

Development and Evaluation of Multimedia Software for the Communicative Arabic Implementation of the J-QAF Programme in Primary Schools

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Abstract

Multimedia can be used to overcome the weaknesses in the process of teaching and learning. However, multimedia elements embedded in the interactive environment of software sometimes fail to make a presentation interesting and motivating for pupils. This study aimed at developing and evaluating interactive multimedia software that can serve as a tutorial for the Communicative Arabic Implementation Expansion Module of the j-QAF programme. This multimedia software was developed based on the Year One j-QAF curriculum issued by the Ministry of Education, Malaysia. Additionally, the objectives of this research were aimed to improve the emphasis on the use of teaching aids. Apart from that, this software was developed to evaluate its effectiveness for the Communicative Arabic Implementation Expansion Module based on the basis of usability and suitability for Year One j-QAF pupils in national primary schools. Next, this software was also designed to help teachers and pupils teach and learn effectively, respectively; in the classroom and to aid self-learning outside the classroom. Eventually, this software from other perspectives will be helpful and can be applied by teachers as an alternative teaching aid because there are combinations of various media in this software and it takes a great deal to get new technology into a position in education in terms of meaning and benefits.

Keywords: Computer-aided teaching and learning (CATL); Communicative Arabic; Evaluation of effectiveness; Multimedia; J-QAF programme

Introduction

The Integrated Curriculum for Primary Schools or *Kurikulum Bersepadu Sekolah Rendah (KBSR)*, implemented almost two decades ago, has undergone various changes to achieve Malaysia's aim of providing world-class education for current and future generations in line with the country's development, to fulfil the goal of the Third Long-Term Plan Framework (EPU, 2001). In the Ninth Malaysia Plan 2006–2010 (JPM, 2006), the focus on one of the key strategies to produce quality human capital for the country is the most important element and the main thrust of Arabic language teaching at primary school level (MOE, 2006). The conceptual framework of this study was adapted and modified based on Dick and Carey Model (2001) and the j-QAF-AQSHA Design Model, while the software development model was based on the ADDIE Design Model (Heinich et al., 1996).

The results of this study are expected to benefit all concerned in strengthening the teaching and learning of the Year One j-QAF programme in national primary schools. This study is expected to assist Malaysia's Ministry of Education in

software development and in further enhancing the quality of Arabic teaching in the j-QAF programme. Through the use of interactive media, the courseware developed can further improve pupils' ability to understand the content of the Arabic Language Implementation Expansion Module software by enhancing the teaching and learning process. The user-friendly presentation style as well as the attractive and exciting interface designs are also expected to foster, enhance, and stimulate students' interest in learning.

The purpose of this research is to develop and evaluate the Communicative Arabic Implementation Expansion Module of the j-QAF programme for Year One pupils in Malaysian national primary schools, using computer-aided teaching and learning (CATL). The software developed is a combination of audio, video, animation, hypertexts, and hypermedia. It is interactive, easy, exciting and is designed to help teachers and pupils in teaching and learning. The main focus of the study is to improve the capability, effectiveness, and quality of the software used by pupils in and out of school to develop quality Muslim human capital. Accordingly, this study is aimed at creating diverse effective and quality delivery methods in the context of implementing multimedia in the teaching and learning of Communicative Arabic Implementation Expansion Module of the j-QAF programme. Through these efforts, the study hopes to meet, at least in part, the requirements of the 'Education Transformation' initiative aimed at computer and ICT literacy among primary school students.

Specifically, the objectives of this research are as follows: (1) To design multimedia software for the Communicative Arabic Implementation Expansion Module of the j-QAF programme in accordance with the curriculum of national primary schools and by emphasising on the use of teaching aids; (2) To develop an interactive, easy, and exciting multimedia software for the Communicative Arabic Implementation Expansion Module of the j-QAF programme

to help teachers and pupils teach and learn effectively, respectively, in the classroom and to aid self-learning outside the classroom; (3) To evaluate the effectiveness of the multimedia software for the Communicative Arabic Implementation Expansion Module developed on the basis of usability and suitability for Year One *Jawi* remedial pupils in national primary schools.

Method

The research design chosen is a survey of teachers and experts on the software for the Communicative Arabic Implementation Expansion Module of the j-QAF programme. The survey examines the development process and the relevant courseware of the module by using the Macromedia Director MX authoring tool. This software module covers interactive teaching and learning for Year One j-QAF programme. The software was developed using the Macromedia Flash CS4 authoring tool by integrating the Adobe Photoshop CS4 software for graphics, Poser 7 Pro for the three-dimensional graphics, and the Al-Rassam program for writing the *Jawi* texts.

In the meantime, the evaluation of this multimedia software was formative and summative, using a questionnaire administered to three experts and 30 Year 1 pupils, assisted by the researchers and the j-QAF teachers. The data were analysed using SPSS version 11.5 for Windows.

Pilot Studies

Glesne and Peshkin (1992) stated that pilot studies need to be conducted before the actual study. The purpose of the pilot study is to learn about the research process, interview schedule, observation techniques, and evaluation of the software. The pilot study prepares the researchers for effective data collection and from the results of the pilot study, the researchers may revise his or her research plan, items or questions of 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 for building any software. It consisted of sets of interviews held with the following, j-QAF programme teachers, lecturers of the Institute of Teacher Education, Malaysia, and officers 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 software was actually implemented. It consisted of software evaluation questionnaire sets administered to the following j-QAF teachers, j-QAF experts and software experts.

Data Collection

The collected data were analysed using the Statistical Package for the Social Sciences (SPSS) version 11.5 for Windows. Descriptive statistics were used to obtain the percentage and mean scores based on the data acquired. For software evaluation and interpretation, the researcher used a five-point Likert scale, such as 1 = Strongly disagree, 2 = Disagree, 3 = Not quite agree, 4 = Agree, and 5 = Strongly agree.

Table 1 shows the scale, which was used as a guide to analyse the experts and pupils' responses to this software.

Table 1: Scale used to evaluate responses

Score	Level of Agreement
5	Strongly agree
4	Agree
3	Not quite agree
2	Disagree
1	Strongly disagree

Source: Hasnah (2006)

To assess the software's level of acceptance, Jamil (2002) score interpretation was used, where

a mean score between 1.00 and 2.33 indicated a low level of acceptance, a score of 2.34 to 3.66 indicated moderate agreements, and a score of 3.67 to 5.00 indicated a high level of acceptance. Table 2 shows the score interpretation used.

Table 2: Mean Score Interpretation

Mean Score	Mean Score Interpretation
1.00-2.33	Low
2.34	Average/Moderate
3.67-5.00	High

Source : Jamil (2002)

Data Analysis

Planning is crucial for software development. Careful planning and high commitment will produce interesting software and help achieve real objectives. Throughout the process of software development, the phases listed in the ADDIE Model (Rossett, 1987) were followed. The model consists of five important phases: software analysis, design, development, implementation, and software evaluation. The analysis phase was able to identify the research problem and find the root of the problem. This ensured that the instructional design would meet the requirements of real users. An examination of the objectives and contents of the software, activities, exercises as well as tests that would assess the students' understanding needed to be carried out repeatedly in the design phase. In this phase, the researchers also determined the information presentation method suitable for the topics and target users and designed the screens for the software. The evaluation aspect was also very important in ensuring the software developed conformed with the purpose, goal and the specifications determined. This required greater practice of the use of multimedia authoring software. Creativity ensures that the software developed has its own aesthetic values. Additionally, the designing of the software was also important in guiding the implementation process. Prior to software development, the storyboard and design were created. With careful initial planning this would simplify and expedite the development of the learning software.

Opening/Main Menu Screen

Multimedia presentation is communicative message to an audience. This will help the student remain focused on communication rather than getting side tracked by the complexities of computer technology (Simkins et al., 2002)

This is the first screen displayed when the user starts the software. It is known as the montage and uses animation to introduce the software to pupils; it also functions as the induction set. Multimedia elements such as a combination of colours, text, graphics, animation, and audio (sound/music) were also inserted to attract interest and motivate pupils to continue the learning process using this software. This is in accordance with the behaviourist and cognitivist theories that the researchers have attempted to apply in this software. To continue with the learning, pupils should click on the links provided.

The main menu screen displays the five menu options that users can select: Single Character *Jawi*, Syllabic *Jawi*, Arabic – Let's Learn Arabic, *Fardhu Ain* – Smart Solat, and *Fardhu Ain* – Let's Perform the Ablution. In order to choose the Communicative Arabic Implementation Expansion Module, the user needs to click on the 'Arabic – Let's Learn Arabic' menu. This has sub-menus that can be selected. In accordance with the constructivist learning theory, to begin learning, pupils should be able to select the menu options they want and do not have to proceed according to the sequence shown on the main menu. The main menu screen also has two navigation buttons for music control and to exit.

Introduction Screen (التعريف)

This screen clearly states the software/learning objectives before the presentation of learning contents. This gives the pupils a clear direction for browsing the software. The navigation buttons provided on the screen are for music control, help, return to the main menu, and exit/end.

Information Presentation/Communicative Arabic Implementation Expansion Module

Tutorial Screen (في المدرسة)



The information presentation screen offers information related to the topics (في المدرسة) from the Year One text book of the Communicative Arabic Implementation Expansion Module. The Information Presentation/Communicative Arabic Implementation Expansion Module Tutorial Screen comprises two sub-menus: the menu (في المدرسة) that contains information about a group of words related to school life in audio-visual format and the song/*nasyid* menu (الأغنية / الأناشيد) that contains three songs/*nasyid* related to numbers in Arabic, items at school, and speech. Graphic and audio presentations are displayed to familiarise pupils with words from school life more effectively. This screen also has navigation buttons for music control and to exit the software.

During this tutorial session, pupils will see pictures of items from school, listen to the correct pronunciation, and read related words/passages. Pupils are free to repeat words they have read or heard during this session because no time limit is specified. A button in the form of an open book allows students to read the words related to the pictures displayed. Clicking on the speaker button allows students to listen to the pronunciation of the words. The left and right arrow buttons are to move forward or backward.

Various Language Skills Screen

This screen displays four language skill activities, namely (a) listening; (b) listening

and reading; (c) reading and; (d) writing. The purpose of developing this screen is to train and familiarise students with several language skills that they can apply independently. These activities are presented in interactive graphic forms as well as combined with animation, audio, and colourful visuals. These combinations can increase students' understanding and retention of topics learnt. There are four sub-menus on this screen: (1) Listening Skills (مهارة الاستماع); (2) Listening and Reading Skills (مهارة الاستماع والقراءة); (3) Reading Skills (مهارة القراءة) and (4) Writing Skills (مهارة الكتابة).



On each of the various language skills screens, there are navigation options that pupils can use. These include the 'Back' (رجوع), 'Repeat' (إعادة), and 'Exit' (خروج) options. The 'Back' (رجوع) option allows pupils to return to the Various Language Skills screen. The 'Repeat' (إعادة) option allows them to repeat the practice of relevant skills. The 'Exit' (خروج) option enables pupils to directly leave or end the software.

Listening Skills Activity

The word listening is defined as making an effort to hear something; to pay attention or heed. It is different from hearing, which is a physiology process of the ear absorbing sound waves and transferring them along neural pathways to part of the brain. Hearing is necessary for listening, but listening is much more than processing the sound. Someone may hear very well but be a very poor listener (Downs, 2008).

Therefore, during the listening skill activity, pupils have to listen carefully and understand the audio for words learnt in the tutorial session. To pick the listening option, pupils click on (1) مهارة الاستماع. They can then start the session by clicking on the ابدأ button. They can repeat the session if they are dissatisfied with their score, return to the main menu, or exit from the software by clicking on the console displaying three buttons: إعادة (Repeat), رجوع (Back), and خروج (Exit).



Pupils must match the right picture with the audio they hear. In this session, there are no words on the screen that pupils can read. If the audio is unclear or cannot be understood, pupils can listen again by clicking on the speaker icon.

The length of time allocated for this session is 60 seconds. If pupils cannot complete this session within this time limit, a screen appears with the following reminder: 'عفو! الوقت لا ينتظرك.. حاول مرة ثانية' (Sorry, time is up. Please try again.) Pupils can try again by clicking on the إعادة button, until they become proficient. If pupils succeed in completing this session, the next screen appears, congratulating them and displaying the total points obtained.



Listening and Reading Skills Activity

To move on to the listening and reading skills activity, pupils need to click on the رجوع (Back) button to return to the language skill activity option menu. After clicking on the button, pupils will be taken to the screen. To go through the listening and reading skills activity, pupils need to click on the (2) مهارة الاستماع والقراءة menu.



Reading Skills Activity

To enter this activity session, pupils need to return to the various language skills option menu. After clicking on the (3) مهارة القراءة option, pupils can begin the activity by clicking on the ابدأ button. Pupils will then be taken to the reading skill activity. This session has no audio. Pupils only need to read the questions that appear, understand them, and click on the correct answer. Pupils cannot move to the next question without answering a question correctly. The time frame is again 60 seconds. If pupils fail to complete the session within the time given, they have to try again. If pupils succeed in completing the session in the time provided, other screens appear.



Writing Skills Activity

To begin the writing skills activity session, pupils need to return to the various language skills option menu. On clicking the (4) مهارة الكتابة option, pupils will be taken to the available screen. After the ابدأ button is clicked, pupils will be taken to the next screen.

In this session, pupils are required to provide the correct words for the pictures that appear on the screen. As the developer of the software does not have the capability to apply touch screen technology to test pupils' ability to write with a pen on the computer screen, pupils can write by using a keyboard. Further, if touch screen technology is used, the use of the software will be limited since computers with touch screen technology are more expensive.

Unlike the case of the other activities, the time allocated to pupils for this session is 120 seconds. This time period is twice as long as those for the other activities because pupils need sufficient time to find the letters to be clicked and arrange them into words that accurately depict the pictures on screen. Pupils cannot move on to the next question until the one on the screen is answered correctly. If pupils can answer all the questions in the time provided, the next screen appears. However, if they fail to answer within the time frame, other screens appear.

Mind Test Screen

There are many different types of test. However, psychometric tests are basically tools used for measuring the mind (Carter et al., 2012)



Meanwhile, the mind test screen is one of the learning activities that can be explored by pupils after they understand the lesson they have gone through. The mind test proposed in this software is in the form of games.

Results and Discussion

This j-QAF software for the Communicative Arabic Implementation Expansion Module contained five main screens, namely (a) Opening/Main Menu; (b) Introduction; (c) Information Presentation/Tutorial; (d) Various Language Skills, and (e) Mind Test. The subsequent sections briefly explain and present the screens contained in this software.

Hopefully, this study will help pupils to understand each Communicative Arabic Implementation Expansion Module more easily and effectively. In another word, this software can also be used by teachers as an alternative teaching aid. The combination of various media in this software also made the teaching and learning process more interesting and meaningful.

Conclusion

The role of teachers in learning in this age of technology is very challenging. Teachers need to adapt according to the current technological development so that their teaching is interesting

and stimulating to learners. Nowadays, Malaysia education system has received a new boost and is now capable of developing valuable human capital with the government's emphasis on enhancing the quality of education. Starting at the primary, secondary, and high school levels, the use of the latest technology is emphasised. This, in turn, enhances the use of computers and educational software in teaching and learning in the classroom. Presently, the use of computers and CATL are believed to have significant implications for the country's education system. Hence, the development of the CATL software for the Communicative Arabic module has successfully achieved the stated aims and objectives of the study. There were a few weaknesses identified, but these can be improved upon. Moreover, the software has its own distinct advantages. Improvements have also been implemented in the evaluation process by experts in the j-QAF-Arabic module and software development. Hence, the development of this software is expected to alleviate some challenges in teaching aid material shortage for Year One j-QAF teachers, specifically for those teaching Arabic. The software can make teaching and learning more effective, interesting, and exciting. In addition, it is hoped that the software will boost the development of more CATL software to overcome the dearth of interactive software for the j-QAF programme.

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