Information Technology System Environment:
The Needs for Learning Materials in e-Learning Portal

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Abstract
This paper seeks to present the considerations, expectations and awareness of students in the School of Distance Education, Universiti Sains Malaysia, concerning the e-learning portal and learning materials provided. This experimental study utilized one model of data analysis for measurement; the Statistical Package for Social Science (SPSS) Version 12.0. The study involved a sample of 1084 students based on gender, ethnic group, courses, marital status, location of internet access and frequency of use of e-learning portal. The questionnaires were administered by distance education lecturers in School of Distance Education Universiti Sains Malaysia and were completed by the students in the lecture class during the two weeks intensive course. The analysis showed that most of the students accessed the e-learning portal and additional notes provided. The results about learning material indicated that the additional notes in the portal were helpful to the students in their study. This showed that students were gainfully using the additional notes provided by the lecturers as learning material. They appreciated the power point presentations and teleconference sessions. The students also wanted to be provided with the summary of the teleconference sessions. They wanted to participate in the sessions through the internet as well as via the VCD and DVD mediums so that they could access the sessions using their computers at home.

Introduction

Recent years have seen the rise of e-learning opportunities offered by the nation's top universities, colleges and by institutions around the globe. The educational institution was among the early institutions undergoing radical changes with the dawn of the information age. Electronic Learning, as a new paradigm, has evolved this area. Given its potential, the shear volume of demand for education, and the ineffectuality of present educational system in addressing it, leaves no room for doubting both the necessity and importance of e-learning. Learning and teaching have been transformed as a result of the Internet which has speedily grown in popularity and widespread use (Jones & Peachey, 2005). Thus, educational institutions are attempting to integrate and implement better ways of new technologies in order to provide more learning possibilities to their students (Ortiz-Rodriguez et al, 2005). This was creating a new perspective in the education environment transforming traditional classroom learning into the distance learning mode. E-learning applications have become one of the most important parts of the educational settings all around the world (Suanpang et al, 2004). According to Husson and Waterman, 2002), students should taken into consideration to increase the quality of e-learning applications. The developers of distance programs also should consider need prospective students and change the negative perceptions in positive way to decrease dropout rates.

Support Systems

The School of Distance Education, Universiti Sains Malaysia aspires and is committed to provide a distinct learning environment for its distance learners via a blended learning approach. In this approach, a course is delivered using specially designed self-learning modules, complemented by face-to-face interaction with course lecturers through live video-conferencing sessions held at the 12 regional centres throughout Malaysia. To further enrich their learning experience in the actual university setting, students are required

to attend a 2-3 weeks residential intensive course annually when face-to-face lectures and laboratory sessions (for some courses) are conducted. In addition, the Learning Management System is also made available for students to participate in asynchronous and synchronous communication with peers and lecturers. Some learning activities are conducted at the regional centres where students have access to various learning resources available at the mini-library, such as books, CD-ROMs as well as the audio and video learning materials. The regional centres located throughout Malaysia enable learning activities to be conducted. At these centres, video conferencing studios, mini-libraries, Internet-linked computers and discussion rooms are made available to the students. Besides, learners enjoy live video conferencing sessions with their lecturers. These sessions are conducted daily, in the evenings during the weekdays and throughout the day during the weekends. They are transmitted live to all the 10 regional centres in Peninsular Malaysia. Other than that, the Learning Management System (LMS) empowers the students to enhance their understanding of a subject matter through the provision of collaboration with peers and lecturers. Electronic resources are also made available to the students.

Methodology

The purpose of this study was to investigate the students' considerations, expectations and awareness regarding the Information Technology System in the School of Distance Education, Universiti Sains Malaysia, specifically in terms of the e-learning portal and its learning materials.

Instrument

The data collection instrument used for this study included six demographics and twelve Likert-type questions divided into two sections preceded by a covering letter explaining the purpose of the questionnaire. The first section captured demographic information such as students' gender, ethnic group, the courses, marital status, place of frequently accessing the Internet and the frequency of using the e-learning portal. The second section captured information on the dimensions involved in the e-learning portal including students' considerations, expectations and awareness concerning the elements and contents of the portal and the learning materials available. The questions also investigated students' use of computers and the Internet, use of the e-learning portal, use of learning materials in the e-learning portal, their perception toward the existing learning materials in e-learning portal as well as their expectation and need of learning material to be included in the e-learning portal. All questions used the five-point Likert Scale ranging from 1 to 5 except questions on demographic information, in which 1 was for 'strongly disagree', 2 was for 'disagree', 3 was for 'neutral', 4 was for 'agree' and 5 was for 'strongly agree'.

Data Collection Procedure

A total of 1200 questionnaires were distributed to students from four different courses in the School of Distance Education - Bachelor of Science, Bachelor of Arts, Bachelor of Social Science and Bachelor of Management. A total of 1084 questionnaires were returned resulting in a response rate of 90.3 per cent. The questionnaires were administered by distance education lecturers in this school, and were completed by the students in the lecture class during the two weeks intensive course. The lecturers were provided with a guide to ensure that the questionnaires were properly administered and duly filled. They were especially requested not to interfere in any way with the students' provision of answers.

Data analysis

This experimental study utilized one model of data analysis for measurement, it is the Statistical Package for Social Science (SPSS) Version 12.0. It is based on frequency and percentage distribution. Frequencies were run to determine the distribution of the demographic profile and mean values for the Likert-type questions.

Analysis and Findings

Demographic Distribution
Table 1 showed the demographic distribution of the respondents including gender, ethnic group, courses taken and marital status.

Table 1 Demographic distribution of respondents

Items		Frequencies	Percentage (%)
Gender	Male	508	46.9
	Female	576	53.1
Ethnic Group	Malay	760	70.1
	Chinese	232	21.4
	Indian	48	4.4
	Others	44	4.1
Courses	Bachelor of Science	348	32.1
	Bachelor of Art	86	7.9
	Bachelor of Social Science	316	29.2
	Bachelor of Management	334	30.8
Marital Status	Single	331	30.5
	Married	739	68.2
	Single Parents	14	1.3
Place of Internet Access	Home	934	86.2
	Office	932	86.0
	University	694	64.0
	Cyber Café	812	74.9
Frequency of use of E-Learning Portal	Never	33	3.0
	Not more than once per week	250	23.1
	At least once per week	428	39.5
	More than once per week	373	34.4

Gender
The data collected showed that among the respondents of distributed questionnaires, 576 of students (53.1 %) were females and 508 of students (46.9%) were males. These findings were in agreement with the study carried out by Hickson and Baltimore (1996), who found that females have more preference for visual learning tasks than males. The findings of this study also supported the research by the American Association of University Women Educational Foundation (2001), which found that the average online student is a woman.

Ethnic Group

As illustrated in Table 1, Malays formed the largest ethnic group (760 students) followed by Chinese (232 students). Indians formed the third largest group (48 students) while rest were from other ethnic origins (44 students).

Courses

The study showed that the highest number of respondents were from the Bachelor of Science course (348 students) and the next highest were from the Bachelor of Management course (334 students).The third largest group were from the Bachelor of Social Science course (316 students) while the rest were from the Bachelor of Arts course (86 students).

Marital Status

The results from Table 1 also showed that a majority of the distance learning students were married (739 students or 66.5%). This supported the study by Gatta and Halsne who found that most of the online students were married. The analysis also showed that 331 students (29.7%) were still single while another 14 students (1.3%) were single parents.

Place of Internet Use

The data showed that 934 students used Internet at home, 932 students used Internet in their office and 812 students used Internet at the Cyber Cafe. Only 694 students used Internet in the University. The results were supported by Inal et al (2008) that nowadays, computer ownership and competencies of the students are high.

Frequency of use of e-Learning Portal

The data about how frequently the students used the e-Learning Portal was also collected. From the data collected, it was found that most of the students, which comprised of 428 students, used the e-Learning Portal at least once in a week. Many of them (373 students) also used the e-Learning Portal more than once in a week. 250 students used it less than once in a week. However, there were a few of them (33 students) who never used the portal. The reason for this could be that they were new students and were not quite familiar with the portal and the e-Learning systems.

Learning Materials

E-learning is proving to be a great platform in leveraging the barriers of access and equity. According to Massachusetts Institute of Technology (MIT), they has uploaded its recorded classroom lectures on the web, teaching material on the web for anyone to see free of cost. Brusilovsky, 2004 said during the study on the Knowledge Sea Portal revealed the importance and need for learning materials to be included in the e-Learning Portal. The Knowledge Sea portal (Brusilovsky & Rizzo, 2002) represents the attempt to meaningfully structure large volumes of learning material with minimal human involvement.

Additional Notes as a Learning Material in e-Learning Portal

Additional notes or lecture notes should be provided by the lecturers to their students as a learning material. The notes should be available in the portal whenever the students need them especially prior to the examination. For example, the teacher of a C programming course can pass to Knowledge Sea a set of lecture notes along with the links to several Web-based C tutorials containing dozens to hundreds of content pages each.

Table 2   Additional Notes as a Learning Material in e-Learning Portal

No	Items	Mean
1	The lecturer did not provide additional notes in the E-Learning Portal	2.92
2	Additional notes in E-Learning Portal did not help me in my study	2.37
3	I need more additional notes	4.15
4	I did not need additional notes	1.58

DiVesta and Gray (1972) were proposed a descriptive model that organized the early research and continues to be referenced by present investigators. The study by Grabe & Christopherson (2004) revealed that locating detailed information within a written summary may be easier to the students and the students simply regard written lecture summaries as more useful or efficient. The study also demonstrated that in certain circumstances, providing notes improves performance.

In this study, the students were asked to give their opinion regarding the additional notes available in the portal. The four questions answered by the students gave a good indication regarding their considerations, expectations and awareness concerning their needs of the provision of the additional notes as learning material in the e-learning Portal.

Table 2 showed the mean values for the items asked in the questionnaire regarding additional notes in the e-Learning Portal. The results for items No. 1 and No. 2 showed that the additional notes in the portal were helpful to the students in their study. This showed that students were gainfully using the additional notes provided by the lecturers as learning material. However, items No. 3 and No. 4 indicated that the notes available were not sufficient and that students needed more notes to enhance their learning. Students wanted the lecturers to add more notes in the portal.

Teleconference Session as a Learning Material in e-Learning Portal
Teleconferencing also called audio conferencing is used in some distance learning courses for communication in small groups. When audio conferencing is available for small group discussions in a distance learning course, it is desirable to give students an alternative method for example, to conduct the discussion online that is accessible to everyone in the group.

Table 3   Teleconference Session as a learning material in e-Learning Portal

No	Items	Mean
1	Power point slide is helping me in my study	3.91
2	Agenda for teleconference session need to be uploaded prior the session	4.09
3	The summary of the teleconference session need to be provided	4.16
4	I like to attend the teleconference session at the regional center	3.55
5	I like to attend the teleconference session over the internet/on my computer at home	3.44

6	I did not need to attend the teleconference session at the regional center	2.67
7	Attending the teleconference session is a burden for me	2.56
8	I hope that my teleconference session can be open through VCD and DVD	4.07

The responses given by the students in this section of the survey were useful in determining the need for and availability of the teleconference session in the e-Learning Portal. Table 3 showed the mean values of the items being asked in the questionnaire regarding the teleconference session in the e-Learning Portal. Response to Item No. 1 showed that the students needed of the power point slides used in their teleconference session.

They felt that the slides were helpful in their study. However, responses to item No. 2 showed that they needed the agenda of the teleconference session to be put earlier in the portal for their reference. Responses to Item No. 3 indicated that the students wanted to be provided with the summary of the teleconference sessions. Responses to Items No. 4, 6 and 7 showed that the students were willing to attend the teleconference session and did not have problems in attending such sessions at the regional centre. However, responses to Items No. 5 and 8 showed that some of the students also wanted to participate in the sessions through the internet as well as via the VCD and DVD mediums so that they could access the sessions using their computers at home.

Discussion and Conclusion

Computers have changed the way we learn. The getting of wisdom is no longer a linear process, but a journey where information is forever transforming with the advent of e-learning. In an economic environment marked by intensive competition between educational institutions, producing and ensuring quality e-learning delivery will be a competitive advantage to the School of Distance Education Universiti Sains Malaysia. Quality of the e-learning portal depends on several factors such as meeting students' considerations, expectations, awareness, and understanding their preferences. In order to enhance the quality of the portal, the first step should be to analyze the factors that underlie these expectations. Therefore, this study aimed to investigate the considerations, expectations and awareness of the students of the School of Distance Education Universiti Sains Malaysia concerning distance education and e-learning, especially the e-learning portal and its learning materials.

The survey conducted showed that a majority of the students have gainfully accessed the e-Learning Portal of the School of Distance Education. Besides, they also thought that competences in technology were the basic criteria of being a distance learner. Students who did not have computer and Internet access at home and in the office sought to find other alternatives such as going to the cyber cafés or using the University's computer labs, library, etc. Due to the limitation of face-to-face interaction in distance learning, the additional notes were necessary for the students to keep track with the course contents and important issues in the subjects taken by them. Additional notes in the form of lecture outlines or summaries should be made available in the portal especially prior to the examination. Most of the students were of the opinion that the notes were insufficient. Thus, the lecturers need to design and prepare the notes in a proper and systematic way so that these notes are made available to the students.

The study also revealed that the students were satisfied with the Power Point applications that were used for teleconference sessions. The reason for this may be the ease with which the presentation material could be downloaded by the students as well as the usefulness and attractive presentation of the slides. The students also responded positively regarding the usefulness of the teleconference session. They were willing to attend the teleconference session both via the Internet as well as at the regional centres. However, they require the agenda for the teleconference session as well as the summary of each session to be uploaded in the portal prior to the session. These students also stated that apart from listening and

watching teleconference session over the Internet in the e-Learning Portal and at the regional centres, it might be useful for them to access the session via CD or DVD player. This would be an easier option for them especially if they have problems with Internet access and are not able to attend the session at the regional centres.

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