Development and Evaluation of a Multimedia Software (Smart Solat) for j-QAF Program for Malaysian Primary Schools

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Abstract: Multimedia which characterises the current trend in education can be used to overcome shortcomings encountered in teaching and learning. However, some multimedia elements that have been applied in interactive software cannot provide an exciting and motivating learning environment. This study describes the development and the evaluation of interactive Multimedia Software that can serve as a tutorial for the Smart Solat Module in the j-QAF curriculum. This software was developed in accordance with the syllabus of the year one j-QAF curriculum, issued by the Ministry of Education. The software was developed on the basis of the ADDIE Design Model and the Al-Rassam Program was used to write the Jawi/Arabic text. The research questions addressed in this study were to develop and assess whether the software can meet the j-QAF curriculum to apply the multimedia elements by taking into account the concept of computer-aided teaching and learning namely the theory and strategies of learning and to evaluate the effectiveness in terms of customer satisfaction. The evaluation of the Multimedia Software was formative and summative using questionnaire, administered to three experts and 30 years one students. The findings showed that this Multimedia Software can help students understand the curriculum (j-QAF Smart Solat Module) more easily and clearly. This software can also be used by teachers as an alternative teaching aid. The combination of various media in this software has made the teaching and learning process of Jawi/Arabic texts more interesting and meaningful.

Key words: Development of Multimedia Software, Smart Solat Module of the j-QAF Program, evaluation of effectiveness, computer-aided teaching and learning, Malaysia

INTRODUCTION

Malaysia's Primary School Integrated Curriculum (KBSR) which has been in effect for nearly two decades has undergone various changes in fulfilling the goal of the third long-term plan framework: 2001 to 2010 (EPU, 2001) for present and future generations. An important element of one of the key strategies of the Ninth Malaysia plan: 2006 to 2010 (JPM, 2006) is the development of high-quality human capital. Such human resource development became the main thrust of this national mission. Towards this end the j-QAF program was implemented with the aim of strengthening Islamic education through specific emphasis on the following primary-school subjects: Jawi, al-Quran, Arabic and Fardhu Ain (MOE, 2006).

The results of this study should empower the teaching and learning of the Smart Solat Module Multimedia Software for the year one j-QAF Program curriculum in national primary schools. This research is expected to assist the Malaysian Ministry of Education in software development and in further enhancing the quality of the teaching and learning in the j-QAF Program Smart Solat Module.

With the use of multimedia, the software discussed in this study can enhance pupils ability to understand the contents of the Smart Solat Module. In addition, the use of interactive multimedia technologies can also enhance the effectiveness of teaching and learning. The user-friendly presentation style and interesting and exciting interface design are also expected to nurture, enhance and stimulate pupils interest in the content.

The purpose of this research is to explicitly describe the development of and evaluate the software developed for the Smart Solat Module which is one of the modules in the j-QAF Program. This module involves computer-aided teaching and learning methods for year one students of national primary schools as outlined by the Malaysian Ministry of Education. This software combines audio, video, animation, hypertext and hypermedia so as to

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create a computer environment that is characteristically interactive, easy and interesting. In this way, this software helps teachers and pupils in the teaching and learning process.

Hence, the developers of this software focused not merely on high-quality audio, video, animation, hypertext and hypermedia but on the software's capability, effectiveness and quality so that it could be applied by the pupils in and out of school, thereby shaping high-quality Muslim human capital.

Accordingly, this software aimed at varying the delivery method to ensure that it is effective and of quality in the context of multimedia implementation in the teaching and learning. Through this effort, it is hoped that it is capable of fulfilling some of the contents of the education transformation concept toward computer and ICT literacy with regard to primary school students. The objectives of this research are as follows:

- Focusing on content-related aspects of teaching aids so as to design multimedia software for the Smart Solat Module of the j-QAF Program Software that is in accordance with the j-QAF Program curriculum for national primary schools
- Developing multimedia software for the j-QAF Program Smart Solat Module which is interactive, easy and interesting so as to assist teachers and students in effective teaching and learning in the classroom and in self-learning outside the classroom
- Evaluating the multimedia effectiveness of the j-QAF Program Smart Solat Module that has been developed in terms of its usability and suitability for year 1 pupils of the Jawi remedial class in national primary schools
- Designing the j-QAF Program Smart Solat Module multimedia software for the year one syllabus that is in accordance with the national primary school j-QAF curriculum and that applies effective teaching and learning strategies, methods, approaches and techniques to enhance pupils knowledge and develop their personality

MATERIALS AND METHODS

Teachers and experts were surveyed in order to obtain their views on the software developed. This study describes the development process and course software of the Smart Solat Module which was designed using the Micromedia Director MX authoring tool. This software enables interactive teaching and learning for year one Smart Solat In-Group Training.

Pilot studies: Pilot studies need to be conducted before an actual study can be carried out (Glesne and Peshkin, 1992). The purpose of the pilot study is not only to wait for the data but also to obtain information about the research process, interview schedule, observation techniques and evaluation of the software itself. The pilot study prepares the researcher in effective data collection. From the results of the pilot study, the researcher may revise his or her research plan, the items or questions in the questionnaire and the way the research is conducted.

Pilot study I: Pilot study I was conducted prior to developing the software. The purpose of this study was to look at the need to build any software. The main aspects of this study were the sets of interviews conducted with the following:

- j-QAF Program teachers
- Lecturers of the Institute of Teacher Education, Malaysia
- Officials of the Islamic Education Division, Ministry of Education, Malaysia

Pilot study II: Pilot study II was conducted after the software had been developed but before the actual software application was implemented. The main aspects of this study were three sets of questionnaires administered to the following parties in order to obtain their evaluations of the software:

- j-QAF teachers
- j-QAF experts
- Software experts

Data collection procedure: The data collected from the questionnaires were analysed using SPSS Version 11.5 for Windows to generate percentages, tables and graphs. Descriptive statistics were used to obtain percentages and mean scores on the basis of the data obtained. For the purpose of the software evaluation and interpretation, the researchers used a five-point Likert scale where 1 = Strongly disagree, 2 = Disagree, 3 = Moderately disagree, 4 = Agree and 5 = Strongly agree. Table 1 shows the respondents level of agreement.

Table 1: Respondents level of agreement

Score	Level of agreement
5	Strongly agree
4	Agree
3	Moderately disagree
2	Disagree
1	Strongly disagree

Table 2: Mean score interpretation of the j-QAF Program Smart Solat
Module Multimedia Software

Mean score	Mean score interpretation
1.00-2.33	Low
2.34-3.66	Moderate
3.67-5.00	High

Table 1 will be used as a guide to analyse the experts and pupils level of agreement with the items in the questionnaire.

To assess the software's level of acceptance, the researcher used the score interpretation by Jamil in which a mean score between 1.00-2.33 reflects low acceptance a score of 2.34-3.66 shows moderate acceptance and a score of 3.67-5.00 indicates high acceptance. Table 2 shows the experts and pupils level of acceptance of the developed software.

Data analysis procedure: Planning is crucial in carrying out any software development. Careful planning and high commitment produces interesting software that achieves real objectives. The developers of this software followed the five phases of the ADDIE Model (Rossett, 1987): analysis, design, development, implementation and evaluation. In the analysis phase, the research problem is identified and the source or factors that caused the problem are determined. This ensures that the instructional design can meet or satisfy the requirements of real users. In the design phase in this study, the development process required repeated examination of the objectives and contents of the software, activities and exercises as well as the tests that were intended to assess the students understanding. In this phase, too the researchers determined the information presentation method suitable to the topics and target users and created the screen design for the software development. In addition, the evaluation aspect ensured that the software conformed to the purpose and goal as well as the specifications that were determined. Clearly in this phase the use of multimedia authoring software should be practised even more. Moreover, creativity was necessary so that the software developed had its own aesthetic values. Additionally, the design of the software development guided the implementation process. The storyboard and design were created prior to the software development. Thus, careful initial planning simplified and expedited the development of this learning software.

RESULTS

The software developed contains six main screens: Opening/Start Main Menu, Introduction, Information Presentation, Skills and Mind test. Each screen is briefly described in the following sub-sections.

Opening/start screen: This screen is displayed when the user starts the software. This screen is an animated montage that introduces the software to the pupils and also functions as the induction set. Multimedia elements such as the combination of colours, text, graphics, animation and audio (sound/music) were also incorporated to attract the interest of the pupils and motivate them to continue with the learning process by using this software. These were incorporated in accordance with the behaviourist and cognitivist theories that were applied while developing in this software. To continue with learning, the pupils have to click on the links provided.

Main menu screen: This screen displays the following four menu options: Introduction, smart solat, skills and mind test. The smart solat and skills menus have sub-menus that can be selected to be explored. Applying the constructivist learning theory, the developers designed the screen so that students are able to start their learning process with any menu option they want not necessarily following the sequence listed on the main menu screen. There are also two navigation buttons the music control button and the exit one.

Introduction screen (software/learning): This screen displays the software/learning objectives which are clearly stated before the learning contents are presented. This enables the pupils to choose their direction in browsing the software. The navigation buttons provided on the screen are the music control, help and exit buttons as well as the button to return to the main menu.

Information presentation screen (Smart Solat): The information presentation screen contains information relevant to the Smart Solat Module and appropriate for the determined learning objectives. The smart solat information screen consists of three sub-menus: solat intention, solat recitation and solat practical. Graphic and audio presentations are used to familiarize the pupils with the obligatory Solat intentions, obligatory (wajib) and Sunnah (sunat) recitations in solat as well as the Solat practice as a whole. This screen has music control and exit buttons.

Solat skills screen: The purpose of this screen is to increase pupils understanding of the Smart Solat Module in relation to Solat intention, recitations in Solat and Solat practical. The materials included in this screen are based on the syllabus provided by the Ministry of Education, Malaysia for the Smart Solat Module in the j-QAF Program. The skills activities are presented in an

interactive graphic form where animation, audio and colour are combined. This form can improve pupils understanding and recall of the topics learnt. There are four sub-menus in the Solat skills screen: Skill 1, 2, 3 and 4.

The Solat skills screen allows pupils to customize their activities according to their own requirements. The screen contains the following navigation buttons: Back (which allows the pupil to repeat the selected activity) Console (which allows the pupil to return to the Solat skills screen and choose whichever skills they want to do) and exit (which enables the pupil to exit from or end the software).

Mind test screen: This screen contains activities that pupils can perform after they have understood the related learning content. The Mind test is in the form of a game in which pupils need to be alert and actively involved. Pupils assist the character in the game in his or her mission to perform Solat or prayers in the mosque. They help the character to reach the mosque by answering the questions presented. The questions ask pupils to match the graphics of solat practices displayed on the screen. The time allotted is 60 sec. If the pupil fails, the character in the game will fall to the floor and fail to complete the mission. Praise is given when the pupil successfully carries out the mission and words of encouragement are given when the pupil fails. Pupils can repeat the game until they successfully complete the mission helping the character to reach the mosque to pray.

DISCUSSION

The role of teachers in this age of technology is very challenging. Teachers need to adapt to current technology so that their teaching is interesting and stimulating. To become dynamic educators, teachers must master and use available technology; j-QAF Program teachers are no exception.

With the government's emphasis on enhancing the quality of education, Malaysia's Education System has received a new boost and is capable of fostering the development of high-quality human capital. At the primary, secondary and high school levels, the use of the latest technology is much emphasised. Consequently, the use of computers and educational software in teaching and learning has increased. Currently, the use of computers and computer-aided teaching and learning has huge implications for the country's Education System making it on par with its counterparts in developed nations.

CONCLUSION

Thus, the development of the Smart Solat Module Software has successfully achieved the stated aims and objectives of the study. Although, a few weaknesses were identified the software has its own distinct advantages. Improvements on the weaknesses have been implemented in the evaluation process by experts in both the j-QAF Smart Solat Module and software development. Hence, the production of this software is expected to be a solution to the problem of the shortage of teaching aid material for the year one j-QAF teachers, specifically in the subject of Solat. This software can be an effective, interesting and exciting teaching and learning alternative. It is hoped that this software will boost the production of more computer-aided teaching and learning software in the future, thereby overcoming the problem of the dearth of interactive software for the curriculum of the j-QAF Program.

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