Pedagogical usability for Digital Learning Content Module based on Blended Learning Strategy in Islamic Civilization and Asian Civilization Course

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ABSTRACT

Blended Learning Environment (BLE) is one of teaching approach designed to attract learners' interest in the studies of the Islamic Civilization and Asian Civilization Course (TITAS). In the study, the application of web 2.0 is integrated into the digital learning content module (e-CITAC) for BLE. Hence the objective of this paper is to evaluate the usability of e-CITAC module based on BL strategy in the teaching of TITAS Course which has been carried out at university using the traditional approach with less interesting materials and which also lacks in the integration of ICT. In order to create an effective learning, e-CITAC comprising four menus was developed based on multimedia developmental model: (i) Information Menu (ii) Guidance Menu, (iii) Practice Menu and (iv) Evaluation Menu. This study adopted Type 1 developmental research design in which its formative evaluation phase involved a case study for eliciting feedback on the usability of e-CITAC. A total of 123 undergraduate university students of University Technology MARA took part in this study for the September-December 2014 academic semester. A set of questionnaire was used to gather students' perception in Blended Learning environment. The data were analyzed using descriptive statistics. The results of the study indicated positive feedback from students in regard to learning the TITAS Course. The 'personal learning' aspect obtained the highest mean (mean = 4.06) followed by the aspect on 'complementary learning' (mean = 4.05), 'course content' (mean= 4.04), 'flexibility' (mean = 3.99), 'sharing' (mean = 3.98), 'feedback' (mean = 3.96), 'learning community' (mean = 3.89), 'motivation' (mean = 3.88), and the lowest mean score which was obtained in the 'technical' aspect (mean = 3.81). The e-CITAC module, being the first support learning material was developed to fulfill the instructional design specifications based on blended learning strategy. It also functioned as a systematic digital learning material and was well accepted by the students to be used for studying the TITAS Course based on blended learning strategy.

Keywords: *Pedagogical usability, Digital learning content module, Blended Learning, TITAS Course*

INTRODUCTION

Effective learning environment is crucial for the accomplishment of learning aims and objectives in which learners are involved in interaction and discussion process with expert guides and tutors (Harashim 1993). The 21st century has seen the vital role played by the ICT in all aspects of life involving small or big organisations whether in education, social and economic aspects, military and medicine (Onn et al. 2009). The technological advancement has also revolutionised the basic learning paradigm and presentation of learning material used by

students all over the world (Hisyam et al. 2006) with an increase in digital learning content as an alternative to physical textbook (Beetham & Sharpe 2013). With technology, the content of a book can be combined more creatively and interactively in a module based on learning objectives and the skills outlined by a learning institution (Robby & Patrick 2008). This way, the content is made easier to access, modify and be used by both students and lecturers anywhere at appropriate location. Furthermore, the Internet and email for sending messages, social activities, file sharing and mobile application have also been used globally (Farahiza 2013) and which are a familiarity to students to use during learning (McGill 2011). Hence students nowadays grow up in the world where technology is part of their environment thus depending on it for helping them learn and gather information (Ontario Online Learning Portal for Faculty and Instructors 2015). Nevertheless, technology alone does not guarantee effective learning if pedagogical aspect and learning material are ignored. Therefore this study seeks to evaluate the usability of digital learning content module (e-CITAC) based on blended learning in the Islamic Civilization and Asian Civilization (TITAS) course. The aspects of evaluation covered are the course content, technical, flexibility, learning community, motivation, sharing, feedback, personal learning and complementary learning.

DIGITAL LEARNING CONTENT MODULE BASED ON BLENDED LEARNING

A module is a unit of teaching and learning for discussing a particular topic systematically and sequentially to facilitate individual learning so the topic can be mastered easily and accurately (Sidek & Jamaludin Ahmad 2005). Even if the module is carried out in a class or group of students, it still applies to individual learning. This is because as long as it brings about positive change in students, its implementation can take place individually or in academic or non-academic groups (Russel 1974). Online digital module for blended learning displays learning content and work plan or a combination of both on one page or more. It can be prepared for teaching and learning for a week or other specified duration (University of Central Florida & American Association of State College and Universities 2015). The structure and characteristics of digital learning content module have changed from text and printed manual to smaller, more interactive versions with the content being divided into smaller topics for a more effective and flexible teaching and learning. The transformation in the course software nowadays brings about a new format as well as adding values to the present software. Hence a digital learning content module has mobile content, is easy to access, can be modified in various platforms and can also be adapted to fulfill today's users. One main criterion of such module is its division into different layers of content, structure, presentation or layout, context and pedagogy. These different segments facilitate lecturers in managing, reusing and storing the content for bringing about effective learning. The digital content is also compliant with the standard set by the SCORM (Shareable Content Object Reference Model) and can be used in various platforms depending on the users (Robson & McElroy 2008).

Blended Learning (BL) is a hybrid, integrated learning combining web-based and traditional face-to-face method with particular materials online for constructive learning experience to take place (Mohamaed Amin et al. 2014; Oliver 2005). The aim of such hybrid course is to combine the best elements of online and digital learning with traditional ones in achieving active and in-depth learning (Sun & Sun 2012) as well as for self-learning opportunity (Norman, 2007; Stacey & Gerbic 2008). A combination of reality and video based on web 2.0 brings about intrinsic values to students due to multimodalities simultaneously integrated in learning (O'reilly 2007). Blended learning is made up of four models: (i) Rotation, (ii) Flex, (iii) Self-Blend, and (iv) Enriched-Virtual. Under Rotation Model, there are four types: Station-Rotation, Lab-Rotation, Flipped Classroom and Individual Classroom (Staker & Horn 2012; Moore 2013).

METHODOLOGY

Research design

The study used a developmental research design (Richey & Klein 2007) and such study on product creation and teaching materials is established through a developmental research design Type 1 as discussed by Richey and Klein (2014). In a formative evaluation, holistic case design (Yin 2009) is used for getting feedback on user acceptance towards a digital learning module that has been developed.

Module Development

In developing the digital module, the instructional design model comprising analysis, design, development, implementation and evaluation (ADDIE) was used as the developmental methodology at three levels: (i) need analysis study for digital module design, (ii) design principle for digital module, and (iii) developmental aspect of digital module. For effective learning, multimedia developmental model (Alessi & Trollip 2001) was used and this was made up of four instructional phases: (a) presenting information, (b) guiding the learner, (c) practising, and (d) assessing learning which is the backbone in the development of a digital module. In the digital module based on Blended Learning strategy, four instructional phases were integrated with elements of Blended Learning outlined by J.M Carman (2005): (i) Life events, (ii) Self-learning, (iii) Collaboration, (iv) Assessment for knowledge testing and improvement, and (v) Support Material. The digital module was also developed with motivational element to ensure users' attention, engagement and motivation while using the module. Hence a motivation model by Keller & Suzuki (1987) known as ARCS - Attention, Relevance, Confidence and Satisfaction - was integrated into the module. A constructivist learning theory was selected for the digital module development as students are actively involved in constructing new knowledge or concept through experiences gathered from multimedia learning environment based on Blended Learning strategy. The digital module developed was presented in four strategies: the role, presentation, instructional method and multimedia design. Hence the menu in the digital module was designed and created through integration of those elements. It was also presented in accordance with the instructional implementation of the TITAS Course based on Blended Learning strategy with the following sub-menus: (a) Guidelines, (b) Learning Notes, (c) Activities, (d) Forum, (e) Other links, and (f) Evaluation.

Implementation of Module

Digital learning content module based on blended learning strategy in the TITAS Course was conducted among semester 1 undergraduates selected from four campuses of the Mara University of Technology (UiTM). The participants were of different academic performance, ethnic groups, faculties and socioeconomic backgrounds. Before the module was implemented, an analysis on the students' learning environment was conducted to ensure complete access to the module by the students. All students could use the Microsoft Office, owned laptops or desktops, had lecture halls and college with wifi facility (as claimed by 75.9% of the students), had access to broadband (21.4%), and had smart phones with Internet facilities (62.4%). In addition, every campus had laboratory and library equipped with wireless Internet connection for online learning.

INSTRUMENT

The main instrument in the study was the prototype of the digital learning content besides a questionnaire which has been checked by 7 experts on various fields: subject matter, instructional design, pedagogy, psychometrics and language. The questionnaire was a modified version of Goode (2003), Ling (2010) and Ugur et al. (2011) on the usability of digital content of the TITAS course based on Blended Learning. The instrument contained nine criteria: (i) Course content, (ii) Technical, (iii) Flexibility, (iv) Learning Community, (v) Motivation, (vi) Sharing, (vii) Feedback, (viii) Personal Learning, and (ix) Complementary Learning. The items in the instrument was measured based on the following scales (1) Strongly disagree, (2) Disagree, (3) Not sure, (4) Agree, and (5) Strongly Agree. The mean score interpretation was based on Nunally (1978): (i) 1.00-2.00 (Low), 2.01-3.00 (Moderately Low), 3.01-4.00 (Moderately High), 4.01-5.00 (High).

Sampling

This study involved 123 undergraduates students from four campuses of University Technology MARA (UiTM) which represents four zones east, west, north and south. The study did not involve students of other higher learning institutions because of the nature of courses offered at any university was a little bit different despite some similarity in content (Faridah & Fakhruladabi, 2012). The selection was done through purposive sampling involving only campuses which had suitability in terms of teaching and learning context and consent from lecturers and students who agreed to implement the module. The digital learning module content was evaluated through questionnaires based on retrospective technique in which feedback from students were collected after its implementation.

Pilot Test

A pilot test was conducted in one of the campuses of UiTM involving 40 Semester 1 undergraduates from two classes. Data collected from the pilot test were evaluated for consistency using Statistical Package for the Social Science (SPSS 22.0). Reliability of the survey is evaluated using Cronbach Alpha. All 39 items show an alpha of 0.957 which commonly used threshold value for acceptable composite reliability is 0.6 (Gay et al., 2011).

Data Analysis

Descriptive analysis was carried out to answer all the questions by using frequency and mean score. The data interpretation of mean score was based on Nunally (1978) as mentioned in the Table 1 below.

Table 1: Interpretation of mean score

Mean Score	Interpretation
4-5	High
3-3.99	Moderately High
2-2.99	Moderately Low
1-1.99	Low

Source: Nunally 1978

FINDINGS

There are nine constructs evaluated in identifying the usability of the digital content of the TITAS Course based on Blended Strategy and the aspects are module/course content, technical, flexibility, learning community, motivation, sharing, feedback, personal learning and complementary learning.

Module Content aspect

Table 2 shows the majority of students think that the digital content is suitable for learning the TITAS Course with a high overall mean of 4.02. Only item 'digital module is sufficient' obtains a moderately high score (mean = 3.92) which indicates students' need for an increase in the module content. Aspects 'module content is useful' (mean = 4.08), 'interactive notes are suitable' (mean = 4.04), 'other links' (mean = 4.04) and 'activities are suitable' (mean= 4.04) all record high mean scores. The overall results indicate students' high agreement with the digital module being used for learning the TITAS Course.

Table 2: Usability of digital content in TITAS Course

No	Item	Min	SD
1	Interactive notes in the digital module are suitable with TITAS Course	4.04	0.59
2	Activities prepared in the digital module are suitable with learning TITAS Course	4.04	0.66
3	Other links in the digital module are suitable as support learning materials for TITAS Course	4.04	0.61
4	The digital content is sufficient for learning TITAS Course	3.92	0.82
5	The digital content is useful for learning TITAS Course	4.08	0.66
	Total	4.02	

Technical Aspect

Table 3 shows the moderately high mean scores obtained for the usability of the digital content from the technical aspect with an overall mean score of 3.81. The aspect 'design is user-friendly' (mean = 3.90) obtains the highest mean score followed by item 'links can be accessed' (mean =3.87), 'browser functions well' (mean = 3.73) and the lowest is 'forum has security system' (mean = 3.72). The findings show that the technical aspect receives less satisfactory feedback from the students hence for the implementation of the TITAS Course based on blended learning strategy, more improvement should be focused on this aspect to achieve better learning outcome from the course.

Table 3: Usability of digital content in TITAS Course from technical aspect

No	Item	Mean	SD
1	Interface design of digital module is user-friendly	3.90	0.76
2	Forum in digital module has security system	3.72	0.77
3	Browser used for exploring digital content functions well	3.73	0.73
4	Links in digital content can be accessed in whole	3.87	0.70
	Total	3.81	

Flexibility Aspect

Table 4 shows the moderately high mean scores obtained for the usability of the digital content from the flexibility aspect with an overall mean score of 3.99. Though high mean scores are recorded for items 'location is flexible' (mean = 4.16) and 'read notes anytime' (mean = 4.08), improvement can be made in providing more suitable notes and wider accessibility to attract students' interest. Items 'communicate with friends anytime' (mean = 3.85) and 'discussion time is unlimited' (mean= 3.83) can be made more systematic in the future to enable students access quality self-learning.

Table 4: Usability of digital content in TITAS Course from flexibility aspect

No	Item	Mean	SD
1	I can read notes prepared in the digital content anytime	4.08	0.78
2	I can communicate with friends anytime through the digital content	3.85	0.72
3	Discussion time online with lecturers is unlimited	3.83	0.80
4	Location for using the digital content is flexible	4.16	0.66
	Total	3.99	

Learning Community Aspect

Table 5 shows the moderately high mean scores obtained for the usability of the digital content from the learning community aspect with an overall mean score of 3.89. The results call for improvement even if there exists a learning community in regard to the TITAS Course. Items 'interact with friends online' (mean = 3.90), 'build knowledge through activities online' (mean = 3.90), 'receive guidance from lecturers online' (mean = 3.88) and 'complete task with support from friends' (mean = 3.88) may need to be planned and implemented more strategically in the future before digital content can be implemented.

Table 5: Usability of digital content in TITAS Course from learning community aspect

No	Item	Mean	SD
1	I can interact online with friends through digital content digital	3.90	0.74
2	I can receive guidance from lecturers online through digital content	3.88	0.75
3	I can build knowledge through activities online through digital content	3.90	0.77
4	I can complete task with support from friends through digital content	3.88	0.73
	Total	3.89	

Motivation Aspect

Table 6 shows the moderately high mean scores obtained for the usability of the digital content from the motivation aspect with an overall mean score of 3.88. The item 'various learning approaches through digital content motivate me' (mean = 3.99) receives the highest mean score followed by item 'I am satisfied with the digital content' (mean =3.94), 'comfortable with the digital content' (mean = 3.80) and the lowest score gores to item 'enjoy learning' (mean = 3.77). Overall, the results reflect the motivating element present in the digital content of the TITAS Course thus further improvement in its presentation quality may yield better feedback in the implementation of the course.

Table 6: Usability of digital content in TITAS Course from motivation aspect

No	Item	Mean	SD
1	I enjoy learning through digital content usage	3.77	0.72
2	Various learning approaches through digital content motivate me to study TITAS Course	3.99	0.67
3	I am comfortable with the digital content used in learning the TITAS Course	3.80	0.65
4	I am satisfied with the digital content used for learning the TITAS Course	3.94	0.70
	Total	3.88	

Sharing Aspect

Table 7 shows the mean scores obtained for the usability of the digital content from the sharing aspect with an overall mean score of 3.98. The highest score is recorded by item 'share knowledge with friends' (mean =4.09), followed by 'share opinions with friends' (mean = 4.01). On the other hand, the, items 'share learning experience' (mean = 3.90) and 'share learning problems with friends' (mean = 3.90) both share the same moderately high mean scores. This reflects sharing element among the students while using the digital content in the course of the TITAS learning. Nevertheless, complete sharing still did not take place as not all students were involved in the activities online.

Table 7: Usability of digital content in TITAS Course from sharing aspect

No	Item	Mean	SD
1	I can share learning material with friends through digital content	3.97	0.73
2	I can share opinions with friends through digital content	4.01	0.70
3	I can share learning problems with friends through digital content	3.90	0.71
4	I can share learning experience with friends through forum in the digital content	3.91	0.78
5	I can share knowledge with friends through digital content	4.09	0.65
	Total	3.98	

Feedback Aspect

Table 8 shows the moderately high mean scores obtained for the usability of the digital content from the feedback aspect with an overall mean score of 3.96. The highest mean score is recorded by item 'confusion in learning can be solved' (mean = 4.03) and 'feedback on course is easily available' (mean = 4.00).

Table 8: Usability of digital content in TITAS Course from feedback aspect

No	Item	Mean	SD
1	Feedback on course is easily available outside lecture hours through digital content	4.00	0.71
2	My participation record in activities is easy to check through forum in the digital content	3.85	0.85
3	My task accomplishment status can be obtained through feedback in the digital content	3.94	0.71
4	Confusion in learning can be solved through instant feedback in the digital content	4.03	0.78
	Total	3.96	

Personal Learning Aspect

Table 9 shows high mean scores obtained for the usability of the digital content from the personal learning aspect with an overall mean score of 4.06. The highest mean score recorded is in the item 'choose learning tools' (mean = 4.17), followed by 'choose learning material to be studied' (mean = 4.15). While items 'learn according to my own capacity' (mean = 3.97) and 'arrange suitable learning strategy' (mean = 3.95) rank at moderately high mean scores.

Table 9: Usability of digital content in TITAS Course from personal learning aspect

No	Item	Mean	SD
1	I can arrange suitable learning strategy through digital content	3.95	0.69
2	I can learn according to my own capacity through digital content	3.97	0.74
3	I can choose learning material to be studied from digital content	4.15	0.62
4	I can choose learning tools (forum, facebook, padlet) to fulfill my needs through digital content	4.17	0.64
	Total	4.06	

Complementary Learning Aspect

Table 10 shows high mean scores obtained for the usability of the digital content from the complementary learning aspect with an overall mean score of 4.05. The highest mean score is recorded by item 'face-to-face learning is extended to online learning' (mean = 4.15) indicating high agreement by students on digital content complementing their learning. The second highest mean score goes to item 'improve my understanding on abstract concepts' (mean = 4.12) followed by 'various notes to support learning' (mean = 4.03) and 'obscurity from lecture can be enlightened through digital content' (mean= 4.03). A moderately high mean score is obtained by item 'problem encountered during face-to-face learning can be solved online ' (mean = 3.92).

Table 10: Usability of digital content in TITAS Course from complementary learning aspect

No	Item	Mean	SD
1	Various notes which can be downloaded fro the digital content support learning	4.03	0.68
2	Obscurity from lecture can be enlightened through digital content discussions on line	4.03	0.73
3	Digital content helps improve my understanding on abstract concepts during lecture	4.12	0.71
4	Problem encountered during face-to-face learning can be solved online through digital content	3.92	0.70
5	I can meticulously follow my lesson because face-to-face learning is extended to online learning through digital content	4.15	0.67
	Total	4.05	

Overall, it has been discovered that digital content has great potential to be used in the studying of the TITAS Course based on Blended Learning strategy with high scoring is obtained in the course content, personal and complementary learning. Nevertheless there are still aspects which obtain moderately high scoring thus prompting improvement to be made in the respective aspects.

DISCUSSIONS

The study revealed that the digital content developed was able to fulfill the needs of the undergraduates at the UiTM in learning the TITAS Course based on the overall positive feedback received. The blended learning strategy integrated in the digital content development has made the students more motivated in learning the TITAS Course due to diversity in terms of teaching and instructional methods, learning environment, media and the role it plays in changing learning from passive to active (Bernard et al. 2014). The digital content can facilitate students in their TITAS Course especially in the personal learning aspect since it was designed and created based on blended learning strategy which allowed learners to choose their own learning material and tool (Dean et al. 2001). Furthermore students are also able to reinforce learning through the various strategies like instructional and presentation methods, media and the function provided by blended learning. As stated by Bernard et al. (2014), blended learning is a valuable learning experience that offers integrated pedagogical technique, student involvement strategy, technology and modality (Lynch & Dembo, 2004).

In addition, the various instructional methods offer educational theories to overcome student boredom (Zhao, D. & Yang, Q. 2011). Students have the opportunities to arrange their own learning time, place and evaluation depending on their characteristics, interest and learning style (Huang, L. 2012). In blended learning, learning styles are not the only determinant for success in online learning as it also involves learning approach and control (Shaw. 2010) and online self -access (Horn & Staker 2011). Horn and Staker (2011) admit that teachers are the major contributors to the success in the blended learning environment. The Prophet Muhammad (p.b.u.h) himself took into consideration individual differences in acquiring knowledge as his treatment to each person was done according to their own efforts, skills, characters and

environment (An-Nawawi 1983). Through blended learning, students can continuously learn through various approaches and objects of learning anytime and anywhere within their own control or with guidance from lecturers in managing and implementing their online learning.

The findings of the study also show that the digital content can be a complementary learning to the TITAS Course as it prepares support learning material in various forms such as notes, online and fieldwork activities, video making, blog creation and interactive quizzes. Students can also benefit from the learning environment that is equipped with multiplicities which enable them to be involved collaboratively in or outside lecture hours (Andri et al. 2015). According to Picciano (2009) the content is one main drive in instructions and there are various ways for content presentation. Content in humanities subjects like arts, history and literature can be upgraded through digital imaging. A study by Ling et al. (2010) shows students' enthusiasm in complete learning materials such as notes, tutorial questions and course content which can be downloaded and printed anytime. In this context, the view by Mohd Nur Manuty (1989) is accepted in which he proposes that educators in the Islamic Education should study ontological, epistemological and axiological questions in depth. This is because all these form the basic in the traditional religious learning but which also needs to be connected with *aqli* knowledge like history, mathematics and arts to spare students from learning boredom. Hence the integration of the ICT in learning the TITAS Course may open students' mind and attract their interest in applying technology and the diversity provided in online learning.

CONCLUSIONS

To conclude, the digital content based on blended learning strategy can be used by students in their TITAS Course with most of them agree that the personal learning aspect afforded by such learning is very useful in studying the course. In addition, the complementary learning and the digital content aspects are also deemed beneficial hence future creation of digital content should integrate various media and presentation besides being flexible. The digital content should also come in realistic design, provide values in skills and learning and have practicalities that connect with real life necessity in accordance with the current technological advancement. In developing digital content, lecturers also need to be open to diversity of materials and should be exposed to technological software and usage from time to time in order to deliver meaningful learning input to their students. Besides the digital content should also be developed by those who are expert in their own fields so the value elements will be automatically integrated in the content. In regard to the TITAS Course that aims to showcase the Islamic great civilisations, the design of its digital content should be systematically planned to ensure the objectives of the course can be achieved.

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