The Result of the Study for Learning Management Suitable to Develop Blended Learning Model in IT for Education Course

Wirachat Banyen, King Mongkut's Institute of Technology Ladkrabang, Thailand
Chantana Viriyavejakul, King Mongkut's Institute of Technology Ladkrabang, Thailand
Thanin Ratanaolam, King Mongkut's Institute of Technology Ladkrabang, Thailand

Abstract
This qualitative research on blended learning has two main proposes. The first aim is to investigate situation of blended learning research in Thailand. The second aim is to determine recent effective environments for blended learning, its obstacle, and how to improve blended learning in an Innovation and IT in Education course. For these purposes, total of 55 graduate-level theses regarding blended learning which published during year 2006 to 2013. In addition, the research samples are a group of lecturers and 30 undergraduate students are selected by purposive sampling. Research tool used in the study is a questionnaire. The study results reveal two significant aspects. Firstly, regarding to an analysis on blended learning research in Thailand, most researches on this topic has been completed during years 2012 and 2013. The researches have been done the most by the department of Educational Technology using sample groups of undergraduate-level students who attended in academic courses related to Educational Technology subject. Moreover, the most preferred blended learning model is the one that integrate face-to-face with e-learning. Secondly, regarding to recent studying on learning environments, the study also shows that the learning environments of educational technology classes provide effective environments for implementing blend learning idea. About the obstacle of blended learning, the lecturers and students totally agree that, instead of learning by traditional face-to-face sessions alone, classroom should be more supplemented with e-learning sessions. Therefore, a preferred solution for this issue is a learning model which combines face-to-face approach together with e-learning model.

Keywords: Blended Learning, Learning Management, Higher Education

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Introduction

The National Educational Act (1999) states that the educational institutes and all agencies related to the educational management must encourage and support the educators to provide the atmosphere, the environment, the learning media and all the tools to facilitate the learners such that the learning can be initiated. In this regard, the educators and the learners may together learn from the learning/teaching media and all other academic resources. Therefore, the learning/teaching management needs to develop the learning/teaching format that conforms to the plan for the education development by introducing the advantage of the technology and applying it suitably. In the generation that the technology has much affected the everyday life, applying the suitable advantage of the technology in order to benefit the learning and the living is an interesting procedure, which also corresponding well with the objectives of the education reformation that wants all Thai citizen to globally have equal access to the education and is pushing for the creation of the learning society. Such purposes are considered the major key in the development of the country. The example of this development is such as the combination of "Face to Face" learning with the learning via the computer network (e-Learning). The important part of this method of learning is to apply to benefit of the computer network technology on to the course managing system such that the educators can manage, oversee and follow the learning by the learners. Such arrangement is the technology application that supports the education management.

From the condition as described above, the researchers are interested in developing the learning format that conforms to the education development plan by applying the technology to the learning/teaching. This is conducted within the course in innovation and information technology in education. The course is provided at the King Mongkut's Institute of Technology Ladkrabang Campus. In this course, the learners will know about the technology and the innovation in education, the application of technology in the education and all other new learning/teaching formats that are suitable with the present condition and also that of the coming future. This research also conforms to the objective of the institute regarding the learning/teaching management as indicated in founding manifest of the institute. For the beginning phase of the research, the researchers are to concentrate on the blended learning format as employed in Thailand. This is to identify the suitability of the research with the current state in the country and to study the learning/teaching management and the problems presently existing within the course in innovation and information technology in education that affect the blended learning and the direction for the development of the blended learning in the future.

Objectives

1. To study the condition on the research on blended learning in Thailand
2. To study the present condition on the learning management that supports the blended learning, the problems and the direction for the development of the blended learning for the course in innovation and information technology in education.

Procedure

1. Synthesize the research works on combine learning in Thailand based on the information resource which is the graduate theses published during 2006 and 2013. The number of these theses is 55.
2. Study the present learning condition that supports the combine learning/ teaching, the problems and the direction for the development of the combine learning for the course on innovation and information technology for education. The study was conducted with the sample groups, which are the lecturing group; 6 lecturers for the course on innovation and information technology for education, and the student groups; 30 students from 4 programs. For the student groups, they are divided into 3 groups with purposive sampling based on their academic achievement; good, average and poor, with 10 members in each group.

Research Tools

1. Synthesizing the research, this is done by noting the characteristics which possess the advantages from the theses.
2. Conduct the interviews with the lecturers and the students. This is done with the interviewing forms. Three subjects of interests are to be raised; the present learning condition that supports the combine learning, problems and the direction of the development for the combine learning course in innovation and information technology for education.

Data Analysis

1. Two types of data are to be analyzed. One is for the general data and one is concentrated in the content of the theses. Statistical analysis tools used in describing the data are the frequency and the percentage.
2. The answers from the interviews regarding the three proposed subjects are analyzed. The relation between the data, the idea, the theory on blended learning and the thinking between the lecturers to the lecturers and between the lecturers to the students are investigated. The result from the analysis is to be used as a way to develop the blended learning.

Result from the Research

1. Synthesize the research work on blended learning in Thailand: The data used have the following characteristics.
   1.1 General Information: The theses being synthesized are as described below.
      1. They were published between 2006 and 2013. The years with the largest number of theses published were 2011 and 2012 In those years, 12 theses were published in each year (21.82%). The second largest, with 11 theses (20.00%), was in 2010 The year with the smallest number of theses published, 1 thesis (1.82%), was 2006.
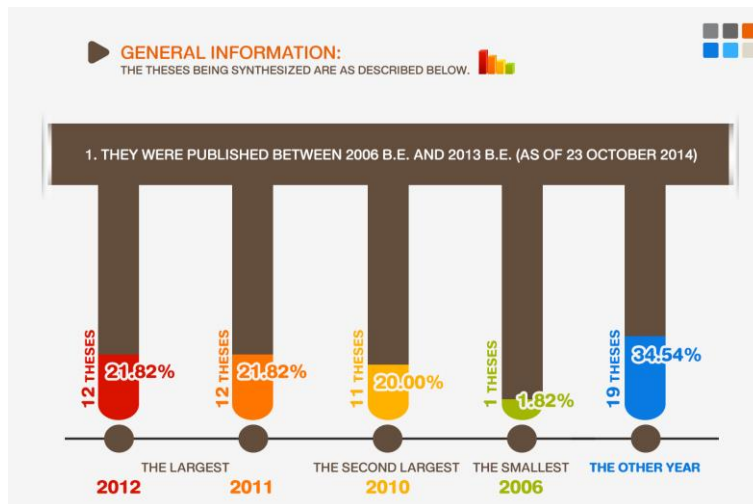
Figure 1: The year of theses published

2. The theses belonged to 10 educational programs. The program that published the largest number of theses (33 theses, 60.00%) was the Education Technology Program, majored in technology and communication for education/audio-visual education. The next programs were the Computer Education Program (7 theses, 12.73%), the Science Program (5 theses, 9.09%). The other programs then contributed 10 theses or 18.18%.
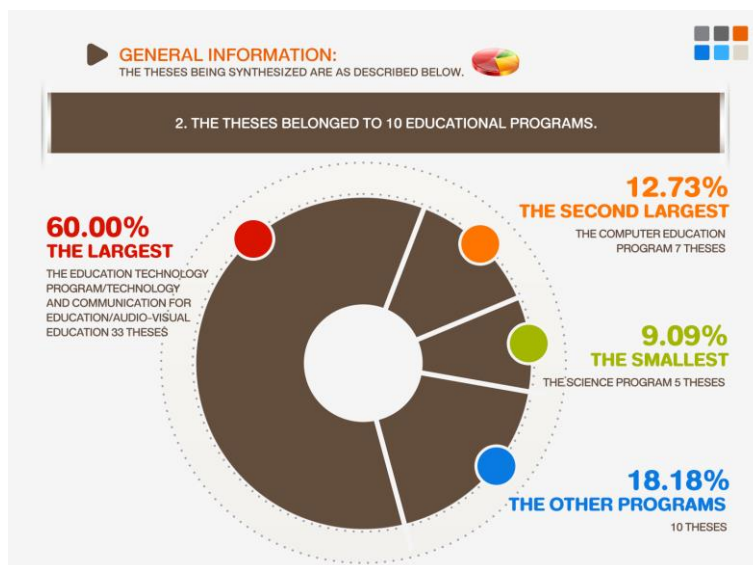

Figure 2: The program of theses published

1.2 Theses content
1. Education levels of the sample groups: 6 education levels were identified. The majority was in the bachelor and the high school levels (17 theses in each level and 34 theses in total, 61.82%) the next one was at the certificate level (7 theses, 12.73%), the primary school level (6 theses, 19.01%) and the university lecturer level (4 theses, 7.27%). In addition, the education personnel level also provided 4 theses (7.27%).
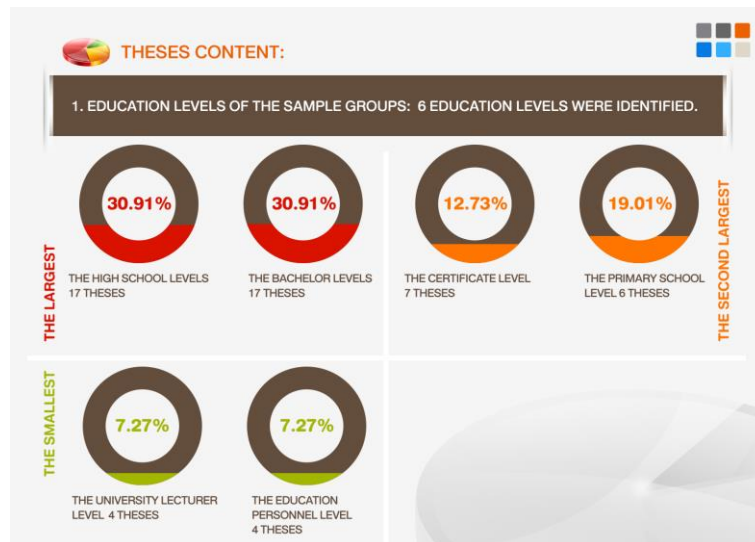
Figure 3: The majority of theses published

2. Courses that were studied: Overall 18 courses were studied. Of all the courses studied, the one on education technology was the majority (12 theses, 21.82%). The smaller groups were the courses in computer and in science (10 theses each and 20 in totals, 36.36%). The courses in sociology provided 3 theses (5.45%). The courses mathematics, special topic, physical education, electricity, Thai language and English language each provided 2 theses (12 in total, 21.82%). In addition, the other courses such graphics, music and art appreciation, etc., each provided one theses (7 in total, 12.73%).
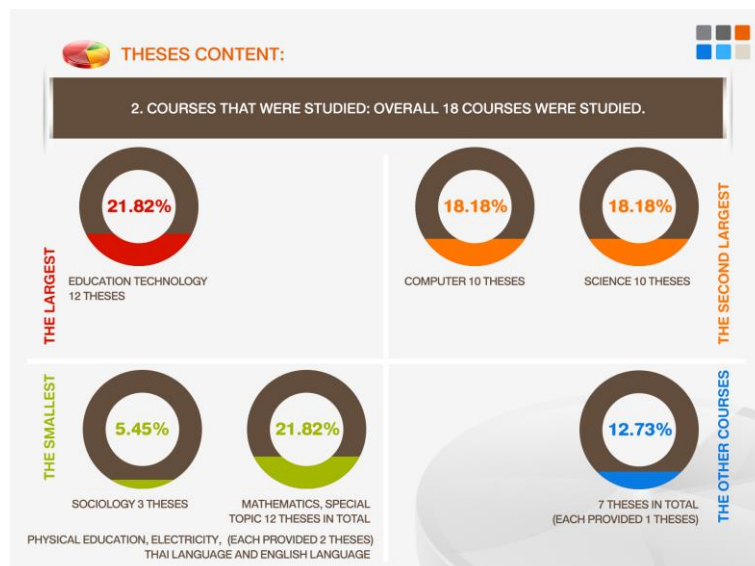

Figure 4: The course of theses published

3. Combining method: 7 methods were found to be most common The majority is the traditional learning, "Face to Face," combined with the computer networked learning, "e-Learning." 39 theses (70.91%) were found for this method. The next ones are the traditional learning with the

computer aided instruction (CAI) and the traditional learning with the multiple techniques for learning. 4 theses were found for each method (8 in total, 14.55%). The traditional learning combined with the on-line social media and traditional learning with the cooperative combination each provided 3 theses (6 in total, 10.91%). The least found methods were the traditional learning with the investigative technique and the traditional learning with the participation technique provided 1 thesis each (2 in total, 7.72%).
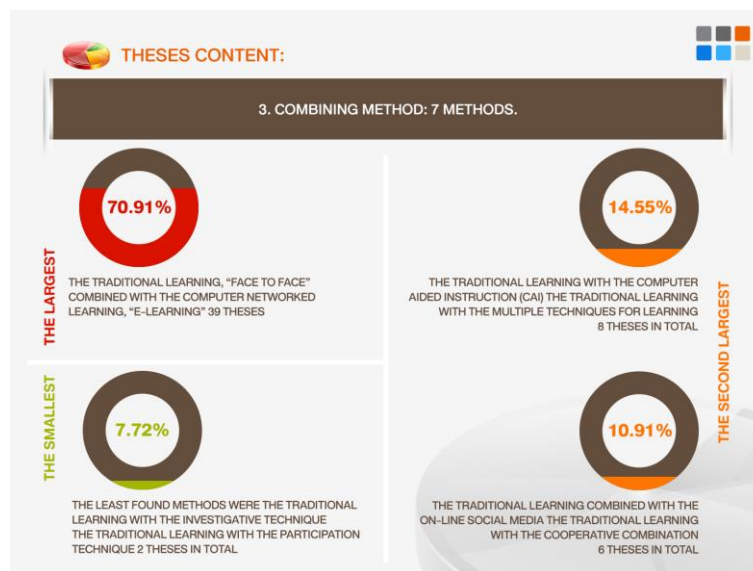

Figure 5: The Combining method of theses published

The summary of the synthesis in the research work on the blended learning in Thailand shows that the research on the blended learning was mostly conducted in year 2011 and 2012. The program in the education technology was most active in this research on the blended learning. The majority of the sample groups were those at the bachelor and the high school levels. The research was also concentrated mostly in the education technology and the method mostly employed in the blended learning was the traditional learning (face to Face) combined with the computer networked learning (e-Learning).

2. The study on the present condition of the learning management that supports the blended learning, problems and the way to develop the blended learning for the course in innovation and information technology for education: The summary is described below.

   1. Data obtained from the lecturers
      With the information collected from 6 lecturers, the following 3 items were identified as described below.
      Item 1: Present condition of the learning management
      For the course in innovation and information technology for education, the present condition that supports the blended learning can be divided into 5 subjects.

1.1 Learning method

At the present time, all 6 lecturers provide the lecture in the class. This is the traditional method (Face to Face) where the lecturer interacts in person the students. However, many years ago, one of the lecturers used to provide the lecture together with the e-Learning. However, as the server has been out of operation, e-Learning is no longer provided.

1.2 Self-learning

Each of the lecturers employs the different techniques for this purpose.

One lecturer uses the problem based learning technique. The students are assigned a project so that they can solve the problem and, thus, learn by themselves in the process. The lecturer's duty is to provide consultation and guidance. The students then must explain what they have done for the project. The other 3 lecturers prefer the students to prepare the reports, mostly in group, before making presentation in front of the class. This is to train the students on how to work, learn and exchange cooperatively.

The other 2 lecturer employ the method similar to the above lecturers but the students are also assigned to conduct e-learning by visiting other websites that provide the contents related to the course. In addition, one lecturer also assigns the students to learn from the other external information sources.

1.3 Cooperative Education Environment

All lecturers arranged the class in the cooperative environment between the students and the lecturers and between the students and the students. This includes the communication via the electronic means such as the electronic mail, social media (facebook, LINE application) in order to make contact and acquire the information from the lecturers and other students.

In addition, some other lecturers also provide the cooperative environment in many other forms as described below.

One lecturer creates his own website in which the information is collected. Instragram is also used as a way to distribute the information and for submitting the assignments. The lecturer explains that such many channels are created to match the students' individuality and preferences.

Two lecturers employ the social learning websites as the ways to collect the class materials and for the students to submit the assignments, to distribute the information and to interact with the other students inside and outside of the class.

One other lecturer uses the social learning website from abroad called EDMODO.

The last lecturer employs the social learning website in Thailand provided by the Burapa University called "Class Start."

1.4 Assessment and Evaluation on the Learners

All lecturers assess and evaluate the students by conducting the midterm examination, the final examination and the class participations and activities; such as question answering, report preparation, project

preparation and class presentation, for the purpose of accumulating the points during the semester. One lecturer also evaluates the students by grading their lecture notes in order to gauge their class attentions.

1.5 Class Media, Materials and Equipment
All lecturers employ the following items to support the learning in their classes.
1. Printed materials such as learning supported documents
2. Multimedia materials such as slides, presentation (Microsoft's Power Point, etc.) and electronic books
3. VIDEO clips as collected from You Tube and other video clips Uploaded/exchanged websites
4. Articles from database and related websites
5. Information technology equipment such as desktop computers, notebook computers, tablet computers and smartphones
6. Diagrams
7. Models

One lecturer, not only experienced with teaching, also learns and employs in his teaching the advance media such as the "Augmented Reality (AR)," which is the technology that simulates the real word environment.
In addition, the university also provides the "Smart Classroom," which the classroom with the equipment supporting the teaching/ learning such as the touch sensitive devices screens and tablet computers (iPad). Some lecturers have been using this room for the class.

Item 2: Present problems on learning management
For the course in innovation and information technology for education, two problems are identified.

2.1 On the students; contents and learning management
3 lecturers agreed that the students in the different group/program had the different learning ability and the lecturers needed to adjust their methods accordingly based on their own experiences. One of them added "The problem is how to make the content more interesting and suitable to the course. This includes the activity in class, questions and answers and class exercises. This is because some students prefer the actual practice, thinking and analysis more than just only listening to the lecture.

2.2 Room arrangement
3 lecturers share the opinion that the regular classroom, if not the smart classroom, is not suitable for the students and the course. This is because such room lacks the equipment for the class. The seat arrangement, desks and chairs filled the room in rows and columns, makes the rooms to feel narrow and uncomfortable. Also, with the difficulty in the re-arranging the seats, it is sometimes not suitable for some class activity.

Item 3: Ways for improvement on blended learning
For the course in innovation and information technology for education, 3 items are considered.

3.1 Opinions on improvement for blended learning
All lecturers agree with the development on the blended learning in which the learning is the combination between the class lecturing and the e-Learning in order to increase the learning/teaching efficiency with the usage of the technology. One lecturer said "In the future, e-Learning may be made as the additional media, together with the exercises and online examination. Still, 100% online is not recommended since there is still a need to meet with the students. The blended learning is good, agreed, and should be implemented because there is no escape from the technology. Teaching in class only will not be possible. The real learning requires the usage of the technology to gain the full benefit. 100% implementation in one aspect only is not recommended. However, what is the actual fraction still needs to be discussed. A balance must be achieved based on the lecturer's consideration." Meanwhile, the other lecturer is in the process of creating an e-Learning system based on Moodle and expects it to be used in the next semester. Such system allows the learners to study its theoretical content by him and then finish the exercise at the end of the session. This is the same as the blended learning.

3.2 Preparing e-Learning
All lecturers agree in making the e-Learning materials. Two of them already supported the idea as stated in 3.1. One lecturer already prepared the e-Learning materials but has never applied it as a learning management system. The other lecturers already planned to implement it.

2. Data obtained from the students
The researcher summarizes the data obtained from 30 students and identifies this into 3 items as follow.

Item 1: Present condition of the learning management
For the course in innovation and information technology for education, the present condition that supports the blended learning can be divided into 5 subjects.

1.1 Learning method
All students answer that the lecturers all implemented the class in the traditional format, face to face between the lecturer and the students.

1.2 Self-learning
All students answer that the lecturers all allowed the students to study by themselves by preparing the reports and conducting the projects, by studying and conducting the research through all sources of information, from the internet via the websites related to the course recommended by

the lecturers and from the class materials of various forms prepared and kept at the websites set up by the lecturers.

Since the course is taught by many lecturers, the students may be taught by the different lecturers. Some students mention that "The lecturer told them to study from the external resources so that students can learn how to present a story with the new technique and the new technology. This is how the technology is applied to the education."

1.3 Cooperative Education Environment

The answers obtained from the students are similar. However, the students from two different programs show some differences. In effect, the lecturers employ the electronic mails and the social media such as facebook and LINE application as the means for communication. The students from one program add that "A lecturer uses a website, which is similar to facebook, called EDMODO for the students to submit their works, to inform about the submission and to collect the class materials." The students from the other program mention that "In their own program, the lecturer also implements the similar social media called Class Start, which belongs to Burapa University."

1.4 Assessment and Evaluation on the Learners

All students answer that the lecturers conduct the midterm and the final examinations with the paper based testing, in addition to the evaluation via reports and projects.

1.5 Class Media, Materials and Equipment

In all programs, the lecturers employ the similar tools.
1. Multimedia such as the slides, the presentation via Microsoft's PowerPoint and the electronic books
2. Video media such as video clips from you tube
3. Computer tools such as the computer aided instruction (CAI)
4. Model
5. Printed materials such as books and handouts made by the lecturers for the course

The students from two programs also mention EDMODO and Class Start.

Item 2: Present problems on learning management

For the course in innovation and information technology for education, three problems are identified.

2.1 Contents

The students from two programs mention that the lecture is too detailed and contains too many theories. In addition, the students from two different programs also mention that the writing in the presentation provided by the lecturers is too crowded.

2.2 Class management

The students in one program add that "The learning/teaching management is the same in every course. There should be the video

records and the practice. The on-line materials are acceptable. In any case, the ability to answer the questions is most necessary. This is so that if something is not clearly understood, the question can be immediately asked."

2.3 Lecturers
The students in one program mention "In many occasions, the lecturers cannot come to class due to other appointments. As a result, the time the students see the lecturers is reduced. This may lead to the inability of the lecturers to provide the sufficient education."

Item 3: Ways for improvement on blended learning
For the course in innovation and information technology for education, 3 items are considered.

3.1 Opinions on improvement for blended learning
All students are interested in, agree with and share the same opinion on the improvement over the new teaching format where, in excess of the traditional lecture, the on-line materials and the exercise are also provided. The students in one program also add "The learning in this format can also help the lecturers. If the lecturers are not available, the students can learn by themselves via the on-line materials and can also practice with the provided exercise in order to revise their knowledge."

3.2 Preparing e-Learning
The students all agree that there should be more visual contents, less text, more colorful presentation, more videos, more exercises and the ability to communicate between the students and the lecturers.

Discussion on the result

1. Synthesize the research work on blended learning in Thailand:
From the synthesis, the trend in the research regarding the blended learning is most apparent during the last 2-3 years. This may be caused by the learning/ teaching pattern began in 2011. The most active program is the one in the education technology. This is perhaps due to the fact that the education technology program is the one that needs to know about the education formats which require the technology to support their managements. The largest sample groups are those of the high school and the bachelor levels. This corresponds to the comment made by Johnson, McHugo & Hall, 2006. The comment states that the blended learning is most suitable for the learners of the current generation (Millennial Generation, M Generation). The ages of the population in this M generation are between 18 and 24 years old. They are also very familiar with the technology. On the courses researched, the one that studies the most is the course in education technology. This is because blended learning puts the traditional class lecturing (Face to Face) together with the other learning formats, which mostly require implementing the technology. For example, the e-Learning materials, the computer aided instruction (CAI) and social media are used in synthesizing the theses. Of all these examples, the e-Learning is most frequently implemented. During the recent years, many academic institutes and

business entities have increasingly introduced the systems with e-Learning. This is due to its advantage that the learning can be conducted anywhere and at any time. This is the new dimension for the education in the evolving world that fulfills the traditional learning and then makes it more efficient.

2. From the study on the present learning management condition which supports the blended learning:
The problems and the way to develop the blended learning for the course in Innovation and Information Technology in Education, the lecturers and the students all gives the similar answers for each subjects and each question. The detail is as follow:

1. The research is conducted over 5 subjects: learning management, self-study encouragement, environment for cooperative learning, assessment and evaluation of the learners and the usage of various media, materials and equipment to support the learning. This is conducted according to the theory on the factors incorporating the blended learning by Carman (2006)

   1.1 On the learning management, the present learning/teaching employed for the course in the innovation and the information technology in education is mainly that of the traditional lecture. This is the method in which the lecturers come and meet with the students. It is noted that for the blended learning, the presence of the live event is also a factor.

   1.2 On self-study encouragement, each of the lecturers employs the different technique to encourage the students in conducting self-study. The techniques such as the project base learning and the report preparation help the students to conduct their own searches for information. This also includes the study on e-Learning from the related websites.

   1.3 On the environment for the cooperative learning, the lecturers communicate via many channels. These channels such as the electronic mail, the social media, the LINE application and the websites allow the learners and the lecturers to communicate and share the learning.

   1.4 On the assessment and the evaluation of the learners, these were done according to the institute's regulation which comprises of the midterm examination, the final examination, the class participation and the activity conducted by the students.

   1.5 On the usage of various media, materials and equipment to support the learning, the lecturers employ similar media, materials and equipment. They are the printed media, the multimedia, visual media, articles from the database and the websites, IT equipment, diagrams and models. Some other additional materials are the actual items, computer aided instruction (CAI) and the AR (Augmented Reality) media.

2. Present problems regarding teaching/learning management according to the lectures and the students 3 items are summarized by the researcher as described below.

    2.1 About the learners, from the lecturers' point of view, the lecturers have tried adjusting their teaching methods, their presentations of the contents and their teaching/learning managements in order to make it more interesting and suitable to the learners since the learners from the different groups/programs have the different learning abilities. On the learners' side, their opinions seem to correspond with that of the lecturers in that they also want the lecturers to adjust their presenting methods, their lectures and their learning formats. The on-line format is suggested in this regard.

    2.2 About the class room, the present management is not quite suitable for the learners and for the course. This includes the seat arrangement and the lack of the equipment in the normal class rooms.

    2.3 About the instructors, the students feel concern that the lecturers may not be able to lead the class due to the other appointment.

3. The improvement on the blended learning for the course in the innovation and the information technology in education 3 items are identified as below

    3.1 Regarding the opinion on the development of the blended learning, both the lecturers and the students share the same opinion that they agree with the development and see that it is very interesting and may be used to solve the problems experienced by the learners such as the presentation of the contents and the teaching/learning management and by the lecturers such as the ability to change the teaching method and the contents in order to match the interest of the learners. In this regard, the learners also are pleased since they would also like the lecturers to change themselves, just as mentioned previously in the above sections.

    3.2 Regarding the preparation of e-Learning materials, the lecturers agree with the idea as it can increase the efficiency in teaching/learning with the help from the technology. From the students' side, they suggest that more visual content should be used with less text. The presentation should also be more colorful. The video contents and the exercises should be included and the ability to communicate between the students and the lecturers should be utilized.

Recommendations

1. From the synthesis blended learning style can be research because mostly this research is appear during the last 2-3 years. The Education Technology is the most active subject for research and the study group that appropriate can be the bachelor or the high school level because it is the level that the researcher uses the most. And the most popular blended style is Face to Face blended with the e-Learning.

2. From the study on the present learning management condition which supports the blended learning, the problems and the way to develop the blended learning found out that the management for blended learning can be implementing in Innovation and Information Technology in Education course because the result of the study for learning style provide for blended learning and draft for preliminary model with the framework in details for conclusion.

Conclusion

From the results of the study, researcher has drafting preliminary Blended Learning Model in accordance with the framework achieved by having studied on learning management conditions and problems to improve blended learning model of Information Innovation and Technology in Education Course and from having studied theories, principles, researches and related documents on blended learning.

Researcher developed two components for Blended Learning Model by Self-Directed Learning through Social Learning Network of Undergraduate Students which are blending and learning system management, see Figure 6
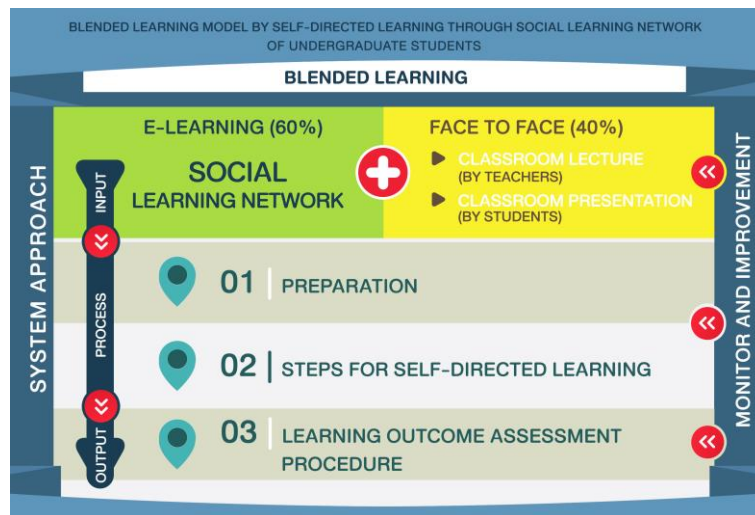

Figure 6: Blended Learning Model by Self-Directed Learning
through Social Learning Network of Undergraduate Students

1. Blending

    1.1   Blending between e-Learning and face-to-face Learning

    1.2   Blended Learning Ratio
        1.2.1   60:40 Ratio - 60% of e-Learning and 40% of face-to-face learning
        1.2.2   Blending Model - Vertical Blended Learning which means coherence of e-Learning and face-to-face learning in terms of time and learning plan.

2. Learning System Management

The 4 elements partaking in applying technology to learning plan are Input, Process, Output and Monitoring and Improvement. Each element has its relation in their performance as follows.

1. Input
    1.1 Input for online learning: Social Learning Network
    1.2 Input for face-to-face learning
        - Classroom lecture (by teachers)
        - Classroom presentation (by students)

2. Process consists of three steps as follows:
    1. Preparation
    2. Steps for Self-Directed Learning
    3. Learning Outcome Assessment Procedure

3. Output meaning learning achievement and information literacy

4. Monitoring and Improvement of every learning system management's element

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