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A FRAMEWORK FOR DESIGNING MOBILE QURANIC MEMORIZATION TOOL USING MULTIMEDIA INTERACTIVE LEARNING METHOD FOR CHILDREN

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ABSTRACT

Quran is the fundamental holy book of Islam. Among the most important concerns is to learn it by heart. However, current method in Quranic schools is becoming less effective towards young generation. Thus, there is a need to find alternative solutions to memorize Quran for young Muslims. Mobile learning is an alternative to conventional learning that will support the existing method. Mobile devices have made an immediate impact on teaching and learning practices. However, for mobile learning to be effective for children in memorizing Quran, it is necessary to find specific design guidelines and pedagogy to this learning method. This paper aims at providing a unifying framework for developing Quran memorizer application using multimedia interactive method and learning theories for mobile learning.
Keywords: *Quran Memorization, Mobile Learning, Game-Based Learning, Rote Learning, Chunking.*

1. INTRODUCTION

Quran is the fundamental holy, authentic, and protected book of God since its revelation over 14 centuries ago. Muslims usually read Quran using the traditional printed version on paperback format called Mushaf [1].

There are effective methods to memorize Quran with different techniques and skills. The methods to memorize Quran include Al- Huffaz, Darul Quran, Deobandy, Panipati, and Cirebon etc.[2]. However, different techniques and approaches in each method give a different impact on the quality of memorization. All the theories and techniques have their advantages in practising to preserve the memorization of Quran. But students must choose an efficient way to memorize Quran within a short time and commit it to long term memory [3].

Based on Elobaid Hameed & Yahia Eldow's study [4], people are now implementing the latest technologies to access their favourite application to enhance their Islamic knowledge in their busy schedule and during their spare time. Mobile Quranic application may help users to access quranic resources and learn Holy Quran on the move i.e. at their convenient time and place [4].

Quran Memorizer is a tool that helps users learn the proper recitation and memorization of the Holy Quran using the repetition method. Users can repeat and loop a range of verses as many times as they want [5]. The same idea was also developed for *Memorization Tool* [6]. It is a bit different with *Quran Tracker* [7] tool. It has more features focused on the reciting, revising and managing the memorization of the quran. User can also track, set target, listen and recite quran. For *Juz30*, it is an online system for memorizing Quran [8]. Users can have their own profile and view their memorization progress.

E-halagat, an e-learning system is an interactive teaching of the holy Quran simulating

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the usual way followed either in the Quranic schools or in the Quranic rings at mosques [9]. It provides all the required computational tools for the perfection of the learner's recitation, follow up, and correction of memorization electronically.

Quran memorizer is a portal feature to help users learn or memorize Quran using well tested method like playing the ayah repeatedly, then fading or removing words automatically, and allowing them to check if it is correct [10]. It also allows users to mark their progress through their user accounts. It also gives an option to test those Surahs.

Despite the widespread research into the use of quranic memorization, there are still opportunities for further enhancements. Gamification concept for motivating students have yet to be implemented. Necessary modules specifically for memorizing Quran and further evaluations with students have not been included in the study. In addition, the applications above use repetition theory only for the purpose of memorization.

This paper propose a conceptual framework for modelling mobile Quranic memorization learning by applying learning theories and essential modules to help young learners memorize Quran. This paper will first present mobile learning technologies and related works. The next section explains the details of the conceptual framework that consist of learning theories, multimedia elements and modules. The last section suggests design requirements for storyboarding based on the proposed framework.

2. MOBILE LEARNING

Mobile learning has become an emerging tool in education and can be used to enhance the learning experience. After 2005, mobile learning started emerging and was researched by several researchers such as Sharples et. all [11]. They proposed an initial framework about mobile learning, to complement theories of infant, classroom, workplace and informal learning. Lui et. all.[12], proposed a conceptual design framework for Mobiledu project and mobile learning research. It focused on strategies to design mobile learning in a efficient way.

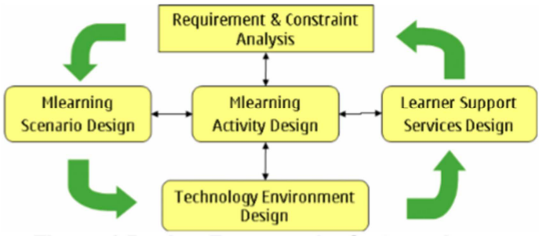

Figure 1. Design Framework of MLearning (Lui et. al., 2008)

Figure 1 shows 5 multi-disciplinary components that need to be incorporated in a mobile learning application proposed by Lui et. al., [12]. They are as follows;

- The mobile learning activity design is to clarify those mutually inter-dependent elements: learning objectives, learning tasks, learning strategies, resources and tools.
- Requirement and constraint analysis are important in designing mobile learning application by studying user's needs and problems.
- The mobile learning scenario design focuses on the characteristics of specific users, their activities and the environment or situation.
- The mobile learning technology environment is the condition such as content databases, learning tools, platforms, networks etc. that supports and sustains the mobile learning activities.
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- The learner support service design emphasize on extra services that are offered to learners in order for them to overcome difficulties, develop competencies and confidence in self-regulated learning.

Furthermore, mobile learning can be designed based on the suitable technology offered by the devices. Technology such as wireless network connection, embedded camera, embedded GPS receiver and additional RFID reader can give maximum impact during learning process [13].

Sharples et. all [11] also suggested that a theory of mobile learning must be tested against the following criteria:

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- Is it significantly different from current theories of classroom, workplace or lifelong learning?
- Does it account for the mobility of learners?
- Does it cover both formal and informal learning?
- Does it theorise learning as a constructive and social process?
- Does it analyse learning as a personal and situated activity mediated by technology?

Memorizing Quranic verses through mobile application is more attractive and easily accessible to young learners. Hence, by having a Quranic memorization mobile application, it would help to increase learners' memorization of the Quran.

3. FRAMEWORK

This section describes the proposed conceptual framework.

3.1 Proposed Conceptual Framework

The conceptual framework of designing and modelling a mobile Quranic memorization application using multimedia interactive learning method is shown in figure 2.

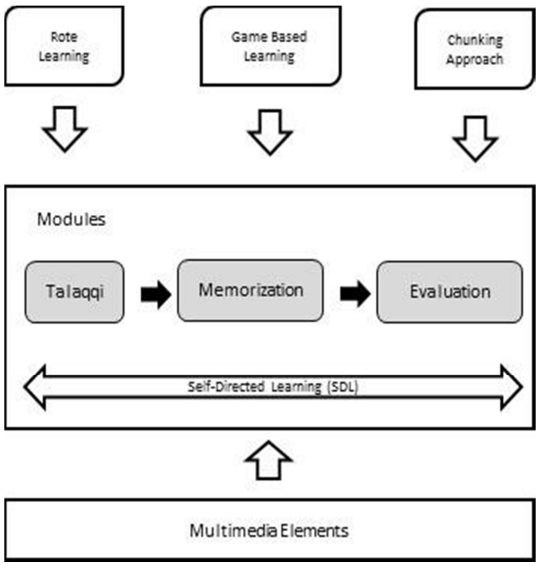

Figure 2. A Conceptual Framework for Designing Mobile Quranic Memorization Tool using Multimedia Interactive Learning Method.

This conceptual framework consists of integrating learning theories and multimedia elements for effective learning process. Modules for memorizing are divided into three phases namely talaqqi, memorization, and evaluation.

3.2 Learning Theories

Learning theories are the main guide to assist the learning process to be more effective. Learning theories that will be implemented in the prototype are game-based learning, chunking approach and rote learning .

Game-based learning refers to the borrowing of certain gaming principles and applying them to real-life settings to engage users [14] around the world [27]. Digital game based-learning can improve the learning effectiveness of students [15][16][17]. Based on Whitton [28], game-based learning create attraction and engagement for experience and environment learning. In game-based learning, students play the game, participate in the learning activities to understand the concept, and allow students to engage with educational materials in a playful and dynamic way as well as guide participants towards the goal of the game [29][30]. This theory is suitable for the memorization of Quran so that children can be motivated to learn while having fun exploring.

Rote learning is a method involving repetition and memorization. Memorizing is one of the techniques used by ancient scholars in preserving knowledge of the Quran [19]. Muslims must follow the specific method of memorization to produce a great memorization and remember all parts of the Quran (25). Daily exercise of rote learning will help students to learn [26]. The most effective method to strengthen memorization is using repeat technique to enhance learning process [18]. Rote learning is one of the memorization of information based on repetition and memorization uses mental ability and retains the level of intelligence [18]. Psychologists say, rote learning is a process whereby specific items are mentally recorded, but it can be associated with other learning of structures [18]. Most Muslims use rote learning method to memorize Quran to ensure the preservation of Quran. This method is used to ensure that the Quran always save in the learner's heart. This theory will be implemented in the memorization module. The user will repeat

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the ayat for five times. The repetition will strengthen the memory of the user.

The process of separating knowledge into smaller parts that have meaning is known as chunking. Chunking to memorize something will enable outstanding memory performance [32]. Chunking is an encoding strategy that improves working memory performance [20] and to reduce the cognitive load as the learner process information [31]. Based on psychology, a person can memorize something in limit information at once but if information is systematically organized and knowledge is integrated by meaningful and characteristic chunking, the person may develop memory in an effective way [33]. The information is broken down by chunking to accomplish the meaning of the information [34]. This is important to children who benefit from chunking to read large text. Chunking will help children to memorize short sentences [35]. This method is used in memorization where, the items are divided into small and easily memorable chunks or groups. Chunking the long ayat into parts will be easier for students to memorize [19].

3.3 Multimedia Elements

Multimedia is an integration of different elements such as text, graphic, audio, video and animation [21][22].

Text involves the use of text types, sizes, and colours. The use of images is to emphasize directed attention and illustrate concepts. Graphics help to illustrate ideas through still pictures. The use of graphics can help sharpen learners' memories [23]. A multimedia application may require audio or sound to attract learners [24]. Video provides a powerful impact in a multimedia program. Animation is a process of making a static image look like it is moving. Animation is essential to improve understanding of young learners [23].

3.4 Modules

There are three important modules to memorize Quran in this framework. The modules are Talaqqi, Memorization and Evaluation.

Talaqqi Module is where listening, and repetition of the correct Al-Quran recitation takes place. Memorization module is focused on memorizing Quran. Each ayat will be repeated five times. Furthermore, there are activities to ensure learners have memorized the surah. Evaluation module will assess learners on memorizing each surah. Time and score will be recorded and the result is displayed at the end of activity.

4. RESULTS AND DISCUSSION

The main finding of this research is a conceptual framework for designing mobile quranic memorization tool using multimedia interactive learning method for children. The proposed conceptual framework will be validated using prototyping approach.

In summary, by adapting the theories, and literature review, the conceptual framework proposed were applied in the design phase which is storyboarding. Storyboarding is typically part of the development phase.

Figure 3 shows an interface for user registration. Learners may choose their desired avatar throughout the learning process. This prototype will save learner information in a database. In doing so, they may always continue at the level they stopped last.

Figure 3. Interface for User Registration

There are three different levels in EZHafiz as shown in Figure 4. Learners have to score 90% before they can proceed to the next level.

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Figure 4. Interface for Levels

There are two surahs for each level. An example for easy level is shown in figure 5. Learners must complete each surah before moving to the next one.

Figure 5. Interface for Easy Level

In module Talaqqi shown in figure 6, learners need to listen to the correct recitation first. Audio for each surah with correct recitation is important to young learners as they must listen intently to the surah.

Figure 6. Interface for Talaqqi

In this module memorization, chunking and rote learning will be applied in the prototype (Figure 7). Learners will repeat five times of the same ayat in memorizing each surah. The surah will be chunked by each ayat to make it easier for learners to memorize the surah. These theories are combined to complete the memorization module..

Figure 7. Interface for Memorization

Figure 8 shows the interface for evaluation. Game-based principles were applied in this module such as scoring, timing and awards as figure 9. Activities were embedded in the design to ensure learners have memorized the Quran.

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Figure 8. Interface for Evaluation

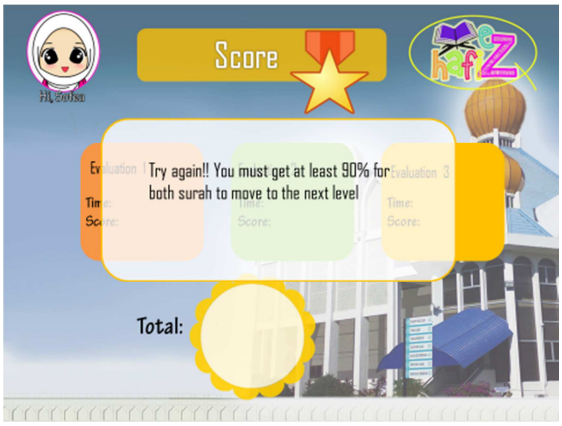

Figure 9. Interface for Scores

5. DESIGN GUIDELINES

Past researchers have made large contributions to the learning process by adopting information technology in their work. They develop guidelines to help developers and designers in creating mobile application based on their targeting audiences [36]. So, this paper discusses design guidelines that will be implemented in the Quran memorization tool using multimedia interactive elements.

5.1 Typography

The first guideline is related to font types and sizes. Choosing the right font type and size will attract children to read and focus. The most important is to choose a clear typeface, straightforward, simple form and easy for children to read [36, 37]. So, the most suitable font to use is sans serif font which are Arial, Tahoma and Comic Sans MS [35, 36]. Additionally, most children are attracted to Traditional Arabic and Arial Unicode MS font for reading in Arabic language. This typeface is convenient, comfortable for children's level and similar to their text book [36].

The font size can also influence children's focus. A number of studies have examined this issue for children. Majority the children preferred to use font size in 12-point or 14-point for English language. But, for Arabic language, they preferred 30-point of font size. These sizes are convenient, readable, large and clear [36].

5.2 Colors

Colors are an essential part to perceive the world. Colors can influence emotions and memory. For children, some colors may increase their brain activity, induce relaxation and create a feeling of excitement and helps them focus [35]. But, colors must synchronize with the application environment.

Therefore, for this application, the researcher uses cool colors such as blue to help students focus. In addition, for activity and evaluation module, bright colors are used such as yellow and orange to increase children's brain activity.

5.3 Layout

Page layout plays a crucial role to attract users towards the interface. According to Osaimi [36], page layout preferences were analyzed from layout arrangement, object locations and utilization of user interface. The researcher found that the children preferred to place the object above or under text/images.

The children were more interested when main text/ images are on the middle center area [36]. That location is similar in appearance on the internet browser. Children feel comfortable to use the application.

In addition, the shape and symbol of the buttons also influence children. , The developed layout has objects placed above and under the middle center area. The shape of the buttons are curvy and familiar symbols easily recognized by the children are used. This development of layout will attract children to use this application.

6. CONCLUSION

As a conclusion, from the analysed and defined theories and guidelines, the proposed conceptual model has been developed. Based on

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the validated proposed conceptual model, Quranic mobile tool has been successfully designed. This application has a great potential as a tool to memorize Quran anytime and anywhere. As for future work, the application will be evaluated for its usability and effectiveness to obtain perception from learners.

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