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E-Learning Environment for Malaysian Technical & Vocational Education (TVE) Students

Lee Ming Foong [a], Rio Sumarni Shariffudin [b], Tan King Hiyang [a]

[a] Universiti Tun Hussein Onn Malaysia
[b] Universiti Teknologi Malaysia

Abstract

E-Learning is unlike any other form of education where it is widely accepted and can be as rich and as valuable as the classroom experience or even more so. With its unique features, e-Learning is an experience that leads to comprehension and mastery of new skills and knowledge, just like its traditional counterpart. Thus, e-learning is transforming education because it is an umbrella term that describes learning done at a computer, usually connected to a network, giving us the opportunity to learn almost anytime and anywhere. The secret and the key to realizing these gains is the learning environment. When e-learning is delivered in an interactive environment, with the right tools and support, studies show that students can retain significantly more and achieve a greater level of skill and performance. Even so, the reality is that most teachers or educators do not integrate e-learning technology into instruction to accommodate for different groups of students' learning based on the needs of their subjects or disciplines. Technical & Vocational Education (TVE) students have different needs in using e-learning compared to the arts or science students. They will not perform under the same teaching e-learning environment including aspects such as learning strategies, materials, curriculums and assessments for, lack of challenging materials, and lack of accelerated course offerings. As a result, identifying the preferred and optimal e-learning environment through the TVET students' preferences of e-learning environment elements is a must to solve the problem mentioned above.

Keywords: e-learning environment; construct; Technical & Vocational Education

1. Introduction

As we live in a high technology driven era, e-learning is not a new issues in educational discipline. E-learning offers students' access to tools and course materials over the internet. Without the limitation of time, space and location, the students are free to access the information for their enrolled courses to achieve their educational goals.

Providing an effective e-learning environment for the needs of students is the current issues being discussed among the educators nowadays. Many definitions have been given by the scholars to define the meaning of e-learning environment. Some of them argued that e-learning environment is virtual learning, distance learning and online learning. All these terms are giving the same meaning. We could conclude that e-learning environment is the use of internet technologies through some special functions to deliver a broad array of solutions that enhance knowledge and performance.

Why e-learning? According to Namahn (2002), the benefits of using e-learning are:

- Flexibility, accessibility, convenience
- Cross-platform
- Browser software and internet are widely available
- Inexpensive worldwide distribution
- Ease of updating information
- Travel costs and time savings
- Training efficiency is increasing significantly

E-learning has been gaining momentum for many years among the higher learning institutions in Malaysia. Various platform or the normal name Learning Management System (LMS) have been develop to support LMS, such as Blackboard Learning System, Claroline, Desire2Learn, Dokeos, eFront, HotChalk, Moodle, Sakai and Spiral Universe. Each system has the different functions to provide an effective e-learning environment for the students.

However, some elements are found to be important to support an effective learning platform, especially for TVET learning. E-learning is a technology based learning, meanwhile TVET is knowledge and skills based learning. How the e-learning environment cater to the needs of TVET education goals is the challenge for TVET educators.

Therefore, as a TVET educator, the elements of e-learning environment argued by other researchers have to be reviewed. Table 1 showed some findings of other research on elements of e-learning environment.

Table 1. Elements of e-learning environment

Researcher	Elements	*Confirmatory Factor Analysis*
Junaidah *et.al.,* (2001)	Announcement	0.700
	Calendar	0.780
	Course management	0.879
	Communication	0.800
	Recourse support	0.650
Johan Ismail (2002)	Learning Design System	0.770
	Learning Content Management System	0.800
	Learning Support System	0.860
Nagarajah *et.al.*, (2006)	Teaching material	0.772
	Technology	0.776
	Learning strategy	0.763
	Support	0.835
	Teaching & learning environment	0.779
Shu Sheng Liaw *et.al.,* (2007)	Self-paced learning	0.750
	Effective teaching environment	0.750
	Multimedia teaching environment	0.660
	Support	0.600
Micheal T. Miller *et.al.*, (2007)	Online Teaching Enhancement	0.700
	Online Faculty Engagement	0.770
	Online Learning Support	0.660
	Online Service Overall	0.720
H. Mahdizadeh *et.al.,* (2007)	Knowledge Construction	0.730
	Computer-assisted Learning	0.720
	Web Based Activities	0.700
	Support	0.700

Source: Nurhafiza (2009)

The elements of e-learning environment proposed by the experts is similar. Based on the findings of Nurhafiza (2009), e-learning environment should consist of learning strategy, learning material management, technology, teaching & learning environment and support. This study is focus on these five elements.

2. E-learning environment in UTHM

Universiti Tun Hussein Onn Malaysia (UTHM) has launched LMS in 2001 and named it as ILMU LMS. The platform being employed for this purpose is Blackboard (see Figure 1 and 2). Now, Blackboard includes rivals WebCT and ANGEL that dominates the online learning software market (Falvo and Johnson, 2007), Moreover, over 31,000 institutions world-wide, students and instructors from kindergarten through doctoral programs, and even those in the workforce interact in Blackboard structured classrooms (Burn, 2006 in Coopman, 2009). Besides, at the university administrative level, the use of open source rather than propriety software can save the institution money and allows tech–savvy faculty to actively participate in refining the course delivery platform (Stewart, et al., 2007). Furthermore, Rose (2004) noted that the basic motivation for the development of e–learning platforms is efficiency of scale, which is teaching more students for less money.

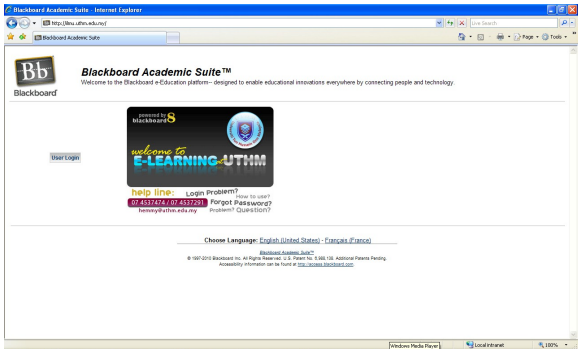

Fig. 1. E-learning system in UTHM

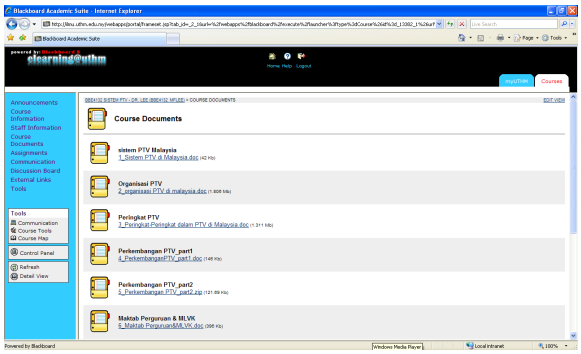

Fig. 2. Environment in ILMU LMS UTHM

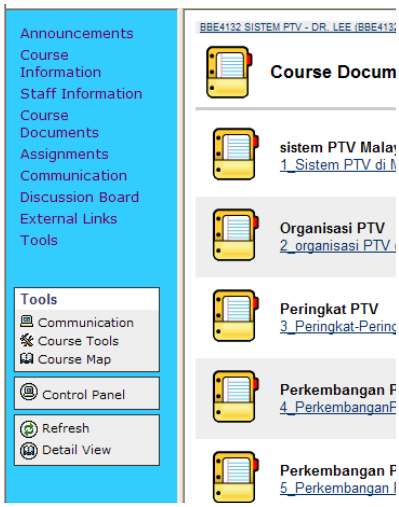

Fig. 3. Functions in ILMU LMS UTHM

The functions provided by Blackboard include announcement, course information, staff information, course documents, assignments, communication, discussion board, external links and tools (see figure 2

and 3). The key advantages of Blackboard are (University of Newcastle, 2010):

- Integrate assessment with teaching materials
- Available on demand
- Randomised question selection
- Automatic grading with immediate feedback
- Reporting and analysis

However, Blackboard also has the disadvantages aspects (University of Newcastle, 2010), which are:

- Not suitable for testing of all skills
- May disadvantage students without IT skills
- Time required to design and input questions
- Security
- Plagiarism

Faculty of Technical Education in UTHM is playing the important role to produce high quality technical teachers for the needs of the nation. Therefore, there is a significant need to evaluate the elements of e-learning environment. The purpose of this study was:

- To identify the elements of e-learning that are perceived as important by TVET students.
- To determine the relationship between elements of e-learning environment.

3. Research design

A case study using a survey was employed in this study. A set of questionnaire which consisted of 43 items using 5 likert scales was used for data collection. The questionnaire was adapted from Nurhafiza (2009) in *The Development and Evaluation E-learning Environment Instrument based on Expertise, Lecturers and Students Perspective*. The gathered data were then statistically examined and analyzed by using SPSS version 17 to obtain mean score and Person-r in order to answer the research questions.

A total of 135 students from Faculty of Technical Education in UTHM were selected randomly as samples. The participants comprised of first year, second year and third year tertiary learners. Even though e-learning is not compulsory for the subjects being enrolled by the students or each semester, some of the lecturers will set the e-learning as a part of assessment. Therefore, most participants were familiar with e-learning and have been using e-learning for many purposes, such as for downloading the notes given by the lecturers, uploading the assignments, forum and others.

4. Results and discussion

This section discusses on the findings based on the research objectives.

3.1. Elements of e-learning environment

Tables 2-3 below showed the results of this study. In the view of the students, the important elements for e-learning environment were learning strategy (mean=4.84), followed by learning material management (mean=4.67), and teaching & learning environment (mean=4.62). On the other hand, they perceived the technology (mean=4.12) and support (mean=4.15) were less important compared with the elements mentioned above. Overall, the mean score for the elements was 4.48. The results conclude that the e-learning environment perceived as important by the students possess the following elements: learning strategy > learning material management > teaching & learning environment > support > technology (refer to Table 3).

Table 2. Mean scores for elements of e-learning environment

Elements	Mean scores
Learning strategy	4.84
Learning material management	4.67
Technology	4.12
Teaching & learning environment	4.62
Support	4.15
Total	4.48

Table 3. Elements of e-learning environment perceived as important by the students in descending order

Elements	In descending order
Learning strategy	↓
Learning material management	
Teaching & learning environment	
Support	
Technology	

The data collected also were analyzed to determine the comparison among the male and female students, as well as among the students with difference years towards elements of e-learning environment perceived as important. Findings through T-test (see Table 4) and ANOVA (see Table 5) analysis indicated that there were no significant differences among the male and female students, as well as among the students with difference years towards elements of e-learning environment perceived as important.

Table 4. T-test for elements of e-learning environment towards gender

Elements	Sig (2 tailed)
Learning strategy	.598
Learning material management	.432
Technology	.977
Teaching & learning environment	.262
Support	.302

Table 5. ANOVA for elements of e-learning environment towards years of study

Elements	Sig (2 tailed)
Learning strategy	.096
Learning material management	.351
Technology	.157
Teaching & learning environment	.060
Support	.115

3.2. Relationship between elements of e-learning environment

To identify the relationship between the elements of e-learning environment, a Pearson-r analysis was applied. Pearson-r analyses revealed that all the elements of e-learning environment have significant correlation with each others. This means that relationship exists between each elements of e-learning environment (See Table 6).

Table 6. Pearson correlation for the elements of e-learning environment

	LS	LMM	T	TLE	S
Learning strategy (LS)	-	.376**	.154*	.233**	.140*
Learning material management (LMM)	.376**	-	.198**	.413**	.143*
Technology (T)	.154*	.198**	-	.335**	.334**
Teaching & learning environment (TLE)	.233**	.413**	.335**	-	.302**
Support (S)	.140*	.143*	.334**	.302**	-

**Correlation is significant at the 0.01 level (1-tailed).
* Correlation is significant at the 0.05 level (1-tailed).

5. Conclusion

This study found that e-learning as a tool for learning provides a platform for TVET students to gain the knowledge actively without time, location and space limitation. Learning strategy, material management and teaching & learning environment were the most important elements to develop an effective e-learning for TVET students. The TVET lecturers could utilize the research results to design their e-learning environment by incorporating the learners' needs and preferences so that the aims to improve learners' performance and motivation in teaching and learning could be achieved. However, further research needs to be conducted to determine if the results of this study may be generalized to the whole population of TVET students in Malaysia.

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