# Evaluations of the Islamic Sex Education (ISE) Courseware Prototype for Parents Based on Cognitive Theory

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## ABSTRACT

This study developed Islamic Sex Education (ISE) interactive courseware to help users particularly parents discover guidelines in guiding them for sex education in Islam. In fact, sex education in Islam provides guidelines in manners related to what is allowed and forbidden, and stresses the faith towards the religion. Islam believes that parents play the main role to educate their children about this matter. However, the deficiency of this 'taboo' learning material in conveying the information makes the situation more stressful. In consequence, this study proposed the courseware as an attempt to the problem. We have conducted two evaluations namely; learning and reaction evaluation towards the effectiveness of the prototype with 41 respondents, which are parents. Employing the pre and post test, learning evaluation that includes 15 similar questions about ISE was given before and after the respondents used the courseware prototype. Meanwhile, the reaction evaluation was given after the respondents used the courseware prototype in assessing the overall effectiveness of the prototype. After analyzing the data, we found that the correct answers of the learning evaluation were increased after the respondents used the prototype; and overall they agreed the effectiveness of the prototype in increasing their knowledge.

**Keywords**: Islamic Sex Education (ISE), multimedia, conceptual model, cognitive theory

## I    INTRODUCTION

The changes in economic and technology have left a deep impact to the socio-cultural and lifestyle of the society (Mat &Saad, 2005). However, the changes have critically impacted the society through the increase of social problems, including free sex and sexual deviance problems. The problems are rapidly growing in Malaysia. Hence, the government is actively taking various measures, including implementing sex education to educate the society in order to prevent them from the unwanted sexual experiences.

However, speculations about the education are bursting out as the sensitivity of the 'sex' term and the appropriate featured contents of the education to the society in Malaysia, particularly for Muslim parents (Rahman, 2010). Most of the current sex education contents were based on non-Islamic approach. Sex education in Islam is aimed to find the truth and as a way to draw oneself closer to Allah S.W.T by giving clear guidelines in the manners and ethics related to family, sexuality and reproductive health (Mat &Saad, 2005). Siraj and Omar (2007) also stated that sex education is the most important aspect to produce a good generation after marriage, which is from parent's strong comprehension in Islamic sexual life.

In Islam, with regard to the issue of sex education, parents are the major role model in educating their children (Ulwan 1985/2002). The intervention of parents is critically needed for parental guides to their children related to sexuality matters (Ulwan 1985/2002; Walker, 2004). Nevertheless, in Malaysia, most parents are unaware of sex education (Noor et al., 2011). They are lacking in knowledge related to that particular matter (Rahman, 2010). Parents are embarrassed to learn and discuss about sex education, particularly about puberty, physical and physiological sexuality changes and others (Buston et al., 2001; Walker, 2004; Constantine et al., 2007; Jaafar& Lee, 2008; Rahman, 2010).

In our preliminary investigation (PI) among 44 parents which include 20 fathers and 24 mothers of a convenient sampling, it indicated that 75% of the respondents were reluctant to discuss about sex education with their children. 79.5% of the respondents did not know and unsure about sex education and its contents. 75% of them stated that they were unclear and have inadequate information about sex education, particularly from the perspective of Islam. The respondents learned and retrieved information about sex education from books (88.6%), VCDs (81.8%) and the internet (63.6%). However, the suitability of the contents was still questionable and this was reflected from the PI results where the respondents did not know and were unsure about the proper contents. Walker (2004) stated that appropriate guide for sex education is important to ensure the effectiveness

of the parental guide. 90.9% of the respondents also agreed that they did not have enough learning materials to improve their knowledge in sex education.

Sex education needs further transformation to pull down the 'taboo' barrier (Buston et al, 2001 & Laura et al., 2006), especially from the support of computer and technological advent (Lee &Jaafar, 2008). Changing the parents' perception about sex education is important. They must be encouraged to understand the essential of the education.In view of that, this study has proposed Islamic Sex Education (ISE) courseware prototype based on the cognitive theories. The theories are important to ensure the courseware prototype considers the processes of human cognitive system in the learning process.

## II    THE ISE CONCEPTUAL MODEL

Conceptual model refers to researcher's theories between several factors or dimensions relationship that have been importantly identified in the research and concepts (Sekaran, 2003). According to Dalle (2010), the conceptual model helps researchers to evaluate the relationship of those elements in enhancing the understanding of the research problems and solutions. The discussion on the conceptual model implicates that the ISE was developed by referring to its conceptual model. Before the model was developed, the concepts and related studies about the selected areas were investigated from the literatures. The model is important in order to clarify the implementation of the ISE courseware prototype as depicted in Figure 1. The model is crucial as it suggests the important guidelines in developing the ISE courseware prototype. It emphasizes the three prominent elements in developing an effective prototype.

The interaction design adapted the Usage Centered Design (USD) guidelines.Meanwhile, the macro design strategies of this study are the ISE principles which refer to the ISE contents design. The principles were referred in the light of the ISE topics proposed by Ulwan (1985/2002). Lastly, the micro design strategies of this study were adopted from CTML andmultimedia learning principles proposed by Mayer (2001). Further details on how the conceptual model guidelines were used in the ISE courseware prototype are elaborated in the following sections.

### A. Interaction Design: USD

As depicted by the conceptual model above, the interaction design for this study adapted the USD as guidelines in clarifying the tasks or activities between the users and the courseware prototype. The combination of USD in the ADDIE model presents proper development and implementation processes of the ISE courseware prototype. Besides that, two models and theories are used in USD models as an attempt to make the courseware prototype more effective to the parents, and then can encourage them to learn ISE. The ARCS is a widely used model (theories) related to motivation and learning. Previous studies have revealed that it can enhance learner's understanding as the model emphasized on ways of grabbing learners' preference and attention towards a learning process.

### B. Information Design: Macro Design Strategies

According to the conceptual model, the ISE contents are the main topics to be conveyed to the learners. The contents consist of nine topics which were derived from various resources related to ISE. The topics include; male and female relationship, vision and awrah care, manners in permission asking, faithful to Allah and religion, abstinence, health issues, contraception, puberty information and marriage.

Macro strategies were used to organize and restructure a number of different ideas or information of the contents. According to Salam (2010), for macro design strategies, the use of principles is important to convey the information effectively. Therefore, the organization and restructuring of the contents must be properly guided. Furthermore, as stated by Patten et al., (1986), the organization and restructuring of the contents are initials to well-organize the memory of the learners. In order to ensure that the developed prototype is relevant to the ISE objectives, this study adapted three main principles in implementing the ISE as guidelines for the information design.The principles were applied in the topics to increase the awareness towards ISE. There are enlightenment, threat and binding principles (Noor et al., 2011).

### C. Information Design: Macro Design Strategies

Micro design strategies were adapted for the presentation design of the contents in the ISE courseware prototype. Multimedia elements that have been applied in this study comprised of text, graphics, animation, audio and video. The presentation of the elements was guided by some principles and theory. CTML and multimedia learning principles are the most widely accepted references that have been adapted in this

study.CTML assumes that human information processing includes dual channels (visual and verbal processing) whereby both processing have their limited capacity. ISE courseware prototype used both channels in presenting the ISE contents. However, this study attempted to present the ISE contents in a minimum way to prevent any memory load as proposed by the ISE conceptual model. Besides, the courseware also promoted the users to be engaged in the active learning process whereby they can interact with the courseware.

As guidelines to the CTML, multimedia learning principles were also referred. Therefore, this study adapted six principles of multimedia learning in order to increase the effectiveness of the presentation design of the ISE contents. They are multimedia principle, spatial contiguity principle, temporal contiguity principle, coherence principle, modality principle and redundancy principle.

## III     EXPERIMENTAL TESTING DESIGN

This study involved investigations related to the experimental testing design. Briefly, the experimental study or evaluation consists of several designs, namely; the after-only design, the before-and-after design, the control-group design, the double-control group design and others. In investigating the changes of users' understanding after using the ISE courseware prototype that has been developed based on the conceptual model, this study deployed the before-and-after design of experimental testing.

The before-and-after experimental design investigates the solutions by constructing 'before' observation, which is before an intervention is produced to the study population. Then, the 'after' observation is carried out whenever the intervention is completely implemented or presented to the population. It is to ascertain the impact of the new intervention to them.

This study adapted two evaluations, which are learning evaluation and reaction Evaluation as suggested by the Kirkpatrick Model of Evaluation. The evaluation involved pre test and post test pertaining to the ISE knowledge before and after using the ISE courseware prototype. The most important thing is it also depicts the acceptable level of the constructed conceptual model based on the results gained in the post test. It shows how the model succeeded in enhancing the respondents' knowledge level. The questions from this evaluation were based on the ISE contents as

suggested in the conceptual model. All the data was collected anonymously. However, each respondent's questionnaire booklet has been assigned a predetermined identification number for the purpose of data analyses. In this study, 41 respondents consisting of both Muslim fathers and mothers from various backgrounds were involved in the evaluation phase.

Overall, there are two control groups for this evaluation. One of them consists of respondents who have the exposure to sex education, and the other one consists of respondents that do not have any exposure to sex education. At first, the respondents were briefed on the objectives of the evaluation and the way it would be conducted. Secondly, they were required to answer the pre test which consisted of fifteen questions related to ISE for assessing the existing knowledge and exposure of the respondents, and the questions were adapted from the Instructional Motivational Material Survey (IMMS) to investigate the respondents' reaction towards the ISE courseware prototype. Thirdly, the respondents were given ample time to explore and learn the contents of the prototype on their own without any interference from the researcher. Once they were done, they were asked to answer the post test questions.

### A. Learning Evaluation

A hypothesis was used to clarify the results obtained during the learning evaluation. Pre test answers from all respondents were compared to the post test answers based on 15 multiple choice questions. The results based on the comparison were then interpreted for both parents having and not having disclosure to ISE.

*Hypothesis $_{01}$*:    There is no significant difference in the respondents' knowledge retention mean scores between pre test and post test

In testing of *Hypothesis $_{01}$*, paired-samples *t*-test was used in comparing the respondents' knowledge retention mean scores in pre test and post test learning evaluation. The results indicated that there was a mean difference in scores between the two tests; pre test and post test, for all the respondents.

The post test results indicated higher knowledge retention mean score of 11.12 compared to only 4.27 for the pre test (Table 2). There was significant difference in mean score between the two tests. The respondents who were exposed to the ISE courseware prototype obtained significantly higher level of knowledge retention in the post test compared to the pre test based on the
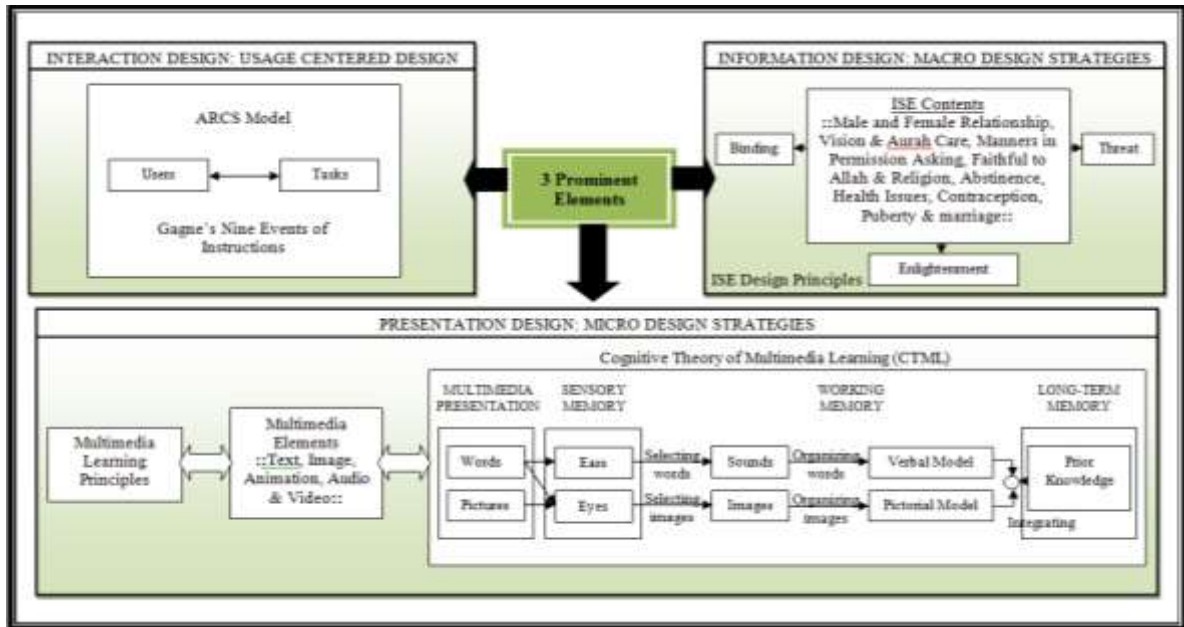
**Figure 1. ISE Conceptual Model.**

**Table 2.Hypothesis $_{01}$ Paired Samples t-test Statistics.**

|  | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|
| Pre Test | 4.27 | 41 | 1.1517 | .237 |
| Post Test | 11.12 | 41 | 1.1735 | .271 |

**Table 3. Pre Test and Post Test Results for 2 Groups of Parents**

| Question No. | Having (Pre) | Having (Post) | Not Having (Pre) | Not Having (Post) |
|---|---|---|---|---|
| 1 | 0.476 | 0.762 | 0.450 | 0.650 |
| 2 | 0.286 | 0.905 | 0.350 | 0.750 |
| 3 | 0.571 | 0.810 | 0.550 | 0.850 |
| 4 | 0.286 | 0.905 | 0.350 | 0.800 |
| 5 | 0.286 | 0.762 | 0.600 | 0.850 |
| 6 | 0.095 | 0.667 | 0.300 | 0.900 |
| 7 | 0.143 | 0.714 | 0.000 | 0.850 |
| 8 | 0.238 | 0.762 | 0.250 | 0.750 |
| 9 | 0.286 | 0.714 | 0.150 | 0.800 |
| 10 | 0.143 | 0.571 | 0.050 | 0.850 |
| 11 | 0.095 | 0.810 | 0.100 | 0.850 |
| 12 | 0.333 | 0.571 | 0.250 | 0.650 |
| 13 | 0.476 | 0.905 | 0.400 | 0.600 |
| 14 | 0.381 | 0.714 | 0.250 | 0.450 |
| 15 | 0.190 | 0.524 | 0.100 | 0.400 |

answers from pre test and post test for the learning evaluation from the two groups of respondents. Overall, both groups showed an increase in the mean scores in the post test compared to the mean scores in the pre test. Based on the above table, in pre test, parents having disclosure to ISE gained 0.476, 0.286, 0.571, 0.286, 0.286, 0.095, 0.143, 0.238, 0.286, 0.143, 0.095, 0.333, 0.476, 0.381, and 0.190 in mean values for question 1 until question 15; however, the mean values of the respondents' correct answers increased to 0.762, 0.905, 0.810, 0.905, 0.762, 0.667, 0.714, 0.762, 0.714, 0.571, 0.810, 0.571, 0.905, 0.714 and 0.524 after using the ISE courseware prototype as obtained in the post test.

Parents not having disclosure to ISE gained 0.450, 0.350, 0.550, 0.350, 0.600, 0.300, 0.000, 0.250, 0.150, 0.050, 0.100, 0.250, 0.400, 0.250 and 0.100 of mean value in the pre test. Similar with the other group, the mean values have increased in the post test, where they gained 0.650, 0.750, 0.850, 0.800, 0.850, 0.900, 0.850, 0.750, 0.800, 0.850, 0.850, 0.650, 0.600, 0.450 and 0.400 for each questions. Surprisingly, there is an increase from 0.000 of mean value to 0.850 for question number 7 for parents not having disclosure to ISE. The results indicated the overall increase in the mean value in the post test after using the ISE courseware prototype.

In pre test, parents having disclosure to ISE achieved the highest correct answers for questions 1, 3, 7, 10, 11, 12, 13, 14 and 15. Meanwhile, parents not having disclosure to ISE gained the highest score for questions number 2, 4, 5, 6, 8 and 9. These showed that the parents having disclosure to ISE have better knowledge (9 answers) about ISE compared to the parents not having disclosure to ISE (6 answers). However, for the post test, parents not having disclosure to ISE obtained 8 correct answers (3, 5, 6, 7, 9, 10, 11 and 12). Meanwhile, parents having disclosure to ISE gained 7 correct answers (1, 2, 4, 8, 13, 14 and 15).

**B. Reaction Evaluation**

Reaction evaluation is important in measuring the effectiveness of new interventions for instructional

or learning material. It assesses whether the materials can encourage, stimulate and sustain users' learning behavior towards the learning process. Since sex education is a 'taboo' issue and most of the parents were reluctant to discuss and less concerned about the topic as explained before, this reaction evaluation has been deployed. It investigated whether the developed prototype can increase their learning motivation or awareness for learning sex education. This study used a well-known motivational evaluation instrument which is IMMS. The most crucial part is that this evaluation also investigates the potential and effectiveness of the constructed ISE conceptual model in encouraging ISE learning.

The IMMS questionnaires used in the evaluations consist of four dimensions namely; Attention, Relevance, Confidence and Satisfaction. All the four dimensions consist of 19 items. The results for all the items were compared between both groups (two groups of parents; those having disclosure to sex education and those not having disclosure to sex education) and the explanations are described in the following sub sections.

The Attention dimension consists of eight items. Table 4 shows the results for each item for both groups of parents. The results indicated that item 3 (The quality of the writing in Al-Adab holds my attention) and item 7 (Al-Adab is so complete that it was easy to keep my attention on it) have high mean scores for both groups of parents. While item 6 (The variety of reading passages, diagrams, graphics and etc. helped keep my attention on Al-Adab) has the lowest mean score for both groups of parents. Based on the results also, both groups of parents agreed that the ISE courseware prototype received their Attention towards the ISE learning.

The Relevance dimension consists of four items. Table 5 shows the results for each item for both groups of parents. Generally, the parents having disclosure to sex education have higher mean scores compared to the parents not having disclosure to sex education except for item 1. The results indicated that item 3 (There are sufficient materials (graphics, videos and etc) that showed me how Al-Adab could be important to some people who are learning Islamic sex education) has high mean scores for both groups of parents. While item 1 (I could relate the content of Al-Adab to things I have seen, done or thought about in my own life) has the lowest mean score for both groups of parents. Based on the results also, both groups of

parents agreed that the ISE courseware prototype has the Relevance value in ISE learning.

The Confidence dimension consists of three items. Table 6 shows the results for each item for both groups of parents. Generally, the parents not having disclosure to sex education have higher mean scores compared to the parents having disclosure to sex education. The results indicated that item 2 (The information in Al-Adab is acceptable and easy to be picked out and remember the important points) has high mean scores for both groups of parents. While item 1 (The exercises in Al-Adab are acceptable) has the lowest mean score for both groups of parents. Based on the results also, both groups of parents agreed that they have confidence in using the ISE courseware prototype for ISE learning.

The Satisfaction dimension consists of four items. Table 7 shows the results for each item for both groups of parents. The results indicated that item 3 (The working of the feedback and the capability to go back and review material after completing exercises made me feel rewarded for my effort) has high mean scores for both groups of parents. While item 4 (It was a pleasure to work with Al-Adab) has the lowest mean score for both groups of parents. Based on the results also, both groups of parents agreed on the satisfaction of using the ISE courseware prototype for ISE learning.

**Table 4. Attention Results**

| | ATTENTION DIMENSION | MEAN | |
|---|---|---|---|
| No. | Item | Having | Not Having |
| 1. | There was something interesting at the beginning of Al-Adab that got my attention. | 4.24 | 4.10 |
| 2. | Al-Adab is eye catching. | 4.29 | 4.50 |
| 3. | The quality of the writing in Al-Adab holds my attention | 4.43 | 4.40 |
| 4. | The way the information is arranged on the Al-Adab pages helped keep my attention. | 4.24 | 4.10 |
| 5. | Al-Adab has things that stimulated my curiosity. | 4.19 | 4.20 |
| 6. | The variety of reading passages, diagrams, graphics and etc. helped keep my attention on Al-Adab. | 4.10 | 4.15 |
| 7. | Al-Adab is so complete that it was easy to keep my attention on it. | 4.43 | 4.45 |
| 8. | There is no repetition information in this Al-Adab that makes me feel bored. | 4.24 | 4.25 |
| | Total | 4.27 | 4.27 |

**Table 5. Relevance Results**

| | RELEVANCE DIMENSION | MEAN | |
|---|---|---|---|
| No. | Item | Having | Not Having |
| 1. | I could relate the content of Al-Adab to things I have seen, done or thought about in my own life. | 4.05 | 4.10 |
| 2. | It is clear to me how the content of Al-Adab is related to the Islamic sex education. | 4.19 | 4.15 |
| 3. | There are sufficient materials (graphics, videos and etc) that showed me how Al-Adab could be important to some people who are learning Islamic sex education. | 4.24 | 4.15 |
| 4. | The content of Al-Adab is useful to me in terms of learning the Islamic sex education effectively. | 4.19 | 4.15 |
| | Total | 4.17 | 4.14 |

**Table 6. Confidence Results**

| CONFIDENCE DIMENSION | | MEAN | |
|---|---|---|---|
| No. | Item | Having | Not Having |
| 1. | The exercises in Al-Adab are acceptable. | 4.00 | 4.10 |
| 2. | The information in Al-Adab is acceptable and easy to be picked out and remember the important points. | 4.33 | 4.50 |
| 3. | Al-Adab contains information that I can understand. | 4.19 | 4.20 |
| | Total | 4.17 | 4.27 |

**Table 7. Satisfaction Results**

| SATISFACTION DIMENSION | | MEAN | |
|---|---|---|---|
| No. | Item | Having | Not Having |
| 1. | I enjoyed Al-Adab so much that I would like to know more about it. | 4.14 | 4.15 |
| 2. | I really enjoyed learning with Al-Adab. | 4.00 | 4.05 |
| 3. | The working of the feedback and the capability to go back and review material after completing exercises made me feel rewarded for my effort. | 4.57 | 4.45 |
| 4. | It was a pleasure to work with Al-Adab. | 4.10 | 4.05 |
| | Total | 4.20 | 4.18 |

The learning evaluation results showed that there is an increase in knowledge related to ISE in the post test results compared to the pre test results. Although the respondents were evaluated by using the ISE courseware prototype, it reflects the effectiveness of the ISE conceptual model that has been constructed to guide the design and development of the courseware prototype. The model has suggested several ISE topics and contents to be included in the ISE courseware prototype. The results indicate that the ISE knowledge among the respondents for both groups of parents has been improved. On that matter, it can be said that the constructed ISE conceptual model has the capability to increase and encourage the ISE learning based on the conducted learning evaluation results. In the same vein, the reaction evaluation depicts variety of mean results for the IMMS questionnaires which are based on ARCS model. However, overall the results showed that the ISE courseware prototype has its own potential to increase their awareness and knowledge towards the ISE learning. As in the learning evaluation, the most important is, this evaluation portrays the effectiveness and potential of the constructed ISE conceptual model. The good results in IMMS dimensions depict the acceptance of the ISE conceptual model that has been constructed. Clearly, the above results for ARCS dimensions showed that there are no significant differences between the results for both groups whether the respondents have or do not have the disclosure to the ISE learning. Relating to the results from the preliminary investigation (PI), even though the parents have rated that they have the disclosure to sex education or ISE, truthfully their knowledge is dubious as they also stated that most of them were unsure the sex education or ISE contents. In Malaysia, sex education and ISE contents are still vague and not clearly exposed to the society.Nevertheless, the results showed that the ISE courseware prototype, and particularly the ISE conceptual model has its own potentials and abilities to encourage, enhance and create awareness towards the ISE learning among the targeted users.

## V CONCLUSION

Based on the learning evaluation and reaction evaluation, there is a significant increase in the ISE knowledge before and after the parents used the ISE courseware prototype. The reaction evaluation showed that the prototype is in the agreeable level. Both evaluations indicate that the courseware prototype and indirectly the ISE conceptual model has the potential to encourage the ISE learning process among the target users and in this case, parents.

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