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**GUIDELINES IN PREPARING FOR COURSEWARE  
DEVELOPMENT FOR MULTIMEDIA SUBJECTS IN  
SCHOOLS IN MALAYSIA**

By

Rozaina Bt Ghazali

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**UNIVERSITI UTARA MALAYSIA  
2008**

**GUIDELINES IN PREPARING FOR COURSEWARE DEVELOPMENT FOR  
MULTIMEDIA SUBJECTS IN SCHOOLS IN MALAYSIA**

**A Thesis submitted to the Graduate School in full fulfillment of the  
Requirements for the degree of Doctor of Philosophy  
Universiti Utara Malaysia**

**by  
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## **ABSTRACT**

Computer-based for teaching and learning has becoming more popular and widely accepted. Interactive presentation with animations for knowledge transfer is more effective and viable compared to conventional diagrams. Developing a methodology for developing teaching and learning courseware for selected topic of Multimedia is the main objective of this research. The teaching and learning courseware is developed for a Form 2. The multimedia and interactive presentation by the courseware would expedite the learning and understanding process. Besides that, it would motivate the students to explore further. Formative evaluation will be done along with the development phase to ensure the courseware practically used. In conclusion, the courseware developed will fulfill the important criteria in attracting attention, fun and motivation in learning process.

## **ACKNOWLEDGEMENTS**

First of all I am thankful to Allah SWT for giving me the courage, ability, and strength to complete this project.

I would like to extend my thanks and gratitude to :

My supervisors Dr Nor Laily Hashim and Madam Noor Izzah Yahya for their wonderful supports and efforts in assisting me carrying out this research project to become a reality. Their encouragement help shaped the direction of my work.

My beloved husband, Mr. Mohd Basir Ibrahim and my children Fatin, Farah and Fairuz, for their love and patience. Special thanks to my mother, Marziah bt Abdullah for her supports and love.

Teachers and staffs at SMK Bandar Bukit Kayu Hitam, for their supports, encouragement and collaboration in sharing ideas during this project.

Everybody that is involved in my project directly or indirectly for productive interactions and for their supports.

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# **CHAPTER 1**

## **INTRODUCTION**

Multimedia is a media that comes from a combination of different content from various forms. In general, multimedia includes a combination of text, audio, still images, animation, video, and interactivity content forms. It is used in many aspects to present contents to audience. It is very wide used in the world for example in education, medical, airports, business and others.

The use of multimedia courseware as part of a teaching strategy has many potential benefits that relate to learners, instructors, the learning content, the learning process and to access to learning. However, quality learning outcomes can only be achieved with the considered application of pedagogy to the design of the learning content as well as to the management of the learning process that revolves around its use. Instructors and instructional designers must pay attention not only to the creation of content but also to the broader embedding context within which the courseware will be used.

The bottom line is that students stand to gain from a broader and richer learning experience that not only helps them achieve their education objectives but which also makes learning an enjoyable and intrinsically rewarding experience.

The contents of  
the thesis is for  
internal user  
only

## REFERENCES

- Acab, M. R. (1996 ). *What is multimedia*. Retrieved October 1, 2008 from [www.cse.yorku.ca/Courses95-96/4361/q1.html](http://www.cse.yorku.ca/Courses95-96/4361/q1.html)
- Alexander, S., McKenzie, J. & Geissinger, H. (1998). *An evaluation of information technology projects for university learning*. Canberra: Committee for University Teaching and Staff Development.
- Barker, P.G. (1989). *Basic Principle of Human-Computer Interface Design*. Hutchinson, London.
- Banathy, B. (1994). *Designing Educational System : Creating Our Future in a Changing World*. New Jersey : Education Technology Publications.
- Becker, H. J. (1992). *Computer education*. In M. C. Alkin (Ed.). *Encyclopedia of educational research*. New York: Macmillan
- Brownstein, I. and Lerner, N.B. (1982). *Guidelines for evaluating and selecting software packages*. New York: Elsevier.
- Caffarella, E.P. (1987). *Evaluating the new generation of computer-Based instructional software*. *Educational Technology*, 4, 19-24.
- Centre for Development of Teaching and Learning ( 2005 ) *Pedagogical Issues*  
Retrieved July 13, 2008 from <http://www.cdtl.nus.edu.sg/mmi/pedagogy.htm>

- Chang, L.L. and Osguthorpe, R.T. (1987). *An evaluation system for educational software. A self-instructional approach*. Educational Technology, 6, 15-19.
- Chong, T.S. (1994). *Designing Principles for Effective Instructional Hypermedia/Multimedia Packages*. Proceedings of the National Symposium on Education Computing. USM: MCCE.
- Clark, R. E. (1983). *Reconsidering research on learning from media*. Review of Educational Research, 53 (4), 445-459.
- Clark, R. E. (1994). *Media will Never Influence Learning*. Educational Technology Research and Development, 42 (2), 21-29.
- Clarke, A. (1992). *The principles of screen design for computer based learning materials*. U.K.: Department of Employment.
- Cox, K., & Walker, D. (1983). *User Interface Design* (2<sup>nd</sup> ed.). London: Prentice Hall.
- Cuba, E.G., & Lincoln, Y.S.(1981). *Effective evaluation*. San Francisco: Jossey-Bass.
- Jaffa, D.. ( 1994 ). *SAM Learning Improving Results Raising Standards*. Retrieved October 1, 2008 from <http://www.samlearning.com/>
- Dejoy, J.K. & Mills, H.H. (1998). *Criteria for evaluating interactive instructional materials for adult self-directed learners*. Educational Technology, 2, 39-41.



- Diaz, P., Sicilia, M.A. & Acdo, I. (2002). *Evaluation of hypermedia educational systems: Criteria and imperfect measures*. Proceedings of the International Conference on Computers in Education, Auckland, 3-6 December, 621-626.
- Dick, W. and King, D. (1994). *Formative evaluation in the performance context*. Performance Instruction, 9, 3-8.
- Gagne, E. D., Walker Yekovich, C., & Yekovich, F. R. (1993) *The Cognitive Physiology of School Learning, Second Edition*. New York: Harper Collins College Publishers.
- Gagne, R. M., Briggs, L. J., & Wager W. W. (1998). *Principles of instructional design*. New York: Holt, Rinehart, and Winston.
- Gray, S.H. (1989). *The effect of locus of control and sequence control on computerized information retrieval and retention*. Journal of educational Computing Research, 5 (4), 459-471.
- Griffith M. L. et. Al. (April 1997) *The Success of Multimedia Courseware in the Manufacturing Engineering Education Partnership (MEEP) Program*. Retrieved July 27, 2008 from <http://www.mne.psu.edu/lamancusa/papers/trp97mm.pdf> )
- Hartman P., (2001). *Flash 5: Visual JumpStart*. London: Sybex.
- Henderson, L. (1996). *Instructional design of interactive multimedia: A cultural Critique*. Educational Technology Research & Development, 44 (4), 85-104.

Horning, A.S. (1986). *The computer's persona: Evaluating the teacher in a box*. Educational Technology, 12, 17-20.

Jolicoeur, K. & Berger, D.E. (1998). *Implementing educational software and evaluating its academic effectiveness*. Educational Technology, 9, 7-13.

Kulik, J. A. Bangert. R. L. and Williams, G. W. (1980). *Effects of Computer-Based Teaching on Secondary School Students*. Journal of Education Psychology.

Lamb, A.C. (1992). *Multimedia and The Teaching Learning Process in Higher Education, New Directions for Teaching & Learning*. New York: ITP.

Lee, T. & Le, Q. (1997) *Web-Based Evaluation of Courseware*. Retrieved July 26, 2008 from  
<http://www.ascilite.org.au/conferences/perth97/papers/Le/Le.html>

Lindstrom, R. (1994). *The Business Week Guide to Multimedia Presentations: Create Dynamic Presentations That Inspire*. McGraw-Hill, New York.

Minielli, M.C. (2005). *Electronic Courseware in Higher Education*. Retrieve July 26, 2008 from  
[http://www.firstmonday.org/issues/issue10\\_9/minielli/](http://www.firstmonday.org/issues/issue10_9/minielli/)

Morrison, J. L. (1997). *Using Multimedia Learning Courseware to Supplement Instruction*. Retrieved July 10, 2008, from  
[http://technologysource.org/article/using\\_multimedia\\_learning\\_courseware\\_to\\_supplement\\_instruction/](http://technologysource.org/article/using_multimedia_learning_courseware_to_supplement_instruction/)

- Neo, M., & Neo, T.K. (2002). *Interactive multimedia education: Using Authorware as an instructional tool to enhance teaching and learning in the Malaysian classroom*. pp 80-94.  
[http://greav.ub.edu/iem/index.php?journal=iem&page=article&op=view&path\[\]=32&path\[\]=30](http://greav.ub.edu/iem/index.php?journal=iem&page=article&op=view&path[]=32&path[]=30)
- Neo, M., & Neo, T.K. ( 2004 ) *Integrating multimedia into the Malaysian classroom: Engaging students in interactive learning*. Retrieve July 10, 2008 from <http://www.tojet.net/articles/334.htm>
- Neo, M., & Neo, T.K. ( 2004 ) *Innovative Teaching : Integrating Multimedia into The Classroom in a Problem-Based Learning Environment*. Retrieved on July 12, 2008 from  
<http://pbl.tp.edu.sg/Others/Articles%20on%20Others/NeoMNeoTK.pdf>
- Neo, M., & Neo, T.K. (2004). *Teachers as Multimedia Developers: Using Multimedia Authoring Tools to Enhance Teaching and Learning in the Classroom*. Retrieved September 20, 2008 from  
[www.usq.edu.au/electpub/e-jist/docs/Vol7\\_No1/CurrentPra](http://www.usq.edu.au/electpub/e-jist/docs/Vol7_No1/CurrentPra)
- Park, N., Lee, K. M., & Cheong, P. H. (2007). *An application of the technology acceptance model*. Retrieved July 26, 2008 from  
<http://jcmc.indiana.edu/vol13/issue1/park.html>
- Reeves, T.C. & Hedberg, J.G. (1997). *Evaluating Interactive Multimedia Education Technology*. Australia: University of Wollongong.
- Ross, S. M., & Morrison, G. R. (1989). In search of a happy medium in instructional technology research. *Educational Technology Research and Development*, 37 (1), 19-33.

Salbiah Ismail. ( 2007) *ICT in the Classroom : A Malaysian Perspective*.

Retrieved October 1, 2008 from

[http://greav.ub.edu/icm/index.php?journal=icm&page=article&op=view&path\[\]=29&path\[\]=27](http://greav.ub.edu/icm/index.php?journal=icm&page=article&op=view&path[]=29&path[]=27)

Sharp, V. (1993). *Computer education for teachers*. Brown and Benchmark, Madison, Wisconsin.

Shahizan, H. & Li, F. (2003). *Utilizing IGV approach to identify factors effecting web usability*. Journal of Information and communication Technology, 2(2), 25-40.

Shneiderman, B., & Kearsley, G. (1998) *Hypertext hands on!* Reading, Massachusetts; Addison Wesley.

Shneiderman, B., & Plaisant, C. (2005). *Designing the User Interface*. University of Maryland : Pearson Education Inc.

Silva, R. S., (1999). *Courseware Development for Less Commonly Taught Languages*. Retrieved July 27, 2008 from <http://clp.arizona.edu/cls/por/rsnasilpap99.htm> ,

Swartz A., ( 2003) *Interactive Courseware: Usability Guidelines*. Retrieved July 27, 2008 from [http://www.serco.com/Images/Interactive%20Courseware%20Guidelines\\_tcm3-2231.pdf](http://www.serco.com/Images/Interactive%20Courseware%20Guidelines_tcm3-2231.pdf))

Thao & Quynh (1997). *Web-Based Evaluation of Courseware*. Retrieved September 2, 2008 from <http://www.ascilite.org.au/conferences/perth97/papers/Le/Le.html>

- Toh, S.C., & Ng., W.K. (1994). *Designing Principles for Effective Instructional Hypermedia / Multimedia Packages*. Kuala Lumpur : E-DUCOMP.
- Vaughan, T. (1998). *Multimedia: Making it Work* (4<sup>th</sup> Ed.), Berkeley, CA: Osborne/McGraw-Hill.
- Watters, J.J. (2003). *Windows into a science classroom: Making science relevant through multimedia resourcing*. ICASE World Conference 2003 on Science and echnology Education, Penang, Malaysia, 7 - 10 April 2003.
- Yin, R. K. (1984). *Case Study research: Design and methods*. Newbury Park, CA: Sage.
- Young, J. D. (1996). *The effect of self-regulated learning strategies on performance in learner controlled computer-based instruction*. Educational Technology Research & Development, 44 (2), 17-27.
- Zahrah Yahya (2006) M.Sc. Thesis, File Net: *A Web-Based Research Repository System for IS-Fit* , University Utara Malaysia.
- Zoraini Wati Abbas (1993). *Komputer Dalam Pendidikan*. Kuala Lumpur: Fajar Bakti.
- Zoraini Wati Abbas (1995). *Internet Untuk Pengajian Matematik*. Kertas kerja yang dibentangkan dalam Persidangan Kebangsaan Pendidikan Matematik Ke 4. Kuantan : BPG.