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THE EFFECTIVENESS OF ANIMATED TRANSITION IN
QUR'ANIC BRAILLE COURSEWARE
DESIGN

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ABSTRACT

This research aimed to evaluate the courseware effectiveness of animated transition and users satisfaction in using developed Qur'anic Braille courseware (QBC) prototypes namely QBC(animation) and QBC(graphic). The courseware was developed by using ADDIE model. The mixed-method approach were used to explore participants views and background with the intention of using this information to develop and test the instrument with a sample from a population. Qualitative methodology was conducted to identify the Islamic education teachers' background in the aspect of Qur'anic Braille knowledge and identifying users' satisfaction regarding the design and development of the courseware whilst quantitative method was used to evaluate the courseware effectiveness. Five in-service teachers were interviewed and the total of 26 pre-service teachers were randomly selected as the samples in the true experimental study of pre-test and post-test. The total of 26 pre-service teachers were selected based on the criteria required and were divided into two groups respectively using two different courseware. The data were in the form of achievement scores which were obtained in the pre-test and post-test. The gathered data were analysed statistically using t-test analysis to see the significant difference in the courseware effectiveness. The results indicated that QBC(animation) is more effective to be used for memorising than QBC(graphic) and respondents showed more satisfaction with QBC(animation) presentation.



KEBERKESANAN ANIMASI PERALIHAN DALAM REKA BENTUK PERISIAN QUR'AN BRAILLE

ABSTRAK

Kajian ini bertujuan menilai keberkesanan perisian Qur'an Braille yang mengaplikasikan animasi peralihan serta mengenal pasti kepuasan pengguna dalam menggunakan prototaip Qur'an Braille koswer iaitu QBC(animasi) & QBC(grafik). Koswer tersebut dibangunkan dengan berpandukan model ADDIE. Pendekatan kaedah gabungan (mixed-method) adalah untuk meneroka pandangan responden dan latar belakang bertujuan menggunakan maklumat ini untuk membangunkan dan menguji instrumen daripada sampel populasi kajian. Kaedah kualitatif yang dijalankan adalah untuk mengenalpasti latar belakang dalam aspek pengetahuan Guru Pendidikan Islam terhadap Qur'an Braille dan juga kepuasan penggunaan terhadap koswer yang telah di reka bentuk dan dibangunkan untuk kegunaan guru pra perkhidmatan. Manakala, kaedah kuantitatif digunakan dalam menilai keberkesanan perisian yang telah dibangunkan. Seramai lima orang guru dalam perkhidmatan telah ditemuduga dan seramai 26 orang guru pra-perkhidmatan telah dipilih secara rawak dalam kajian eksperimen sebenar ujian pra dan ujian pos. Seramai 26 orang guru pra-perkhidmatan dipilih berdasarkan kriteria yang diperlukan dan telah dibahagikan kepada dua kumpulan masing-masing menggunakan dua perisian yang berbeza. Data adalah dalam bentuk pencapaian skor ujian yang diperoleh daripada ujian pra dan ujian pasca bagi kedua-dua kumpulan dan data telah dianalisis secara statistik dengan menggunakan kaedah analisis ujian-t untuk melihat keberkesanan perisian yang telah dibangunkan. Hasilnya menunjukkan QBC(animasi) adalah lebih berkesan untuk digunakan berbanding QBC(grafik) dan responden adalah lebih cenderung dalam menggunakan QBC(animasi) serta berpuas hati dengan persembahan QBC(animasi) tersebut.



TABLE OF CONTENTS

	Pages
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
ABSTRAK	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	xi
LIST OF TABLES	xiii
LIST OF APPENDICES	xiv
LIST OF ABBREVIATIONS	xv
CHAPTER 1 INTRODUCTION	1
1.1 Introduction	1
1.2 Research Background	4
1.3 Problem Statement	7
1.4 Research Questions	10
1.5 Research Objectives	10
1.6 Research Significant	11
1.7 Research Scope	12
1.8 Initial Study	14
1.9 Limitation of the Research	15
1.10 Theoretical Research Framework	15



1.11 Conceptual Research Framework	20
1.12 Operational Definition	22
1.12.1 Courseware	22
1.12.2 Braille	22
1.12.3 Qur'anic Braille	23
1.12.4 Special Education	23
1.12.5 Animation	23
1.12.6 Graphics	24
1.12.7 Perkins Brailier	25
1.12.8 Embosser	25
1.13 Structure of the Thesis	25
1.14 Summary	26

CHAPTER 2 LITERATURE REVIEW 28

2.1 Introduction	28
2.2 Research Theory	29
2.2.1 Cognitive Theory in Multimedia Learning	30
2.3 Multimedia in Education	37
2.4 Integrating Multimedia into Teaching Technology	39
2.4.1 Courseware	41
2.5 Graphic and Animation	42
2.5.1 Graphic Advantages in Information Presentation	43
2.5.2 Animation Advantages in Information Presentation	46

2.5.3 Animated Transitions in User Interface	48
2.6 Animated Presentation Principles in Module's Development	51
2.7 Braille and the History of Development	54
2.7.1 Braille Invention and Technology	56
2.7.2 Qur'anic Braille Education in Malaysia	61
2.7.3 Teachers' Knowledge on Qur'anic Braille Education	64
2.8 Summary	65
CHAPTER 3 METHODOLOGY	67
3.1 Introduction	67
3.2 Courseware Development Methodology	68
3.3 Implementation of Animation Principles and Techniques for Courseware Presentation	70
3.3.1 Principles of Animated Presentation	71
3.3.2 Animation Technique for Courseware Presentation	73
3.4 Research Design	78
3.4.1 Qualitative Approach	78
3.4.2 Quantitative Approach	80
3.5 Location, Population and Sample	82
3.6 Student Achievement on Pre-Test Score	84
3.7 Research Procedure	87
3.8 Instrumentations	89
3.8.1 Interview	89

3.8.2 Courseware	90
3.8.3 Assessment Test	91
3.8.4 Open-ended Questionnaire	92
3.9 Pilot study	92
3.10 Summary	94

CHAPTER 4 PRODUCT DESIGN AND DEVELOPMENT 95

4.1 Introduction	95
4.2 Instructional Design and Technology	96
4.3 Development Phase	98
4.3.1 Analysis	100
4.3.2 Design	102
4.3.3 Development	118
4.3.4 Implementation	121
4.3.5 Evaluation	121
4.4 Project Outcome	123
4.5 Summary	132

CHAPTER 5 ANALYSIS AND FINDINGS 133

5.1 Introduction	133
5.2 Data Analysis	134
5.3 Qualitative Data Findings	135
5.4 Quantitative Data Findings	146



5.5 Summary	149
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CHAPTER 6 DISCUSSION AND CONCLUSION **151**

6.1 Introduction	151
6.2 Discussion from the First Research Question	153
6.3 Discussion from the Second Research Question	154
6.4 Discussion from the Third Research Question	156
6.5 Discussion from the Fourth Research Question	158
6.6 Recommendations for Future Work	159
6.7 Contribution of the Research	160
6.8 Summary	164



REFERENCES **165**

APPENDICES **174**



LIST OF FIGURES

Figure No.	Pages
1.1. Braille Code Cell	5
1.2. Cognitive Theory of Multimedia Learning	17
1.3. Theoretical Framework on Qur'anic Braille Courseware	18
1.4. Conceptual Research Framework	20
2.1. Learning Process of Memorising by Gagné	33
2.2. Five Cognitive Processes in Multimedia Learning by Mayer, 2001	37
2.3. The Form of Information Presentation	44
2.4. Stylus and Slate	57
2.5. Embosser	58
2.6. Smart Iqra' Courseware	60
2.7. eKodBrailleBM Web Portal	61
3.1. Principles of Animated Presentation	71
3.2. Series of on(rollover) Timeline	75
3.3. On(rollover) Work Environment	76
3.4. On(rollout) Work Environment	76
3.5. Series of on(release) Timeline	77
3.6. On(release) Work Environment	77
3.7. Courseware Effectiveness Framework	82
4.1. Instructional Design Model	98

4.2.	Flowchart for Courseware Usage	104
4.3.	Storyboard 1	106
4.4.	Storyboard 2	107
4.5.	Storyboard 3	108
4.6.	Storyboard 4	109
4.7.	Text Used in the Courseware	112
4.8.	Initial Graphic Design and Layout	116
4.9.	Finalised of Graphic Design and Layout	116
4.10.	The interface of Main Menu Screen	124
4.11.	' <i>Pengenalan</i> ' Page	125
4.12.	Interface of ' <i>Alif – Ya</i> ' Page	126
4.13.	'On Rollover' button Interface	127
4.14.	'On Click' Button Interface	127
4.15.	' <i>Tanda Bacaan</i> ' Page	128
4.16.	'On Rollover' Button in ' <i>Tanda Bacaan</i> ' Page	128
4.17.	'On Click' Button Interface on ' <i>Tanda Bacaan</i> '	129
4.18.	Interface of the ' <i>Alif-Ya</i> ' Without Animation	130
4.19.	' <i>Titik Braille</i> ' Page of the ' <i>Alif-Ya</i> ' Button	130
4.20.	Interface of the ' <i>Tanda Bacaan</i> ' Without Animation	131
4.21.	' <i>Titik Braille</i> ' Page of the ' <i>Tanda Bacaan</i> ' Buttons	131
5.1.	Initial Graphic Design and Layout	142
5.2.	Finalised of Graphic Design and Layout	142
5.3.	Pre-Test and Post-Test Achievement Score in Bar Graph	148
6.1.	Finalised of Graphic Design and Layout	154



LIST OF TABLES

Table No.		Pages
2.1	Special Education School in Malaysia	63
3.1	Categories and Range of Achievement Score	85
3.2	Respondents' Pre-test Achievement Score	85
3.3	T-Test Result of the Pre-test Score	86
3.4	Time Taken in Conducting the Testing	89
4.1	Background Song Used in the Courseware	113
4.2	Button Sound	114
4.3	Software Description and Features	119
4.4	Summary of ADDIE Model Components and Subcomponent	122
5.1	Analysis on Courseware Satisfaction	144
5.2	Users' Satisfaction Feedback	145
5.3	Overall Achievement Score	147
5.4	Frequency and Percentage of Pre-test and Post-test	148
5.5	Independent T-Test of Post-Test Analysis	149





LIST OF APPENDICES

- A Interview of Semi-Structured Question
- B Assessment Test
- C Open-Ended Question
- D Student Verification for Conducting Research
- E Application Letter for Conducting Research
- F Example of Script in Swish



LIST OF ABBREVIATIONS

ADDIE	Analysis, Design, Development, Implementation, Evaluation
CBT	Computer-Based Training
CD	Compact Disk
CTML	Cognitive Theory of Multimedia Learning
DSDSM	Dynamic System Development Method
EEG	Electroencephalography
FPPM	<i>Fakulti Pendidikan dan Pembangunan Manusia</i>
GUI	Graphical User Interface
ICT	Information and Communication Technology
IDT	Instructional Design Technology
IPS	Institute of Graduate Studies
ISD	Instructional System Design
JQAF	<i>Jawi, Al-Qur'an, Arab, Fardu Ain</i>
KBSM	<i>Kurikulum Bersepadu Sekolah Menengah</i>
KSSR	<i>Kurikulum Bersepadu Sekolah Rendah</i>
QBC	Qur'anic Braille Courseware
RAD	Rapid Application Development
SKPK	<i>Sekolah Kebangsaan Pendidikan Khas</i>
SPSS	Statistical Package for the Social Sciences
UPSI	<i>Universiti Pendidikan Sultan Idris</i>
USM	<i>Universiti Sains Malaysia</i>



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CHAPTER 1

INTRODUCTION



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1.1 Introduction

Multimedia is powerful in education because it allows students to visualize various kinds of things in the learning process and makes it more effective on them. Courseware is one of the multimedia tools that can help either students or teachers in an educational environment. They can use the material anytime and anywhere without any constraints or instruction from others. The instruction is already prepared and they are able to follow it easily. Multimedia courseware plays a big role in transferring and delivering the information to users through interactive presentations



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and performance. By using the combination of various hardware such as computers, laptops, PCs, and tablets with various platforms, or various software available such as Power Point, Adobe Flash, Swish, Adobe Photoshop, and Adobe Premiere, it can create a useful interactive courseware. Multimedia courseware acts as a bridge that links the process of teaching and learning. Along with the development of technology, a variety of advanced technology and equipment have been used in teaching and learning. In contrast to traditional teaching, multimedia teaching changes many aspects in the educational field. For example, multimedia teaching requires teachers to have the knowledge of ICT to approach students using the technologies.



Qur'anic Braille is one of the subject matters that can be incorporated into a multimedia courseware in a variety of ways such as the use of graphic and animation, colour, design, and layout in the courseware and the creative presentation of the courseware. In addition, by using multimedia courseware, users can remember and memorise the Arabic letters of the Qur'an in Braille dots guided by the model developed and the theories behind the development that are compatible with the courseware content. Instead of using the manual handouts to memorise the whole letters and sign of the Qur'anic Braille, courseware might be more attractive and exciting in memorising and learning the Qur'anic Braille. Learning in an attractive and creative way may help us to remember what we are learning and what we have learned. It also might be the faster way to adapt learning in this attractive and creative environment.





Qur'an learning is definitely important for Muslims. Learning the holy Qur'an is obligatory to all Muslims in any kind of situations or conditions they are in and there is no exception for the blind people to recite and learn the Qur'an. Although they do not have the ability to see, they still have to learn Qur'an and recite it. One of the great examples is Imam As-Syatibii r.a. who was born without sight. He was one of the pioneers in the qiraat field (a branch of the Qur'an knowledge). He wrote so many books about qiraat learning and became a huffaz (a person who memorises the whole Qur'an). In addition, the emphasize of as narrated in the Qur'an in surah 'Abasa (He frowned) that a story of Prophet Muhammad who had frowned and turned away from a blind man named 'Abdullah ibn Umri Maktum who has come to the Prophet Muhammad and wanted to learn Qur'an. At the time, Prophet Muhammad had explained the Holy Qur'an to the Pagan Quraysh leaders then Abdullah came for the sake to learn Qur'an and Prophet naturally dislike the interruption and showed impatience. Perhaps the blind man's feelings were hurt then Allah's revealed this surah to Prophet Muhammad to reprove him for some natural and human zeal that led him to a false step in his mission (Abdullah Yusuf, 2008).



In teaching and learning, the intensive management and administration are based on the pedagogy, curriculum, evaluation, and teaching materials. These are the primary key to generate experts, skills, and responsible human resource. It must be done through a process by teachers, staff or students itself to produce a competent human resource. The process can be done by using the technology either the new one or the existing technology (Rozinah, 2000).



1.2 Research Background

Braille is a writing system that is widely used by visually impaired or blind people to read and write. Braille writing has been used for books, menus, signs, elevator buttons, and also in currency. It is a series of raised dots that can be read by touch by blind people and those whose eyesight are poor and cannot read printed materials. People with normal eyesight will read Braille with their eyes, not with their fingers (American Foundation for the Blind). For the blind, their sense of touch is much stronger than normal people and their touch sensor is their medium to read and write.

The Braille writing system was first developed by Louis Braille who was also blind. It is also famously known as tactile writing which implies reading through touch sensory, not sight, which is done by touching the raised dots or lines or shapes embossed on the selected medium of writing such as paper or metal. The first invention of Braille is in French alphabets which were created by Louis Braille who was a French. Nowadays, Braille has expanded and had been transcribed in many languages all over the world.

A Braille cell consists of 6 dots, 2 across, and 3 downward. It is considered as the basic unit for all Braille symbols. All dots are numbered downward with 1, 2, 3 on the left side and 4, 5, 6 on the right side, (Abdallah & Khairuddin, 2009) as shown in Figure 1.1.

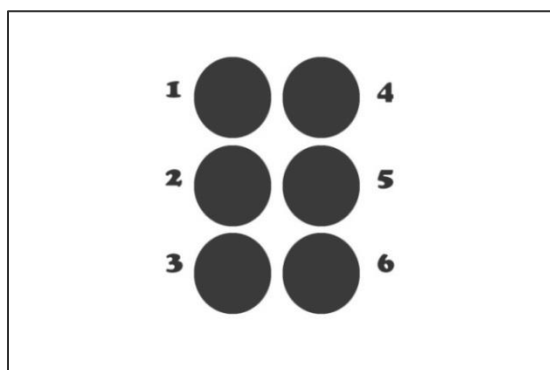


Figure 1.1. Braille Code Cell

Qur'anic learning is very important to Muslims all over the world. Nevertheless, it is being neglected by certain small community such as blind community as most people do not feel that the blind community has to learn it or they do not have to recite it as they cannot see. However, they do not seem to notice that blind people need to learn it. This leads to an urge to make good use of Braille in Qur'an learning especially for blind people. It is an obligatory for all Muslims to learn Qur'an, let alone to read it. In Malaysia, Qur'anic Braille has been used but it is not expanded throughout the country. It still needs to be developed in terms of the process of teaching and learning in class. From these situations, several questions come into mind. Are the blind students in Malaysia get a better education in Qur'anic Braille learning? Are there teachers who are experts in Qur'anic Braille learning? Can they truly teach the Qur'anic Braille subject? Due to the following issues and questions, researcher concerns in identifying and investigating the background of Islamic education teachers (*Guru Pendidikan Islam*) in special education schools on their pedagogy skills to teach blind students in reciting Qur'an.



Accordingly, the research conducted in designing and developing Qur'anic Braille courseware (QBC) mainly evaluates the effectiveness of QBC_(animation) and QBC_(graphic) in memorising the Qur'anic Braille letters by the presence of animated transition techniques. The idea of developing Qur'anic Braille courseware is based on the true experience of having difficulties in memorising the letters and signs of Qur'anic Braille. Besides, the courseware or multimedia aids in helping teachers to deal with special education students and for people who learn Braille to read Qur'an are still lacking.



Based on the interview session with special education teachers who teach Islamic education that involves Qur'an literary, it is aware that most of the teachers are facing problems in teaching visually impaired students either because they do not have any basic or they only have a little knowledge of Braille education. Pre-test and post-test are also conducted on pre-service teachers of special education program and the scores gained in memorising the Arabic Braille dots are compared.

This research may also help and guide people who want to learn the basic of Qur'anic Braille especially pre-service teachers of special education that teach Islamic education subject and also parents with a blind child.





1.3 Problem Statement

Braille has been used by visually impaired or blind people to read and write using their sense of touch. In Malaysia, Braille education is taught to visually impaired or blind students at special education schools. Besides visually impaired students, normal people such as pre-service teachers in teaching institutions and universities such as *Institut Pendidikan Guru (Maktab Ilmu Khas)* in Malaysia who enrolled under special education programme also learn Braille. Unfortunately, they only learn the ordinary Malay and English Braille and have not been exposed to Qur'anic Braille. To date, Qur'anic Braille curriculum in JQAF (special education) program has also not been offered. Later, it will cause problems to the teachers if they are posted to a special education school to teach Islamic education that involves Arabic Braille code and Qur'anic Braille learning. They have to learn by themselves or they have to follow a special program of Qur'anic Braille learning before they can teach the subject.

In the previous studies, researchers have found that some of the teachers who are teaching Islamic education (*Pendidikan Islam*) subject in special education school have not mastered the Qur'anic Braille code (Hajarul Bahti, Mohd Huzairi, Bani Hidayat, Nor Hayati Fatmi, & Nabiroh, 2010; Norakyairee et al., 2013). Another issue that the Islamic education teachers are facing now is the problem of teaching aids. They have difficulties in teaching students in which the materials and teaching aids for Qur'anic Braille learning are insufficient (Hajarul Bahti et al., 2010; Norakyairee





et al., 2013). A research done by Norakyairee et al., (2013) have highlighted that teachers who teach Islamic education subject in special education school have not been provided teaching module to guiding them teaching the subject. They were not provided any specific guidance related to Qur'anic Braille learning either during teaching training or after they have entered the teaching profession in any special education school. Thus, the process of self-study, experience-based, and knowledge sharing of Qur'anic Braille knowledge with Islamic education teachers seniors are the only basic guides adopted by the educators to achieve the goal of teaching Qur'an in Braille to visually impaired students (Norakyairee et al., 2013).



In the initial study of this research, interview session is conducted with the teachers in special education school who teach Islamic education. It shows that most of them are with different educational backgrounds. For example, one of the teachers is from the special education field, but with hearing problem background. She stated that she has never been exposed to Qur'anic Braille learning, even the conventional Malay and English Braille. It is difficult for her to teach blind students, because she had an experience with deaf students before but it is totally a different approach to teach blind students. She had to learn it by herself and it took a long time for her to adapt the new knowledge. She also learnt it from a senior teacher who taught the same subject and she also learnt Qur'anic Braille with her blind students. Another teacher is from JQAF special education programme. The teacher stated that during the teacher training program, he had not been taught about Braille at all and then he was asked to teach blind students, which is something beyond his knowledge. The same thing that





he did was learnt about the conventional Braille and Qur'anic Braille all by himself and practiced a two-way learning with his blind students.

According to Hajarul Bahti et al. (2010), responsible parties must provide and enhance teaching aids like CDs and cassettes that can be used by teachers and students as well as reference materials of *Tajwid* and Qur'an in Braille text to encourage students to do their own learning in the process of recitation of Qur'an. Teachers can also use a variety of teaching module of *Tajwid* that are available in the market to attract students to be more interested in learning Qur'an. This proves that the use of multimedia resources will make it easier for teachers as well as motivate students to learn Qur'an in a more effective way. Therefore, this study focuses on designing and developing Qur'anic Braille multimedia courseware prototype and evaluates the courseware effectiveness and satisfaction. The research also provides the background of Islamic education teachers (*Guru Pendidikan Islam*) in special education school in configuring the problems and issues of Braille teaching and learning.



1.4 Research Questions

There are several questions to be answered in this research which are:

- 1) What are the suitable graphic design and layout for the courseware content?
- 2) What are the animated transition techniques to be included in the courseware?
- 3) Which one of the courseware is more effective to be used?
- 4) Which one of the courseware presentation satisfies the users the most?

1.5 Research Objectives

The purpose of the research is to study the graphic and animation elements suitable for Qur'anic Braille courseware content and presentation. The research then evaluates the courseware effectiveness and satisfaction whereby in this research two courseware are developed to see whether a courseware with graphic alone or graphic with animation is effective to be used in memorising Qur'anic Braille dots.

The objectives of the research are:

- 1) To design and develop a Qur'anic Braille courseware (QBC) with animated transition and without animated transition.
- 2) To evaluate the effectiveness of QBC_(animation) and QBC_(graphic) courseware.
- 3) To identify users' satisfactions of using QBC_(animation) and QBC_(graphic).



1.6 Research Significant

This research focuses on the Qur'anic Braille learning using multimedia courseware. From the literature review and the interview done, it is found that in Malaysia, teachers who can really teach Qur'anic Braille to blind students are scarce. Thus, the research is conducted based on the significant below:

- 1) There is insufficient Qur'anic Braille multimedia material available, thus this research will configure the suitable content and the layout of the courseware that can help and give the picture of Qur'anic Braille knowledge to special education teachers.
- 2) Designing and developing the materials from scratch subsequently measure the suitable graphic and animation to be included in the courseware.
- 3) Researchers develop the QBC prototype to help pre-service teachers of Islamic education (*Pendidikan Islam*) at special education school to master the basics of learning Qur'anic Braille so that they can teach the visually impaired or blind students properly about Qur'anic Braille learning.
- 4) QBC may help pre-service teachers at special education school to save their time to learn Qur'anic Braille where they do not have to attend a special course for the learning. Instead, they can have self-learning with the courseware. They can just use the QBC to replace the special courses provided by the school and it may cut the cost on any courses or workshop provided.
- 5) The courseware acts as a self-learning aid for in-service teachers at special education school. Besides, the courseware can also be used by lecturers who teach

