There are among the aspect that been tested during the usability testing:

1. Did the instruction work well during testing?
2. Is the teaching material understandable for students?
3. Did the student achieve the project objectives?
4. How can the courseware be further improved?

Sample group : Students from SK Iskandar Perdana

Interviewer : Nur Nabilah bt Md Taib

Purpose of Testing:

- Measure the performance level resulted from the learning through courseware.
- Collect feedback for further improvement.

Summary of Testing :

- Multimedia elements able to attract students learn Tajweed.
- Students are able to follow the instructions from the courseware.
- Students are able to repeat the pronunciation after model demonstration on Hijaiyah letter.
- The quiz and games affect their performance level in remembering rule of Tajweed.
- Project revision:
 - 1- Adding course outline for student before moving to the tutorial.
 - 2- Adding “sign in Holy Quran” in Introduction of Tajweed menu for better understanding in other submenus.

Table 4: Testing Report

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

Tajweed is very important for Muslims especially because it is much related to Muslims' main ibadah; solaah or daily prayers. Tajweed can be defined as the way of pronunciation for every hijaayah letter with precise characteristics and its attributes. People who do not know even the basis rule of Tajweed may affect the quality of solaah. Wrong pronunciation leads to different meaning, thus it is very essential for every Muslims to learn Tajweed from children stage. This project called Tajweed Learning Courseware for children aims to enhance users's understanding and focusing on the right pronunciation.

The project is emphasizing on the importance of Tajweed in Muslim life. It is indirectly balance Muslim knowledge; general knowledge to excel in this global world and preparation for hereafter life. Even though this project cover an Islamic topic, the element of technology is being used parallel with today global and sophisticated world. It shows any topic related with religion is equally essential with non-religion topic like algorithm, languages, history and others for education.

The emphasis on interactive courseware structure with combination of multimedia elements and animation are designed to enable a close interaction between users and the courseware. This is in line with the project objective to attract children age range from five to twelve years old. Hence the target market is students who study in the kindergarten and primary school.

Using an Instructional System Design as methodology enable the project to be evaluated in every phases from analysis to development stage. It is to ensure the project is relevance to the objectives from time to time. In addition, ISD support the interactive learning courseware using multimedia approach and it is being recommended by many researchers and developers.

The project will be specifically relevant to several ages for additional information. It is obvious an aid to help children enhance their understanding, in some way this project will give a great impact in education at school and also for parents at

home. This project is aim to help teachers and parent to guide their students and kids to understand well on rule of Tajweed. Even though this project has no collaboration with government sector, as my vision is to look an opportunity for this project to be part of teaching tools at schools. For future recommendation, this courseware may be develop as mobile application as more and more consumers move towards mobile devices such as smartphones and tablets. Furthermore, application for mobile devices for iPhone, Android and Windows is easy to distribute and share to the market all over the world only by using Internet. This application may reduce cost of promotion and save energy consumption.

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APPENDICES

Tajweed Learning Educational Courseware for Children

[FYP Survey]

* Required

1. Please select your status: *

- Parent
- Teacher
- Students
- Other:

2. Please select what channel(s) do you use to gain Islamic knowledge? *

- Internet
- Books
- Courseware
- Sharing Session
- Other:

3. Do you aware on the importance of rule of Tajweed (Hukum Tajweed)? *

- Yes
- No
- Other:

4. Please rate your level of understanding on Rule of Tajweed (Hukum Tajweed) *

1 2 3 4 5

Not Good Very Good

5. Do you satisfy with your children or students level of understanding on rule of Tajweed (Hukum Tajweed)?*

1 2 3 4 5

Not Satisfy Very Satisfy

6. What are the main cause(s) of less understanding on Rule of Tajweed for children? *

- Teaching method in schools
- Lack of awareness
- Limited access for Tajweed education
- Other:

7. Do you agree that the development of an educational courseware of Tajweed Learning for children might helpful to solve the problem? The courseware will use multimedia elements; sound, graphic, picture and pronunciation demonstration to visualize the prescribed point of exit for rule of Tajweed. *

1 2 3 4 5

Strongly Disagree Strongly Agree

8. What is your recommendation for this courseware in order to solve Tajweed problem among Muslim especially children?*

Tajweed Learning Educational Courseware for Children

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Abstract— It is compulsory for every Muslim to pray five times a day as it is second pillar of Islam. In fact, children also have to pray as early as ten years old. Thus, parents should ensure that their children are able to pray with correct pronunciation of prayer recitation. Prayer recitation should pronounce correctly with its stipulated attributes called Tajweed. However, a research conducted found many children has problem in rule of Tajweed. This is because children dislike learning facts and theory therefore by using multimedia and graphic tutorial approaches; it might enhance the level of excitement to learn and the also level of understanding on Tajweed rule. Thus, the project is aims to develop a courseware for children age five to twelve years old with the integration of objectivism teaching theory and multimedia elements. In addition, in order to visualize the pronunciation to the users, the 2D approach used to make the pronunciation clear compared to lesson in classroom. The scope of the project is only covered Introduction to Tajweed, Hijaiyah letter and Nun and Tanwin classes. Bahasa Melayu is chosen to be the intermediate language in the courseware. The Instructional System Design methodology is been chosen to develop the courseware.

I. INTRODUCTION

IT is an obligation for Muslims to pray five times a day. At early age of ten, it is a must for the children to pray otherwise they will be punished. In the Holy Quran Allah says “When ye have performed the act of worship, remember Allah, standing, sitting and reclining. And when ye are in safety, observe proper worship. Worship at fixed times hath been enjoined on the believers.” Muslims must learn the proper way to pray, the rules and also the prayer recitation since children. The recitation should be pronounced correctly as it is one of the principles in a prayer. In addition, wrong pronunciation leads to different meaning of recitation. Tajweed is defined as knowledge on how to pronounce Holy Quran letter in a proper way [1].

Many students have problem in pronunciation and rules of Tajweed. They have less understanding on how to pronounce the letters with its attributes [2]. The current learning methods such as books, radios, television and classroom for children are efficient for a better reading but not effective to improve the pronunciation and understanding. Most of these method focus on one way communication which the users

cannot interact with the system. The system use dull interfaces and plenty of text approaches which makes children bored and hard to memorize. These applications are more suited for adults because of their use of high level English and absent of multimedia element.

As a result, this project called Tajweed Learning Educational Courseware is developed to integrate Objectivism Teaching Theory and multimedia elements in order to help Muslim children in learning Tajweed. The interactive design of interface, two way system, and multimedia elements used to develop the courseware. This approach aims to attract children to learn and enable them to interact to the system.

This paper is divided into four sections, including introduction which is section 1. In section 2 is about the literature review. Section 3 includes methodology and section 4 includes results and discussions. The last section 5 will be the conclusion and future work.

II. LITERATURE REVIEW

A. *Tajweed*

Tajweed linguistically is to improve and make better. The technical definition is the correct recitation of the Qur’an that is achieved by giving each letter its due through the vowel movement, prescribed point of exit and the manner of articulation. Tufatul-Atfal, a famous beginner style Tajweed manual, that it is incumbent to observe the rules of Tajweed, those who fail to do so are incurring a sin because the Holy Quran was revealed by Allah and transmitted to us with the rules of Tajweed [3].

In a research article [4], she investigated on the application of Objectivism concept in teaching Rule of Tajweed to Muslims. Objectivism concept emphasizing that fact is facts, which cannot be altered simply. The concept is integrated with multimedia elements in order to enhance the understanding of the users. This project has excellent objectives in enhance the users understanding by using specified teaching method. However, the limitations for this research are sample group of studies. This project is not specifying to specific group of age, meaning it is for general. The courseware might useful to certain level of age but not

so efficient maybe for few level of age because no specification in term of target market. This project only aims to create the 'easy' way to enhance users understanding but then, the developer not focusing into one segment which is very important in order to meet the user requirement.

B. Introduction to Multimedia

Multimedia is the use of computer to present and combine text, graphic, audio, and video with links and tools that let the user navigate, interact, create and communicate [5]. It means the integration of multimedia elements in a system enable the user to interact with by using the computer. The usage of Multimedia technology is actually widely used in teaching to enhance the learning environment. [6]. The effects of multimedia system on people are grouped into knowledge transfer, entertainment, and data processing. Multimedia paradigm, the dominant conviction among multimedia system developed and users that adding multimedia functionality to information systems always leads to improved information and knowledge transfer [7].

C. Courseware

Courseware is an educational material intended as kits for teacher or tutorial for students, usually packaged for use with a computer. The most common knowledge area encompass in courseware is information technology [8].

Courseware learning supports individual learning with consideration of the different of individual. Courseware provides Learner initiated learning. While the instructor chooses the content and gives a lecture to learners on a massive scale through his own intentions in classical learning, the learner can choose the content and can study at his learning pace, at his level and according to his interest in Courseware learning. Courseware provides self-directed, self-paced learning, and learning based on various media.

Courseware benefits through simulation learning, it supports learning activities that cannot be accessed in classical learning due to limitations, cost and danger. In addition, it allows the learner to repeatedly practice the things that he learns. In classical learning the teacher has limitation in giving a lecture repeatedly, but courseware learning allows the learner to repeat the lecture and practices as many times as is necessary. Furthermore, it makes learning interesting by combining the content with games and activities. This is especially useful for children. Other researchers conducted in few studies found that courseware produces positive effects in logical learning such as mathematics and science subjects. Multimedia learning is effective by supporting multi-sensory learning [9]. Learning is best facilitated through combination of complementary visual and auditory information [10].

In order to develop a courseware, there are ten step listed down [11]. Firstly, the developers need to determine goal for

a single lesson. The users should understand what they learned throughout the end of the lessons. Second step is searching for resource materials include books, journal, films, substitute products or survey. Resource materials are group into resources materials for instructional design and for delivery system. The computer, operation manual and references guide are the example of resource materials for delivery system. Step three is to learn the content. The developer should learn the content as familiar with the users' environment or challenges will be helpful in designing the interfaces and delivering the information. The developers must have deep knowledge and understanding on users' behavior, problems and requirement to develop a high-quality courseware. After learning the content, the developers have to brainstorm to generate creative ideas with the assistance from experts or others. Next step is designing the instruction from brainstorming outcome. The ideas may vary in term of the quality. Thus, the developer should filter and re-list the ideas according to users' priority. Afterwards, describe the flow of system or learning in a flowchart. The flowchart is important to visualize the presentation especially to computer based instruction because of the iterative process. While flowchart depict the sequence of a lesson, storyboard take place the process of preparing textual and images display in a lesson. The storyboard is needed to understand the whole presentation of the lessons. After drafting and designing the ideas on papers, the developers have to convert the ideas into programmable software. The software might be Flash, Macromedia, or any multimedia software to develop the application. It is advisable to have some supporting materials for computer based instruction. The technical manuals and users' guideline are the example of supporting materials. Finally, the lesson and support materials should be evaluated by experts and target users.

D. Children Education

Based from survey conducted, there are three basic learning styles for children which are auditory, kinesthetic and visual learner [12]. *Auditory learners* prefer listening to explanation over reading and may like to study by reciting the information aloud. They might want to have background music while studying or quiet space or maybe distracted by noises. On the other hand, *kinesthetic learners* learn by doing and touching. They prefer writing down the information or doing hands-on activities rather than sitting while studying. Children who choose to look at graphics, watching a demonstration or reading are in *visual learners* group. They can easily grasp information presented in a chart or graph.

Children are more attracted to image, sounds, color, graphic rather than text. It will be easier for them to memorize information. In addition, children also are more appealed to computer based learning than reading books. Classroom occupied with computers is actually improving the confidence level of children. This is because children become more competent in a classroom and they pretend to be an adult. Computer based learning also attract children to

learn and improve the creativity skill in solving problems [13].

III. METHODOLOGY

A. Project Activities

- a) Survey: To observe and collect data from parents, teachers and students.
- b) Interviews: To collect data from expert in Tajweed domain and feedback from system testing.
- c) Multimedia Class: To enhance basic skill in FLASH and ACTION SCRIPT 3.0

B. Tools and Software for development

The courseware is developed using FLASH and ActionScript 3.0. For hardware, SVGA color monitor, speaker, 256 MB of RAM, Hard Disk Drive 4 GB and Pentium IV 1.6 has been used. For software, Adobe Flash CS3 and Adobe Photoshop CS3 being used while programming language is ActionScript 3.0. User may need flash player 9 to play the application.

C. Instructional System Design

This project used Instructional System Design (ISD) as a methodology to develop the courseware. This method ensures the process of software development is design systematically, using step by step approach with specific measurable outcomes. The model for ISD is ADDIE which referring to Analysis, Design, Development, Implementation and Evaluation. These processes are sequential and interactive as shown in Figure 1.

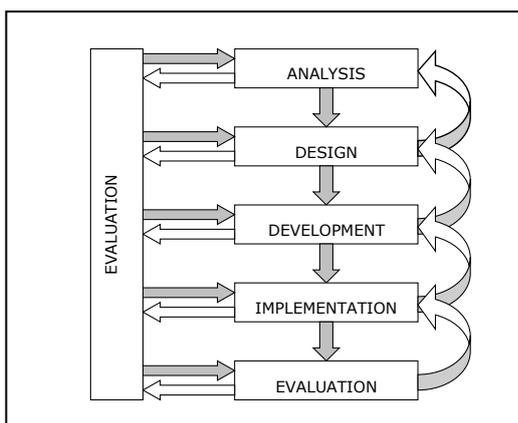


Figure 1: ADDIE model of ISD

As in Figure 1, the iterative aspect is represented vertically down the model by arrows in both directions between each phase. On the left side of model, evaluation is

accompanying each phase to test the adequacy of the decision and progress made during that phase. As an example, the precision of the instructional strategy or plan for the project after designing phase is evaluated by experts. The evaluation is take place after each phase.

Phase 1: Analysis

Setting the objectives, identification of audiences, verification of audiences' behavior and characteristic are the first task in analysis phase. Thus, online survey, interview and research study are the main medium and tools to extract information for the requirement and project planning.

Phase 2: Design

The design phase identifies all of the details of training material to meet the specific needs of the target audience and achieve learning objectives. The flowchart is design to plan the flow of courseware activities and help to understand what elements to include and when to transition from one scene to another. The ideas and strategies on how to deliver the information and content is also take part in this phase

Phase 3: Development

The development phase will convert the blueprints in the design phase into instructional material. Creating the prototype uses Adobe Flash CS3, Adobe Photoshop CS3, Wavepad Sounds Editor and sounds recorder as the development tools. ActionScript 3.0 is an object-oriented languages use to control 2D animation made in Adobe Flash. The activities, performance aids, content and context are created to ensure the courseware provide best learning environment. Every part and section in the courseware is combined into a coherent whole so that it best integrates the information and activities into a learning platform that fosters performance. The graphical user interface is design based on user requirement from analysis and design phases for prototype

Phase 4: Implementation

A pre-test is conducted with student from Sekolah Kebangsaan Iskandar Perdana to determine whether the audience can already perform some of the objectives. In addition, pre-test is to ensure whether this teaching materials and plan is helpful to improve understanding on Tajweed among children. The result from pre-test will be used to improve and revise the course before it fully implemented. The result can be read from user reaction and satisfaction, the effect from the courseware and user performance level.

Phase 5: Evaluation

Evaluating the success of any training implementation is important as a learning tool for the developer. In fact, evaluation is the systematic determination of merit, worth and significance of a learning process by using criteria against a set of standards. Evaluation takes places in every phase from analysis until implementation. In the first phase

of evaluation, the ADDIE process is reviewed to assess how each step was conducted and look for ways to maximize development of the current project. The second phase of evaluation is taken farther by ensuring the audience or user can actually meet the new performance standards once they have completed their training and being assessed by their teacher or parent.

IV. RESULTS AND DISCUSSIONS

a) Survey

This project uses the survey method to observe and analyses the current level of knowledge on Tajweed from target market. Furthermore, using survey, developer collected feedback for this project improvement. The respondents for this survey are divided into few categories. There are teachers, parents and Muslim students'. These people are related to this study. They have lot information on this project domain which essential to develop a useful system.

b) Interview

The second method for this project in order to obtain information is interview. This method is defined as a qualitative research interviews seeks to describe and meanings of central theme in the life world of subjects. This expert is very important in order to gain precise information on the main theme for this project which is Tajweed. The expert is acquainted with any related issues related to her domain. Fir this project, the expert for Tajweed is Rashidah bt Dahlan, a Headmaster of Sekolah Agama Sungai Suloh. Her domain is Arabic language and Tajweed. Thus, she is very supportive and put her recommendation for this project.

c) Flowchart

The application will start with homepage buffering. The buffering will take about maximum three to five seconds before the homepage being load. There will be introduction song and appearance of animal icons in the homepage to attract the children. The theme background for this courseware is nature. User need to click 'KLIK' button to continue the learning process to Main Menu. In the Main Menu, there are three options for user to begin the lesson either Introduction to Tajweed, Introduction of Hijaiyah Letter and Nun and Tanwin classes. Under Nun and Tanwin classes there will three submenus to complete one lesson of Nun and Tanwin rules including quiz.

d) Snapshot



Figure 2: Homepage

Bahasa Melayu is the intermediate language for the courseware. The reason is based from the survey result, many children and parent prefer Bahasa Melayu to be an intermediate language compared to English language. Furthermore, teaching Tajweed is clearer to use Malay language for children to brace up the basic. Nature theme comprises of animals, fruit, and green forest background makes the courseware livelier than current method. Children love animals and colorful environment compared to dull interface. Colorful background play important role in order to sustain the interest of the children. User will click 'KLIK' button to begin the tutorial. This courseware is also use some popular kids song like 'Alif Baa Taa', chicken dance, row row the boat and if you are happy.

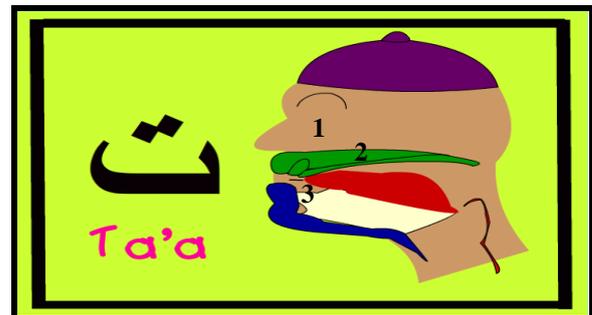


Figure 3: Pronunciation Demo

In order to shows the correct and proper way to pronounce each Hijaiyah letter, the 'Pengenalan Huruf Hijaiyah' will demonstrate how to pronounce each letter using diagrams as shown in Figure 11. Referring to Figure 11, layer labeled with number 1 is the upper part of mouth, layer labeled with number 2 is the tongue and layer labeled with number 3 is the lower part of the mouth. These 3 layers are the main parts of pronunciation order to pronounce Hijaiyah letter with correct articulation and manners.



Figure 4: Game Platform

A simple game named 'Permainan Kenal Huruf'. This game is made to create more enjoyable learning approach for children. This avoiding game may help them to remember better on every letter for each rule.

e) Usability Testing

Criteria improved in are shown below based on testing:-

- Multimedia elements able to attract students learn Tajweed
- Students are able to repeat the pronunciation after model demonstration on Hijaiyah letter.
- The quiz and games affect their performance level in remembering rule of Tajweed.

Project improvement after testing:-

- Adding course outline before begin the tutorial session.
- Adding 'sign in Holy Quran' in Introduction of Tajweed menu for better understanding.

V. CONCLUSION AND FUTURE WORK

Tajweed is very important for Muslims especially because it is much related to Muslims' main Ibadah; solaaah or daily prayers. Tajweed can be defined as the way of pronunciation for every hijaiyah letter with precise characteristics and its attributes. People who do not know even the basis rule of Tajweed may affect the quality of solaaah. Wrong pronunciation leads to different meaning, thus it is very essential for every Muslims to learn Tajweed from children stage. This project called Tajweed Learning Courseware for children aims to enhance users's understanding and focusing on the right pronunciation.

The project is emphasizing on the importance of Tajweed in Muslim life. It is indirectly balance Muslim knowledge; general knowledge to excel in this global world and preparation for hereafter life. Even though this project cover an Islamic topic, the element of technology is being used parallel with today global and sophisticated world. It shows any topic related with religion is equally essential with non-

religion topic like algorithm, languages, history and others for education.

The emphasis on interactive courseware structure with combination of multimedia elements and animation are designed to enable a close interaction between users and the courseware. This is in line with the project objective to attract children age range from five to twelve years old. Hence the target market is students who study in the kindergarten and primary school.

Using an Instructional System Design as methodology enable the project to be evaluated in every phases from analysis to development stage. It is to ensure the project is relevance to the objectives from time to time. In addition, ISD support the interactive learning courseware using multimedia approach and it is being recommended by many researchers and developers.

The project will be specifically relevant to several ages for additional information. It is obvious an aid to help children enhance their understanding, in some way this project will give a great impact in education at school and also for parents at home. This project is aim to help teachers and parent to guide their students and kids to understand well on rule of Tajweed. Even though this project has no collaboration with government sector, as my vision is to look an opportunity for this project to be part of teaching tools at schools. For future recommendation, this courseware may be develop as mobile application as more and more consumers move towards mobile devices such as smartphones and tablets. Furthermore, application for mobile devices for iPhone, Android and Windows is easy to distribute and share to the market all over the world only by using Internet. This application may reduce cost of promotion and save energy consumption.

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