The Development of Multimedia on E-Learning with Blended Learning in E-Commerce Lesson for Undergraduate Students

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ABSTRACT

The purposes of this research were: 1) to develop and validate the efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students are effectively criteria. 2) to compare the students' learning achievement of pre-test and post-test by using Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students. The samples consisted, 87 of the second year undergraduate students of Faculty of Science and Technology who have enrolled in the Computer and Technology subject, in the first semester of academic year 2018, Southeast Bangkok College, which were divided into two groups as: 1) The samples to study efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students were 40 undergraduate students using a simple random sampling method, and 2) The samples to study of the learning achievement of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students were 1 classroom for 30 undergraduate students using cluster random sampling method. The research instruments in this study consisted of: 1) The multimedia on e-learning with blended learning in e-commerce lesson 2) The lesson plans using blended learning 3) The learning achievement test. The data were analyzed using various statistical tests including mean, standard deviation and t-test dependent. The research results finding were as follows:1) The efficiency criterion was at 80.48/84.40 of multimedia on e-learning with blended learning in e-commerce lesson 2) The students' learning achievement of post-test by using multimedia on e-learning with blended learning in e-commerce lesson, was statistical significance at the .05 level

Keywords: Multimedia, E-Learning, Blended Learning, E-commerce

1. INTRODUCTION

The information and communication technology can be select or develop supporting education management in many ways. The selected of computer for learning resource and instruction, internet service, especially to develop of the World Wide Web (WWW) network and develop supporting media. The instruction will through by using e-learning and using internet technology as a medium of communication between the learner and the teacher. The learners construction of knowledge and skills can learn anytime anywhere to opportunity construction of learning. The learners can exchange knowledge and provided of information. Incur social learning through e-learning. By present teaching and learning has developed a variety of learning styles for learners to develop themselves according to the twenty-first century skills (21st century skills) that aims to develop learners on three skills including: 1) learning and innovation skills, 2) information, media and technology skills, and 3) life and career skills (Partnership for 21st century learning, 2015)

The instructional are integration of computer technology with conventional teaching method, In order to achieve more effective learning. This is called "Blended learning" is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. It requires the physical presence of both with the teacher and the student, with some elements of student control over time, place, path, or pace. (Panita Wannapiroon, 2011), practices are combined with computer-mediated activities regarding content and delivery. The blended learning is also used in professional development and training settings. It represents a much greater change in basic technique than simply adding computers to classrooms.The students are able to access teaching materials via the internet network according to the advice of teachers anywhere, anytime, enabling students to learn at all times (Bernath, 2012) for this reason, the researchers were interested to develop and validate the efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students. To compare the students' learning achievement of pre-test and post-test by using Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students by using the pilot courses in Computer and Technology subject, which the course is instructional for students of the Faculty of Science and Technology Southeast Bangkok College. This is enrollment according to the regulations of the university. The researcher therefore studied the concept of the development of multimedia on E-learning including studying the concept of learning process management of blended learning. To be used as a guideline for the development of teaching and learning styles the twenty-first century learning and the highest achievement for students, who have enrolled in this subject, and another subjects in the future.

2. OBJECTIVE

2.1 To develop and validate the efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students.

2.2 To compare the students' learning achievement of pre-test and post-test by using Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students.

3. LITERATURE REVIEW

3.1 Blended Learning

Charles R. Graham (Graham, 2012), Brigham Young university from The United States gave the following definition of blended learning as blended learning systems combine face-to-face instruction with computer-mediated instruction

The summarized the definition of blended learning is a learning method that combines face-to-face learning methods through online computer media systems to increase the learning efficiency of learners.

3.2 E-learning

Jai-Thip NaSongkhla (1999) gave the meaning of e-learning that means using the properties of hypermedia and computer. The World Wide Web network. Allowing learners to learn without limiting that students must be at the same place in one place. Learning can occur at the time and place that the learner is convenient and able to solve the lessons to be updated.

The summarized the definition of e-learning that are learned through the internet and can be used with learners through blended learning methods.

3.3 E- Commerce

Organization for Economic Cooperation and Development (OECD, 1997) Electronic commerce is a transaction of any forms. Related to commercial activities both at the corporate and personal on the basic of processing and digital data transmission, has text, audio and images.

The summarized of E-commerce definition means spending and doing the process of buying and selling produce by electronic means such as by mobile applications and the Internet. E-commerce refers to both online retail as well as electronic transactions through any forms of internet as required by user.

4. CONCEPTUAL FRAMEWORK

These researches, researchers' definition conceptual framework for the development of multimedia on e-learning with blended learning in e-commerce lesson for undergraduate students were as follows:

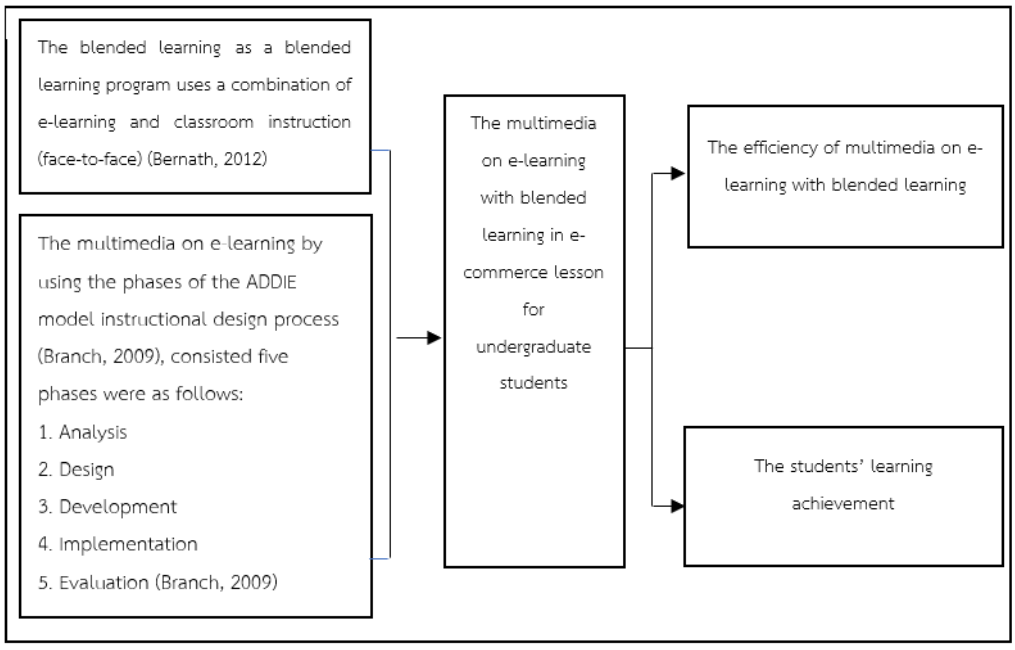

Figure 1 Conceptual Framework

5. RESEARCH METHODOLOGY

5.1 The Population and The Samples

The population in this study consisted, 87 of the second year undergraduate students of Faculty of Science and Technology who have enrolled in studying in the Computer and Technology subject. In the first semester of academic year 2018, Southeast Bangkok College.

The samples were divided into two groups as: 1) The samples to study efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students were 40 of undergraduate students of Faculty of Science and Technology by using a simple random sampling method, which were divided into three stages of the efficiency test were as follows: Stage 1: Individual testing (1:1) using the samples, 3 undergraduate students. (1 Good, 1 Fair, and 1 Poor) Stage 2: Group testing (1:10) using the samples, 9 undergraduate students. (3 Good, 3 Fair and, 3 Poor) Stage 3: Field testing (1:100) using the samples, 28 undergraduate students. 2) The samples to study the learning achievement with Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students were 1 classroom for 30 undergraduate students by using cluster random sampling method.

5.3 The research process

Step 1. The development of the research instruments

1. The multimedia on e-learning with blended learning in e-commerce subject for undergraduate students, by using the phases of the ADDIE instructional design process (Branch, 2009) consisted five phases were as follows:

1.1 Analysis phase, the common procedures associated with the Analyze phase were analysis of learners, analyzing resources that require using both of software and hardware. The Analyze content to determine behavioral objectives using the content of the research by consisted five units were as follows: Unit 1 What is E-Commerce?, Unit 2 Things to know before opening an online store, Unit 3 Examples of finished the store, Unit 4 Credit card payment, Unit 5 Strategies to increase the number of visitors.

1.2 Design phase was used the data analyzed of Analysis phase to instructional designing were as follows:1) The generated a flowchart to define a set of the content then connects within the lesson. 2) The storyboard for instructional design were designing by according to the learning objectives, the blended learning plan, the lesson structure and the content, and the evaluation were presented of the work procedure in each section.

1.3 Development phase were to generated the multimedia on e-learning, which is designed through validation by experts of the content and the educational technology were to develop into software that were already prepared, then the multimedia on e-learning were revised by three experts to assessed in the content were at level of good quality ($\overline{X}$ = 4.17), the technical quality were at level of good quality ($\overline{X}$ = 4.30), and were experiment with the samples.

1.4 Implementation phase were applied multimedia on e-learning to experiment according to the guidelines of (Chaiyong Promwong, 2013), to define a set of the efficiency criteria were at 80/80 by using the efficiency test with the samples were 40 of undergraduate students of Faculty of Science and Technology, which were divided into three stages of the efficiency test were as follows: Stages 1: Individual testing, using the samples, 3 undergraduate students. Stages 2: Group testing, using the samples, 9 undergraduate students. Stages 3: Field testing, using the samples, 28 undergraduate students.

1.5 Evaluation phase the researchers were made the evaluation with all of the phases of ADDIE instructional design process to develop of multimedia on E-learning by divided into two steps were as follows:

1) Formative evaluation was made evaluated that occur during each of the five phases including: Analysis phase, Design phase, Development phase, and Implementation phase. 2) Summative evaluation was made evaluated upon completion of the developed of multimedia on E-learning.

2. The lesson plans using blended learning of multimedia on E-learning with Blended learning in E-Commerce lesson, were provided with three of the lesson plans, which were divided as follows: The lesson plan: lesson 5, consisted 2 units were as: Unit 1: What is E-commerce?, and Unit 2: Things to know before opening an online store. The lesson plan: lesson 6, consisted 2 units were as: Unit 3: Examples of finished the store, and Unit 4: Credit card payment. The lesson plan: lesson 7, consisted 1 unit was as: Unit 5: Strategies to increase the number of visitors. The lesson plans using blended learning were assessed in the quality by three experts by using the Item-Objective Congruence Index (IOC) to ensure the lesson plans using blended learning that were requires research instrument to correctly measure and appropriate of the research.

3. The learning achievement test on e-commerce lesson. The learning achievement test were using the multiple choices test consisted 30 items, and has 4 answer choices option in each items, and in both of them were shuffled both of the questions items, and the answer choices for used in pre-test and post-test, also there has only one correct answer in each items. The learning achievement test were assessed in the quality by the experts, which has the content validity between the questions item and the behavioral objectives was verified by the index of item-objective congruence (IOC) consideration ranged between 0.67-1.00, the item difficulty (p) ranged between 0.20-0.80, the item discrimination (r) ranged between 0.20-1.00, and the reliability of the learning achievement test was verified by calculation of Kuder-Richardson 20 (KR-20) formula was 0.88.

Step 2. Experiment

1) Inform learners of learning objectives of multimedia on E-learning with blended learning in E-Commerce lesson.

2) Guidelines relearning by explained the process of blending learning instruction by divided of learning ratio for the regular class were 40%, and for the E-learning lessons were 60% by using nine hours per week to study. The researchers were combined the role of both the teacher and the e-learning lesson altogether.

3) Stimulating recall of prior learning of the learners by allowing to do pre-test for 30 items of the learning achievement test that was created by the researchers.

4) The students allowed to learning of multimedia on e-learning with blended learning in e-commerce lesson by stimulating recall of the learners responses to allowed students to do various activities, and to do all of the exercises of learning units along with answering the students' inquiries.

5) Upon completed to learn of the five learning units of multimedia on e-learning with blended learning in e-commerce lesson, and then obtain the students allowed to do post-test of the learning achievement test

6) The researchers were conduct every step of experiment method, and also were collected of the data from pre-test and post-test of the learning achievement test, and then data were statistical analyzed. The data analysis and statistical for data analysis. 1. An analysis of the efficiency of multimedia on e-learning with blended learning in e-commerce lesson, which were using the set efficiency criteria of 80/80, E_1/E_2 efficiency index. 2. The comparative analysis of the students' learning achievement of pre-test and post-test by using Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students, the statistical for data analysis were using T-test (T-test dependent sample)

6. RESULTS

6.1 The efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for Undergraduate students, which was found the efficiency criterion at 80.48/84.40. The summarized results of the efficiency of multimedia lessons on e-learning as shown in Table 1

Table 1. The results of the efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students

The samples	Formative evaluation			Summative evaluation			Efficiency test (E_1/E_2)
	Full score	Average $\overline{X}$	Percentage (E_1)	Full score	Average $\overline{X}$	Percentage (E_2)	
28	30	24.14	80.48	30	25.32	84.40	80.48/84.40

from the table 1, the efficiency of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students, with the samples were 28 undergraduate students was 80.48/84.40, which was higher than the specified criteria at 80/80, Finally, these the samples were used to find out of the students' learning achievement.

6.2 The students' learning achievement of post-test by using multimedia on e-learning with blended learning in e-commerce lesson was found higher than pre-test. The summarized results of the efficiency of multimedia lessons on e-learning as shown in Table 2

Table 2 The results of the students' learning achievement were analysis comparison between pre-test and post-test by using of Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students

The students' learning achievement	n=30		
	Mean	Standard deviation	T-test
Pre-test	16.67	9.95	11.06*
Post-test	23.47	4.95	

*statistical significance at the .05 level (α = .05, df = 29, t = 1.699)

from the table 2, the students' learning achievement were comparison between pre-test and post-test, which were found in the pre-test of Mean was 16.67, and Standard deviation was 9.95, and also were found in the post-test of Mean was 23.37, and Standard deviation was 4.95. In conclusion of the students' learning achievement of post-test by using multimedia on e-learning with blended learning in e-commerce lesson was found higher than pre-test, was statistical significance at the .05 level

7. CONCLUSION

7.1 The efficiency of multimedia on e-learning with blended learning in e-commerce lesson was students was 80.48/84.40, which was higher than the specified criteria because the researchers were studied of designing By using the phases of the ADDIE instructional design process (Branch, 2009), and applied to the multimedia on E-learning consisted five phases were as follows: 1) Analysis phase 2) Design phase 3) Development phase 4) Implementation phase 5) Evaluation phase. The Multimedia on E-learning was designed through validation by experts of the content and the educational technology. The researchers were revised and improved developed of multimedia on E-learning until the research process completed, therefore used to implement in teaching and learning instruction. This research was consistence with the research of (Yingkwancharoen, 2013) was done on The development of Blended Web-Based Lesson on "Lighting for studio Photography" for under graduated student with personality different was found efficiency at 86.00/80.76 which conforms to threshold set, As a results of the researcher was developed of Blended Lesson and tools, which were, learning instruction in the regular class and learning, for learning in regular class was support students on extermination and authentic practice, and on web-based lesson for the instructional media was used in this research consisted of video multimedia and rehearsed simulation game which students were responsibility feedback to all easily to understand. The illustrations of content needed to support were obvious and easy to understand and the independent content can applied the appropriate students' knowledge and skills, and also the student can review of the lessons when the students' needs including students' learning styles to apply blended web-based lesson with teaching-learning collaboration in the classroom to increase of students' comprehensive understanding.

7.2 The students' learning achievement of post-test by using multimedia on e-learning with blended learning in e-commerce lesson was found higher than pre-test, was statistical significance at the .05 because e-learning was easy to understand and motivate to learning. The research was consistence of Boyle et al. (2003) he was used blended learning with online resources with tutorial support found learning with online learning assist to achieve of individual students' learning was more than just only traditional learning.

8. RECOMMENDATIONS

8.1 The Multimedia on E-learning with Blended learning in E-commerce lesson for undergraduate students, as the results, was higher the students' learning achievement. Therefore can provide guidelines for the design and implementation of blended learning through technology, media and networks for the other courses and for the future research that are appropriate with the content and the learning objectives, and also can help in teaching and learning instruction for more effective and more interesting.

8.2 Should be consider of the internet network system availability that is prepared of the encourage places and facilitate to teaching and learning instruction to be the most effective. In addition, the teachers have to stay update on the technology trends and teaching practices to apply in teaching and learning instruction to increase of students' knowledge and skills.

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