Students' and Teachers' perception towards an Interactive Courseware for History Subject: A Case Study in Labuan Secondary Schools

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Abstract

Currently, Malaysian education system is being transformed to create a new generation of students who are ready to adapt with new technologies and able to manage the information explosion. Thus, the need to incorporate ICT in teaching and learning at all levels of education is deemed essential. Multimedia Technology is playing an important role in the classroom as an interactive courseware in presenting and delivering the course material to the students. Most of the interactive coursewares available in the market now are focusing on Languages subjects, Mathematics and Science. This paper investigates the perception of form 5 history teachers and students in using interactive multimedia courseware as their teaching and learning channel in history subject. This research identified the features which influence student's interest in learning history, as well as the possible challenges and constraints that might be encountered by their teachers in using interactive courseware. Furthermore, this study also highlighted some considerations before designing and developing the interactive multimedia courseware for history subject.

Introduction

History education is about the study of the past. The history education is important in understanding our people, country and ourselves. It provides the knowledge and the feelings of appreciation for the previous events, people, ideas and practices. By not knowing the past, it is not possible to know the present or the future. History learning is important for students' spiritual, emotional, intellectual and physical development.

In today's dynamic education, the Malaysian education system is being transformed to create a new generation of students who are adept with the new technologies and are able to access and manage the information explosion. The Ministry of Education sees ICT as a tool to revolutionise learning, to produce richer curricula, to enhance pedagogies, to lead to more effective organisational structures in schools, to produce stronger links between schools and society and to empower learners[1]. In the current Malaysian education perspective, rapid advancement of multimedia technology was plays as one of the most important roles in classrooms as interactive courseware that has been used in presenting content and information[2]. However, a majority of the teaching-learning courseware available in the Malaysian market focuses on subjects such as Malay language, English Language, Chinese Language, Mathematics, and Sciences.

The main teaching and learning material in history subject is based on the textbook and it is designed as the sole source of information, whereby the students could only see single perspective on a history event, content or issue. Lack of creativity in history teaching caused students to become bored and lose interest in the subject. Therefore, there is a need for computer-aided learning materials in teaching history subject, which can increase students' interest and performance as well as reduce students' boredom with history[3].

Therefore the objectives of this paper study focused on three issues, which are to determine the potential benefits in using interactive multimedia courseware, identify the courseware features influencing the

students' interest in using interactive multimedia courseware, as well as to investigate the challenges the history teachers will be faced in using courseware in their history subject teaching.

Literature Review

Computer and History Education

Most of history learning environment in the classroom is based on the textbook. A printed history textbook is limited by the constraints of size and practicality. Such practical issues have important consequences for the kinds of materials that go into the hands of readers. Limitation of size means that it is more practical to write history books that synthesize and make reference to large bodies of historical documents without being able to include very much or any of the documents[4].

A multimedia approach can be a very useful tool for teaching historical events, topic and issue in History. Initially the history teacher can introduce the topic and then the students can use a multimedia software package such as the one to reinforce the topic. Another researcher described one of the essential elements of learning history is through storytelling by use narrator voice[5]. Storytelling remains an important mode through which individuals and cultures communicate who they are, what they value and fear, what they know and more compelling and memorable than alternative ways of conveying information in the classroom. Narrative is fundamentally linked to cognition and so is particularly relevant to the design of interactive multimedia for history learning[6].

Interactive Multimedia in Education

In interactive multimedia, the user controls the experience of reading the material by being able to select among multiple choices, choosing unique paths and sequences through the materials. One of the key features of interactive multimedia is the ability to navigate through material in whatever ways are most meaningful for individual users[4]. Interactive multimedia courseware allows independent and interactive learning process, and actively engaging the learners in interesting tasks. Kamat[7] stated that interactive characteristics concur with the constructivist view of learning, which encourages the learner as an active participant to construct knowledge in making sense of their real-world experiences. The presence of interactions and interactivity in technology-based instructional materials has become synonymous with enhanced learning.

Learning is primarily the process through which we become the human beings we are, and it takes place through a variety of media, strategies, and processes, of which interactive multimedia is just one. Using these media and technologies, we internalize information and knowledge available in the external world to construct our own experiences. Interactive multimedia courseware has been defined in a number of ways. Gibbs[8] defined multimedia courseware as single instructional units with one or more lessons designed for self instruction or small group instruction using a stand-alone computing system. According to England & Finney[9], interactive media is the integration of digital media including combinations of electronic text, graphics, moving images, and sound, into a structured digital computerised environment that allows people to interact with the data for appropriate purposes.

Multimedia element in educational tools

Audio is generally spilt into two categories, namely sound and music. Sound is perhaps the most sensuous element of multimedia. It is meaningful "speech" in any language, from a whisper to a scream. Audio can provide the listening pleasure of music, the starling accent of special effects, or the ambiance of a mood-setting background. Some feel-good music powerfully fills the heart, generating emotions of love of otherwise elevating listeners closer to Heaven[10].

Researchers believe that the use of audio may also increase enjoyment and engage a user in a way that static material does not. Multimedia audio assets include narration, sound effects, and background music. To make animation or image more effective, the use of voice narration can be added. Narration is a very brief phrase of several words timed to pint out important or key aspects of the animation at the most appropriate time. Wang, *et al* [11] also claimed that interactive courseware can be enhanced with audio such as text to speech or other sound effects to stress important or key points in the lesson.

Animation makes static presentations come alive. It visual changes over time and can add great power to one's multimedia projects and web pages[10]. Schnotz[12] stated that animations can elaborate instructions with process information by presenting the dynamic aspects of a subject matter and thus allow more cognitive processing than static pictures. The use of multimedia elements such as animation, audio, graphics, text and interactive features in presenting the courseware instructional content can attract interest among leaners during the teaching and learning session. Learners will be faster to learn, and have better attitudes toward learning when using interactive animation especially if the other techniques like audio and video are used[13].

Challenges of using multimedia courseware in education

The prerequisites for using multimedia include access to computers with related softwares or programs, the user must possess a minimum level of computer literacy in order to exploit the capabilities of this medium for learning. There is a lack of experience of educators in manipulating multimedia computer based instructional tools. Most educators do not have sufficient computing knowledge, training and skills in graphic design, computer programming and authoring multimedia courseware. Finally, training of the educator who is unfamiliar with the process of multimedia courseware or packages production and design can be equally complicating[14].

According to Rahimi, *et.al*[15], most teachers reported that the courseware was useful for their students and facilitated student learning. Analysis by them revealed that most of the teachers involved in their study agreed that the courseware is useful for teaching and learning. However, some certain aspects and components of the courseware need to be improved. It is essential to note that the courseware needs to be revised as there is room for improvement to fulfil the student needs. Motivation among learners is one of the essential elements in all educational settings.

Methodology

Population and Sample

The population of this study was conducted at 9 secondary schools in Federal Territory Labuan; specifically we focused on Form 5 students who had taken Form 5 History in their curriculum. However, for the sample of the study, we managed to get 7 schools to participate in this study with the returned questionnaire frequencies of 129 Form 5 students. Form 5 History teachers had been interviewed to access general views on teachers' perception of teaching History using interactive multimedia courseware.

Survey Instrument

After conducting an extensive literature review, we designed a list of questions that we believed were logically associated with the ideas and factors in identifying the students' perceptions on multimedia learning package in general. The survey instrument was administrated design based on dimensions of TAM and basic multimedia elements purposely for identify perceived human computer interaction that can be used to measure descriptives students's subjective acceptance and perception on multimedia application interfaces**.** The survey questionnaire is in part adapted or selected from the commonly administered by Yasmine[16] who had studied on TESOL courseware development and evaluation in 2009.

The students were asked to rate the feasibility Form 5 History courseware on a 5-point Likert scale along perception on human computer interaction dimension, in which participants rate each questions based on numerical data. That is, 1 if they strongly agree, 2 if they agree, 3 if they're not sure, 4 if they disagree, and 5 if they strongly disagree. Each question also came with a 'not applicable' option in case the students considered it to be irrelevant to his or her experience.

- The questionnaire set is divided to 4 section questions, which are part A to gain the demographic profile of respondents, part B to investigate the potential benefits of using interactive multimedia in history teaching and learning, part C to identify the courseware features influencing the students' interest in using interactive multimedia and the last part is part D, which is this section includes a few open-ended short-answer questions: what feature(s) of courseware would the respondents like to see; and what feature(s) and content of courseware they like the most.

Semi- Structured Interview

A semi-structured interview questionnaire has been carried out among form five history teachers within the sample frame. The main purpose of this short interview was to investigate teachers' perceptions on Form 5 history teaching courseware that to be feasibly to be developed a history courseware prototype in the future studies. This semi-structured interview took about 20- 30 minutes and was conducted after the history class time in a small meeting room in the school.

• During the interview the teachers were given the opportunity to respond to a series of pre-designed questions. 2 questions were posed to the teachers. All the questions proposed were related in attempt to answer the research questions in this paper, that were research question 1: What are the teachers and students' perceptions on potential benefits in order to implement using interactive multimedia courseware in history teaching and learning?; and Research question 3: To investigate the challenges the history teachers will be faced in using courseware in their history subject teaching.

Result and Analysis

Objective 1:   To determine teachers and students' perception towards potential benefits of courseware in their History subject teaching and learning.

The first objective of this paper was to determine teachers and students' perception towards potential benefits of courseware in their History subject teaching and learning. A total of 129 respondents among form 5 students, about 65% (84) respondents were female students and 35% (45) respondents were male students.

Table 1 describes the overview on the students' responses toward the interactive multimedia courseware in history education, specially focused on the history education. Based on the table, majority of the respondents (116) were agreed if form 5 history teaching and learning taught or delivered by using computer application or material based on ICT specially using courseware. Most of them who were agreed using courseware in history education have experiences of using courseware in their other subjects but still lack of computer skill. Those who were do not agreed using courseware in history education were who do not have experiences in using courseware before and do not have any computer basic certificate. Thus, experiences of using courseware were relevance in give the motivation to the respondents in attracting them to use interactive multimedia courseware in history education although they were still do not have a sufficient skill and knowledge in using computer.

Table 1   **S**tudents' responses toward multimedia courseware for history education

Do you agreed if Form 5 History teaching and learning 5 taught / delivered by using computer application / material based on ICT?			Do you have basic computer certificate?		
			NO	YES	**TOTAL**
NO	Do you had ever used courseware in any others subject?	NO	4	0	**4**
		YES	4	1	**5**
		TOTAL	**8**	**1**	**9**
YES	Do you had ever used courseware in any others subject?	NO	42	4	**46**
		YES	53	17	**70**
		TOTAL	**95**	**21**	**116**

N=125

Table 2 illustrates the percentage distribution of students' perception of potentials benefits on using courseware in their history learning. Based on the figure, it shows that majority of the respondents agreed that they will get benefits in their History learning if form 5 History subject will be taught using interactive courseware. 95.3% of the students stated that by using courseware, history learning environment become more interesting. This finding supported by the previous study which stated that multimedia courseware which is combines sound, pictures and texts can changed the situation of having to learn into willing to learn[17].

Table 2   Potential benefits on using courseware in history learning from students' perception

Benefits on using courseware in History learning	Percentage
Improving the quality of learning	88.4%
Class preparation become more easier	72.1%
Historical figure become more lively	75.2%
Information delivering become more easier to the students	88.4%
Appreciation on historical events	83.7%
Subject acceptance become more flexible	73.6%
Learning environment become more interesting	95.3%

Objective 2:   To identify the courseware features influencing the students' interest in using interactive multimedia courseware for Form 5 History subject learning.

There were 6 features listed as the important courseware features that can influenced the students' interest in using interactive multimedia courseware for Form 5 History subject learning. The following three tables show the mean response and standard error of students' perceptions on courseware elements which can affect their interest towards use of courseware. A Mann-Whitney U independent samples test (non-parametric equivalent of 2 samples t-test) was performed to see if there was a significant difference in student's perceptions between the different group of students whom are categorized based on ownership of laptop at home, experiences in using courseware and gender. Cells with shading indicate a significant difference between the groups (Mann-Whitney U test for independent samples with p-value < 0.05).

Students' Perception by Gender
Table 3 summarizes these results. The male students and female students show no significant difference in perception on all the courseware elements. All feature items had shown p-value more than 0.05. Overall, both groups perceive all six features as essential features in attracting them to use courseware.

Table 3   Mean Scores for Students' Perception by Gender (Standard Errors in Parentheses)

Courseware features	All	Male (n = 44)	Female (n = 79)
Easy to use	4.22 (0.741)	4.16 (0.112)	4.25 (0.083)
Clear Navigation	4.30 (0.789)	4.20 (0.120)	4.35 (0.088)
Help Menu	4.45 (0.749)	4.45 (0.110)	4.44 (0.086)
Good Layout Design	4.45 (0.760)	4.34 (0.112)	4.51 (0.086)
Sound Element	4.51 (0.728)	4.39 (0.114)	4.58 (0.080)
Good Visualize	4.64 (0.642)	4.61 (0.093)	4.66 (0.074)

Students' Perception by PC/Laptop Ownership at Home
Table 4 summarizes these results. Both groups show significant different of perceptions on "Good Layout Design" (p = 0.031) and "Good Visualize" (p = 0.036). Based on the mean scores, students who own PC or laptop at home show more concerns on "Good Layout Design" and "Good Visualize" compare to students who do not own PC or laptop at home.

Table 4   Mean Scores for Students' Perception by PC/Laptop Ownership at Home
(Standard Errors in Parentheses)

Courseware features	All	Yes (n = 69)	No (n = 54)
Easy to use	4.22 (0.744)	4.30 (0.084)	4.12 (0.111)
Clear Navigation	4.30 (0.791)	4.39 (0.084)	4.18 (0.124)
Help Menu	4.44 (0.750)	4.54 (0.069)	4.31 (0.130)
Good Layout Design*	4.45 (0.762)	4.61 (0.071)	4.24 (0.127)
Sound Element	4.52 (0.730)	4.52 (0.085)	4.51 (0.106)
Good Visualize*	4.65 (0.642)	4.76 (0.062)	4.49 (0.106)

* Significant difference at $\alpha = 0.05$.

Students' Perception by Experience in Using Courseware
Table 5 summarizes these results. Both groups only show significant different of perceptions on "Help Menu" (p = 0.033). Mean scores show that students without experience show more concern on "Help Menu" compare to students who have experience in using courseware. This indicates that students who had never use courseware will appreciate more instructions and guidance.

In general, all items show mean scores greater than 4, thus representing a positive view on all six courseware features (i.e. Easy to use; Clear Navigation; Help Menu; Good Layout Design; Sound Element; and Good Visualize). All six features are considered essential in developing a good courseware. Among all these features, "Good Visualize" shows a slightly higher mean score, thus indicating a good visualization is the most important features in courseware. This result was in line with previous literature which stated that learners prefer good visual representations in their e-learning environment. A learning environment that looks good, feels good and is fun to use will create a more engaging experience and increase the amount of time the learner is prepared to spend in front of the computer[18].

Table 5   Mean Scores for Students' Perception by Experience in Using Courseware
(Standard Errors in Parentheses)

Courseware features	All	Experienced (n = 73)	Inexperienced (n = 48)
Easy to use	4.22 (0.736)	4.18 (0.090)	4.29 (0.099)
Clear Navigation	4.31 (0.786)	4.33 (0.087)	4.29 (0.123)
Help Menu*	4.45 (0.752)	4.34 (0.090)	4.60 (0.102)
Good Layout Design	4.45 (0.763)	4.45 (0.092)	4.44 (0.107)
Sound Element	4.52 (0.720)	4.53 (0.083)	4.50 (0.107)
Good Visualize	4.66 (0.627)	4.70 (0.069)	4.60 (0.098)

* Significant difference at $\alpha = 0.05$.

Objective 3:   To investigate the challenges that history teachers face in using courseware in their history subject teaching.

Based on the short interview, it showed that there is currently no history courseware used in schools. In addition, the current history resources that available through online are very limited, static and less exciting. However, all the form 5 history teachers in this study have positive perceptions on the courseware compliant with the following guidelines and three major events of instruction listed below:

i)   The main purpose of this structured interview try to investigate the holistic approach on form 5 history teachers that should be takes into account the literacy experience of the students, as well as assisting students learning and cognitive, affective and psychomotor capabilities when history teached using multimedia package learning method. Therefore all four history teachers in this interview agreed that students should be included in development processes of history courseware. Thus, this indirectly refers to the aspects of students thinking, including knowledge, understanding, application, analysis, synthesis, and evaluation are important elements in any courseware development project.

ii)   When asked about to what extent the history courseware fulfils the requirements of instructional design and promotes students' motivation, all respondents agreed that courseware must accordance with national education philosophy and principle as well as pedagogical approachs of computer based courseware. Norfadilah[19] stated that most of the developers tried to produce the courseware to fulfil the guidelines of the Ministry of Education depended on their previous experience only, rather than researching pedagogical approaches. Thus it would be valuable to conduct a follow-up study that related the pedagogical style on the usage of computer based learning instructions, especially in term of incorporating multimedia learning package in collaborative learning, class discussions, and reflective inquiry, so that be able to embrace the interactive features of propose courseware[20].

iii) History courseware should be paralled with open-ended learning environment. This particular learning environment perceived to be able to help students understand the more complex historical events, provided the proposed courseware have extensive resources. By using integrated multimedia history courseware as a tool of open-ended learning environment would involve students in independent research to find and select their own relevant historical memory.Therefore the respondents agreed that respective history courseware have to able to link real life historical events and historical figure into the real world. By integrated multimedia design, such historical events and historical figures will be to help enhancing levels of students' cognitive functioning. A group of researches like Song, *et al*[21] had addressed on the importance of flexibility in questions and answers of any interactive learning medium whereby provides feedback with respect to the question's context makes the user an active participant in the learning process so that learners can response based on context.

From the structured interview among 4 form 5 history teachers above, we concluded that overall respondents in this study have acknowledged the importance of using the teaching courseware to complement traditional teaching of history. Teachers had shown great preference in using the courseware since the subject like history demands great narrative and holistic teaching flexibilities in promoting historical events and historical figures understanding among different students' capabilities.

In term of perceived constraints and challenges issues in using history courseware, the respondents outline following statements: i) History multimedia learning package did provide more enjoyment teaching and learning experience, however, the upmost challenges might be well-conversed the multimedia learning package to parallel with ministry requirement and national education aspiration on digitalized the education system. ii) Is concerning the training program for teachers and students on utilized the learning medium whereby linked to the school computer laboratory and other relevant facilities, that seeing as responsibility of school authorities as nowadays, laptop only applicable for mathematics and science teachers as these two subjects have been provides teaching and computer based learning courseware. iii) Is concerning students learning capabilities and learning style. Respondents concern on some of the students have low technology accessibility and not technology savvy which might be one of the hindering factor in using courseware for history education.

Conclusion

In conclusion, it is important to take into account teachers and students' perception, problems and expectations in order to implement using interactive courseware for history subject teaching and learning. The findings shows that overall respondents in this study have acknowledged the importance of using interactive courseware in their teaching or learning process to complement traditional teaching or learning of history. Regardless of the limitations found in this study, the researchers still believe that findings add to our understanding on the teachers and student's perception toward interactive multimedia courseware for history education. These perceptions, constraints and challenges need to take into account before the designing and development of an interactive multimedia courseware for history subject teaching and learning.

The researchers believe that the participants' experience described in this study represent what might occur in other secondary schools. Additional research is needed to add or refute the conclusion of this study. Further studies are needed from different districts or states in order to analyze the perception of students and teachers. The expectation, environment, and socioeconomic statuses may not be the same from different school settings. Therefore, the attitudes of the students and teachers may all vary. Although this study was conducted only on form 5 students, future studies should be conducted on form 4 students. A broad quantitative survey may further assist to the understanding of student's perception toward interactive multimedia courseware for history education. Future research may also be focused on designing and development of an interactive courseware for history subject in collaboration with history teachers and educational professionals.

Acknowledgement

Endnotes

1. Tian Belawati. "Malaysia: ICT use in education." 2001. http://www.unescobkk.org/fileadmin/user_upload/ict/Metasurvey/MALAYSIA.PDF (accessed November 21, 2009).

2. Norhayati Abdul Mukti and Siew Pei Hwa. "Malaysia perspective: Designing interactive multimedia learning environment for moral values education." *Journal on Educational Technology and Society* 7, 4(2004), pp. 143-152.

3. Norazan M.Z. and Wong S.Y.. "Gamed Based Learning Model for History Courseware: A Preliminary Analysis." *In proceeding of International Symposium on Information Technology*, August 2008. Kuala Lumpur, Malaysia.

4. Randall Bass. "A Brief Guide to Interactive Multimedia and the Study of the United States." *Georgetown University*. 2000. http://www9.georgetown.edu/faculty/bassr/multimedia.html (accessed November 21, 2009).

5. Paige Rod, Laurie M. Rich and John McGrath. "Helping your child learn History". *US Department of Education*, 2004, http://www.ed.gov/parents/academic/help/history/history.pdf (accessed February 16, 2010).

6. Lisa Neal. "Storytelling at distance". *ACM eLearn Magazine*, 2001, http://www.elearnmag.org/subpage.cfm?section=research&article=1-2 (accessed February 16, 2010).

7. Vasudha Kamat. and Jayashree Shinde. "Enrichment of the learning experience of rural children through interactive multimedia." 2009. http://wikieducator.org/images/5/5a/PID_598.pdf (accessed March 21, 2010).

8. William J. Gibbs, Pat R. Graves and Ronan S. Bernas. "Identifying important criterias for multimedia instructional courseware evaluation." *Journal of Computing in Higher Education* 12, 1 (2000), pp. 84-106.

[9]   Elaine England and Andy Finney. "Interactive Media – What's that? Who's involved? (2002) - http://www.atsf.co.uk/atsf/interactive_media.pdf (accessed March 28, 2010).

[10] Tay Vaughan. *Multimedia : Making It Work.* 7th ed. New York: McGraw-Hill Technology Education, 2008.

[11] Andy Ju An Wang. et al. "Encouraging active learning through multimedia and interactive courseware." *In Proceedings of 35th ASEE/ IEEE Frontiers in Education Conference.* October 2005. Indianapolis, US.

[12] Wolfgang Schnotz. "Enabling, Facilitating, and Inhibiting Effects in Learning from Animated Pictures." *In Proceedings of International Workshop on Dynamic Visualizations and Learning,* July 2002. Tubingen, Germany.

[13] Adel M Agina. "The advantages and disadvantages of the animation technology in education and training". 2003. http://projects.edte.utwente.nl/pi/papers/AnimationPaper.html (accessed May 23, 2010).

[14] Rahman Syed M., Nam Tsoi Kei and Graham Dettrick. "Multimedia as an educational tool: An overview and the future." 1996. http://ascilite.org.au/aset-archives/confs/iims/1996/ry/rahman1.html (accessed January 21, 2010).

[15] Rahimi Md Saad. et al. "Evaluation of courseware for teaching and learning of from one mathematics and Science." *MEDC* 1 (2007), pp. 47-56.

[16] Yasmine Howard. "User-Friendly and Learner-Friendly courseware design, development and evaluation." Ph.D thesis, University of Tasmania, 2009.

[17] Jing Liu. "An Experimental Study on the effectiveness of multimedia in College English Teaching." *English Language Teaching* 3, 1(2010), pp. 191-194.

[18] Cathy Key and Roger Mundell. "LOGIC: Creating online Case Studies." 2005. http://www.udutu.com/pdfs/logic-whitepaper.pdf (accessed February 18, 2010).

[19] Norfadilah Kamaruddin. "Challenges of Malaysian Developers in Creating Good Interfaces for Interactive Courseware." *TOJET: The Turkish Online Journal of Educational Technology* 9, 1(2010), pp. 37-42.

[20] Robert Woods, Jason D. Baker and Dave Hopper. "Hybrid structures : Faculty use and perception of Web-based courseware as a supplement to face-to-face instruction." *Internet and Higher Education*, 2004, 7 (4), pp. 281-297.

[21] Ki-Sang Song et al. "A framework of synthesizing tutoring conversation capability with web based distance education courseware." *Computers & Education*, 42 (2004), pp. 375-388.