

# Implementing A Real Time E-Learning: Why We Need?

Noorhuzaimi@Karimah Mohd Noor<sup>1</sup>, Junaida Sulaiman<sup>2</sup>, Mazlina Abd Majid<sup>3</sup>

<sup>1,2,3</sup>Fakulti Sistem Komputer & Kejuruteraan Perisian,

Universiti Malaysia Pahang

Karung Berkunci 12, 25000 Kuantan, Pahang.

*Abstract* - Real time E-learning has become a new medium of educational learning. In the old days, learning is carried out in school and there is no facility for distance learning. With the emergence of e-learning, students are able to gain knowledge through online communication. However, the process of receiving feedback from the instructors can be long and tedious. It is because any questions on their subject and assessments will take some time to be answered. Therefore, by conducting e-learning in a real time, students will be able to communicate face to face with their lecturers and receive quick response to every questions arise. In a real time e-learning environment, parallel communications between instructor and students are carry out without any delay. The purpose of this paper is to highlight the advantages of real time e-learning in term of face to face interactions between instructors and students and the educational psychology (appreciation of learning). The case study discussed in this paper is based on experiences using Universiti Malaysia Pahang e-learning.

## INTRODUCTION

E-learning or Electronic Learning has becoming a common way of distributing knowledge not only for distance learning but also for in-house learning environment. Generally, e-learning is a technology and strategy that combined the elements in technology, pedagogy and organization. Its function is to deliver certain information and materials automatically to the users when some works has been done [1]. The method of delivering information through e-learning is a one way communication where the interaction is by using e-mail, forums and specialized communication tools [2].

E-learning provides a diverse means to support learning in a more flexible, portable and on demand manner [3],[4]. In addition to that, it enables borderless communication between students and instructors. It is because they can access the e-learning contents as long they are connected through internet connection. Basic content of e-learning includes lecture's notes, questions bank, forums and discussion, online examinations, announcement boards, course time table and others which depends on the institution's requirements.

According to [5], certain limitations of e-learning exist such as no human teacher expression and explanation, lack of contextual understanding, just-in-time feedback and interactions. E-learning should be able to provide more interaction rather than static interaction between students and instructors. Therefore, a new approach to e-learning which is by delivering information

in real time has emerged with the aim to achieve immediate response between instructor and students. This concept of real time e-learning is adapted from the use of video conferencing technology. The technology allows two or more locations to interact via two-way video and audio transmissions simultaneously. It is hoped that the idea of real time e-learning will provide effective interactive communications and contextual learning scene.

In the next section, real time e-learning is discussed and followed by explanation on Universiti Malaysia Pahang e-learning scenario. Lastly, we will highlight the importance of real time e-learning implementation.

## REAL TIME E-LEARNING

According to [6], real time system refers to any system in which the time at which output is produced is significant. It means that whatever happens in real world is the output of the system. A real time e-learning imitates a classroom which takes place in real time and connects instructors with students via streaming audio and video. For example, in real time e-learning system, when the instructor shows the first slide of presentation, the students can view the same presentation from different location without any time delay.

The approach of learning using real time e-learning system are by classroom lecturing (one to many communication) or by individual lecturing (one to one communication). A classroom lecturing is like a traditional classroom lecture which students simultaneously observe and listen to an instructor and watch PowerPoint slides or whiteboard notes.

Another approach in real time e-learning is to give assessments such as real time examinations, tests and quizzes. These can be done in other time or after classroom lecturing depending on the availability and convenience of both students and instructors.

The main feature of a real time e-learning is a two-way communication between students and instructors using interactive tools such as webcam video, whiteboard, presentation tools. The concept of real time e-learning is shown in Figure 1. The participants of real time environment must be provided with real time e-learning tools such as computers that are equipped with collaborative software, internet connection and audio video devices.

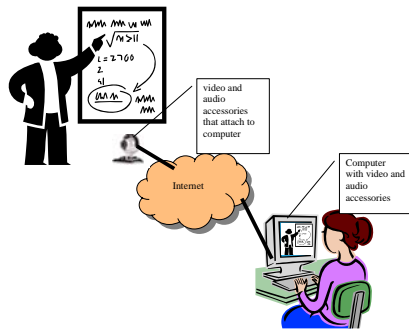


Figure 1 : Conceptual view of Real Time E-Learning

## E-LEARNING IN UNIVERSITI MALAYSIA PAHANG (OBSERVATION)

Before going further discussing on real time e-learning, it is better to have an overview of e-learning implementation in UMP. It all begins on early 2003. The aim of its introduction is to provide paperless learning tools and promote an innovative ways of delivering education. In addition to that, E-learning also acts as an additional place to provide learning materials apart from the classroom teaching. The students and instructors are able to access this facility using the link <http://www.elearn.ump.edu.my>.

The contents of UMP's e-learning includes sections for subject administrations which covers subject planning, study materials and questions banks and a collaboration tools to display announcements and create subject forums. The study materials section enables instructors to upload notes for student convenience. However, based on our observation, there is no 100 percent guaranteed that the students will access the materials at the same time. In the forum sections, only instructors can initiate a topic for specific subjects and after that students can pose any questions or request for that subject. The disadvantage of this approach is that students are not given a freedom to ask questions beforehand. The announcement section is use by the instructors to broadcast related information such as class cancellation, date for tests and class venue changes. Students will able to view announcements through memo (a form of email assessable within UMP electronic community). The limitation of this service is that students can only know about the announcements whenever they login to their memo.

Moreover, e-learning usage in UMP has lacks of educational psychology because late feedback from instructors will result in frustration and will demotivate the students' interest towards the subject [3]. In addition to that, e-learning does not improve students understanding on the course contents because the available notes are simple and brief. In a study by [7], they have found out that e-learning can potentially cause misinterpretation on the subject content to the students. It is because the students have no control over knowledge structure and the materials are not tailored to meet individual needs. In delivering their lecture, instructor use various type of learning material such as text, image, media, sound and video. However, some of these

multimedia contents were lack of interactivity and flexibility to the students to use.

## THE ADVANTAGES OF REAL TIME E-LEARNING

Many researchers in real time e-learning have highlighted the benefits of its implementation [5], [8], [9]. In [5], they have developed a web based virtual online classroom (WVOC) which able to provide effective interactive tools and contextual learning scene. This WVOC provides the instructors with instructional communication environment (ICE) in which they can have direct contact with students instantly. Moreover, ICE has efficient tools like BBS, chat-room and so on for the students and instructors to use. This facilitates two way communications such as question and answers sessions in which students are able to receive immediate response from the instructors.

Moreover, real time e-learning assist the instructors in giving the online assessments to the students. The assessments can be run concurrently regardless of students' locations as long as the facilities are there. For instance, students can sit for examination even though they are not physically available and plagiarism is less then on traditional classroom [8].

The benefit of conducting lecture in a real time situation is that the instructors can offer their educational services even though they are away. Real time e-learning provides a convenient platform for those lecturers who involve as consultant or visiting lecturer for other institutions. The similar situation also applies for any educational institutions which offer joint venture academic programs among them. Thus, this kind of platform is actually needed in UMP e-learning based on our experiences using current e-learning application.

A case study by [10], revealed that students more appreciate if a collaborative learning is done in real time and asynchronously. It is because they can feel the presence of a teacher to assist their learning. Therefore, in [9], a collaborative environmental education called DigitalEE has offers an environment which the students and the instructors can really existing in the real nature.

Besides delivering lecture by live broadcasting, a real time e-learning environment helps instructors to control the learning and teaching process as if they do in traditional classroom [5]. It is because instructors can observe students participation and understanding towards learning.

In delivering lecture, the oral explanation and expression shown by the instructors are important because they can help students in understanding the subject[5].

Real time e-learning increase the human development in term of skill in communication, social interaction, and team-working [8]. It is because face to face conversation either with the instructor or their classmate can develop the skill to communicate and interact with each other. Moreover, the assessments given by the instructor help to promote team working among students because they are able to communicate with the aid of collaborative tools. The sense of belongings and social presence are existed among students in real time e-learning because they

interact and cooperate during face to face interactions with the instructors. A group of social presence theorist said that the construction of psychosocial learning processes in online groups only requires a communicative exchange among participants [8].

The advantages of real time e-learning over e-learning can be concluded in Table 1.

Table 1. Advantages of Real Time E-Learning over E-Learning.

	<b>Real Time e-Learning</b>	<b>E-Learning</b>
Face to face conversation	Yes	No
Online monitoring assessments to the students	Yes	No
Immediate feedback	Yes	No
Increase students motivation	Yes	No
Cultivation of a social community (social presence, belonging)	Yes	No
Time and location flexible	Yes	Yes
Human Development skills	Yes	Partially exist

### CONCLUSIONS

In general, real time e-learning has given many benefits. It enables face to face interactions, provides immediate feedback between instructors and students, offers on time assessments to students, increase students motivations and interest towards subjects, develops human and social skills in students personality.

Therefore, any organizations or institutions who would like to implement e-learning should likely consider implementing real time e-learning because it imitates like traditional classroom learning and offers many advantages.

For our future work, we would like to evaluate the feasibility of implementing real time e-learning in Universiti Malaysia Pahang.

### REFERENCES

[1] Morch, A. I., Engen B. K. and Asand, H.R., The workplace as a e-learning laboratory: The winding road to e-learning in a Norwegian Service Company. Proceeding Participatory Design Conference 2004. Toronto, Canada. ACM 1-58113-851-2/04/07 pp 142-151, 2004.

[2] Guerri, J. C., Palau, C. E., Pajares, A., Esteve, M., "A Real-time E-learning System Via Satellite Based on JMF and Windows Media," International Multimedia Conference Proceedings of the tenth

ACM International Conference on Multimedia, Vol. December 1- 6, pp. 219-222, 2002.

[3] Zhang, D., Zhao, J.L., Zhu, L., Nunamaker, J.F. Jr., "Can E-Learning Replace Classroom Learning?," Communications of The ACM, Vol. 47, No 5, pp. 75-79, May 2004.

[4] Farrell, G.A., Cubit, K. A., Bobrowski, C.L. and Salmon, P., "Using the WWW to Teach Undergraduate Nurses Clinical Communication," Nurse Education Today, Available online 28 August 2006.

[5] Yang, Z. and Liu, Q., "Research and Development of Web-Based Virtual Online Classroom," *Computers & Education*, Vol. 48, Issue 2, pp. 171-184, February 2007.

[6] Burns, A. and Wellings, A., *Real-Time Systems and Programming Languages*, Addison Wesley, 1996.

[7] Abdul Kadir, T.A., Awang, S., Abdullah, A., Abdullah, A. and Ramli, M.F., Isu dan permasalahan dalam implementasi pembelajaran elektronik, Seminar Kebangsaan ICT dalam Pendidikan 2005 ict@edu2005, Nov 2005.

[8] Francescato, D., Mebane, M., Porcelli, R., Attanasio, C. and Pulino, M., "Developing Professional Skills and Sosial Capital Through Computer Supported Collaborative Learning in University Contexts," *International Journal of Human Capital-Computer Studies*, Vol. 65, Issue 2, pp. 140-152, February 2007.

[9] Okada, M., Tarumi, H. and Yoshimura, T, Collaborative environmental education using distributed virtual environment accessible from real and virtual worlds, ACM SIGAPP Applied Computing Review, Vol. 9, Issue 1, pp. 15 – 21, April 2005.

[10] Minton, L., Boyle, R. and Dimitrova, V., If Diversity is a Problem could e-learning be part of the solution?: a case study, ACM SIGCSE Bulletin, Proceedings of the 9th annual SIGCSE conference on innovation and technology in computer science education ITiCSE '04, Vol. 36, Issue 3, pp. 42 – 46, June 2004.