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The effects of multimedia with different modes of presentation on recitation skills among students with different self-regulated learning level

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Abstract

One of the requirements in reading al-Quran is to read with proper recitation (*tajweed)*. This study attempts to investigate the impact of multimedia on student' recitation skills using three presentation modes (MSM – a separate mode with the text placed separately from the video on recitation by a *qari*, MIM – an integration mode in which text / words are combined in the video using subtitling concept, or MVRM - voice recognition mode whereby students can record their recitation). This quasi-experimental study involves the multimedia mode as the independent variable, the students' recitation as the dependent variable, and their self-regulated learning (SRL) level as the moderator variable. A total of 140 secondary school students were randomly selected for this study. Three courseware have been developed, with each courseware applies a multimedia mode. During the learning process, the students worked in pair. The findings show a significant difference in recitation between the three groups, and the post hoc analysis indicates that MVRM scored significantly better compared to MIM and MSM. In addition, students with high SRL scored higher as compared to those with low SRL level in all treatment groups. MVRM allows students to record and play back their recitation recording to their learning partner to be immediately assessed and corrected. MIM also helps their recitation skills when subtitles were used in the video and the words that changed colours when read, in which the students were able to identify the phonics of the letters and sounds of the combined letters. Also, the self-paced and self-assessment learning material helps the students with high SRL level, although pairing activity assists those with low SRL level.

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Keywords:, multimedia, recitation skills, self-regulated learning, tajweed learning

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1. Introduction

All Muslims are required to recite the Quran because it is a Book revealed by God to all mankind. Reading the Quran must be in accordance with the recitation principle so that the meaning of the word is appropriate and the art in recital is preserved. Reading the Quran is similar to learning the other language skills that require receptive and productive skills.

In Malaysia school system, the teaching of the Quran recitation starts as early as 5 years old until high school level. Unfortunately, studies indicated that there are students who are still not able to read the Quran with proper *Tajweed* (recitation) at the age of 16 (Hatifah, 2000; Ab. Halim et al., 2004). This is due to the lecture method of delivery and less attention is given to teaching to individual or small groups. In addition, the lack of teaching aids and comprehensive syllabus resulting the teachers' preference to deliver in traditional approach.

In an attempt to overcome the problem of teaching and learning *tajweed*, the authors have developed a learning courseware with three modes of presentation: Multimedia with Separation mode (MSM), Multimedia with Integration mode (MIM) and Multimedia with Voice Recognition mode (MVRM). MSM is a multimedia presentation that puts text / word separately with the video clip on an expert reciting the verses/sentences. MIM is a multimedia presentation that includes text / word in the video using Same Language Subtitling concept. While MVRM also has a text / word and video as well as a voice recognition system that allows students to record their readings. Table 1 shows the three multimedia display modes.

Table 1: Three modes of recitation learning multimedia presentations

Mode	MSM	MIM	MVRM
Display			
Similarity	Each presentation has the same text / words and the same video		
Difference	Sentence /text and video are separated	Sentence/text, video and Same Language Subtitles concept viewed in the video.	Sentence /text and video are separated. Voice recognition system allows students to record the recitation

Table 1 shows the similarities and differences of each presentation mode. The three modes are designed and developed to determine which presentation mode produce better impact on recitation skills among students with different levels of SRL. Based on these objectives, three hypotheses were formed.

Hypothesis

In this study, four null hypotheses were formulated:

Ho1: There was no significant difference in terms of recitation skills among students who received MSM, MIM and MVRM.

Ho2: There was no significant difference in terms of recitation skills among students with different self-regulated learning levels after being treated with MSM, MIM and MVRM.

Ho3: There was no significant difference in terms of recitation skills among low SRL students after being treated with MSM, MIM and MVRM.

Ho4: There was no significant difference in terms of recitation skills among students who have a high level of self-learning after using MSM, MIM and MVRM.

2. Literature review

Multimedia has three major functions: as a medium of instruction, as a teaching mode and as a sensory element (Mayer, 2009). These three functions have attracted the interest and attention of students to learning when multimedia was used and integrated in teaching and learning activities. According to Heinich, Molenda, Russell and Smaldino (1996), multimedia elements support the use of various senses (multi-sensory) that can stimulate the senses to form and retain the information for long period of time and can be quickly accessed. Multimedia can also attract students attention and make them concentrate on learning. In addition, by using multimedia, students can also assess their own capabilities and enhance their creativity.

Three presentation modes (MSM, MIM and MVRM) are selected in this study as studies have shown that these modes of reading have a positive impact on performance. The use of video as Quran learning aids has been discussed by Fatin and Rafiza (2013), Irfan and Rohana (2010), Norasikin et al., (2005), and Nor Hasidah et. al., (2010). Video is used to provide examples, demonstrate, or to model learning (Nor Hasidah et. al., 2010). During learning, students will normally observe and imitate a model. According to Bandura (1977), students learn from others through observation, imitate and try to adapt the model to themselves.

Meanwhile, the use of voice recognition systems in reading the Quran has been implemented by Tabbal, El-Falou and Monla (2006), Ehad, Ahmad and Mousa (2007) and Noor Jamaliah (2010). Voice recognition system allows the distinction between the expert (*qari*) reading with the students reading. However, comparing the recitation of an individual with another individual is difficult due to the differences in the learner's way of creating sounds, recitation, and pronunciation between them (Tabbal et al., 2006; Ehad, et al., 2007; and Noor Jamaliah, 2010).

Self-regulated learning (SRL) is the student's self-control process that convert their mental ability into academic skills (Schunk & Zimmerman, 1998; Zimmerman, 2002). Students who use many SRL strategies (such as time management strategies, replication strategy, strategic planning and others) have higher academic achievement than those with less use (Lee & Lee, 2008). In addition, during the process of acquiring knowledge, those with a high level of SRL are more motivated and less reliance on the teachers . They continuously monitor, plan, evaluate and improve themselves. Conversely, low pupil SRL has low self-esteem, lack of confidence and expect help from others (Jamaludin, 2010). High SRL students can learn better in a non-linear learning environment in which students are required to determine their own learning objectives, learn self-pace and given the opportunity to change its learning strategy based on the learning progress (Azevedo & Cromley, 2004).

3. Research methodology

This 3x2 factorial design quasi experimental study involves three variables. The multimedia presentation mode (either MSM, MIM or MVRM) was identified as the independent variable, while the students' recitation skills was classified as the dependent variable. Meanwhile, the students' self-regulated learning level was used as the moderating variable. A total of 140 students aged 16 years old from three secondary schools were identified as the sample. Prior to the treatment, they were given a pre-test of ten Quranic verses/sentences to measure their oral reading / recitation skills. Also, the participants were required to respond to the SRL questionnaire in order to categorize them either as high SRL or low SRL individuals. These students were randomly assigned into three groups to receive the treatment with the three modes of presentation (MSM, MIM, MVRM). During the treatment, the students were instructed to learn the courseware for 140 minutes and they worked in pairs. A post-test to determine the effect of those multimedia presentation modes was conducted after the treatment in which they had to recite ten different sentences or verses of the Quran.

4. Results and discussion

In order to test the first hypothesis, the pretest scores of Quran recitation were used as the covariate. The analysis revealed the adjusted means of the post test at 20.68. Based on Table 2, the MVRM group obtained the highest recitation score (mean: 34.50), followed by the MIM group (mean: 30.25), and the MSM group (mean: 30.15). The ANCOVA univariate analysis showed a significant difference in terms of Quran recitation among the three treatment groups at the 0.05 level of significance (F: 5.797, p: 0.004).

The post hoc test results in Table 3 indicate that the MVRM group performed a significantly higher recitation score as compared to that of the MSM group (p: 0.005, mean difference: 4.25). A significant difference was also observed between the MVRM and MIM groups (p: 0.003, mean difference: 4:35), with the former outperformed the latter group. In addition, although the MIM group obtained a higher recitation score compared to the MSM group (mean difference: 0.98), the comparison between these two groups yields a non-significant finding (p: 0.945). Thus, overall, it can be concluded that there are significant differences in Quran recitation between groups of students who received the MSM, MIM and MVRM courseware. The first null hypothesis was rejected.

Table 2. Result of Posttest of Quran Recitation for the Three Modes of Presentation

Mode	N	Adjusted Mean	SE	F	p	Result
MV	46	30.15	0.98			
MVS	46	30.25	1.01	5.797	0.004	Sig.
MVR	48	34.50	1.01			

Table 3. Result of Post Hoc of Quran Recitation

	Post Hoc		Mean Difference	p	Result
Recitation of al-Quran	MSM	MIM	-0.98	0.945	Not Sig.
	MIM	MVRM	-4.25	0.005	Sig.
	MVRM	MSM	4.35	0.003	Sig.

To answer Hypothesis 2, the pre-test score was again used as the covariate. Based on Table 4, a difference of 3.27 points was observed between the high SRL group and the low SRL group. The high SRL group scored a mean of 33.28 while the low SRL group achieved 30.01. ANCOVA univariate analysis showed a significant difference in terms of reading skills between the two SRL groups at p level of 0.05 ($F = 8.256$, $p = 0.005$), with high SRL scored significantly higher than those with low SRL. This result rejects the second null hypothesis.

Table 4. Posttest score according to the SRL groups

Group	N	Adjusted mean	SD	F	p	Result
Low SRL	69	30.01	0.81	8.256	0.005	Sig.
High SRL	71	33.28	0.80			

Next, to test Hypothesis 3, Table 5 and Table 6 are referred. Table 5 shows that among the low SRL students, those who received MVRM scored the highest (mean: 32.55), and followed by the MIM group (mean: 29.19). Based on Table 6, the highest mean difference between the two modes of presentation is among the low SRL students who received MVRM treatment and the low SRL students who received MSM treatment (mean difference = 4.03). In specific, among the low SRL students, the MVRM group (mean: 32.55) scored significantly higher than the MSM group (mean: 28.52) with p-value of 0.039. However, for the two other comparisons, non-significant differences in recitation skills were observed. The three comparisons have rejected the third hypothesis.

Table 5. Descriptive statistics findings for the post-test result for recitation skills among the low SRL students

	Presentation Mode	Adjusted mean	Standard Error
Low SRL	MSM	28.52	1.37
	MIM	29.19	1.36
	MVRM	32.55	1.36

Table 6. The analysis of pairwise comparison among the low SRL students with three presentation groups

	Mode comparison		Mean Difference	p	Result
Low SRL	MSM	MIM	-0.67	0.731	Not Sig.
	MIM	MVRM	-3.36	0.084	Not Sig.
	MVRM	MSM	4.03	0.039	Sig.

This study also investigated the differences in recitation scores among the high SRL students who received the three treatments. Table 7 and Table 8 indicate the findings of the analysis. Table 7 shows that among the high SRL students, those who received MVRM scored the highest (mean: 36.53), and followed by the MSM group (mean: 31.73). Based on Table 8, the highest mean difference is between the high SRL students who received MVRM treatment and the high SRL students who received MIM treatment (mean difference = 5.44). In specific, among the high SRL students, the MVRM group (mean: 36.53) scored significantly higher than the MIM group (mean: 31.09) with p-value of 0.015. In addition, among the high SRL students, the MVRM group also scored significantly higher in recitation skills as compared to the MSM group (mean difference: 4.80; p: 0.019). However, a non-significant difference in recitation skills was observed between the MIM and the MSM groups. The three comparisons have also rejected the fourth hypothesis.

Table 7. Descriptive statistics findings for the post-test result for recitation skills among the high SRL students

	Presentation Mode	Adjusted mean	Standard Error
High SRL	MSM	31.73	1.37
	MIM	31.09	1.45
	MVRM	36.53	1.45

Table 8. The analysis of pairwise comparison among the high SRL students with three presentation groups

	Mode comparison		Mean Difference	p	Result
High SRL	MSM	MIM	-0.64	0.746	Not Sig.
	MIM	MVRM	-5.44	0.015	Sig.
	MVRM	MSM	4.80	0.019	Sig.

The findings show that multimedia with voice recognition (MVRM) is the most significant presentation mode when compared with MMI and MSM in assisting students' recitation skills. In addition, learning using multimedia with pairing activity has assisted high SRL students as compared to the low SRL students. Among the low SRL students, MVRM has helped them to recite better as compared to those treated with MIM or MSM. Similar finding was observed among the high SRL students, whereby the MVRM group scored significantly higher than the other two treatment groups. However, unlike the insignificant difference found between low SRL students who received MIM and those who received MSM, a significant difference was observed between high SRL students in these two treatment groups.

VRM is more significant than the other presentation modes because it can better assist in producing receptive and productive skills among its users. According to Fadwa (2010), receptive and productive skills are the main foundation in language learning . Receptive skills are acquired from multimedia elements presented through text, audio and video, while productive skills acquired when students practice by recording their recitation through voice

recognition systems. The recitation file recorded using the voice recognition system also enables the students to carry out self-assessment and peer evaluation while listening to the recorded recitation clips. MVRM has helped students with high levels of SRL by granting the learning autonomy. They were able to learn by themselves with the help of text, audio and video as well as the voice recognition systems. Similarly, MVRM also helps the low SRL students as their recorded recitations can be read and assessed through repeated play back. Self-assessment also allows students with low SRL to identify their recitation weaknesses. In addition, with pairing activity, the pair member was able to listen and correct the recitation mistakes made by the partner. In other words, working in pairs gives them the opportunity to implement peer evaluation during the play back of the audio file.

This study supports the Mayer's Cognitive Theory of Multimedia Learning (2001). This cognitive theory successfully shows the process of how these two important senses (eyes and ears) play their roles in assisting the students' receptive skills. For reading skills, the students have to produce either in written or speech form. The students' recitation skills are strengthened by the existence of an assessment of the products produced either through self-assessment or peer evaluation. From these observations, the authors have proposed Al-Quran Recitation Learning Model based on Mayer's Cognitive Theory of Multimedia Learning (2001) and the language learning skills (Figure 1).

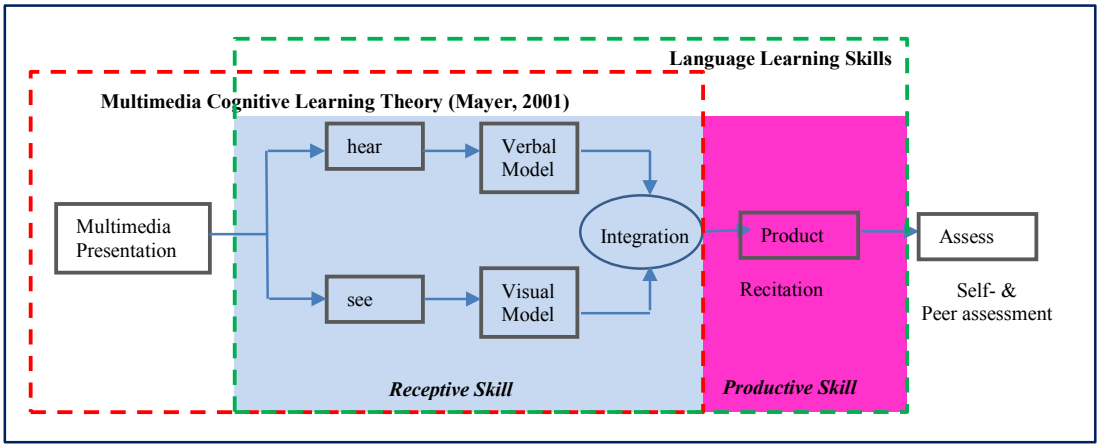

Fig. 1: Al-Quran Recitation Learning Model (based on Mayer's Cognitive Theory of Multimedia Learning, 2001 and the Language learning skills).

MIM also helps generate productive skills of students with low and high SRL levels. With the use of same language subtitling concept and the change of colors when the words were read, MIM has assisted the students' recitation skill. According to Fadwa (2010), reciting by following the expert's reading can improve articulation of letters, intonation, chunking of words and how to pause / stop when reading. Although MIM is a good method of imitation/modelling, the receptive skills (reading and listening) and productive skills (recited) were obtained simultaneously. This leads to students' lack of understanding in reading skills as they will not be able to perform self-assessment and peer evaluation as no recitation is recorded to be evaluated.

For students who received the MSM treatment, multimedia elements such as video can help improve their recitation skills. However, the split-attention principle (Moreno, 2006) is observed when the words / text are separated from the video clips. The students have to focus on two key elements simultaneously, namely the word (text) and the video, which in turn will affect their receptive and productive skills. Furthermore, MSM also does not produce a product to be evaluated, affecting the students' recitation score. This difference can be obviously seen when compared with the MVRM and MIM groups.

5. Conclusion

This study proved that multimedia with voice recognition systems positively impact students' recitation skills. The resulting audio file from the voice recording enables them to self-evaluate their recitation with the assistance of the pairing activity. Self-assessment also allows low SRL students to identify their weaknesses and recitation mistakes. While for high SRL students, the courseware offers autonomy to their learning. MVRM also helps the students in their receptive and productive skills, and ultimately, their recitation skills. Therefore, it is recommended that voice recognition to be embedded in any language learning multimedia.

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