

Research article

The Design and Development of a Tajweed Learning Innovation

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e-Tajweed Yadun is a mobile application developed for learning the science of tajweed effortlessly and efficiently. The application can be simply downloaded and accessed anytime, anywhere. It involves a combination of multimedia and creative graphic elements of a 'Yadun' model which is an Arabic term for 'hand'. e-Tajweed Yadun aims to create an interactive self-learning environment for deeper understanding and memorization of specific tajweed laws that could be burdensome when learned via books and conventional drills. The development of e-Tajweed Yadun involved five phases, namely theoretical study and needs analysis, model development, prototype design, prototype development and evaluation. e-Tajweed Yadun is a new alternative technique to learn the science of tajweed, particularly for Muslim students, as a guide while reading the Qur'an.

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1. Introduction

The development of technology today has given a great influence on the patterns, concepts and lifestyle of society. Every aspect of human daily routine is highly dependent on technology because it makes life easier and more efficient. This scenario also occurs in the field of education, especially in the teaching and learning process. Learning is no longer concentrated in the classroom alone, but teaching methods are also evolving with the rapid pace of ICT in Malaysia [1]. One of the technologies that can be used in the teaching and learning is mobile applications. The mobile applications are limitless to be applied in various branches of knowledge and this provides convenience to those who want to learn[2]

Similarly, al-Quran and tajweed teaching and learning processes should be in line with the rapid pace of technology. The variety of materials and methods in the teaching and learning of al-Quran and tajweed include the use of television broadcasts, video

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CDs and applications installed in computers or smartphones etc. It is an attractive phenomenon because it encourages more learners to master the Quran and tajweed knowledge. Generation Z in particular, would prefer this latest and practical approach to learn the science of tajweed because it is based on the demands of current educational needs [3] This echoes a saying by Sayyidina Ali r.a. that encourages Muslim to, “educate your children according to their times.”

The use of mobile applications in smartphones is an alternative for learners to learn something on their own as a learning module in addition to existing materials such as textbooks and workbooks. According to [4] learning using mobile applications stimulates motivation for learners to learn independently because equipment such as smartphones are easy-to-use and allow accessibility anywhere and anytime. In addition, mobile learning application encourages interactive learning, provides a more authentic learning context, triggers learners’ motivation, and also enhances learning development [5] [5] add that learning using mobile applications is more sophisticated, dynamic, and flexible in providing more spaces and access for learners to obtain information.

Hence, based on these evidences and justifications that mobile applications in teaching and learning generate encouraging effects in improving learners’ learning ability, an interactive mobile application is designed and developed to fill in the gap of limited availability on tajweed mobile learning applications. This application specifically aims to meet the needs of the present generation in learning tajweed. E-tajweed Yadun is developed as an application that is contemporary with learners of today’s way of learning.

2. Literature Review

The use of teaching aids is one of the aspects that can improve the quality of teaching and learning. [7] asserts that the use of various teaching aids in teaching and learning can attract learners to be more focused to understand what is being taught. Teaching aids act as a medium to stimulate and develop learners’ knowledge and intelligence [6] Therefore, the selection of appropriate materials and media is important to ensure that learners are comfortable and enjoy learning.

The suitability of applications or software that incorporates various multimedia elements as effective teaching and learning aids have been widely discussed. [7] identify multimedia-based teaching aids capability to attract learners’ attention as well as ease teachers’ workloads. [2] concur that software is prevalent and attractive because the technology has a logical and scientific display. The interactive element in the application

allows learners to experience a new learning environment that can attract interest, trigger positive motivation throughout the process [8];[9]and for easy reference and review [4]A study conducted by [10], found that the use of software makes teaching and learning fun and assists learners to understand and master various concepts quickly and easily.

In other words, the literature in the area showed positive relationships of teaching and learning and the use of applications or software in improving understanding and mastery of learners' learning. This means a software system that can create good interaction with learners is indispensable to cater to the current generation's way of learning, and particularly in learning basic tajweed knowledge. Evidently, it is crucial for the e-Tajweed Yadun application to be accessible on smartphones to allow interactive and constant engagement as a teaching and learning aid, anytime, anywhere. Therefore, this study presents the development process of the application that utilises a hand-held graphic and game innovations for learners to master tajweed knowledge via smartphones. In particular, the objective of the study is to illustrate the development of a prototype of a tajweed learning application termed as e-Tajweed Yadun.

3. Methodology

This study uses the ADDIE model to develop the application of e-tajweed Yadun. The instructional design methodology is applied to organise and streamline the production of the application content. The model has a cyclical process and continues throughout five phases namely Analysis, Design, Development, Implementation and Evaluation (Figure 1), each with its own distinct purpose and function in [11] in developing the application. The model is chosen to assist the researchers in establishing a learner centred approach rather than a teacher-centred, making the application more applicable and meaningful for learners.

4. Results And Discussion

4.1. e-Tajweed Yadun Application: How it Works

e-Tajweed Yadun applies innovations that use multimedia elements such as text, graphics, and audio in explaining the rules of tajweed, and are creatively combined with graphic elements of hand or 'Yadun' (Arabic term means 'hand') model. It is believed that the model can make learners retain the names and knowledge of the tajweed rules

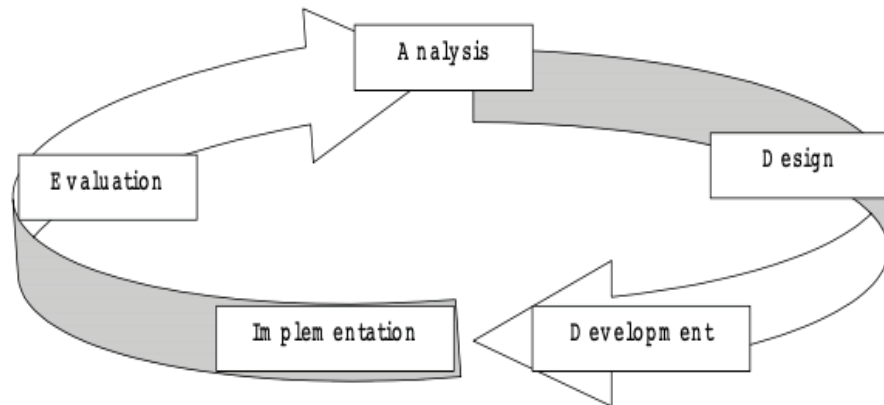


Figure 1: ADDIE Model for E-Tajweed Yadun Application Development (Source taken from Peterson, 2003).

involving *nun sakinah* and *tanwin* easier and quicker in comparison to the conventional way of memorizing the rules from books.

The Yadun (hand) model in e-tajweed Yadun application is easy to grasp by learners because each finger represents each tajweed rule. The application uses the technique of matching the five (5) fingers of the hand to explain the five (5) tajweed rules namely

1. Iqlab (Thumb)
2. Idgham Maal Ghunnah (Index/Pointer Finger)
3. Idgham Bila Ghunnah (Middle Finger)
4. Izhar Halqi (Ring Finger)
5. Ikhfak Haqiqi (Pinky Finger)

The method of learning the rules via the application is divided into three stages. It starts with the names of the tajweed rules, followed by the distribution of *hijaiyyah* letters that are included in the rules of the tajweed, and the way to read each rule. Each rule is determined based on the size or length of the finger. As well, the learning technique ranges from easy to difficult to help learners to remember the rules in stages to refrain from burdening learners' cognitive ability.

Furthermore, this application employs mnemonic methods. By imagining the fingers to symbolise the names of the rules, the distribution of letters and the way to read the rules, the model makes it easier for learners to remember the whole skills involving the rules of *nun sakinah* and *tanwin*. [12] identifies the advantage of mnemonic methods in driving memory to remember facts by relating them to simpler, existing information and data. Resultantly, learners who often forget and confuse the rules of *nun sakinah*

and *tanwin* can overcome the problem by proactively utilising e-tajweed Yadun as self-learning. These mentioned features are incorporated in the design and development e-tajweed Yadun application as an innovation in the teaching and learning of Al-Qur'an tajweed. Applying the ADDIE model, the findings and discussions of the five phases of the e-tajweed application are as follows.

4.2. Phase 1 Analysis

This first phase started with gathering literature of related studies on the development of e-learning tajweed applications, systems, or software from journals, academic studies and books. Comparisons of findings on existing applications that use mobile technology in tajweed learning are made, and screened. The results gathered the three closest ones in which each has its own strengths and limitations, as presented in Table 1.

TABLE 1: Comparative Analysis of Existing e-Tajweed Applications/Software/Systems

Applications/ Software/ Systems	Strengths	Limitations
Fun Learning al-Qur'an Tajweed Application [15]	Game concept User friendly Has musical elements and sound effects	Can only be used on a computer
Mobile Application for Learning Knowledge of al-Qur'an Tajweed [16]	Can adjust language for better understanding Every rule of tajweed is accompanied by audio Easy to use A mobile application (for smartphone)	Digitized notes and books
Educational Course on Tajweed Rules (<i>Hukum Tajweed</i>) Application [17]	Focus on SPM assessment and evaluation formats Integration of games such as treasure hunt and puzzles	All information in the form of tutorials to be completed at once Can only be used on a computer

The results of the analysis showed that there are still limitations or weaknesses in the existing tajweed learning applications. The gap enables the researchers to strategize e-Tajweed Yadun application with enhanced features and design that is efficient for the teaching and learning process of tajweed particularly on the five rules.

4.3. Phase 2 Design

In this phase, contents and information about the development of e-Tajweed Yadun have been compiled in order to come out with the design of the application as a whole. The identified contents, graphic display, animation, buttons and audios are incorporated in the design. This is done so that every function in the application can be effectively

used from the 'start' to the end. Figure 2 displays the diagram of e-Tajweed Yadun design model.

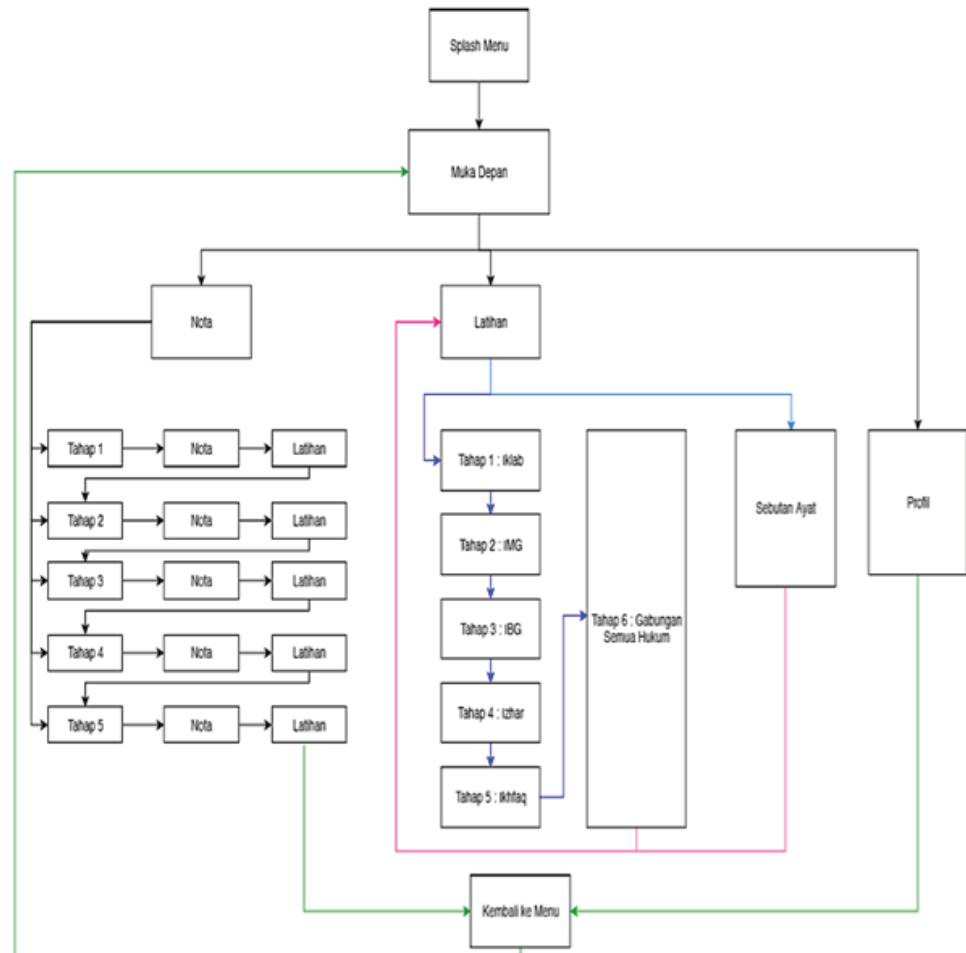


Figure 2: e-Tajweed Yadun Design Model .

4.4. Phase 3 Development

The development process is based on a storyboard that has been designed specifically for e-Tajweed Yadun application. Some features of software have been identified to develop e-tajweed Yadun such as Adobe Flash CS6, Audacity, ActionScript 3.0 and Adobe Photoshop CS6. Table 1 shows the software requirements for e-Tajweed Yadun (Table 2).

4.5. Phase 4 Implementation

As a result of the development process, e-Tajweed Yadun application has been tested on its usability and to identify unforeseen problems during the design and development

TABLE 2: Software Requirements for the Development of e-Tajweed Yadun Application

Software	Descriptions
Adobe Flash CS6	To make animations more interactive
Audacity	To edit audio recordings of tajweed law readings
ActionScript 3.0	For language programming in Adobe Flash applications
Adobe Photoshop CS6	To create graphics

phase. This phase is important to ensure that the application can achieve the set objectives. All suggestions from users were gathered and re-analysed for improvement, before this application can be fully utilised by users. e-Tajweed Yadun interface view is discussed in this paper as a part of the application implementation.

4.6. Interface View e-Tajweed Yadun

Loading and main menu displays of the application are used as an introduction to explain how to use the e-Tajweed Yadun application as a whole. There are three buttons on the main menu that allow users to select any button to start learning. It consists of notes, training and 'info' buttons. The buttons to end the application are provided in the upper room to make it easier for users to exit at any time. The screen display is shown in Figure 3.



Figure 3: e-Tajweed Yadun Loading Screen and Main Menu.

Notes are the main part of this application which is organized in accordance with three levels of learning. Each level of learning is accompanied by a mastery training. Users need to complete the entire level of learning and training to enable the transition to the next level of learning. Once the user clicks the note button, a hand graphic is displayed to start the learning session. The user has to click the arrow button to allow the text of the tajweed rule names to move towards the fingers based on the length of the finger, starting with the shortest finger to the longest one. Then, the user is directed to press the arrow button to allow the training content of the rule names to be displayed with the concept of drag and drop method. Upon completion of the training, the user

will be taken to the second level of learning display, and then the third. The three levels of learning have similar methods i.e. ‘Note’ display followed by ‘Practice’ display as represented in Figure 4.

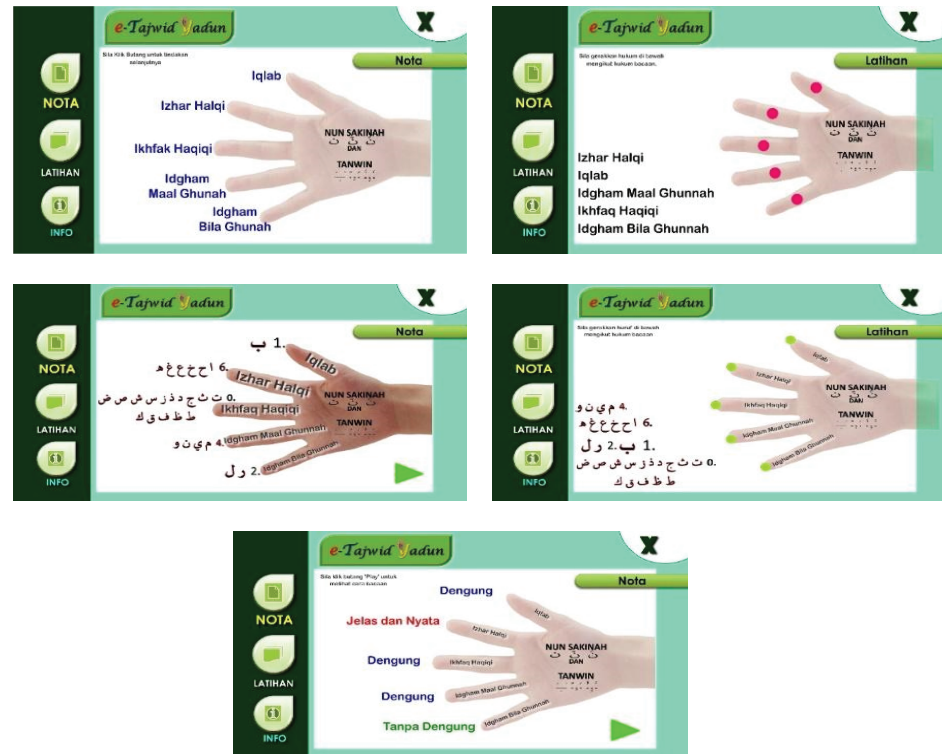


Figure 4: Screen Notes and Exercises for Each Level of Learning.

Training buttons have two options, namely reading the rule training and reinforcement training. Users can choose to listen to audio samples of the recitation of each tajweed rule by pressing the rule names button. There are texts displayed and its audio played sequentially. On the other hand, the reinforcement training button exhibits the text of the verse that has the rule of tajweed which involves *nun sakinah* and *tanwin*. The user needs to move the mouse to touch and click on the verse that has the rule of the tajweed and is being read based on the instructions on each display. Figure 5 presents the ‘Practice’ screen for the application.

4.7. Phase 5 Evaluation

The evaluation phase is the last phase to focus on feedback received from users in terms of usability of the application that has been developed. The responses have been collected via a focus group’s interviews, questionnaires and test implementation throughout the design and implementation phases of e-Tajweed Yadun application.



Figure 5: e-Tajweed Yadun Practice Screens.

Several revisions and enhancements have been made to better the efficiency and usability of the application. Revisions and tests have been reiterated as part of ADDIE model design methodology adapted in this study.

5. Conclusion And Recommendation

The application of e-Tajweed Yadun is in line with current technological advances. Utmost, e-Tajweed Yadun is an innovation to cater to today's generation preference in learning of tajweed rules. It incorporates creative, digital technology resources for learners to self-learn the tajweed rules of *nun sakinah* and *tanwin* via mobile phones, which is accessible anytime, anywhere. The application is also an alternative to teachers in facilitating their learners to overcome the problem related to memorisation and mastery of tajweed rules. This way, the emphasis and continuous efforts to help learners to better understand tajweed and proficiency in reading the Quran is sustained by using advanced technology.

In this sense, e-tajweed Yadun has provided a platform for learners' interactive engagement to improve Quranic recitation with tajweed. The applications can even be installed on a smartphone or computer for a quick and easier access to learning the

rules. Eventually, the development of this application contributes to tajweed rules mastery and memorisation pedagogical transformation process from conventional books and board, to one that utilises technology.

This study however, is confined on the usability of the application; it does not specifically aim to assess the effectiveness of the application on users who are learning the five tajweed rules. It is therefore recommended that e-tajweed Yadun application be tested on larger and various groups of learners so that more feedback can be gathered to validate its effectiveness in improving users' knowledge and mastery in tajweed. A quasi experimental study that consists of actual groups of learners learning the tajweed rules is next in line to find out the effectiveness of e-Tajweed Yadun application.

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