

Pilot Development of Sharable e-learning Contents for IT Departments of Yangon Technological University (YTU) and Mandalay Technological University (MTU):

A preliminary study on lecturers and students' attitude and perception towards e-learning at YTU and MTU in Myanmar

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Abstract – Over the past decade, the development of Information and Communication Technology (ICT) has enhanced rapidly in teaching and learning activities and provided a good chance to participate learners more, as well as improving the quality of education. In order to promote in higher education, especially in Myanmar, ICT is an important tool for teaching and learning in higher educational institutions to carry out e-learning. This research work is the preliminary accessing lecturers and students' attitude and perception towards e-learning at Yangon Technological University (YTU) and Mandalay Technological University (MTU) in Myanmar. As a pilot sharable content development, Microprocessor Programming subject was implemented in Modular Object-Oriented Dynamic Learning Environment (Moodle) platform. In this study, a set of 39 questionnaire items was distributed to lecturers as well as 29 questionnaire items to students, 23 respondents in total. According to the questionnaire results, both lecturers and students' attitude towards e-learning were evaluated. The outcome of this research work can be examined as a description of lecturers and students' perception concerning e-learning based course.

Keywords – e-learning, lecturers, students, attitude, perception, YTU, MTU

I. INTRODUCTION

The advancement in educational technology advanced by the dissemination of Internet in recent years has a potential to improve the quality of education by encouraging participation and collaboration between instructors and students. ICT is used as a tool in educational institutions for teaching and learning in a number of ways including but not limited to Internet-based content delivery and visualization [1].

Teaching and learning in higher educational institutions are experiencing great and rapid transformation to adopt the concept and the utilization of electronic learning (e-learning). E-learning refers to the emergent phenomenon in which teaching and learning occur via the Internet. One notable difference in this new approach toward learning is that an instructor acts as a facilitator or a guide to the students. E-learning has the potential to maximize the chance of a student to interact with instructors and other students by online via the Internet, regardless of time and place. The effective integration of the Internet to higher education could maximize opportunities for students to become more involved actively in self-directional learning [2].

As blended learning techniques become more widely applied, the learners should not only always have access to their learning material, but also be able to collaborate with both teachers and other learners in a remote fashion. Conventional content management systems are thus replaced by learning management systems which offer a broader range of functions. The term blended refers to often applied to any course that combines face-to-face instruction methods and, although some researchers comprehend blended learning from other formats based upon the percentage of time spent online [3]. By combining the power of synchronous and asynchronous activities in a synergistic relationship, blended learning has the potential to transform higher education [4].

Moreover, e-learning is still in its initiation in developing countries that experience challenges unique from developed countries. Various aspects of e-learning have been examined in developed countries. Those issues including technology based components, student and teacher satisfaction, participants' interaction with an online environment, and the students' experience. After evaluating the students' experiences in developing countries, many of them have expressed an interest to implement e-learning but face obstacles in infrastructure, resources, and information access such as meeting the limited bandwidth, technology and connectivity, instructor's design, and technology confidence [5].

II. RELATED WORK

E-learning is identified as a future application world wide as it promotes life-long learning by enabling learners to learn anytime and anywhere. In [1], the redesign of course curriculum based on Analysis, Design, Development, Implementation and Evaluation (ADDIE) model and the development of e-learning materials, both "Logic Circuit and Digital Technique" and the "Discrete Mathematics" courses through Moodle were described. The overall respondents' results showed a transition from a passive model of learning to an active model. Students' learning performance under conventional and blended learning classes in the Electrical Engineering Department of University of Sam Ratulangi (UNSRAT) were compared, and showed that the implementation of blended learning has a positive effect on increasing students' performance and raising exam pass rates in the courses.

In [4], the general evaluation of the blended learning courses based on survey was conducted in Electrical Engineering Department, Faculty of Engineering, UNSRAT. The participants in this study provided constructive comments that proved valuable in evaluating and revising the courses. Student feedback both from Likert-type scale questionnaire and open-ended questionnaire, led directly to changes in many areas including the organization of the syllabus and objectives of each content module, frequency of online and face-to-face meetings, and construction of discussion method, assignments and quizzes. Detailed student feedback can provide a rich source of information to help instructors evaluate specific elements of course design and structure, make revision, and assess the effects of those changes. Moreover these findings could indicate endorsement for implementation of blended learning system for more courses in UNSRAT educational environment, as well as leading to students' readiness for using web based laboratory.

In [5], both lecturers and students' readiness in e-learning at UNSRAT were examined. Both respondents showed their interest and desired to use e-learning as well as spending their time to use a computer at home. Lecturers and students' perspective, respondents dissatisfied with the computer facilities provided by the university. On the other hand, there was also high availability of both lecturers and students access to computer devices as well as possibility of Internet connection in the university network. The respondents felt that the university needed to support an adequate computer facility for lecturers and students to use in e-learning. More than 80% of respondents thought that this was the right time to implement e-learning in the university.

In [6], the instructors' and learners' attitudes towards e-learning in a college were investigated. In addition to viewing these independently, the relationship between reported technology experience and attitudes toward e-learning were examined. It was possible to compare some of the instructor and learner attitudes. Overall, the instructors in this study had a positive attitude toward e-learning. When comparing the six instructors' attitudes subscales of the instructors' attitudes, perceived self-efficacy was rated the highest. The instructors felt very confident using the Internet, but also expressed confidence in online instruction and in using e-learning environments. In this paper, the learners also had a positive attitude toward e-learning. They reported the highest attitudes towards e-learning as a multimedia instructional environment. The learners rated pictures, videos, and animations nearly the same. Learners also rated e-learning as an instructor-led learning environment rather highly.

However, e-learning is facing a lot of obstacles and challenges in developing countries and drop-out rates are usually much higher than in conventional classroom based teaching. The seven major challenges for e-learning in developing countries: student support, flexibility, teaching and learning activities, access, academic confidence, localization and attitudes were identified and the solutions were also suggested in this paper [7].

This study aims to build the basis for developing student-centered e-learning materials with the Moodle platform as a learning management system. In order to promote the conventional teaching and learning system in

higher education, Moodle was used as a sharable content development between YTU and MTU towards e-learning circumstances. Therefore, the preliminary study on e-learning awareness in YTU and MTU is also required to design e-learning circumstances. As a pilot development of sharable e-learning content in IT departments at YTU and MTU, Microprocessor Programming is conducted in Moodle as an e-learning platform. This study aims to examine lecturers and students' readiness in using e-learning at YTU and MTU. The remainder of this paper is organized as follow. First, the method that was used in this study will be described. Second, the evaluation results of both lecturers and students' towards e-learning will be discussed. Finally, the results based on the evaluation will be concluded.

III. METHODOLOGY

A. Course Development using Syllabus

In a course development for undergraduate course in Moodle, Microprocessor Programming was selected to develop the e-learning system in IT departments between YTU and MTU. The lecturer, syllabus and lecture plans of this course were developed according to the key elements of a curriculum based on Moodle. The learning material resources for this subject were identified from the textbook. Students can get 3 credit points in this course. "Microprocessor Programming" course constitutes a total of 30 hours of lectures, 15 hours of practicals and 15 hours of tutorials, and covers 10 chapters in the textbook.

Every topic phase, the learning objectives for each topic, content, lesson planning, how to run Assembly program as a practical section and assignment were described in video file, pdf file and html file. This video lecture file is accessible at the university campus. Although the students can learn the video lecture file with smart phone at the home, it may be high cost. Therefore, the students can learn the lecture file with pdf file or html file and audio lecture file are also accessible in Moodle. As the core of the second-term curriculum, upon completion of this course, the students were expected to be able to understand and get experiences using e-learning.

In Moodle, lecturers can share resources and set up activities, while students can read those resources and take part in the activities. Both lecturers and students can communicate with each other within their course. The Moodle contains lecturer information, course syllabus, week-by-week program, materials, assignments and quizzes for each chapter as shown in Fig. 1. After completion of learning in each chapter for this course, an assignment and quiz were given to assess students' understanding about the material. The quiz uses a format in which answers were automatically evaluated and the feedback were given immediately to students. The general forum which was lecturers can post class information, assignment reminders and quiz deadlines, every week can be accessed. Through this forum, we expected to have interaction between students and lecturers as well as within students themselves.

As a pilot development, the actual instructions and delivery of learning experiences were done for third year course, "Microprocessor Programming" course, which will be opened in the second semester of the academic year 2016. From the result, both the lecturers and students are

ready for e-learning. However, in order to implement e-learning environment in both universities, the universities need to provide enough budget for e-learning. Moreover, adequate computer facilities, IT infrastructure maintenance and training experiences are also needed to provide by universities.

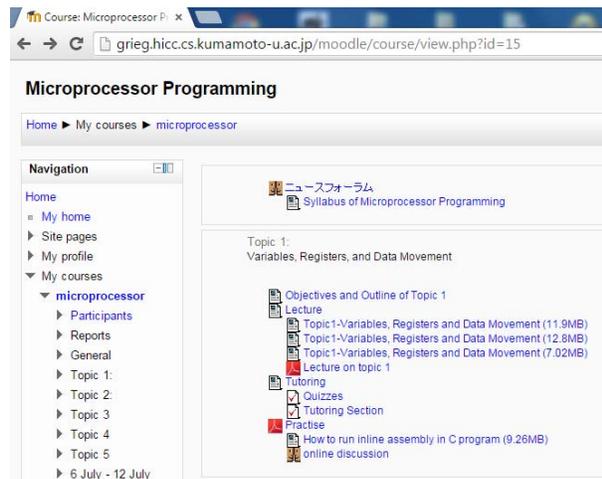


Fig.1 Content Development for Microprocessor Programming in Moodle

B. Instruments

In this research, questionnaires were used to gather data. Those questionnaires were given to lecturers and students in two different types of questionnaire. A set of questionnaires with thirty-nine questions focusing four divisive dimensions was developed for lecturers. The four dimensions are characteristics of lecturers, e-learning facilities, e-learning management, and e-learning environment. Whereas a questionnaire elaborated for students consists of ten items about characteristics of students, five items about e-learning facilities and fourteen items about e-learning environment. In both questionnaires, five responses will be expected from respondents such as SA (Strongly Agree), A (Agree), N (Neutral), D (Disagree) and SD (Strongly Disagree). Each item was measured using a Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

B. Participants

After developing e-learning in Moodle as a pilot sharable course, "Microprocessor Programming", a divisive questionnaire items form were distributed to lectures and students in Information Technology (IT) departments at YTU and MTU. Of these participants, a total of 8 lecturers and 15 students sent back their attitudes and perception towards e-learning in both universities. Items on the questionnaires were used to measure lecturers and student's perception towards e-learning implementation as well as their feedbacks in evaluating.

IV. RESULTS AND DISCUSSION

A. Characteristics of Lecturers and Students

The results from this study keep going on the direct indication for the readiness of lecturers and students towards e-learning at YTU and MTU. It presents an important role assessing e-learning readiness. For this

purpose, ten items were developed. The percentage of positive responses (SA and A) for each item within this dimension both for lecturers and students' attitude are shown in Table I. Fig. 2 illustrates the positive responses of both respondents' characteristics.

TABLE I
ANALYSIS OF CHARACTERISTICS OF LECTURERS AND STUDENTS

No.	Item	Responses	
		Lecturers' perspective % of SA and A	Students' perspective % of SA and A
1.	I know what e-learning is	100	100
2.	I am ready to integrate e-learning into my teaching/studying	87.5	100
3.	I have enough IT competency to prepare/access the e-learning materials	50	86.67
4.	I prefer face to face lessons /with my students	100	60
5.	I use computer at home very often	100	86.67
6.	I use computer at campus very often	100	66.67
7.	I am willing to work/make the time for e-learning	75	80
8.	I am interested to improve my work /study performance through e-learning	100	93.33
9.	I can discipline myself to follow e-learning courses	75	100
10.	Overall, I am ready for e-learning	87.5	100

1) Lecturers' Perspective

After preparing the e-learning contents in Moodle, a set of questionnaire items were given to lecturers to examine their attitudes as well as their readiness for e-learning. According to the result, the highest percentage are item 1, "I know what e-learning is", item 4, "I prefer face to face lessons with my students", item 5, "I use computer at home very often", item 6, "I use computer at campus very often", and item 8, "I am interested to improve my work performance through e-learning". These items have the same percentage (100%). From this result, the lecturers felt that they are interested in to improve their work through e-learning. The lowest percentage of respondents' characteristics is item 3 (50%), "I have enough IT competency to prepare the e-learning materials".

From the result, although they prefer face to face lessons, they are now willing to improve their teaching towards e-learning in the University. On the other hand, there were also respondents who felt that their IT competency was not enough for them to develop e-learning materials and, so they need more training and experience in using e-learning by the university.

2) Students' Perspective

The results showed that, the students' attitude and perception towards e-learning have the positive responses. From the above result, the highest percentage of positive respondents is item1, item 2, item 9 and item 10 (100%).

However, item 4, “I prefer face to face lesson” is the lowest percentage (60%). The second largest percentage is item 6 (66.67%), “I use computer at campus very often”.

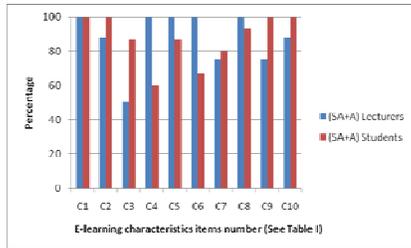


Fig. 2 The positive responses from lecturers and students in characteristics of respondents towards e-learning

According to the results, although they can't use computer effectively in the campus, the students felt that they are confident for studying in e-learning because they can use smart phones to improve their studying. Consequently, they are also ready to use e-learning.

B. E-learning Facilities

E-learning facilities are one of the most important role to improve the teaching and learning in higher institutions. This result shows that the university can provide whether the computers are adequate for lecturers and students to use e-learning. Five items are used to evaluate. The detail positive percentage of lecturers and students are shown in Table II. Fig. 3 depicts the comparison percentage of the positive response of both respondents in this dimension, which vertical line represents the percentage and horizontal axis shows the five items regarding the e-learning facilities.

TABLE II
ANALYSIS FOR E-LEARNING FACILITIES

No.	Item	Responses	
		Lecturers' perspective	Students' perspective
		% of SA and A	% of SA and A
1.	My Faculty/Department has enough computers for lectures to use	37.5	80
2.	Computers in my Faculty/Department are fast enough to run the software installed	62.5	66.67
3.	My University network is fast enough to access the e-learning materials	0	26.67
4.	My University has good IT infrastructure maintenance	12.5	20
5.	Overall, the IT infrastructure can support e-learning well	12.5	40

1) Lecturers' Perspective

From the current result, the highest percentage of the lecturers' responses is item 2 (62.5%), “Computers in my Faculty/Department are fast enough to run the software installed”. The second largest percentage is item 1, “My Faculty/Department has enough computers for lectures to use” (37.5%). “My University network is fast enough to access the e-learning materials”, item 3 is the lowest percentage (0%).

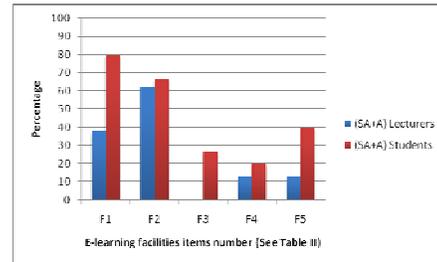


Fig. 3 The positive responses from lecturers and students concerning e-learning facilities

2) Students' Perspective

The highest percentage of the students' positive perceptive concerning e-learning facilities is item 1 (80%), “My Faculty/Department has enough computers for students to use”, followed by item 2 (66.67%), “Computers in my Faculty/Department are fast enough to run the software installed”. The lowest percentage is item 4 (20%), “My University has good IT infrastructure maintenance”.

From the finding result, both respondents felt that the University has not good IT infrastructure. Moreover, they thought that they need to get fast enough to access e-learning. So it is also needed that the university should provide the adequate access to connect e-learning.

C. E-learning Management

In this research, the e-learning management consists of having enough number of technical staff, having a plan to train lecturers and faculty members for any new technological skills, having necessary skills and having e-learning development professionals to implement e-learning among faculty members. For this reason, a set of questionnaires including ten items were distributed to the lecturers to examine the e-learning management supported by the university. The lecturers' positive percentage of this dimension is described in Table III.

TABLE III
ANALYSIS OF E-LEARNING MANAGEMENT

No.	Item	Responses
		Lecturers' perspective
		% of SA and A
1.	My University/Faculty has a budget for e-learning	0
2.	I am willing to buy a computer for e-learning purpose	12.5
3.	I am willing to spend extra money on e-learning	0
4.	My university's IT manager/coordinator has sufficient IT competency to support me in using e-learning	62.5
5.	My university's IT technician(s) has sufficient IT competency to support my use of e-learning	75
6.	My university has enough technician to support e-learning	0
7.	I can overcome most of the technical problems I encounter myself	50
8.	My university provides enough training opportunities for me to learn about e-learning	0
9.	My university provides enough tutorial for me to learn about e-learning	0
10.	Overall, the technical support of my university is adequate to support e-learning	12.5

From the result, more than 70% of the lecturers agreed that IT technician has the sufficient IT competency to support them for using e-learning in the university (item 5). Although the university has not enough technician and training for e-learning, the lecturers felt that they have relevant knowledge concerning e-learning. On the other hand, from the result, the universities have not enough budget and training experiences for e-learning. So, the universities should provide enough budget and training experiences for lecturers to implement e-learning.

D. E-learning Environment

This study shows that the lecturers, students and their colleagues' perception concerning e-learning environment to implement e-learning in the campus. Fourteen items were developed in this dimension shown in Table IV. Fig. 4 shows the comparison positive percentage of both lecturers and students concerning e-learning environment, which the vertical line indicates the percentage and the horizontal line represents the fourteen items in Table IV.

TABLE IV
ANALYSIS FOR E-LEARNING ENVIRONMENT

No.	Item	Responses	
		Lecturers' perspective	Students' perspective
		% of SA and A	% of SA and A
1.	My colleagues/friends know what e-learning is	87.5	93.33
2.	My colleagues'/friends' IT competency is high enough to conduct e-learning	75	60
3.	We have a shared vision among the colleagues/friends about e-learning	50	86.67
4.	My University/ Faculty/ Department has a culture of sharing and team work	100	100
5.	Overall, the lecturers/students are ready for e-learning	50	80
6.	The most effective method of learning is face to face	100	60
7.	E-learning is an advanced mode/stage in teaching and learning	100	86.67
8.	E-learning is an efficient means of disseminating information	87.5	60
9.	Discussion via the internet make learning more meaningful	75	66.67
10.	Lecturers are still the best information providers	87.5	93.33
11.	When using e-learning technology, the personal touch is important in the learning process	87.5	73.33
12.	E-learning is helpful to improve teaching and learning	100	100
13.	E-learning provides the opportunity for learners to discuss and work collaboratively on projects	62.5	93.33
14.	It is the right time to promote e-learning in my university	75	73.33

1) Lecturers' Perspective

The respondents felt that four from fourteen items got the highest percentage (100%) to improve teaching and learning using e-learning. On the other hand, 50% of the

lecturers are ready for e-learning (item 5). Nevertheless, 75% of the respondents felt that it is the right time to promote e-learning in the university (item 14).

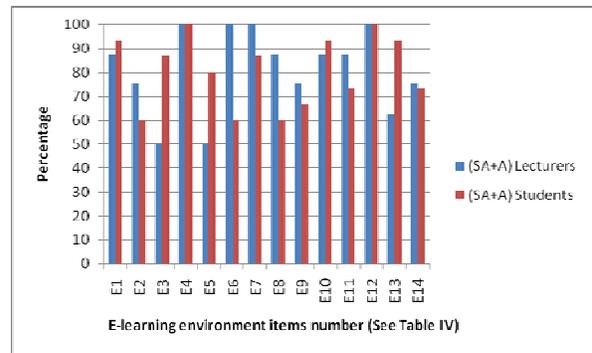


Fig. 4 The positive percentage from lecturers and students related to e-learning environment

2) Students' Perspective

Like lecturers' response, the students also felt that e-learning is helpful to improve teaching and learning, item 12 (100%) and the department has a culture of sharing and team work, item 4 (100%). On the other hand, there was 60% of the respondents felt that the most effective method of learning is face to face (item 6). Nevertheless, the respondents are willing to change their conventional learning style to e-learning. Moreover, more than 73% of respondents felt that this is the right time to promote e-learning in the university (item 14). According to the result, more than 70% of both respondents agreed that this is the right time to promote e-learning in the university (item 14).

E. Lecturers and Students' Readiness towards E-learning

In order to promote higher education towards e-learning, the infrastructure, in terms of connectivity, availability of Internet, is one of the most important factors for lecturers and students' readiness towards e-learning. At the present, there is suitable access for lecturers and students to use e-learning in YTU main campus via fiber communication with 10 MB bandwidth, which is used in the campus. Moreover, wifi connection is also available for the students and lecturers in the main campus. Nowadays, the communication systems and new technologies like 3G in the telecom space have already been started in Myanmar. So, all lecturers and students can easily use Internet via Myanmar Post and Telecommunication (MPT), Telenor and Ooredoo telecommunication network packages. On the other hand, even though the e-learning facilities provided by the university are inadequate for the students, they can learn via their own smart phones effectively. Consequently, the lecturers and students' are now ready to use the e-learning at YTU and MTU.

V. CONCLUSION

In this research work, Microprocessor programming subject for undergraduate course was developed in Moodle as a pilot sharable content development in IT departments at YTU and MTU. In this e-learning subject, detail syllabus, the objectives of each lecture, video presentation file for lectures, the step-by step procedures for practical works were described. The students can learn effectively lecture video file within the university campus through wifi

connection. In current situation, the high availability of Internet access is also adequate in Myanmar, and so lecturers and students can use Internet through their smart phones effectively anytime and anywhere. But it may cost highly when the students download the lecture video file at home by using smart phone. After completion of the lectures, the students can answer multiple quizzes for their understanding upon lecture. In this research work, lecturers and students' attitude towards e-learning were investigated at YTU and MTU. In this study, a set of questionnaire items, which distributed to lecturers and students in IT departments, was evaluated. According to the result, the respondents disagreed the computer facilities for e-learning that provided by the university. From the current study, the university needed to provide adequate computer facilities for lecturers and students to use in e-learning. Both respondents also keen on to transform conventional learning style to e-learning in the university. From this survey, more than 70% of the respondents felt that this is the right time to promote e-learning in the university. Therefore, the e-learning implementation for undergraduate course in IT departments at YTU and MTU will be started in near future.

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