

Using Facebook® as Iterative Evaluation Tool for the Design and Development of a Virtual Learning Resource Platform for Malaysian Primary Schools

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Abstract

The emergence of online educational courseware serves as an important addition to the teaching and learning aids of the digital generation. It is increasingly becoming the focus of researchers in designing and developing new and up-to-date educational aids that cater to the learning needs of 21st century learners as well as keeping in-line with the transformation of latest technologies. This chapter features a virtual Arabic learning tool prototype specifically designed for primary schools learners in Malaysia in providing an interactive and attractive learning aid in an online open-source platform. The innovative process of design and development begun with the literature analysis of 3 theories based on the work of Nation (2003), Prensky (2001) and Mayer (2001). The design and development of this game-based learning prototype are modeled on the methods and approaches of design and development research (Richey & Klein, 2007) or formerly known as developmental research (Richey, Klein & Nelson, 2004). The adapted method is also known as designed case (Reigeluth & Frick, 1999), design-based research (Reeves, 2006 & Herrington, et. al, 2007), formative research (Nieveen, 2007), and design research (Bannan-Ritland, 2003; Van der Akker, 2007). The 'design principles' are adapted from a study on the design and development of an online Arabic vocabulary learning games prototype among pre-university learners in IIUM by Muhammad Sabri (2011). This Arabic virtual learning tool prototype also enables teachers and students access to additional Arabic language learning aids that complement traditional learning methods. It facilitates Arabic learning enhancement through a compendium and a variety of open-sources learning tools such as the followings : a) E-book of Arabic text books, including story books for extra reading, b) Educational Arabic games, c) Audio learning aids (MP 3) in Arabic, d) Visual learning aids (MP 4) in Arabic, e) Online dictionary and translator for Arabic, f) Online chat-box for virtual discussion and synchronous learning, g) Arabic keyboard for PC without Arabic letters stickers, and h) Links of various websites in learning Arabic for children. The prototype provides a new learning experience for students who have been through traditional Arabic teaching and learning methods allowing engagement with an attractive, interesting, and interactive virtual learning environment. The prototype is still in its design and development phase and the feedbacks from teachers and users were analyzed via the famous online social networking website, Facebook ®. The URL for this prototype is <http://ezarabic.net/v1/>. This prototype won a bronze medal award in 2012 International Islamic University Malaysia Research, Invention, and Innovation Exhibition (IRIIE 2012) which was organised on 21-22 February 2012.

Key Words: Design and development, e-learning games, virtual learning tools, design principles, instructional design model (ID).

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Introduction

Teaching and learning through multimedia is now among the most celebrated learning aids and tools throughout the world. The term ‘multimedia’ as defined by Mayer (2001) is the presentation of materials using both words (verbal) and pictures (pictorial). Integrating the element of multimedia in a learning process would simply means learning from words and pictures (Mayer, 2001). The full view of multimedia learning flow as discussed by Mayer (2001) is shown in the following Figure 1.0:

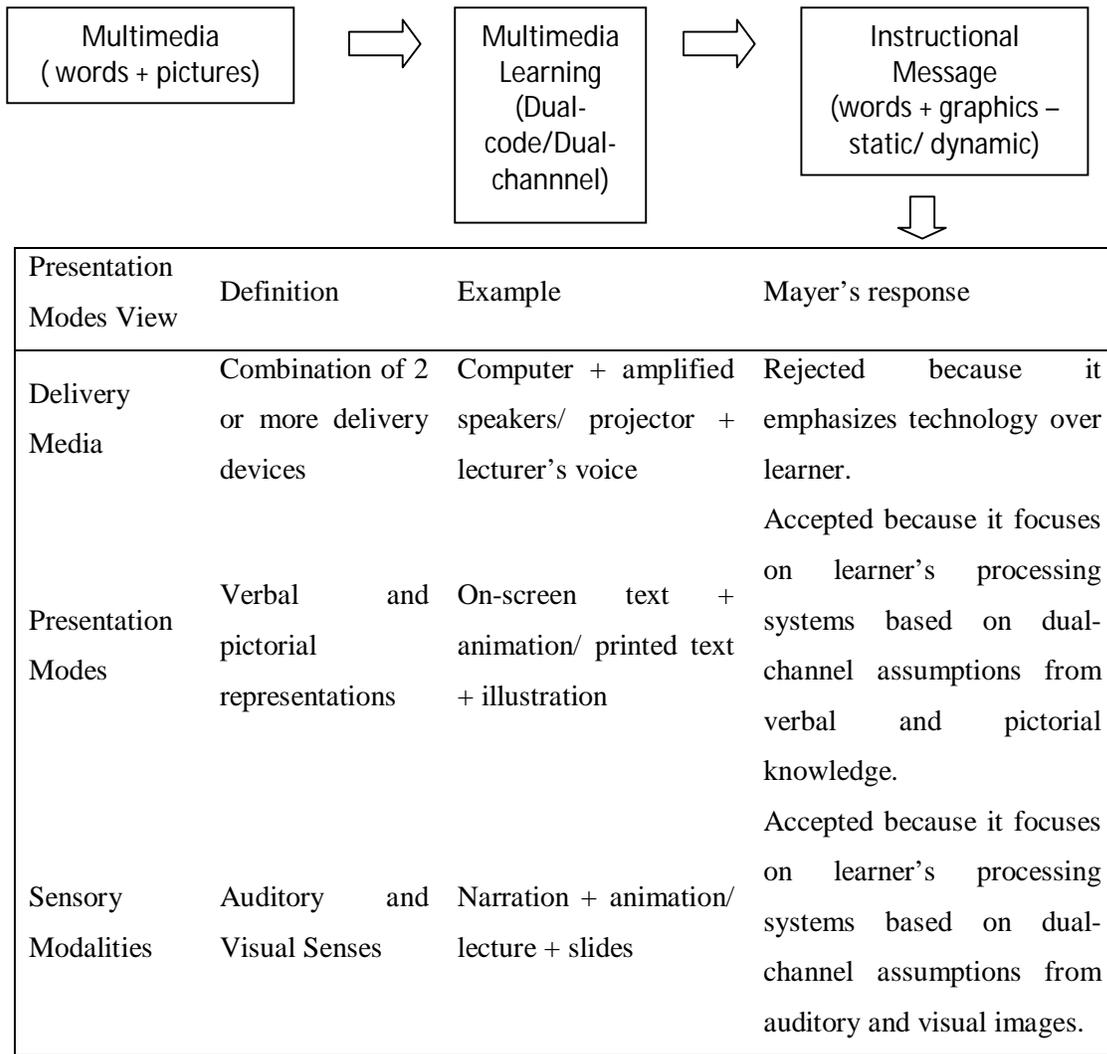


Figure 1.0: Multimedia learning based on Mayer (2001)

The potential use of multimedia learning specifically in texts and images as initially elaborated by Mayer (2001) was further expanded by other researchers adding on other characteristics such as sounds in facilitating and exploring language instructions (Bush, 2007), exploiting the mass delivery of World Wide Web (WWW) to enhance learning process and outcome (Joliffe, Ritter & Stevens, 2001), facilitating modified graphics for learning language vocabularies (Salsbury, 2006; Bush, 2007) implementing various technology-enhanced syllabus in enhancing the effects on language learning such as electronic workbook, digitalized video, interactive listening comprehension quizzes, online reading materials and virtual community (Gill, 2006), and edutainment games that consist of many mediums such as sound, animation, video, text and images (Zarina & Hanafizan, 2005).

Thus, the term ‘multimedia’ and ‘technology’ are composed of many categories in addition to words and pictures due to their dramatic increase and expansion over the past decade in second language learning in the United States (Gill, 2006).

Multimedia Learning in Arabic Language

Ditters (2006) emphasized on the necessity for the ‘Arabization’ of machinery technological production in language teaching and learning as it is currently dominated by the American-English language, be it in software or hardware. Mohd Feham (2006) claims that the Arabic language is merely following the trend in using instructional technology rather than finding and creating new invention and innovation. The use of instructional technology such as educational software and courseware are limited due to several reasons as observed by Zawawi (2008) in his investigation on the use of instructional teaching aids in Arabic language classrooms among selected Malaysian Secondary Religious School. His study found that the application of computer-based and web-based instructional aids is of low frequency. The teachers preferred using traditional and non-computer instructional aides primarily due to convenience as they do not require additional time and effort in preparing teaching aids. Furthermore, the majority of Arabic language teachers are incompetent in computer skills and lacking knowledge of courseware in teaching process especially among the veteran educators, the difficulties in obtaining Arabic courseware (Zawawi, 2008) and the incapability of handling a computer (Mohd Feham & Isarji, 2000).

In addition, the nature of the Arabic language has contributed to the scarcity of computer instructional aids due to its writing system that differs from the Latin-based writing systems. The integration of Arabic materials and contents into web-based environment should be handled carefully because the right-to-left writing system requires specially enabled Arabic software in stages of composing, editing, and

implementing (Mohd Feham, 2006). The attempt to apply new CALL technology in Arabic environment especially in Malaysia is still at the early stages and requires extensive cooperation between Arabic learning content experts and instructional designers to expedite and improve its development. The instructional research in this language is still very limited except for notable ones by Alish (1995) and Mohd Feham (2006). The low frequency in using computer-based or web-based instructional aids in teaching and learning Arabic is found to be caused by reasons such as : (a) preference in using traditional and non-computer instructional aids among teachers, (b) poor computer literacy especially among the veteran educators, (Zawawi, 2008), (c) the incapability of handling a computer (Mohd Feham & Isarji, 2000) and (d) the lack of computer training (Ashinida, Afendi & Mohd Shabri, 2004).

The teaching and learning of Arabic language in Malaysia is still in dire needs for improvement if the rapid evolution in existing and advanced technology of the 21st century education are taken into account. The needs and gaps are obvious especially when softwares and coursewares developed for other subjects such as English, Science and Mathematics are scrutinised. Arabic learning is more textbooks and workbooks oriented and mostly supplemented by additional exercises. The rapid development of ICT in Malaysia, clearly visible through the emergence of a variety of computers and sophisticated gadgets such as laptops, notebooks, netbooks, e-book, podcasting, tablet PCs and smart phones, signals the necessity for the enhancement of Arabic teaching materials as to become more attractive and to slowly break away from sole dependency on the use of textbooks and the blackboard in order to cater to multi-skilled 21st century learners (Azman, 2012).

Employing Design and Development Research (Ddr) and Rapid Prototyping Model

The employment of design and development research (DDR) methodology as the selected approach is justified in this study by its pragmatism in testing the theory and validating the practicality. Besides, it is described as a way to establish new procedures, techniques and tools based on specific needs analysis (Richey & Klein, 2007). This methodology is also formerly known as developmental research (Richey, Klein & Nelson, 2004), designed case (Reigeluth & Frick, 1999), design-based research (Reeves, 2006 & Herrington, et. al, 2007), formative research (Nieveen, 2007), and design research (Bannan-Ritland, 2003; Van der Akker, 2007). Although many terms have been introduced to explain and describe this research method within its similarities and differences, it was first proposed by Brown and Collins in 1992 as an extension to other educational research methods (Wang & Hannafin, 2005) and to test theory and validate its practices (Richey & Klein, 2007).

It is also employed to design and develop an intervention (such as programs, teaching-learning strategies and materials, products and systems) with the aim to solve a complex educational problem and to advance our knowledge on the characteristics of these interventions and the processes to design and develop them (Plomp, 2007, p.12). Wang and Hannafin (2005) define it “as a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories” (p. 6). Table 1.0 illustrates the pragmatic elements of a design and development research that have been adapted in this study:

Table 1.0: Elements of a design and development research

Goals	Dual goals – theory and practice
Theory development	Multidisciplinary and interdisciplinary
Method	Mixed modes
Process	Cyclical, iterative, teamwork
Resources	Extensive literature, collaboration, partnership, various research technologies
Outcomes	Improved theory, product, design principles

Adapted from Nor Aziah (2007)

This learning prototype uses the rapid prototyping model of instructional design model for its design and development process, as it is still in the early stage. The comments and suggestions prior to design and development are gathered from various users via open Facebook social networking website. Almost 13 pages of comments and suggestions were gathered in order to revise the design and development process of this prototype. The phases of design and development are shown below in Figure 2.0:

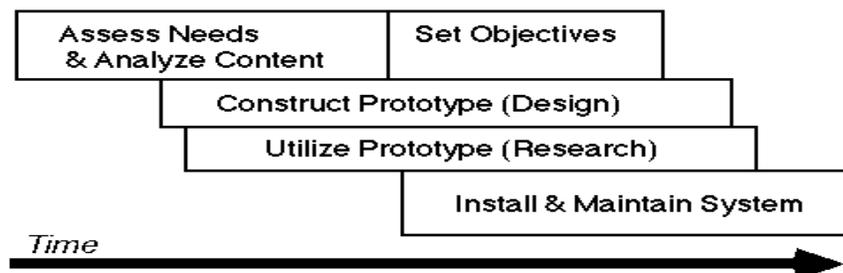


Figure 2.0: Adapted Model of Rapid Prototyping (Tripp, S., & Bichelmeyer, B. [1990])

Ez-Arabic for Children as Virtual Learning Platform: Design and Development Process

The EZ-Arabic prototype is initially designed as a virtual learning platform and a tool for learning Arabic, especially for children learners of Standard 1 to Standard 6 from Malaysian primary schools. It is proposed as an alternative supplementing reference for the traditional textbook as initiated by the Malaysian Ministry of Education in its recent workshop in transforming the hard copy textbook into digital versions (Azman, 2012).

This virtual platform supports the learners via various multimedia support files such as pictures, sounds and videos in order to enhance learners' interest and motivation towards learning Arabic. This expanded Arabic virtual learning tool prototype enables teachers and students access to additional Arabic language learning aids, and complements traditional learning methods. It facilitates Arabic learning enhancement through a compendium and a variety of open-sources learning tools such as the followings : a) E-book of Arabic text books, including story books for extra reading, b) Educational Arabic games, c) Audio learning aids (MP 3) in Arabic, d) Visual learning aids (MP 4) in Arabic, e) Online dictionary and translator for Arabic, f) Online chat-box for virtual discussion and synchronous learning, g) Arabic keyboard for PC without Arabic letters stickers, and h) Links of various websites in learning Arabic for children.

The details of the design and development process and phases of EZ-Arabic are as shown below in Table 2.0:

Table 2.0: Design and Development Process and Phases of EZ-Arabic

Phase(s)	Process(es)
Assess needs and analyse contents	<ul style="list-style-type: none"> • Analyse needs of learners • Analyse needs of institutions • Analyse learning contents • Analyse existing or other online courseware
Set objectives	<ul style="list-style-type: none"> • Set objectives of language learning • Set objectives of language skills • Design principles
Construct Prototype	<ul style="list-style-type: none"> • Collaborative works and partnership • Iterative, cyclic and teamwork • Using various research technologies
Utilize Prototype	<ul style="list-style-type: none"> • Conduct small user testing sessions • Conduct online user testing sessions via Facebook ® • Gather comments and feedbacks
Install and Maintain System	<ul style="list-style-type: none"> • Review process of design and development • Continuous improvement of prototype

Gathering Feedbacks and Comments from Users for Iterative Evaluation of Design and Development

The process of conducting online user testing sessions was done via Facebook®, an online social network. The selection of Facebook is due to the fact that it is a famous and widely used social network and to gather immediate comment and feedback from online users. Furthermore, a user can read previously posted comments and feedbacks from other users before proceeding with their own point of views. The online survey was posted on February 15, 2012 until the last comment received on March 1, 2012 (2 weeks). A total of 55 qualitative responses were gathered and 48 users clicked on the LIKE button. The comments analysed are divided into main thematic and sub-thematic comments. The screenshot of the posted online survey via Facebook® is as shown below in Figure 3.0:



Figure 3.0: Online survey via Facebook® social network website

The survey was posted in Malay in order to gather as much comments and feedbacks as possible from various backgrounds of respondents. The quotation of the posted question is as the following:

“Assalamualaikum. Mohon para pakar, penyelidik, pendidik dan pelajar bahasa Arab atau sesiapa sahaja yang meminati pengajaran dan pembelajaran bahasa Arab untuk memberi komentar dan cadangan tentang laman belajar bahasa Arab ini. Ia merupakan hasil inovasi kumpulan penyelidik yang diketuai Dr. Muhammad Sabri Sahrir, Mohd Firdaus Yahaya dan Mohd Shahrizal Nasir.

Semua cadangan ke arah penambahbaikan laman belajar ini amat dialu-alukan.

Jazakumu Llah Khayr al-Jazak. LINK : <http://ezarabic.net/v1/> ”.

Translation in English:” Assalamualaikum. We are seeking for comments and suggestions to improve this educational Arabic language learning website from experts, researchers, educators and anybody who are interested in teaching and learning Arabic. This product is an innovation of a research team lead by Dr. Muhammad Sabri Sahrir, Mohd Firdaus Yahaya dan Mohd Shahrizal Nasir. All suggestions for further improvement are fully welcomed. JazakumuLlah Khayr al-Jazak. LINK : <http://ezarabic.net/v1/>”.

Samples of Screenshots from Ez-Arabic: A Virtual Learning Resource Platform

Below are some of the main screenshots from EZ-Arabic as a virtual learning platform with justification of features and functions, such as shown below in Figure 4.0 and Figure 5.0:



Figure 4.0: Screenshots of Online Arabic Vocabulary Learning Website

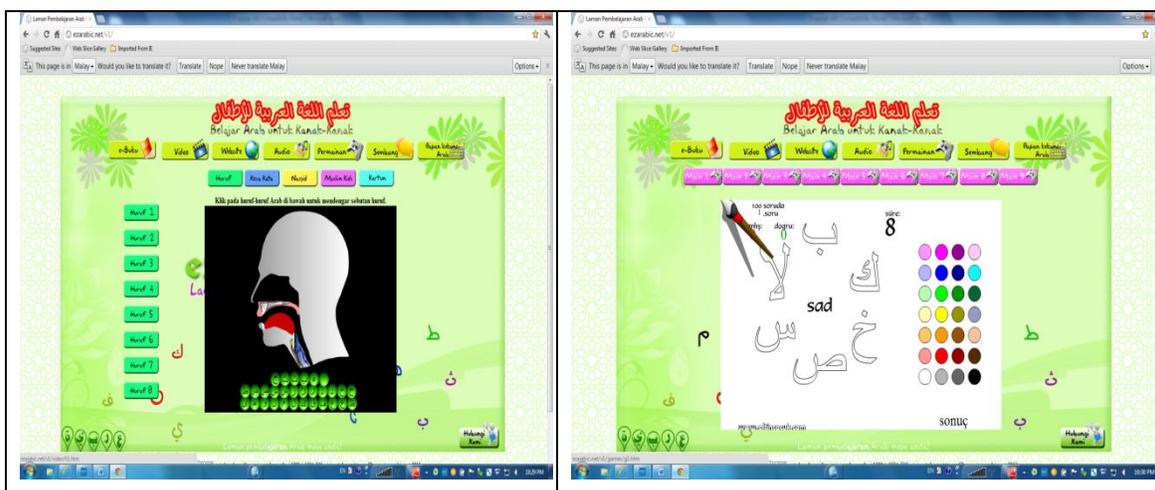


Figure 5.0: Learning Arabic via Videos and Games in EZ-Arabic

This virtual learning platform is designed to facilitate Arabic learning enhancement through a compendium and a variety of open-sources of learning tools such as the followings:

- a) E-book of Arabic text books, including story books for extra reading,
- b) Educational Arabic games,
- c) Audio learning aids (MP 3) in Arabic,
- d) Visual learning aids (MP 4) in Arabic,
- e) Online dictionary and translator for Arabic,
- f) Online chat-box for virtual discussion and synchronous learning,
- g) Arabic keyboard for PC without Arabic letters stickers, and
- h) Links of various websites in learning Arabic for children.

Discussions of Results and Findings

Below are among the comments and suggestions from users of EZ Arabic as gathered through Facebook ®. The main themes shown below were identified after the transcripts of user's feedbacks were analysed. The comments will be used for further improvement of the design and development of this virtual learning prototype. The comments and suggestions from users towards the production of an interesting learning virtual prototype in learning Arabic vocabulary were analysed and grouped accordingly as shown below in Table 3.0:

Table 3.0: Main themes from comments and suggestions

No	Comments and feedbacks
1	<p>INTERFACE</p> <p>Improve user-friendly interface. Make e-book bigger Language instructions need to be bilingual Some buttons such as ‘contact us’ is suggested to be placed at the top It seems beautiful and cute, but with a little bit of ‘cliché’ in the design Make the interface not so formal but interesting Make it more colourful for children</p>
2	<p>SUPPORT</p> <p>Some audios and videos need to be improved Need for sounds for Nasyid section Need to add instructions on how to install Arabic characters in Windows® Need to add E-Jawi Include more Arabic videos and audios Suggestions of various additional links of e-qamus, videos and audios</p>
3	<p>CHALLENGE</p> <p>The use of videos from Youtube ® may be distracting because of advertisements Design own videos and upload them into Youtube ® Some broken links and sounds</p>
4	<p>SUITABILITY</p> <p>Easy access and suitable for children The video should be using standard Arabic, not colloquial one Some illustrations of Arabic words need to be corrected and improved The language instructions in buttons should be bilingual</p>
5	<p>EASE OF USE</p> <p>Can be used in learning at home Various resources of learning tools Suitable for children</p>
6	<p>VALUE-ADD AND VARIETY</p> <p>Should further design for I-Pad in mobile learning Can be further designed for adults as well Need to add pictorial dictionary The videos need for subtitles. Need to add references of various syllabus Change from PDF files to GIF for e-book for faster loading time Technical suggestions for improving quality of videos</p>
7	<p>LEARNING CONTENT</p> <p>Need to be aligned with standard syllabus of Arabic in Ministry of Education Suitable for children and can be extended for adults Suggestion for designing the same prototype for secondary schools The level of contents should be suitable for level of children Can be extended by collaborative research with Division of Curriculum Development in Ministry of Education</p>

The findings showed that the participants have positive responses towards the potential of EZ-Arabic in enhancing the learning of Arabic language among learners in Malaysian primary schools. In addition, the respondents put forward several suggestions for further improvement of this virtual prototype in the future.

Current Issues And Challenges Faced By Researchers

EZ-Arabic as a virtual learning platform in learning Arabic for primary schools in Malaysia is still in its ongoing design and development process. Among the major challenges in completing this project is in developing the learning contents to be embedded in this virtual platform instead of using the existing ones that may be subjected to issues of copyright. Furthermore, it may require extra time, efforts and financial implications on the researchers to produce a ready to use final prototype and it requires from time to time management and updating by the web administrator.

Proposed Solutions and Recommendations

In dealing with the issues and challenges for the design and development of this virtual learning resource platform, several solutions and recommendations are proposed in this chapter as listed below:

- a) The interface of this virtual learning platform may be changed from time to time in order to avoid boredom among children learners or users upon seeing the same features, colours and graphics.
- b) Various virtual learning contents can be designed and developed in order to produce more challenging and interesting Arabic learning contents.
- c) The learning contents of Arabic games can also be changed and updated from time to time in order to avoid boredom among learners viewing the same repetition of graphics, videos and games.
- d) Attractive animations, graphics, colours and sounds can be added to the online games sections as long as it has educational and functional purposes without causing distractions to learners or users.
- e) Additional characteristics in this games prototype could be enhanced with more advanced technical applications such as zoom in/zoom out, attractive animation, graphics and music that were constructed for the purpose of educational learning.
- f) The educators should search for more sophisticated software or author ware that are able to develop better virtual learning platform particularly the ones that can work conveniently with Arabic language fonts and features.

- g) The mutual and cooperative teamwork between instructional designers, computer programmers and experts with educators are the key success of design and development of more practical, attractive and effective Arabic virtual learning platform with the financial support from learning institutions or ministry of education for the high production process cost.
- h) Other learning institutions may collaborate and benefit from the design and development framework of this project as it could be adapted to their learning needs and environment.

Conclusion

This paper discussed and presented the attempts and efforts to develop an interactive Arabic learning programme by integrating learning contents from several traditional and contemporary text books with selected open source web-based applications as a theoretical and practical sample of proposed design framework. This design framework may be useful for designing interactive Arabic e-learning tools in other educational settings and environment as it contributed towards increasing the motivation and positive perception among non-native speakers in learning Arabic.

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