

The Evaluation of V-Hajj: A Courseware for Hajj Learning Procedures

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ABSTRACT

Previous researches and current initial findings have shown that conventional approaches used in most Hajj supplementary learning materials are less effective in providing clear understanding to users, particularly the pilgrims. Most of the materials are based on passive learning. Thus, in order to cater for those limitations, this study incorporates virtual environment (VE) and multimedia technology in developing V-Hajj courseware as an attempt to provide a better learning aid for supporting active and self-directed learning for Hajj. In addition, this courseware is also intended to persuade users, and in this case elders to use computer technology as their main supplementary learning material. Thus, this study adapted the persuasive design guidelines from persuasive technology. Generally, this paper elaborates the evaluation that has been conducted on the V-Hajj courseware. It also reviews some related literatures about Hajj, multimedia, VE and persuasive technology. Lastly, this paper discusses on the results of the evaluation on the targeted users.

Keywords: Hajj, virtual environment, multimedia, persuasive technology

I. INTRODUCTION

Hajj is one of the five pillars of Islam. Every capable and able-bodied Muslim is obliged to make the pilgrimage to Makkah at least once in their lifetime. In Malaysia, Lembaga Tabung Haji (LTH) is the entrusted organization to handle Hajj matters before pilgrims leave for Makkah such as providing Hajj learning courses. These courses include talks and practical sessions (Tabung Haji, 2010). The Hajj procedures are complex where a lot of information, rules, tasks, practical steps and Al-Quran verses, dua and zikr have to be learnt and understood.

Even though comprehensive courses are provided by the LTH for the pilgrims, supplementary learning materials are still required (Jamaan, 2010). Currently, most of the supplementary materials are available in the form of books, cassettes, CDs/DVDs and video tapes which emphasize more on the requirements, procedures and steps in performing the Hajj. However, obtaining

knowledge through these approaches seems like a rather passive activity. In a learning process, learners should be active rather than passive (Brecke & Jensen, 2007). Passive learning approaches result in the decrease of comprehension and retention among learners (Burt, 2004).

A preliminary study has been conducted to confirm this issue. It is an initial exploration in order to propose a better solution. Interviews and survey were used as data gathering techniques. Interviews were deployed with two qualified Hajj instructors (content experts) from LTH. According to the Hajj instructors, most of the Hajj learners could not practically imagine the Hajj procedures. The learners were hard to successively imagine and memorize the steps in Hajj. Furthermore, they did agree that there is a large amount of information, rules and tasks that need to be understood by the learners. Surprisingly, they also suggested the Hajj learners to refer to the supplementary materials to increase their understanding and retention towards better understanding of the Hajj procedures. However, for the practical parts, the learners have no choice except to involve in the practical sessions to understand the steps and to experience in a real life situation. Hence, the only practical parts (require learners to actively involve) is from the practical course session.

A survey was conducted as part of the preliminary study involving 60 respondents. A convenient sampling technique was applied and the age of the selected respondents was 19 years old and above. 22 respondents above the age of 40 were grouped as elder while 38 respondents between the age of 19 and 39 were grouped as youngster. The results of the preliminary study indicated that fifty two percent (52%) of the respondents experienced low understanding and retention in Hajj learning. Ninety three percent (93%) of the respondents referred to supplementary materials for learning Hajj procedures in order to better understand and increase their knowledge. Ninety seven percent (97%) of them claimed that the supplementary materials lacked in terms of practical steps.

According to Jabar et al. (2008), VE is the best alternative to be employed during the practical training for Hajj learning based on the supplementary material. The real time of life-like

environment and self-directed learning capabilities can increase learners understanding towards the Hajj procedures. Meanwhile, the use of MM is the best way to convey information effectively, such as through the use of animation (Jusoh et al., 2009).

Thus, this research attempts to utilize VE and MM technologies in order to provide a much better Hajj learning approach. VE has been used for the practical steps which include Tawaf, Sa'ie and throwing of the Jamarat while MM for the alternative approach in conveying information.

II. LITERATURE REVIEW

The following sections discuss the related literatures of the study.

A. Hajj and Learning

Hajj is a required pilgrimage to Makkah for all able-Muslims to be performed once in a lifetime. When Malaysian Muslims intend to perform Hajj, they will have to register with the *Lembaga Tabung Haji* (LTH). LTH will provide courses that will teach them on the procedures and guidelines to perform the Hajj. These courses include *Kursus Bersiri*, *Kursus Intensif* and *Kursus Perdana*. Normally these courses will take between 15 to 18 weeks to complete. Even though LTH provides comprehensive courses for Hajj, still these courses have some limitations. In order to overcome the limitations, learners have to resort to supplementary learning materials on Hajj that are available in the market. The materials are in various forms which include books, cassettes, VCDs/DVDs and video tapes, which emphasize on the requirements, procedures and steps in performing the Hajj (Yusoff et al., 2010; Yusoff et al., 2011). Most of the supplementary learning materials are based on passive learning method whereby learners are required to view the contents without involving any active interaction between them.

B. Multimedia in Learning

MM in learning comprises the combination of any text, graphic, animation, video and audio elements in the knowledge construction process and provides an active learning environment to the learners (Mayer, 2005; Neo & Neo, 2000). MM certainly has the potential to convey information in an attractive way and understandable to the learners (Shank, 2005). As stated by Ng and Komiya (2000), the use of MM promises the value of information conveying to be more effective, especially in the area of learning. Instead of only using the traditional method in conveying information, the use of MM in learning exposes learners to both auditory and visual channels. According to Mayer (2001), MM learning that

combines animation with narrations generally improves in performance on retention tests better than the information only displayed on text or narration. Lindstrom (1994) stated that, users remember 20% of what they see, 40% of what they see and hear, and about 75% of what they see and hear and do simultaneously. The combination of multiple elements seems to increase what has been presented. Dyer and Observe (1996) stated that on average, a learner will retain 10% of what they read, 20% of what they hear, 30% from pictures they see and 50% from watching what has been presented in a learning process.

C. VE in Learning and Training

Laws (1996) defined VE as any real time interactive three dimensional systems, a virtual space which can be visited but not necessarily resembling the real world. The use of VE promises a better understanding and effective learning process. VE allows a learner to train different dimensions of mind, which is not encouraged by symbolic interaction with an ordinary computer system. It is a revolution whereby a learner collaborates with the skills and participates in a computer environment (Kalawsky, 2000). VE in learning offers unique capabilities in conveying information in 3D interactive environment and has been recognized as a very powerful human-computer interface for decades (Burdea & Coiffet, 2003).

In the same vein, VE based training is an environment specifically developed so that users or trainers can learn a task without actually performing the real tasks in real life (Jabar et al., 2008; Yahia, 2007). VE provides a safe, cost-effective and more flexible environment for training (El-Mounayri et al., 2005). Performance, safety and cost are other reasons for using VE in training (Caird, 1996; Schlager et al., 1993). VE in training offers sufficient preparation to train people who in reality will face dangerous tasks such as in maintenance of nuclear reactor core (Li et al., 2003). Besides that, it facilitates a learning environment that requires imagination or related to certain complex procedures. VE enables learners to interact with the simulated environment. Dynamic interaction and self-manuever give advantages in understanding complex and important procedures (Jabar et al., 2008).

D. Persuasive Technology

Persuasive technology or more specially known as persuasive computer is an interactive technology that can change a person's attitudes or behaviours (Fogg, 2003). This technology is regularly used in many areas such as sales, religion, military training, public health and management and also in

VE. Oinas-Kukkonen et al. (2008) defined that this technology focuses on computational technologies including desktop computers. According to Harjumaa and Oinas-Kukkonen (2007), there are three types of persuasions: interpersonal persuasion, computer-mediated persuasion, and human-computer persuasion as shown in Figure 1.

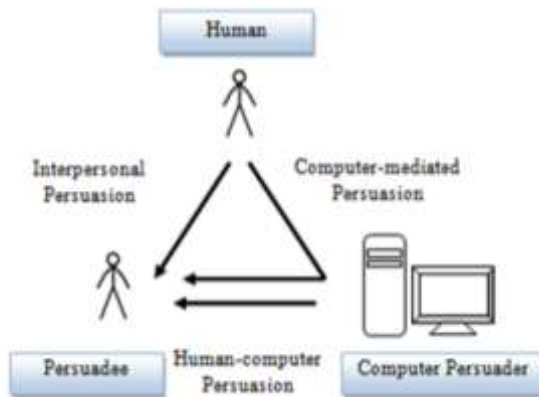


Figure 1. Three Types of Persuasion

Interpersonal persuasion is when a person persuades the others by using verbal or non-verbal communication. Computer-mediated persuasion occurs when someone uses technology such as computer technology to persuade people (via e-mail, animations etc). Meanwhile the human-computer persuasion involves the persuasion through human-computer interaction. The overlapping of human-computer technology in persuading people is also known as 'captology'. Figure 2 shows the 'captology' concept where computers, particularly VE, and persuasion are overlapped.

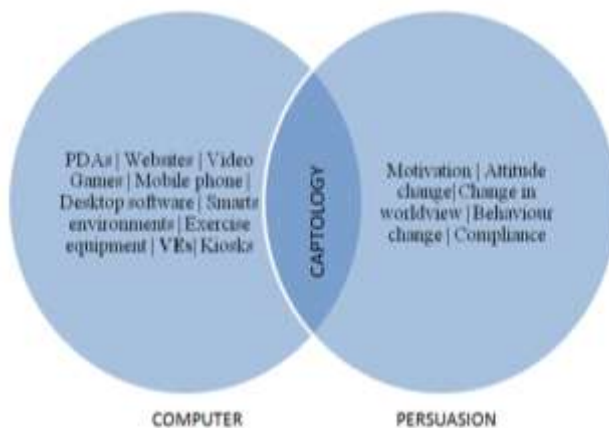


Figure 2. The Area of Captology.

E. VE and Persuasive Technology Relationship

According to Fogg (2003), in PT, there are three ways where computer can change people's lives. Paralleling with the VE, the persuasive computing technology and the VE relation can be related as explained in Table 1 below.

Table 1. VE and Persuasive Technology Relationship.

PT	VEs
They can make it easier for people to do things by making things easier, either by giving people shortcuts to annoying processes or by reminding them that it's time to exercise.	VE for learning can be meant of enhancing, motivating and stimulating learners' understanding of certain events, especially those for which the traditional notion of instructional learning has proven inappropriate or difficult (Pan et al., 2006).
They can provide an experience, allowing people to explore the cause-and-effect relationships.	VE offers the possibility to recreate the real world as it is or to create completely new worlds, providing experiences that can help people in understanding concepts as well as learning to perform specific tasks, where the task can be repeated as often as required and in a safe environment (Chittaro & Ramon, 2007).
They can create relationships, either with other people or with the program.	Relationship with VEs as an educational tool, (VE) or any other media immersion should allow a student to actively become part of learning and reviewing process (Shaffer, 2002).

F. The Persuasive Technology Design

In producing a material that can persuade users, particularly the elders to use computer technology as their supplementary learning material, this study adapted the persuasive design guidelines. Currently, there are many designs, studies and examples to be chosen for persuasive design. The existence of many successful studies has changed the PT study significantly. Despite other examples, Fogg (2009) proposed eight steps to make the design process more effective. Figure 3 shows the design to be considered in PT.

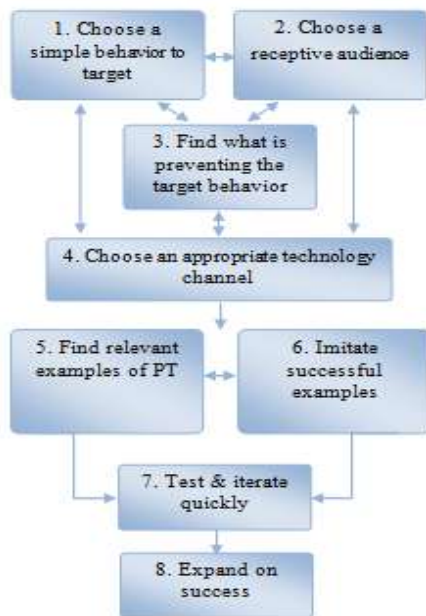


Figure 3. Persuasive Design Guidelines

III. EVALUATION

User evaluation for V-Hajj was intended to determine users' acceptance and perception towards the integration of VE and MM in the supplementary Hajj learning material. The evaluation was based on the modified and improved courseware. It was conducted among 60 users which have been grouped as youngster (19 to 39 years old) and elder (above 40 years old). The grouping was based on Erikson's stages of psychosocial development. For this study, the youngster and elder groups consist of 30 respondents each. All the respondents were Muslims who have minimum knowledge about Hajj and have volunteered to be involved in this evaluation.

Convenient sampling technique was used for the selection of the respondents. Prior to the evaluation, respondents were given explanations on the operation and also the interfaces of the V-Hajj courseware. Respondents were allocated ample time (90 minutes on average) to explore the courseware on their own without any interference by the researcher.

Once the respondents were done with the use of the courseware, they were then given a set of questionnaires based on TAM (see Table 2) to fill. The TAM is based on four dimensions which are; Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude towards Using (ATTITUDE) and Intention to Use (ITU).

The purpose of the questionnaires is to collect data related to respondents' opinion on the use and acceptance of the V-Hajj courseware.

Table 2. TAM Questionnaires for V-Hajj.

No	Measurements	Items
1	Perceived Ease of Use (PEOU)	i. I found V-Hajj easy to use. ii. Learning to use V-Hajj would be easy for me. iii. My interaction with V-Hajj was clear and understandable. iv. It would be easy for me to find information at V-Hajj.
2	Perceived Usefulness (PU)	i. Using V-Hajj would enhance my effectiveness in learning. ii. Using V-Hajj would improve my course performance. iii. Using V-Hajj would increase my productivity in my course work. (D) iv. I found V-Hajj useful.
3	Attitude Toward Using (ATTITUDE)	i. I dislike the idea of using V-Hajj. (R) ii. I have a generally favourable attitude toward using V-Hajj. iii. I believe it is a good idea to use this V-Hajj for my course work. (D) iv. Using V-Hajj is a foolish idea. (R)
4	Intention to Use (ITU)	i. I intend to use V-Hajj during learning Hajj. ii. I will return to V-Hajj often. iii. I intend to visit V-Hajj frequently for my course work. (D)

Note: R = reversed item, D = removed item

A. Results

Results of comparison between the two groups, elder and youngster were made for every items of the measurements. The results depicted the difference in perceptions between the two groups after using the V-Hajj courseware as a supplementary Hajj learning material.

For the PEOU measurement, the mean value for the elder group was 4.27 while for the youngster group was 4.28 as shown in Table 3. For the elder group, the highest mean among the item was 4.37, while the lowest mean was 4.20. Meanwhile for the youngster group, the highest mean among the item was 4.37, while the lowest mean was 4.20.

Subjects from both groups agreed on the Perceived Ease of Use of the V-Hajj courseware and the mean value of the youngster was higher than the elder.

Table 3. PEOU Results

Perceived Ease of Use (PEOU)	MEAN	
	Elder	Youngster
1. I found V-Hajj easy to use.	4.23	4.30
2. Learning to use V-Hajj would be easy for me.	4.37	4.30
3. My interaction with V-Hajj was clear and understandable.	4.27	4.23
4. It would be easy for me to find information at V-Hajj.	4.20	4.37
TOTAL	4.27	4.28

For the PU measurement, the mean value for the elder group was 4.41 while for the youngster group was 4.49 as shown in Table 4. For the elder group, the highest mean among the item was 4.47, while the lowest mean was 4.37. Meanwhile for the youngster group, the highest mean among the item was 4.63, while the lowest mean was 4.40. Subjects from both groups agreed on the Perceived Usefulness of the V-Hajj courseware and the mean value of the youngster was higher than the elder.

Table 4. PU Results

Perceived Usefulness (PU)	MEAN	
	Elder	Youngster
1. Using V-Hajj would enhance my effectiveness in learning	4.47	4.40
2. Using V-Hajj would improve my course performance.	4.40	4.43
3. I found V-Hajj useful.	4.37	4.63
TOTAL	4.41	4.49

For the ATTITUDE measurement, the mean value for the elder group was 4.47 while for the youngster group was 4.52 as shown in Table 5. For the elder group, the highest mean among the item was 4.67, while the lowest mean was 4.23. Meanwhile for the youngster group, the highest mean among the item was 4.57, while the lowest mean was 4.43. Subjects from both groups agreed that V-Hajj influenced their attitude toward using it as a supplementary Hajj learning material and the mean value of the youngster was higher than the elder.

Table 5. ATTITUDE Results

Attitude Towards Using (ATTITUDE)	MEAN	
	Elder	Youngster
1. I like the idea of using V-Hajj.	4.67	4.57
2. Thave a generally favourable attitude toward using V-Hajj	4.23	4.43
3. Using V-Hajj is a good idea.	4.50	4.57
TOTAL	4.47	4.52

For the ITU measurement, the mean value for the elder group was 4.22 while for the youngster group was 4.25 as shown in Table 6. For the elder group, the highest mean among the item was 4.27, while the lowest mean was 4.17. Meanwhile for the youngster group, the highest mean among the item was 4.53, while the lowest mean was 3.97. Subjects from both groups agreed that V-Hajj influenced their intention to use it as a supplementary Hajj learning material and the mean value of the youngster was higher than the elder.

Table6. ITU Results

Intention to Use (ITU)	MEAN	
	Elder	Youngster
1. I intend to use V-Hajj for learn Hajj	4.27	4.53
2. I will return to V-Hajj often.	4.17	3.97
TOTAL	4.22	4.25

CONCLUSION

The analysis on the collected data indicated that overall, the subjects agreed on the use of V-Hajj courseware for Hajj learning. In detail, the mean values for PEOU was 4.27, PU was 4.45, ATTITUDE was 4.49 and ITU was 4.23. These results clearly indicated that the V-Hajj courseware is usable to be used as a supplementary Hajj learning material whereby only usable products grab users' acceptance.

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