

LEARNING BASIC JAPANESE LANGUAGE COURSEWARE

SITI AISHAH BINTI RASHID

**UNIVERSITI UTARA MALAYSIA
2010**

LEARNING BASIC JAPANESE LANGUAGE COURSEWARE

**A project submitted to Dean of Postgraduate Studies and Research in partial
Fulfillment of the requirement for the degree
Master of Science of Information Technology
Universiti Utara Malaysia**

**By
Siti Aishah Binti Rashid**



KOLEJ SASTERA DAN SAINS
(College of Arts and Sciences)
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PROJEK
(Certificate of Project Paper)

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certifies that)

SITI AISHAH RASHID
(804475)

calon untuk Ijazah
(candidate for the degree of) **MSc. (Information Technology)**

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project of the following title)

LEARNING BASIC JAPANESE LANGUAGE COURSEWARE


seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that this project is in acceptable form and content, and that a satisfactory knowledge of the field is covered by the project).

Nama Penyelia
(Name of Supervisor) : **DR. SOBIHATUN NUR ABDUL SALAM**

Tandatangan
(Signature) :  Tarikh (Date) : 20/10/2010

Nama Penilai
(Name of Evaluator) : **MDM. NORHANA YUSOF**

Tandatangan
(Signature) :  Tarikh (Date) : 19/10/10

PERMISSION TO USE

In presenting this project in partial fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this project in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor(s) or, in their absence by the Dean of Postgraduate Studies and Research. It is understood that any copying or publication or use of this project or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my project.

Requests for permission to copy or to make other use of materials in this project, in whole or in part, should be addressed to

Dean of Postgraduate Studies and Research
College of Arts and Sciences
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
Malaysia

ABSTRAK

Pada abad ke-21, multimedia telah menjadi medium baru yang menyediakan interaktiviti kepada media baru. Ini mempengaruhi cara untuk belajar, bekerja, dan bermain seperti e-pembelajaran, cakera padat perisian multimedia, dan ensiklopedia. Pada masa ini, penggunaan cakera padat perisian multimedia telah berkembang dengan pantas. Teknologi ini telah digunakan di kebanyakan bidang seperti komersil, pendidikan, promosi, dan aplikasi latihan. Teknologi ini menyediakan penggunaan yang sangat berkesan untuk pengguna yang memerlukan maklumat yang diperlukan tanpa mengira di mana jua pengguna itu berada. Kini, ramai kanak-kanak dan pelajar yang menggunakan perisian multimedia yang dikenali sebagai Multimedia Pendidikan Interaktif (IEM) sebagai cara untuk belajar. Objektif kajian ini adalah untuk merekabentuk aplikasi pembelajaran multimedia dalam pendidikan asas bahasa Jepun, membangunkan aplikasi pembelajaran multimedia dan menilai keberkesanan aplikasi tersebut. Bagi membangunkan rekabentuk yang sesuai untuk pengguna, prinsip-prinsip pembelajaran multimedia untuk rekabentuk pengajaran multimedia oleh Mayer telah digunakan dalam kajian ini.

ABSTRACT

In 21st century, multimedia has become a new medium that provides interactivity on new media. It affect the way to learn, work, and play such as e-learning, multimedia software compact-disk ROMs (CD ROMs), and encyclopedias. Nowadays the use of multimedia software CD ROMs has increased quickly. This technology has been use in many domains such as commercial, promotional, education and training applications. It provides highly effective utilization for people that can get the required information, without matter where the users are located. Today, there are loads of student, children and kindergarten that use multimedia software which are known as Interactive Educational Multimedia (IEM) CD ROMs as a way to learn. The objective of this study is to design the educational multimedia courseware in learning basic Japanese language, develop the prototype of the educational multimedia courseware and to evaluate the effects of the courseware prototype. To develop the suitable design for the users, principles of multimedia learning for design instruction multimedia by mayer has been used in this study. There are Multimedia Principle, Spatial Contiguity Principle, Temporal Contiguity Principle, Coherence Principle, Modality Principle, Redundancy Principle, and Individual Differences Principles.

ACKNOWLEDGEMENTS

All praise is due to Allah, Most Gracious and Most Merciful. Without help and mercy, I would not have reached this far.

It would not be possible for me to complete the program and this study without the support of my supervisor. I would like to express my appreciation and thank to Dr. Sobihatun Nur Bt. Abdul Salam for her support, guidance, correct the usage of language, and give a comment and idea. She is very patience in reading my proposal and drafts and gives a feedback as soon as possible. Her discussions and help are very much appreciated.

My sincere appreciation is for my family member for their support. To my father, Rashid Bin Mohamad, thank for his support and also to my mother, Maislamah Binti Juana that always give an encouragement to me to complete the study and thanks to them because always pray for me. I also would like to thank to my beloved sister, Norlela Binti Rashid for her guidance to develop the courseware.

I must convey my gratitude to my friend, Mariatul Atiqah Binti Mohd Akhir, Nur Tahrina Binti Abdullah and Noor Aishah Binti Saad for their guidance, help and support. Special thank to the students that have involved in the evaluation phase.

I would like to dedicate my research to my younger sister and brother, Siti Hajar Binti Rashid and Mohamad Faiz Bin Rashid. I hope this will give an inspiration to them to acquire knowledge through life-long learning journey in their lives.

‘Syukor to Allah’ for granting the time and knowledge to me for complete my program and this study.

TABLE OF CONTENTS

	Page
PERMISSION TO USE	I
ABSTRACT (BAHASA MALAYSIA)	II
ABSTRACT (ENGLISH)	III
ACKNOWLEDGEMENTS	IV
TABLE OF CONTENTS	V
LIST OF TABLE	VIII
LIST OF FIGURE	IX
LIST OF ABBREVIATIONS	X
CHAPTER 1 – INTRODUCTION	
1.1 Introduction	1
1.2 Problem Statement	2
1.3 Objective	3
1.4 Scope of Study	3
1.5 Significance of The Study	4
1.6 Research Question	4
1.7 Summary	4
CHAPTER 2 – LITERATURE REVIEW	
2.1 Introduction	5
2.2 Definition of Interactivity	5
2.3 Multimedia Learning Theory	6
2.3.1 Dual Coding Theory	7
2.3.2 Working Memory Theory	8
2.3.3 Cognitive Load Theory	9
2.4 Multimedia Learning Principles	10
2.4.1 Multimedia Principle	10
2.4.2 Contiguity Principle	11
2.4.3 Coherence Principle	12
2.4.4 Modality Principle	12
2.4.5 Redundancy Principle	12
2.4.6 Individual Differences Principles	13
2.5 The Growth of Educational Application Development	13
2.6 Current Studies on Teaching and Learning Japanese Language Application	14

2.7	Summary	15
CHAPTER 3 – METHODOLOGY		
3.1	Introduction	16
3.2	Analysis	17
3.3	Design	18
3.4	Development	19
3.5	Implementation	19
3.6	Evaluation	19
3.7	Summary	21
CHAPTER 4 – DEVELOPMENT AND RESULT		
4.1	Introduction	22
4.2	Development	22
4.2.1	Stating Screen	22
4.2.2	Main Menu Screen	23
4.2.3	Word Screen	24
4.2.4	Number Screen	24
4.2.5	Day Screen	25
4.2.6	Month Screen	26
4.2.7	Color Screen	26
4.2.8	Vehicles Screen	27
4.2.9	Direction Screen	28
4.2.10	Part of Body Screen	28
4.2.11	Dialogue Screen	29
4.2.12	Activities Screen	30
4.3	How the Designs Support the Learning Basic Japanese Language?	31
4.3.1	Multimedia Learning Theory	31
4.3.1.1	Dual Coding Theory	31
4.3.1.2	Working Memory Theory	32
4.3.1.3	Cognitive Load Theory	32
4.3.2	Multimedia Learning Principle	33
4.3.2.1	Multimedia Principle	33
4.3.2.2	Spatial Contiguity Principle	34
4.3.2.3	Temporal Contiguity Principle	35
4.3.2.4	Coherence Principle	35
4.3.2.5	Modality Principle	36
4.3.2.6	Redundancy Principle	37
4.3.2.7	Individual Differences Principle	37
4.4	Testing	38
4.5	Result	39
4.5.1	Result of Pilot Testing	39
4.5.2	Result of Usability Testing	40
4.5.2.1	Screen is Design in a Clear and Understandable	41

	Manner	
4.5.2.2	The Design Uses Proper Fonts in Terms of Style and Size	42
4.5.2.3	The Use of Graphic Support Meaningfully the Text Provided	43
4.5.2.4	Sounds in Good Quality and Enhances the Presentation of Information	45
4.5.2.5	The Quality of Text and Image is good	46
4.5.2.6	Navigation Button Display Exactly the Same Position Every Time it Appear	47
4.5.2.7	Easy to Learn	48
4.5.2.8	Efficient to Use	49
4.5.2.9	Easy to Remember	51
4.5.2.10	Learning Basic Japanese Language Courseware is Interesting	52
4.6	Summary	53
CHAPTER 5 – DISCUSSION AND CONCLUSION		
5.1	Introduction	54
5.2	Problems and Limitations	54
5.3	Recommendations for Future Work	55
5.4	Conclusion	56
REFERENCES		58
APPENDICES		
Appendix A: Screenshot Web-page		61
Appendix B: Screenshot Web-page		62
Appendix C: Gantt chart		63
Appendix D: Storyboard		64
Appendix E: Sampling Table		78
Appendix F: Questionnaire		79
Appendix G: SPSS Result		80

LIST OF TABLE

	Page	
Table 2.1	Description, Advantages, and Disadvantages of the Related Studies	14
Table 3.1	List of Hardware and Software	18
Table 4.1	Alpha Coefficient Raga Strength of Association	39
Table 4.2	Statistic of the Reliability	39
Table 4.3	Usability Testing of Learning Basic Japanese Language Courseware	40
Table 4.4	Frequency of Question 1	41
Table 4.5	Frequency of Question 2	42
Table 4.6	Frequency of Question 3	43
Table 4.7	Frequency of Question 4	45
Table 4.8	Frequency of Question 5	46
Table 4.9	Frequency of Question 6	47
Table 4.10	Frequency of Question 7	48
Table 4.11	Frequency of Question 8	49
Table 4.12	Frequency of Question 9	51
Table 4.13	Frequency of Question 10	52

LIST OF FIGURE

		Page
Figure 2.1	Structural model of dual coding theory	8
Figure 2.2	Proposed System Architecture for studying Working Memory	9
Figure 3.1	Flow Chart ADDIE Model	19
Figure 4.1	Screenshot of Stating Screen	23
Figure 4.2	Screenshot of Main Menu Screen	23
Figure 4.3	Screenshot of the Word Screen	24
Figure 4.4	Screenshot of Number Screen	25
Figure 4.5	Screenshot of Day Screen	25
Figure 4.6	Screenshot of Month Screen	26
Figure 4.7	Screenshot of Color Screen	27
Figure 4.8	Screenshot of Vehicles Screen	27
Figure 4.9	Screenshot of Direction Screen	28
Figure 4.10	Screenshot of Part of Body Screen	29
Figure 4.11	Screenshot of Dialogue Screen	29
Figure 4.12	Screenshot of Activity 1	30
Figure 4.13	Screenshot of Activity 2	30
Figure 4.14	Screenshot of the Word Module	31
Figure 4.15	Screenshot of Activity 1	32
Figure 4.16	Screenshot of Activity 2	33
Figure 4.17	Screenshot of Color Module	34
Figure 4.18	Screenshot of Vehicle Module	34
Figure 4.19	Screenshot of Part of Body Module	35
Figure 4.20	Screenshot of Number Module	36
Figure 4.21	Screenshot of Direction Module	36
Figure 4.22	Screenshot of Day Module	37
Figure 4.23	Screenshot of Month Module	38
Figure 4.24	Percentage of Screen is Design in a Clear and Understandable Manner	42
Figure 4.25	Percentage of the Design Uses Proper Fonts in Terms of Style and Size	43
Figure 4.26	Percentage of the Use of Graphics	44
Figure 4.27	Percentage of Sounds in Good Quality	45
Figure 4.28	Percentage of the Quality of Text and Image is good	47
Figure 4.29	Percentage of Navigation Button	48
Figure 4.30	Percentage of Easy to Learn	49
Figure 4.31	Percentage of Efficient to Use	50
Figure 4.32	Percentages of Easy to Remember	51
Figure 4.33	Percentage of Learning Basic Japanese language is Interesting	53

LIST OF ABBREVIATIONS

CD ROMs	Compact-disk ROMs
IEM	Interactive Educational Multimedia
UUM	Universiti Utara Malaysia
CLT	Theory of Cognitive Load
THE	Technological Horizons in Education
ADDIE	Analysis, Design, Development, Implementation and Evaluation
QUIS	Questionnaire for User Interface Satisfaction
YAB	Yayasan AlBulkary

CHAPTER 1

INTRODUCTION

1.1 Introduction

With technological advances, multimedia has become a new medium that provides interactivity on new media. It affect the way to learn, work, and play such as e-learning, multimedia software compact-disk ROMs (CD ROMs), encyclopedias (Hudetz & Friedewald, 2002). In the 21st century, the use of multimedia software CD ROMs has increased quickly (Vaughan, 2006). The changes in multimedia technology definitely had resultant affects on all aspects of life. This technology has been use in many domains such as commercial, promotional, education and training applications (Barry & Lang, 2001). It provides highly effective utilization for people that can get the required information, without matter where the users are located (Taguchi et al, 1999). Today, there are loads of student, children and kindergarten that use multimedia software which are known as Interactive Educational Multimedia (IEM) CD ROMs as a way to learn (Liu, 2005).

The Learning Basic Japanese Language Courseware is initiated to develop multimedia application for user that provides interactive learning in Japanese language. Learning basic Japanese Language Courseware is about learning Japanese language through translation with English and Malay language, it is an easier way for users, whom like to learn

The contents of
the thesis is for
internal user
only

REFERENCES

- Ananda Kumar Palaniappan. (n.d). *Statistics in Education*. Kuala Lumpur, Malaysia: Universiti Malaya.
- Baddeley, A. (1992). *Working Memory*. *Science*, 255, 556-559.
- Barnum, C.M. (2002). *Usability testing and research*. Kuala Lumpur, Malaysia: Longman.
- Barry, C., & Lang, M. (2001). A survey of multimedia and Web development technique and methodology usage. *Journal of Multimedia*, IEEE, 8(2), 52-60.
- Chandler, P., & Sweller, J. (1991). "Cognitive Load Theory and the Format of Instruction." *Cognition and Instruction*, 8, 293-332.
- Chin, J.P., Diehl, V.A., & Norman, K.L. (1988). *Development of an Instrument Measuring User Satisfaction of the Human-Computer Interface*. University of Maryland.
- Chong, H.Y. (n.d). *An introduction to computing and interpreting Cronbach Coefficient Alpha in SAS*. Arizona State University.
- Clark, R. (2002). Six Principles of Effective e-Learning: What Works and Why. *Journal of The E-Learning Developer's*. Retrieved 25 July 2010, from www.elearningguild.com.
- Downes, E.J., McMillan, S.J. (2000). "Defining interactivity", *New Media and Society*, 151-179.
- Flagg, B. N. (1990). *Formative Evaluation for Educational Technologies*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hudetz, W., & Friedewald, M. (2002). *Multimedia Product Documentation-User Requirements*.
- Jamalludin Harun, Baharuddin Aris, Zaidatun Tasir (2003). *Pembangunan Perisian Multimedia Satu Pendekatan Sistemik*. Kuala Lumpur, Malaysia: Venton Publishing.
- Joseph, F.H., Arthur ,Jr., Money, H., Samouel, P., & Page, M. (2007). *Research Methods for Business*. England: John Wiley & Sons Ltd.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.

- Lam, C. (2006). *Applying the Spatial-Contiguity Effect to Software Manual*. Illinois Institute of Technology.
- Laurel, B. K. (1986). *"Interface as mimesis", User Centered System Design*. London.
- Flagg, B. N. (1990). *Formative Evaluation for Educational Technologies*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Learn Japanese language (2010). Retrieved from <http://learnjapanese.elanguageschool.net>
- Learn Japanese- Months of the Year in Japanese (2010). Retrieved from <http://www.youtube.com/watch?v=vcBHokyk33M>
- Learn Japanese Color. Retrieved from <http://www.youtube.com/learning+japanese+color>
- Liu, M. (2005). *How Pre-kindergarten Children Use the Interactive Multimedia Technology: Implications for Multimedia Software Design (Research/Technical)*. Austin: University of Texas at Austin.
- Mayer, R. E. (1989). Systematic thinking fostered by illustrations in scientific text. *Journal of Educational Psychology*, 81, 240-246.
- Mayer, R. E. & Sims, V. K. (1994). For whom is a picture worth a thousand words? Extensions of a dual -coding theory of multimedia learning. *Journal of Educational Psychology*, 86, 389-401.
- Mayer, R.E., & Moreno, R. (1997). *A Cognitive Theory of Multimedia Learning: Implications for Design Principle*. Santa Barbara: University of California.
- Mayer, R. E. (2001). *Multimedia learning*. New York: Cambridge University Press.
- Moreno, R. & Mayer, R.E. (1999). Cognitive principles of multimedia learning. *Journal of Educational Psychology*. 91, 358-368.
- Moreno, R. & Mayer, R.E. (2002). Verbal redundancy in multimedia learning: When reading helps listening. *Journal of Educational Psychology*, 94 (1), 156-163.
- Najjar, L. J. (1996). Multimedia information and learning. *Journal of Educational Multimedia and Hypermedia*, 5(2), 129-150.
- Nielsen, J. (2010). *Usability 101: Introduction to Usability*. Retrieved from <http://www.useit.com/alertbox/20030825.html>

- Norlina Mohd Sabri, Hasiah Mohamed @ Omar, & Noraidah Md Bati. (2010). *Formative Evaluation for Accounting Courseware Enhancement*. Terengganu, Malaysia: Universiti Teknologi MARA.
- Paivio, A. (1986). *Mental representations: A dual coding approach*. England: Oxford University Press.
- Paivio, A. (2006). *Dual Coding Theory and Education*. University of Western Ontario.
- QUIS: The Questionnaire for User Interaction Satisfaction (2010). Retrieved from <http://www.cs.umd.edu/hcil/quis/>
- Rafaeli, S. (1988). Interactivity: From new media to communication. *Journal of Sage Annual Review of Communication Research: Advancing Communication Science*, 16, 110-134.
- Shujuan, Z., Wei S., Zheng L., Qibo H. (2010). *The Principles of Multimedia Teaching Design Based on Cognitive Load Theory*. Proceedings of the 2nd international Conference on Education Technology and Computer (ICETC).
- Taguchi, T., Umemoto, T., Naniwada, M., Garden, A., Amano, T., & Tabata, K. (1999). *A case study of the effectiveness of distance learning materials in higher education and suggestions for improvement*.
- Tessmer, M. (1993). *Planning and Conducting Formative Evaluations*: Routledge.
- Tse-Kian, K. N. (2003). Using multimedia in a constructivist learning environment in the Malaysian classroom. *Australian Journal of Educational Technology*, 3, 293-310.
- Vaughan, T. (2006). *Multimedia: Making it Work (seventh ed.)*. McGraw: Hill Osborne.
- White, C. (2006). Distance learning of foreign languages. *Journal of Language Teaching*, 39(04), 247-264.
- Wilkes, D.M., Tugcu, M., Hunter, J.E., and Noelle, D. (2005). *Working Memory and Perception*. IEEE International Workshop on Robots and Human Interactive Communication. USA : Vanderbilt University.
- Zeljko, S. (2007). *Guidelines for Multimedia Learning Materials*.
- Zhang, S., Shi, W., LiU, Z., Hu, Q. (2010). *The Principles of Multimedia Teaching Design Based on Cognitive Load Theory*.