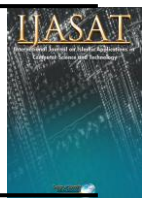
Design for Scientific RENAISSANCE



Multimedia Instructional Learning System to Aid in Teaching Quran Recitation with Effective Tajweed in Primary Education of Malaysia

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Abstract
The advent of multimedia learning system brought about enormous transformation in the learning pattern at various settings, yet its benefits have not been explored to improve religious practices in Malaysia. Prior studies consistently pointed out the weakness encountered by Malaysian students in observing the basic rules of Quran teaching and recitation and strongly emphasized that an urgent measure is to be taken. In an attempt to circumvent the predominated error at Malaysian schools, this study focuses on developing a multimedia instructional learning system to aid in teaching Quran recitation with effective Tajweed in primary education of Malaysia. A quantitative research method based on a survey questionnaire was used to collect data and validate the appropriateness of a multimedia design approach (Almoneer المنير) system developed in this study. The result showed that the system tremendously improved Quran teaching and recitation using an easy-to-understand methodology coupled with social features such as puzzle that motivated the students. Findings of this research confirmed that the multimedia model enhances learning better than the conventional learning system. It then, becomes evident that the developed model standout to improve learning capability of Quran students and the teacher's instructional approach in Malaysia.

Keywords: Multimedia features, Quranic education, teaching method, Malaysian primary school.

1. Introduction

It is a Fardhu Kifayah (فرض كفاية) to Muslims to develop training programs based on computers mainly in concerting the current static Islamic materials to a virtual application or software program which is more attractive to Islamic Ummah (الامة الاسلامية) . Present day children are adventurous and curious with new multimedia technology whether it is for gaming or educational. Computers have been utilized for years to educate youngsters on various subjects like Mathematics, Science, Geography, History and Languages. In Malaysia, Tajweed is normally taught in classrooms by a direct method (face-to-face approach) and examined by written tests. Direct method is obviously the most efficient education technique. Nevertheless, the size of the class will obstruct the interaction needed between the teacher and student. At the same time, written tests do not give an instant feedback which is very much needed during the teaching and learning process (Marina Ismail 2011). Multimedia combines images and sound to improve interaction and make the presentation more attractive and effective. The background of information and communication technology resides on learning and arts whereby there is a constant flow of trial and error on how knowledge is conveyed.

Multimedia efficiency and performances, Multimedia training manuals and Multimedia presentations utilize multiple sensory channels and types of presentation. This present norm is currently being nurtured by a new kind of communication technology which is based on digital technology. Desktop computers can alter pictures, photos, sounds and videos in digital format.
Digital technology can be easily mixed and analyzed. Thus, they are becoming the main features of futuristic modem multimedia technology (Gibbs and Tsichritzis, 1995). Multimedia is defined as the mix of words, visual and sound matters in a sole presentation or collection. It turns into an interactive multimedia when the user is given a control over the data displayed and the time when it is utilized. Interactive multimedia technology changes into hypermedia when its creator offers a framework of connected matters through which the user can interact and navigate (Vaughan, 2004).

1.1 Multimedia levels interactive

There are seven levels of multimedia as shown in (Table 1) but only two levels are interactive. Level 1 and Level 2 uses colour or black and white text and visuals are shown on the monitor as static. Therefore, these two levels are not associated with any movement. Software which can be used in the production of multimedia at these two levels are Freelance Graphics, Delta Graph Pro, Harvard Graphics, Impact, Persuasion, Super Show ,PowerPoint and Tell, and WordPerfect Presentations.

Table 1 Levels of Multimedia

Type	Levels	Element
Static	1	The plan text and graphics
	2	The text is color format and graphics
Animation	3	Simple animated words and the graphics
	4	Pre-digitized video presentation and animations
	5	Authored visual video presentation and animation
Interactive	6	The required input from audience basically on groups
	7	The required input assigned by audience interaction individually

Multimedia Level 3, 4 and 5 utilize some kind of video and animation features. Programs that aid in production of multimedia in Level 1 and 2 are also used additionally in these Levels 3, 4 and 5 along with Astound, Action, Compel, Charisma, Movie Works, Special Delivery and Vmedia. Moreover, other backup applications such as Adobe Photoshop, Illustrator, Premiere, Fractional Painter or Strata Studio Pro can also be utilized.

Multimedia Level 6 and 7 contain interactive interface either by single or collective interaction. Programs which aid in the production of multimedia at these levels are Authorware Professional, Apple Media Kit, Authority Multimedia, Digital Chisel, Everest Authoring Systems, Macromedia Director, Multimedia Toolbox, Guide Author, Course Builder, Image Q, and Multimedia Builder2. A graphic Web browser will be used in this level to provide inputs through individual interaction through hypermedia links (Gehris, 1998).

1.2 Multimedia Courseware

The learning process can be more interesting and interactive if multimedia features are applied. In addition, the use of multimedia applications will help the audiences to grasp the subject, capture their attention and improve their memory power. It applies multisensory interactive presentation or program to deliver data or message to the viewers. According to Chapman & Hall (1994) multimedia courseware unifies various medias namely text, visuals, sound, video clips and digital background. The application of various multimedia technology in the education field has many advantages such as aiding the learners to grasp the required skills needed for the workforce, improving the capability to memorize and understand the subject matter, helping learners to be Self-dependent and enhancing the educators' technique and knowledge. Studies show that learners can grasp more data if they utilize both visual and audio senses together, so backing the utilization of multimedia as an efficient aid can be a positive addition in the education sector, however, several researchers have debated the pros of proposing data with multimedia features like written text, spoken text, visuals, and videos on learning languages (AlSeghayer, 2001). In their reviews, data displayed in writings, talks, visuals and video clips can be combined to make a reliable, interesting and multi-sensory language files for EFL studies (Dong, 2004).

1.3 Technology as an Educational Tool

According to (Sandholtz, 1997) the use of multimedia in educational institutions are the only method to make an effective change. Technology is viewed as a solid tool for bring out positive changes but it must be carried out properly. Certain procedures need to be followed to make technology an effective tool. For example, School administrators must involve all the people in policy making planning regarding implementation of technology. For instance, Project PICT Training Model and utilize it. Employ a technology director, include everyone in the school in the changes and offer the services which are required for the technology to be effectively carried out in the school. Educators must make changes in their teaching methods. Teaching and learning must be student centered and educators must play the role of facilitators. Students must be allowed to utilize technology which enable them to collect, record, examine and design main projects. The amount of technology integrated into the curriculum is the path to the students' education and not the amount of time spent with technology (Wenglinsky, 1998). Technology does not provide the whole solution in keeping the problematic students in the classrooms but it is the beginning in the right path.

1.4 Computers in the Classroom

Nowadays, computers are able to accommodate a knowledge-based classroom. Several researchers such as (Bork, 1985); Laboratory for Comparative Human Cognition; (Papert, 1980); (Ragosta, 1982) think that computers have a direct impact on teaching and learning processes. They say that with the utilization of computers in classrooms, schools will be more students oriented and a more personalized learning can be carried out compared to before. Presently, in a student oriented classrooms students will be able to collaborate, use critical thinking skills and find alter ways of solving problems with the help of the computers (Javer, 1997). However, the changes from a teacher oriented teaching and learning methodology to a student oriented model will probably result in a protest against change. Student oriented education require the educators to realign their teaching techniques and student learning techniques. (Jaber, 1997). A study done by Dwyer, Ring staff and

Sandholtz (1991) shows that computers can be utilized in teaching and learning all fields of study but that educators have to know the different techniques of teaching and the students. R.G.Muir-Herzig / Computers & Education 42 (2004) practice this kind of learning. These kind of teaching skills need a change in the educator's technique of teaching and learning, the intervals required to understand and use the technology and locations of models that are compatible with technology. Sheingold & Hadley (1990), Negroponte, Resnick and Cassel (1997) debated that digital technology can allow students to be more progressive and self- dependent learners. The internet provides latest "knowledge-building communities' through which children and grown-ups from all over the world can cooperate and gain information from one another. Computers enable students to take charge of their own education through direct discovery, expression and experience.This alters the student's part from 'being taught' to 'learning' and the teacher's part from 'expert' to 'collaborator' or 'guide'.

1.5 Significant of Multimedia in Tajweed

Multimedia courseware has been utilized widely in Malaysian schools since the launch of Smart Schools by the government in 1997. Various multimedia applications have been designed to expose the students to the usage of technology; besides recognizing the fact that the usage of multimedia technology in the teaching and learning process encourages adaptive and personalized method of learning.

According to Wan (Malini, 2010) multimedia courseware was created for teaching and learning of KAFA subjects. The courseware was developed to manage some of the problems that crop up in the teaching and learning of KAFA subjects. Kelas Pengajian Al-Quran dan Fardu Ain (KAFA) is a class that is conducted to make sure that the children are able to recite the Al-Quran in the correct manner. 1) KAFA is organized by Malaysian Department of Islamic Development (JAKIM) for students falling in the age range of 6 to 12 years in Malaysia.

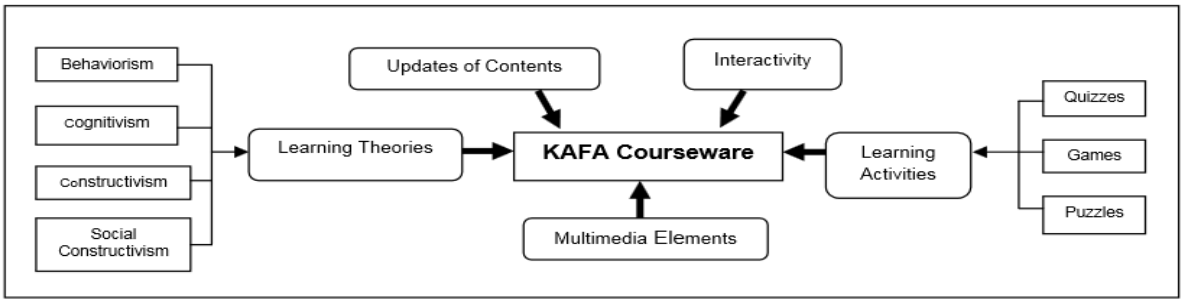

Figure 1: Conceptual model of KAFA courseware

1.5.1 *Multimedia features*

There are five features in multimedia i.e. text, graphic, audio, video and animation which are used in the development procedures.

A different initial study was also done to create a web tutor for teaching vocabulary used in the Holy Quran by applying audio and text to give the meaning of the words and their pronunciation. This web site used an instructional design model called ADDIE model. A multimedia application was created to encourage students to take part actively in learning

tajweed (Marina, 2011). This program targets only on the introduction of *Izhar Halqi* of the *Tajweed*. The program has mixed multiple multimedia features into the application to create a teaching and learning setting which encourage students to actively take part in the learning process.

1.5.2 *Text*

Following the latest happenings in the technologically innovated era encompassing World Wide Web, the text has become more significant. Writings and symbols in any form; spoken or in black and white are the most common networking system of interaction. It is significant to plan tags for title displays, menus and buttons using words that have specific and powerful definitions to display what the programmer has to express. Programmers should experiment with the words they intent to utilize by allowing others to give a try (Vaughan, 2004).

1.5.3 *Graphic*

Normally, an image (from Latin imago) or picture is an object that reproduces the closeness of some subject-usually-mostly a solid matter or a person. The pictures may be 2D, like photographs or 3D like a sculpture. They are normally created from optical instruments like mirrors, cameras, telescopes, lenses, microscopes etc. and nature happenings and objects for instance the eye or water surfaces. The word "visual" is also utilized in a wider sense for any 2D figures or illustrations like maps, graphs, pie charts, or abstract art. In this broader perspective, pictures can be designed manually by drawing, painting or carving, by multimedia graphic tools or a mix of the two, especially in a pseudo-photograph. A volatile image only shows for a small interval. This could be the reflection of a matter by a mirror, the ray of the sun on a wall, projection by a pinhole camera, or a scene shown on a cathode ray tube. A fixed image or a hardcopy is something recorded on a solid object like paper or textile. A mental image only exists in a person's mind or a thing in a person's memory or imagination. The subject matter of an image not necessary have to be real whereas it could be an abstract concept for instance a function, graph, the supernatural or being (Gibbs and Tsichritzis 1995).

A traditional Chinese proverb says a picture is worth a thousand words. People learn and retain more data from visuals than other forms of information. Integrating visuals into a multimedia application can include background, photos, 3D visuals, charts or graphs, flow charts, organizational charts, paintings and button elements (Casanova and Molina, 1996).

1.5.4 *Video*

Video is technology of recording, capturing, analyzing, delivering, and reconstructing moving visuals using magnetic tape, electronic signs, or virtual media, basically for displaying on television or as video clips on computer screens. Typically, it is to be differentiated from cinema which captures visuals on celluloid film (Gehris, 1998).

The capability to integrate digitalize video into a multimedia presentation is a significant success in the development of the multimedia industry. Those watching the video would acknowledge the effect of witnessing the real happening, rather than listening to it or

reading about it. Video brings reality to multimedia presentations and is effective in engaging the audience and provoking emotions (Shuman, 1998).

1.5.5 *Animation*

Animation is the method of filming a sequence of drawings or positions of the subject to create an illusion of movement. It is an optical illusion based on movement because of the phenomenon of persistence of vision (Gehris, 1998). Animation utilizes a computer to design movement on the monitor. There are four types of animation that are frame, vector, computational and morph. Frame animation designs create movement of the subject by showing a series of predawn images known as frames in which the subject appears in various places on the monitor. Vector animation is a line that has a starting point, a pathway, and a timeframe. It shows the subject moving by altering these three parameters for the line segments that define the object. Computational animation is utilized to move a word across the monitor. Morphing is defined as the transition of a shape into another by showing a series of frames which creates a smooth flow as the initial shape transforms itself into a different shape (Hofstetter, 2001).

1.5.6 *Interactivity*

In the area of information science, communication, and industrial design, there is debate over the meaning of interactivity. In the "contingency view" of interactivity, there are three levels namely:

a. Non-interactive if a message is not related to previous messages;
b. Reactive if a message is related only to one immediate previous message; and
c. Interactive if a message is related to a number of previous messages and to the relationship between them. Interactivity is similar to the degree of responsiveness, and is examined as a communication process whereby each message is linked to the previous messages exchanged, and to the relation of those messages to the messages preceding those (Gehris, 1998).

2. Almoneer Road Map Design

The proposed instructional design termed as Almoneer was created based on the combination of the concepts proposed by educational psychologists such as Mayer's 'Nine ways' to reduce Cognitive Load in Multimedia learning (Mayer, 2003). It is assured model of instructional design proposed by Heinrich & Molenda (1999) and Arc's Model by Keller (1988). The researcher has taken into consideration every step to ensure that whatever is proposed is evaluated carefully to get the maximum output of the instructional Module

2.1 Theories Applied to Almoneer

Summary of the Models Being Deployed in the Design Stage in Almoneer

Table 2: Summary of the models being deployed in the design stage in Almoneer

Models	Principles	Almoneer
Gagne Model	This Model focuses more on the evaluation of the learners who intend to use the proposed system.	This is one of the important feature of Almoneer where the user can review his answers in the puzzle and correct his own mistakes which can boost the students confidence.
ARCS Model	ARCS model is largely used for motivating the students and to improve their performance in education.	Almoneers provides different puzzles which are very interesting and motivate the students to use the proposed instructional courseware.
Mayer's Model	This model broadly classifies the information and interactivity of the proposed system.	The manner in which the content is arranged in Almoneer is very simple is based on a lesson format easy for any student to get used too.
Assure's Model	The main principle of this model is to analyze the learners characteristics.	Almoneer had identified the main needs of the users of the system initially and based on this the proposed instructional design was developed.

3. Methodology and Results

The basic questions which derives results for the study; " *What are the envirmentental barriers you face in Reciting the Holy Quran* ?" and "*Do you understand the Tajweed in this course*?"and Does the program motivate you to learn more"? This reported the result of statistical and analysis of quantitative data obtained from primary school (SK Taman Kosas) in Malaysia using a survey questionnaire. maintained in Malaysia schools, a thorough study that focuses on elementary education is reported in this chapter. It becomes important to conduct this study among primary school students to establish an appropriate teaching and recitation strategy to effectively impact students at the early stage of their fundamental studies. The bootstrapping conducted to check the accuracy of the result showed that bias value of the samples were -.2, .2 and 0.0 and the standard error values were 3.1, 2.1, and 3.5. At 95 % confidence interval, the lowest and highest value were 2.9 % and 84.9 % respectively. An important approach to improve Quran recitation based on Tajweed remains to improve learning and recitation process based on the standardized Tajweed principles and teaching the students Arabic language. This will be an important step to increase their learning capability especially in recitation which is among the weaknesses of learning Quran among the students in Malaysia. Based on the analysis reported here, one of the weaknesses of the student based on the analysis is that they spent limited time in reading and reciting Quran.

Table 2: Major barriers to Quran recitation among the students in Malaysia

					Bootstrap for Percent[a]			
							95% Confidence Interval	
		Frequency	Percent	Valid Percent	Bias	Std. Error	Lower	Upper
Valid	Arabic Language	21	15.1	15.1	.0	3.1	8.6	20.9
	Recitation	9	6.5	6.5	.0	2.1	2.9	10.8
	Rules of Tajweed	109	78.4	78.4	.0	3.5	71.2	84.9
	Total	139	100.0	100.0	.0	.0	100.0	100.0

And the statistical analysis on whether students understand Tajweed is presented in (Table 4) the result of the analysis showed that greater proportion of the sample (73 comprising 52.5 % of the total percentage) reported that they understand Tajweed very well using the multimedia

leaning system. 63 (45.3 %) reported that the about Tajweed. 2 of the respondent (1.4 %) reported that they moderately understand Tjaweed while 1 (0.7 %) of the respondent reported that he don't understand Tajweed during when it was taught. It then implied that the greater percentage that confirmed that the multimedia system enables the student to overcome their respective weaknesses in learning Tajweed principles and doing recitation with the right ascent.

Table 4 : Descriptive statistics on whether the students understand Tajweed

			Bootstrap for Percent[a]			
					95% Confidence Interval	
Valid	Frequency	Percent	Bias	Std. Error	Lower	Upper
Very Good	73	52.5	.2	4.3	43.9	61.2
Good	63	45.3	-.2	4.2	36.7	53.2
Moderate	2	1.4	.0	1.0	.0	3.6
Bad	1	.7	.0	.7	.0	2.2
Total	139	100.0	.0	.0	100.0	100.0

The primary aim of developing Almoneer model in this research is to improve Quran practices and to address series of weaknesses faced by students over the years. This section confines to providing a clear description on how the multimedia instructional program contributes to enhancing students performance and addressed the third research question of this study. Based on the result reported in Figure 2 and Table 5, 133 constituting 95.7 % of the student were motivated to learn Quran based on the program while only 6 student comprising 4.3 % of the total population were not motivated to use the program.

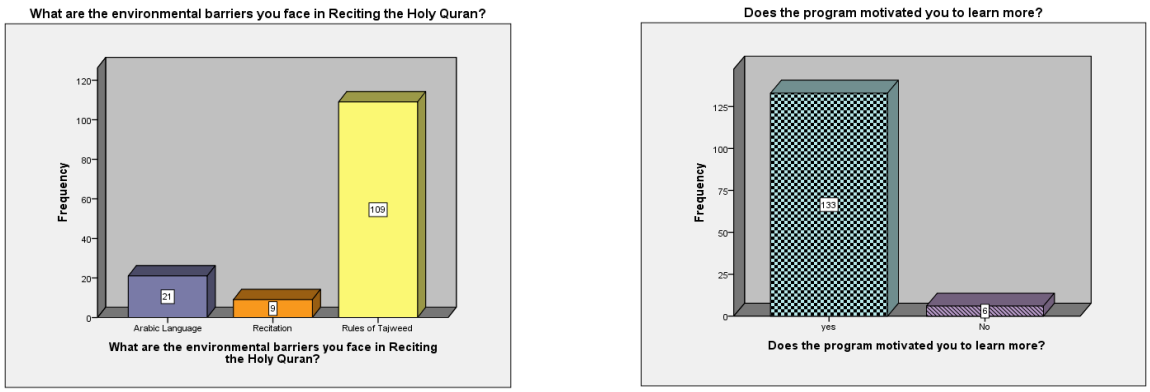

Figure 2 Environmental barriers of reciting the Holy Quran & Motivation to use Almoneer program

The bootstrapping analysis depicted that the accuracy of the result and showed that bias value of the samples were .1 and-.1 while the standard error were 1.8. At 95 % confidence interval, the lowest and highest value were 1.4 % and 98.6 %% respectively. This result is encouraging and implies that the model of this research will immensely contribute towards improving Quran practices especially among students. The analysis satisfactorily answer the third research questions of this study by supporting that the students likes the multimedia learning system and are motivated to use it to develop comprehensive skills over the traditional learning system.

Table 5: Motivation to use Almoneer multimedia learning system

				Bootstrap for Percent[a]			
						95% Confidence Interval	
	Frequency	Percent	Valid Percent	Bias	Std. Error	Lower	Upper
Valid yes	133	95.7	95.7	.1	1.8	92.1	98.6
No	6	4.3	4.3	-.1	1.8	1.4	7.9
Total	139	100.0	100.0	-.3	5.5	100.0	100.0

The development of an empirically-based multimedia instructional design approach Almoneer and the analysis based on the concept of this software. Thorough evaluation of the appropriateness of the developed software by adopting a mixed research method stands out as an effective strategy to enhance students learning capability by applying the right knowledge and teaching skills at the elementary schools stage as to enable students to establish a foundation in Quran recitation.

4. Conclusion

The advent of multimedia discovering arrangement held concerning large makeover in the discovering outline at assorted settings, yet its benefits have not been discovered to enhance spirtual habits in Malaysia. Prior studies consistently pointed out the flaw encountered by Malaysian students in discerning the frank rules of Quran teaching and recitation and powerfully emphasized that an urgent compute is to be taken. In an endeavor to circumvent the prevailed error at Malaysian schools, this study focuses on growing a multimedia instructional discovering arrangement to assistance in teaching Quran recitation alongside competent Tajweed in main education of Malaysia. A quantitative study method established on a survey questionnaire was utilized to amass data and validate the appropriateness of a multimedia design way Almoneer arrangement industrialized in this study. The consequence displayed that the arrangement incredibly enhanced Quran teaching and recitation employing an easy-to-understand .

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