A VIRTUAL CLASSROOM MODEL IN EDUCATIONAL TECHNOLOGY AND COMMUNICATIONS FOR SUKHOTHAI THAMMATHIRAT OPEN UNIVERSITY

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ABSTRACT

The purpose of this study is to develop the Virtual Classroom Model used in Educational Technology and Communications for the Sukhothai Thammathirat Open University. The quality of the developed virtual classroom is evaluated by: i) measuring students' learning achievements before and after their learning; and ii) studying students' opinions toward the model. The twenty-two subjects used in this study are Graduate Diploma students in the Curriculum and Instruction course at the Faculty of Education, Sukhothai Thammathirat Open University. They were selected by using the purposive sampling technique. Research tools comprised pre-test and post-test. Data were analyzed by means of standard deviation and t-test. The model of virtual classroom in educational technology and communications for Sukhothai Thammathirat Open University is composed of four main components: 1) input, 2) process referring to techniques of virtual classroom in educational technology and communications, 3) output, and 4) feedback. The evaluation of the virtual classroom model in educational technology and communications for Sukhothai Thammathirat Open University by experts confirmed that the model appropriated at a very good level. Results of the experiment on the developed virtual classroom in educational technology and communications model show that students' post-experiment learning achievement scores in both the theoretical and practical components are significantly higher than their pre-experiment scores. Students' opinions on the lessons are also found to be at a good satisfactory level.

Keywords: *model, virtual classroom, educational technology, communications*

INTRODUCTION

In the development of the 21st century distance education, the approach towards enhancing efficiency must depend on information technology and the Internet connection. Virtual Classroom is considered as a new approach in learning and instruction in this borderless world of globalisation. The model virtual classroom refers to the integration of features of Library Model, Textbook Model, Interactive Interaction Model and Communication Model that depend on Computer-mediated Communication Model. Learners can communicate with other learners, instructors and experts by using diverse web-based communication tools such as electronic mails, online chat, discourse and conference via computer and other communication devices.

Sukhothai Thammathirat Open University (STOU) is an open and distance learning university in Thailand with no regular classroom on campus. STOU students have to study by themselves using distance instructional media provided by the university. The university, envisioning the necessity of utilising computer technology for distance education formulated a policy for students to learn and to be taught through the Internet system by a single instructor at a specified time via the Virtual Classroom for a given course. Students can interact with the instructor and other students at any time through a well-prepared presentation of the lessons. The use of information and communication technology (ICT) guided by the need to enhance the efficiency of learning and instruction in the Virtual Classroom. Learners can improve their ability to interact and communicate well, improve their interpersonal skills and create efficient collaboration.

The Curriculum Development and Instructional Media course (20506) is a Graduate Diploma course that aims to present basic concepts and principles in curriculum and instructional media. The instructor has to determine specific teaching methods to train learners on learning skills such as listening to the instructor's lectures, taking notes, taking part in instructional activities through practice and testing. Learning skills are skills that learners can use to learn by practicing and experimenting in order to acquire more knowledge and skills. Equipping learners with learning skills will help to reduce the failure and drop-out rates.

Spiro, Feltorich, Jacobson, and Coulson (1991) said that the utilisation of the Internet network will lead to new learning and instructional methods which are "Self-Directed Learning" and "Learning Control" by which students can select the sequence of content by themselves and learn at any time convenient for them. Learning and instructional design depends on the principles of "System Approach" in which due to the steps covering various processes are taken in sequence until the last step which is the evaluation step. The output from the evaluation step forms the feedback into previous steps/processes forming a "Closed System" (Gerlach & Ely, 1980; Semprevivo, 1976; Dick, Carey, & Carey, 1985). STOU developed an online learning system in order to support a comprehensive learning process through which the instructor will design the lessons suitable for "Self-directed learning" (Knowles, 1975). This will enable the students and the instructor located at different places to interact with each other through the "Virtual Classroom". Generally, it is divided into 2 parts: (1) the learning and instructional system, and (2) the database (Hannum, 2001). The learning and instruction through virtual classroom incorporates various media through which the students and the instructor are able to carry out learning and instructional activities without having to see each other face-to-face. Interaction occurs through communication technology that enable efficient collaboration. Kearsley (2000) explains the advantage of interaction in the learning and instruction through the network as follows,

> "Online learning is as much a social activity as an individual one. However, the quality and quantity of interactivity can vary dramatically from course to course and points to the importance of instructor skill in creating and

> managing interaction in online courses, particularly when collaborative learning is required. However, he also points out that most people have little formal training in how to successfully interact or work with others and that the social milieu of online activities is quite different from in-person interactions, thus requiring new skills and behaviours."

The virtual classroom model in educational technology and communications for STOU aims to design learning instructions through the Internet by relying on the versatile capability of interactions between the components (content, supplementary content, activities between the learners and the instructor, recommendations and feedbacks, presentations in multi-media form, and collaborative learning). Such a model will provide benefits for the learners without limitation of time and place.

OBJECTIVES

The objectives of this study are:

1. to develop a model of the virtual classroom in educational technology and communications for STOU;
2. to study students' learning achievements before and after learning from the model of the virtual classroom in educational technology and communications for STOU; and
3. to study students' opinions toward the model of the virtual classroom in educational technology and communications for STOU

RESEARCH METHODOLOGY

This research uses the research methodology and development in accordance with the research objectives using the three steps presented below.

Step 1: Searching for the model of the virtual classroom in educational technology and communications for STOU

In order to search for the model of the virtual classroom in educational technology and communications for STOU, the researchers analysed and synthesised information from documents, articles on relevant concepts, theories, and research principles of the model of the virtual classroom in educational technology and communications. Two data collecting tools were developed:

- a questionnaire to obtain opinions of experts regarding the components of the model of the virtual classroom in educational technology and communications; and
- an evaluation form for experts to assess the developed model of the virtual classroom in educational technology and communications.

Step 2: Development of the virtual classroom model in educational technology and communications for STOU

In this step, the model of the virtual classroom in educational technology and communications was developed based on the information acquired in Step 1 and opinions of 10 experts regarding the desirable model of the virtual classroom in educational technology and communications. The model of the virtual classroom in educational technology and communications consists of 4 components: Input, Process, Output and Feedback. These components are related to each other in the context of the distance education at STOU, its

philosophy, principles, determination, policy, goals, and objectives (Chalabhorn, 2008; Supreeya, 2004) as shown in Figure 1.

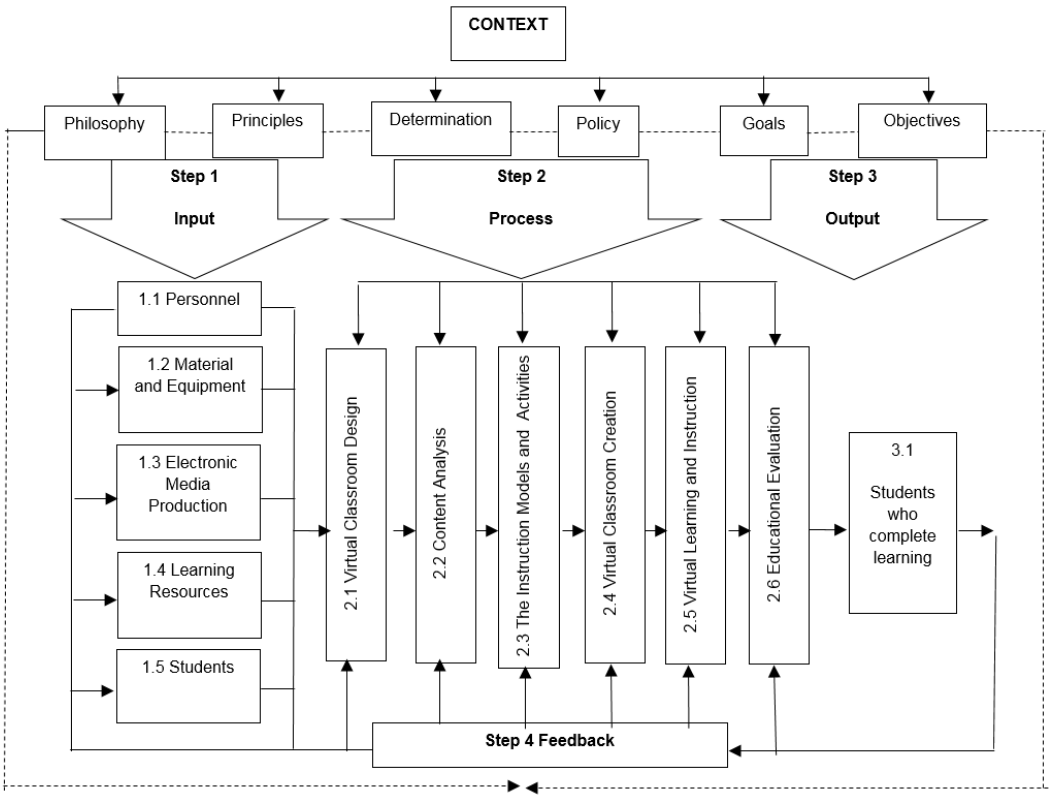

Figure 1: Virtual Classroom Model in Educational Technology and Communications

Input: personnel, materials and equipment, electronic media production, learning resources and students.

Process: processes in delivering the course through the model to achieve the desired learning outcome. The process in running the virtual classroom in educational technology and communications consists of 6 sub-components: (1) virtual classroom design; (2) content analysis that is suitable for the target group or the learners that would help to enhance the efficiency of learning and instruction whereby continuity of the content must be set as the first priority. The prioritization to present the learning experiences to the learners must be consistent with the ability of the learners and the duration of instruction in order to enhance the efficiency according to the predetermined plan; (3) Specifying the instruction models and activities (Activities are presentation of the content previously analysed by specifying sequence of instructions and specifying the instruction activities which are the introduction, getting to the lesson, learning content, practicing exercise and the test in order to create the learning arrangement plan); (4) designing the details of instruction in the following order: (a) designing the objectives and contents of instruction; (b) designing the methods of learning and learning activities; and (c) designing the evaluation of learning outcomes; (5) Virtual learning and instruction through internet is based on Self-directed Learning whereby learning in the virtual classroom occurs through practice, interaction through online chat, forum, social media, and the Internet. The virtual learning reflects individual differences. Learners can determine their own learning, repeat the learning of the content they do not understand as many times as they want without any limitation before continuing with the next content;

and (6) evaluation of the system before and after learning. These processes are depicted in Figure 2.

Output: students who complete their learning through the developed model.

Feedback: the outcome from the evaluation process that helps to identify weaknesses and opportunities to improve the system.

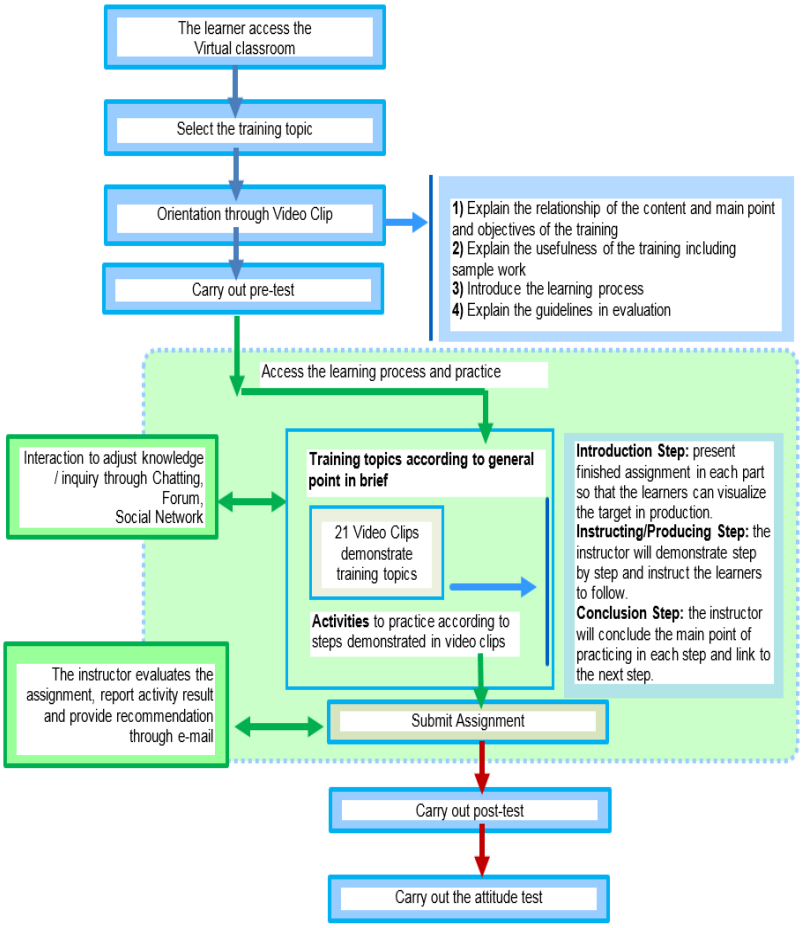

Figure 2: Arrangement of the Virtual Classroom

Step 3: Experimentation with the virtual classroom model in educational technology and communications for STOU

After the model of the virtual classroom in educational technology and communications for STOU had been developed, the researchers conducted an experiment to test its effectiveness with a research sample consisting of 22 purposively selected STOU graduate diploma students enrolled in the Curriculum Development and Instructional Media Course (20506). The experiment is a Single Group Pretest-Posttest Design. Two dependent variables were involved: learning achievements before and after learning from the model of the virtual classroom in educational technology and communications and students' opinions toward the model of the virtual classroom in educational technology and communications. The data collecting tools are achievement tests and a questionnaire to assess students' opinions toward the developed model. Data were statistically analysed using mean, standard deviation and t-test.

The experimentation will help STOU to obtain the model of the virtual classroom in educational technology and communications that is suitable. The developed model can then be used as a guide in arranging the learning and instruction of for other subjects or fields of study.

RESEARCH FINDINGS

Experts' evaluation of the developed virtual classroom in educational technology and communications model shows that the components of the model are in accord with each other and appropriate at a very good level (mean score of 4.60). The assessment of the lessons by the experts also revealed that the lessons are of very good quality (mean score of 4.47).

Results of the experiment with the developed virtual classroom in educational technology and communications model shows that students' post-experiment learning achievement scores in both the theoretical and practical components are significantly higher than their pre-experiment counterparts. Post-experiment mean score of 7.385 is much higher in comparison with their pre-experiment mean score of 3.500. This finding indicates that the developed virtual classroom in educational technology and communications model is effective as it enables students to achieve higher learning achievement mean score after the experiment, with significant statistical difference at 0.5.

The scores of the opinions on the lessons are at a good level (mean score of 4.04) with the specification of the developed virtual classroom in educational technology and communications model.

The above results of the research lead to the conclusions that the developed virtual classroom model in educational technology and communications model is very good as verified by experts. The effectiveness of the developed model is evident from the students' tests scores and the rating given.

DISCUSSION

The creation of interaction in learning via Virtual Classroom can be done in every learning and instruction process from the start to the end. This study was conducted according to the development steps and processes, starting from document analysis and literature review, analysis and synthesis of data to expert evaluation. The model of the virtual classroom in educational technology and communications was designed using the "system approach". The model of the distance learning and instruction that is based on the Internet is developed to create equal opportunity in education. The asynchronous arrangement of lifelong learning and instruction is disseminated to students in remote areas. The model is designed to stimulate students to think in a critical and creative manner with sufficient practice to ensure effective transfer of knowledge and skills.

Step 1: Content Analysis

Subject matter which is appropriate for students enables efficient learning and instruction. According to Bruner (1996), a theory of instruction should address four major aspects: (1) predisposition towards learning, (2) the ways in which a body of knowledge can be structured so that it can be most readily grasped by the learner, (3) the most effective sequences to present material, and (4) the nature and pacing of rewards and penalties. Good methods for structuring knowledge should result in simplifying, generating new propositions, and increasing the manipulation of information. In addition, content analysis will

enable the instructor to specify the subject matter in accordance with the objectives of learning and instruction, level of knowledge, and ability of the students.

Step 2: Development of the Model

The instructor is required to prepare specified document in order to teach correctly according to the pre-determined objectives, which is in accordance with Kearsley (2000) who described that development of learning and instruction through the established virtual classroom model requires all aspects of preparation and facilities related to the learning and instruction in order to smoothen the learning and instruction. For students who are not accustomed to learning through the Internet, Lactis and Atkinson (1984) proposed teaching preparation which is aimed at making the lesson more interesting by ensuring that the narrative stimulates the interest in the relevant subject matter in an informal, warm and respectful manner. According to Atkinson (1957) (as cited by Weibell, 2011), achievement-oriented activity is an activity undertaken by an individual with the expectation that his performance will be evaluated in terms of some standard of excellence. It is presumed that any situation which presents a challenge by arousing expectancy that may lead to success, may also pose threat of failure by arousing an expectancy that action may lead to failure.

Step 3: Assessment of the Quality of the Virtual Classroom Model

The lesson designed and developed using the system approach enables students acquire knowledge. The “trial run” shows that the scores of the post-test are generally higher than the pre-test scores with statistical difference at 0.05. This indicates that the learning and instruction system developed by the researcher is a good learning media as it enables students to acquire knowledge effectively.

Step 4: Satisfaction of the students toward the lessons in the Virtual Classroom Model

It is found that the students are satisfied with the lessons using the virtual classroom model which responds to the individual differences. The students are independent learners and are able to repeat the learning process at any time without any limitation. Students who have acquired the knowledge and wish to skip a particular lesson may do so and move on to the next lesson. This is in accordance with Parissa (2003) who described that the students who learn through the virtual classroom will have positive attitude towards the lessons because it poses less anxiety. Piccoli, Ahmad, and Ives (2001) found that the atmosphere in learning in a virtual classroom is always full of excitement and offers the ease to integrate various technologies. The virtual classroom model requires high speed network system that enables transmission of data in various formats as well as a good sound system. The virtual classroom model requires high-speed Internet connections. Joseph, Ng, and Ng (2002) who carried out research on student learning readiness using such models found that the students who have higher learning achievement both in “skill” and “theory” will have a positive attitude towards learning because they believe that ICT based-atmosphere facilitates their learning.

The application of instructional techniques transmitted through the Internet will help instructors to prepare the lesson so that the learners can study by themselves at their convenient time. Instructors may also design supplementary material for students who need more support in their learning. Instructors are able to interact and respond through the arrangement of virtual classroom model with learners from different places. This provides great benefits to distance education and supports lifelong learning initiatives in a borderless education era.

RECOMMENDATIONS

From the proposed results of the research, the following recommendations are made. First, there should be a research concerning the need for various lessons for the virtual classroom and various training centres in order to compensate for the lack of instructors or lecturers. This may serve as the guideline for the development of the virtual classroom for lifelong education. Second, there should be a study on the "usability" of the lesson with the same features as the lessons for the virtual classroom with the assessment from the students that will be used as the index to indicate the quality of the lessons and as supporting data for subsequent improvement.

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