The Implementation of Classnetwork. net in Teaching and Learning in the University of Brunei Darussalam

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ABSTRACT: *Teaching and Learning in Higher Education is an issue for educators in various fields to look into. The rapid growth of online teaching is the mode of instruction increasingly being used by educators today. The present study investigated the implementation of classnetwork.net by undergraduates enrolled in various teacher education programmes. The sample consisted of 102 teacher education students and they were given opportunities to make use of classnetwork.net (an online tool for uploading and downloading lecture notes and teaching materials). The implementation of classnetwork.net as an alternative mode of knowledge delivery to student teachers was made available to students recently. Instead of using traditional lecture method this online mode of delivery is an innovation in University of Brunei Darussalam. A survey method was used to elicited answers to researched questions. This study analyzes online skills (certain aspects) such as numbers of hours using computer and frequency of access the content in classnetwork.net. An effective communication is judged through correlation between online skills and numbers of hours and online skills and frequency of access. The study reports on the effective implementation of this tool as an innovative mode to teaching that will effect learning among students.*

KEY WORDS: *online learning, online learning skills, instructional design, and e-learning.*

Introduction

In the era of information technology today, a great deal of efforts has been put into improving the teaching learning process. The use of computers as an innovation in education is the case to be highlighted here. Many efforts to integrate computers into education or teaching and learning have not advanced to a great distance in higher education. Much has been written about factors affecting the success of educational change particularly pedagogical change. In the case of computer use in the classrooms, particularly in schools, there have been many comprehensive and

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systematic studies done. But at the university level, the use of computers, particularly using internet, much have to be seen.

Teachers nowadays are exposed to varieties of ways in imparting knowledge to their students because of emergence of new technologies. Internet technology has given ways to teachers and students to interact and communicate effectively regardless of their time and location. M. Ally (2004:5) stated that online learning has given benefits to students and teachers in accessing up-to-date and relevant learning materials, opportunities to communicate effectively through real-time interaction and directing students to appropriate information based on their needs.

Browsing internet for information needs specific skills or else the student might be lost in the cyberspace or might end up with irrelevant information for their learning needs. R.M. Pallof & K. Pratt (2001) stated that using technology effectively in the classroom requires more than basic computer skills because computers should fit into the larger context: learning environment. The learning environment is determined by the kinds of task student complete, the way teachers and students interact and how students are exposed to information.

Teachers should creatively think of various ways to deliver their lesson effectively. They have to create a dynamic learning environment through the integration of technology in teaching and learning. The use of internet technology in teaching and learning provide several challenges to teachers. T. Anderson (2004:35) stated that online learning can present challenges to educators, because the tools and opportunities for discovering students' preconceptions and cultural perspective are often limited by bandwidth constraints.

The primary purpose of this article is to share with readers the integration of internet technology in teacher education programs. The study involves the use of World Wide Web (WWW) as student's resource tool. Classnetwork.net was introduced to them in their learning activities. Notes and learning materials were placed and given to the students in the classnetwork.net.

REVIEW OF LITERATURE

M. Ally (2004:3), who cited Carliner (1999), defined online learning as educational material that is presented on the computer. Online learning involves the use of web as a medium to disseminate information and knowledge. Delivering materials through World Wide Web can be difficult if the students are not ready. R.M. Pallof & K. Pratt (2001:110) stated that the online classroom can provide an alternative that may be quite useful for some students. However, all students must not be forced into online classroom because it is not effective at all. Understanding different learning styles can help to illustrate the reasons why that was the case. They added (p.113) that instructors in the online classroom serves only as a gentle guide in the educational process. Consequently, the "recipient" of that guidance, the learner has a responsibility to use that guidance in a meaningful way.

What and how internet helps teaching and learning? Internet provides wide learning opportunities for students and teachers (Mohamed Amin Embi, 1998;

Mohd Sharif Abd Manaf *et al.*, 1998; and Abdul Halim Mohamed, Hisham Dzakiria & Azilah Kasim, 2000). Internet access gives maximum input for teaching and learning particularly in communication, searching for information and creatively interacts among users. In teaching English as a second language, Mohamed Amin Embi (1998) mentioned about "smart net" can be good model for learning English language. While Kyong-Jee Kim & Curtis J. Bonk (2008) mentioned on the use of computers has a positive effect on the achievement levels of second language learners, with limitations and weaknesses, such as financial, isolated, and knowledge required issues. Educators recognize that utilizing computer technology and its attached language learning programs can be convenient to create both independent and collaborative learning environments.

Abdul Halim Mohamed, Hisham Dzakiria & Azilah Kasim (2000) mentioned that the web-based classroom taught students to collaborate and participate in classroom discussions. It was also noticed that more students tended to take part in their discussions over the net than in the normal classrooms. Learners who have been exposed to the internet technologies could certainly be more comfortable in future learning that involve technology. In her study on "Using WebCT to Facilitate Student-Centred Learning in a Large Commerce Mathematics Class", Crystal Lau Chun Yun (2007) mentioned "*through WebCT, the students could feel closer to the learning materials and lecture. They found it particularly efficient and helpful in which they could save, print, reprint, or access to from any computer at any time, from anywhere*" (p.37). On the other hand Ng Poh Yen & Goi Chai Lee (2007) in their study on "E-Learning in Malaysia for Lifelong Learning: Motivation and Hindrances" mentioned that respondents were highly motivated by e-learning flexibility and cost and time saving features. These factors help respondents learn independently and without much hassle of travelling and moving (p.46).

The use of technology at the university greatly assists those who want to access the e-learning materials. Online teaching and learning is a powerful medium to deliver academic content. Online learning reduces the dependence of printed and traditional means of communications (Norizan Abdul Razak, 2007). The integration of e-learning and the conventional methods of teaching have been implemented in 1990's in some universities. The e-learning medium seemed to cater for the needs of different learners (Rosnah Abdul Karim & Mohd Izham Mohd Hamzah, 2007). Online learning is an e-learning and university education has started to recognize the importance of e-learning in encouraging student learning (Mohd Fadzli Ali & Joyes, 2007).

As mentioned in Kyong-Jee Kim & Curtis J. Bonk (2008) that technology has played and continues to play an important role in the development and expansion of online education. With regards to online education they listed four things as follows: *firstly,* effective pedagogical strategies for online teaching (online courses should be relevant, interactive, project-based, and collaborative, while providing learners with some choice or control over their learning); *secondly,* effectiveness of online instructional strategies make use of strategies that "create an environment that supports and encourages inquiry, broaden the learner's experience of the subject

matter, and elicit active and critical reflection by learners on their growing experience base"; *thirdly,* online activities related to critical and creative thinking, hands-on performances, interactive labs, data analysis, and scientific simulations – those activities were highly important in online learning environments; and *fourthly,* among the factors for the success of online education is "online instructors' readiness". They should have the pedagogical, technical competencies and improvements in online technologies.

Pedagogical techniques to be used more widely online in the coming decade would include group problem solving/collaborative tasks, problem-based learning, discussion case-based strategies, simulations or role play, student-generated content, coaching/mentoring, guided learning, exploratory or discovery, lecturing or teacher-directed activities, modeling of solution process, and Socratic questioning. Well-designed and maintained web courses have the potential to: (1) provide an interactive and challenging learning environment for the learner; (2) expose learners to real-world learning experiences involving meaningful and purposeful learning; (3) allow learners to reflect before responding; and (4) promote collaborative learning (Kyong-Jee Kim & Bonk, 2008).

Research shows that web-based learning is just as effective as face-to-face learning which highlights hundreds of studies showing that when comparing different media types (computer, classroom, correspondence, interactive video, radio, television, web-based), there is no significant difference in effectiveness. The advantages to the learners are longer time for discussion; pace and schedule can be set by the learner; better access to the instructor; and ability to share work with peers and more immediate feedback. The advantages for the instructors are the instructors can teach from anywhere; no travelling needed; more dynamic; and save time of Web-Based Instruction (Childress, n.d.).

What are the advantages & disadvantages of the internet? According to Pondered.Org (2006) that the internet or the world wide web is indeed a wonderful and amazing addition in our lives. The internet can be known as a kind of global meeting place where people from all parts of the world can come together. It is a service available on the computer, through which everything under the sun is now at the fingertips of anyone who has access to the internet. Anyone needs to have a computer and internet service provider to get "online" (connect to the internet). The internet provides opportunities galore, and can be used for a variety of things such as e-mail, access information, shopping, online chat, downloading software and others. There are certain dangers relating to the use of internet such as personal information, pornography, and spamming. But the advantages of the internet far outweigh the disadvantages and millions of people each day benefit from using the internet for work and for pleasure.

Impediments to online teaching and learning can be situational, epistemological, philosophical, psychological, pedagogical, technical, social, and/or cultural and include among others are "faceless" teaching, lack of an adequate time-frame to implement online courses, many distance learners who lack independent learning skills and local library resources, resistance to change and lack of technological

assistance. Barriers to online education are cited in the works of T. Fetherston (2001) and M. Childress (n.d.). In this context, T. Fetherston (2001) mentioned that the challenges facing the use of the web in universities are: (1) to use the web to encourage good learning behaviors in students; (2) most good learning behaviors rely on metacognition – universally regarded as an essential attribute of good learning; (3) encouraging metacognition develops students' knowledge of the nature of their learning, of their effective learning strategies, and of their learning strengths and weakness; (4) the web has potential in this area to meet this challenge if appropriate instructional design strategies are employed in the development of material for the web; (5) it is unlikely to occur if lecturers just mount their printed course material and use the web as a convenient delivery medium; and (6) if the design of courses allows individual exploration coupled with reflection and the comparison of a student's views with others, as well as the encouragement of good learning behaviors, then metacognition can be enhanced and good learning can result.

From the reviews of literature it is found out that there are at least two types of online learning: fully online learning and partly online learning. Classnetwork.net is partly online teaching and learning.

Methodology

The sample consists of 102 undergraduates who registered in 3 education courses at the Sultan Hassanal Bolkiah Institute of Education, University of Brunei Darussalam. They were from various teacher education programs namely Art, Physical Education, Science and the *Bahasa Melayu*. These students were provided with a learning website at http://www.classnetwork.net/. In most of their learning activities, they are required to use classnetwork.net as their resource page and as their online learning tool for downloading lecture notes and teaching materials. A survey method was used to elicit answers on the effectiveness of classnetwork.net in teaching and learning and problems students and lecturers faced in implementing this online tool. After 14 weeks a set of questionnaire was given to the students for their feedbacks. The questionnaire was then collected and the data were analyzed by using SPSS version 11.0. Descriptive analysis and cross tabulation tables are used in most of the analyses to reveal the findings for both research questions.

Findings:
A. Accessing the Internet at Home and University

Before the main findings are analyzed it is wise to give background features of the respondents or sample in this study. Respondents were from various teacher education students from various program consisting of 25 males and 77 females. This is normal sample in the teacher education programs where female outnumbered the males. Out of 77 females, majority of the samples are in Science (n = 38, 50%); followed by Art (n = 15, 19.7%); *Bahasa Melayu* (n = 12, 15.8%); other subjects

with n = 6 in (7.9%); Physical Education (n = 3, 3.9%); and Geography (n=2, 2.6%). This is clearly shown in Table 1.

TABLE 1:
Background of the Sample

Subject	Male		Female	
	n	%	n	%
Science	5	20.0%	38	50.0%
Art	10	40.0%	15	19.7%
Physycal Education	8	32.0%	3	3.9%
Bahasa Melayu	2	8.0%	12	15.8%
Others	-	-	8	10.5%
Total	**25**	**100**	**77**	**100**

Table 2 shows numbers of hours spent by the students in using computers at home. Majority of the students took 20 hours above (n = 37, 36.6%) in using computers at home; 35 (34.7%) used 4-6 hours; followed by 9 students used 1-3 hrs (8.9%). Most of the students are likely to access internet at home more than 4 hours.

TABLE 2:
Internet usage at home

Hours spent	n	%
1-3 hrs	9	8.9
4-6 hrs	35	34.7
7-9 hrs	6	5.9
10-13 hrs	6	5.9
14-16 hrs	3	3.0
17-20 hrs	3	3.0
20 hrs & above	37	36.6
None	1	1.0
Total	100	99.0
Missing System	1	1.0
Total	**101**	**100.0**

Table 3 shows number of hours spent by the students in using computers at the university. Majority of the students took 1-3 hours (n = 51, 50.5%) using computer at the university; 22 (21.8%) took 4-6 hours; followed by 6 respondents using computers around 10-13 hours (5.9%). Most of the students are likely to access internet at home more than the number of hours spent at the university.

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TABLE 3:
Internet Usage at the University

No. of Hours	n	%
1-3 hours	51	50.5
4-6 hours	22	21.8
7-9 hours	4	4.0
10-13 hours	6	5.9
14-16 hours	3	3.0
20 hours above	4	4.0
None	1	1.0
Total	**91**	**90.1**
Missing System	10	9.9
Total	**101**	**100.0**

Table 4 shows the number of hours in using computers at home and the purpose of using the computers by the users. At the university students are using computers for various purposes such as games/pleasure, teaching/learning, research, and analyzing information. The number of hours spent on these activities also differs. Most students spent 1-3 hours in the four areas under study.

TABLE 4:
Crosstabulation of Number of Hours in Using Computers at the University
and the Purpose of Using Computers by the Users

Purpose of Using Computers		How many hours a week do you use a computer at university?							Total
		1-3 hrs	4-6 hrs	7-9 hrs	10-13 hrs	14-16 hrs	>20 hrs	None	
Games and Pleasure	yes	47	21	3	5	3	3	1	83
	no	4	1	1	1	-	1	-	8
Teaching and Learning	yes	39	19	4	3	1	1	1	68
	no	12	3	-	3	2	3	-	23
Doing Research	yes	49	19	4	6	3	4	1	86
	no	2	3	-	-	-	-	-	5
Analyzing information	yes	29	12	2	3	1	2	-	49
	no	22	10	2	3	2	2	1	42

Table 5 shows the number of hours in using computers at home and the purpose of using computer by the users. At home students are using computers/internet for the purposes of games and pleasure, teaching and learning, doing research, and analyzing information. The number of hours spent on these activities greatly differs.

For example in games and pleasure, 35 (out of 92 students) spent more than 20 hours; teaching and learning, 28 students spent more than 20 hours on the internet at home; doing research, 34 students out of 94 of them spent more than 20 hours on the internet at home; and analyzing information, 22 students spent more than 20 hours per week in using the computer at home.

TABLE 5:
Crosstabulation of Numbers of Hours Using Computers at Home
and the Purpose of Using Computers by the Users

Purpose of Using Computer		How many hours a week do you use a computer at home?								Total
		1-3 hrs	4-6 hrs	7-9 hrs	10-13 hrs	14-16 hrs	17-20 hrs	>20 hrs	None	
Games and Pleasure	yes	7	31	6	6	3	3	35	1	92
	no	2	4	-	-	-	-	2	-	8
Teaching and Learning	yes	5	22	5	6	3	3	28	1	73
	no	4	13	1	-	-	-	9	-	27
Doing Research	yes	8	34	6	5	3	3	34	1	94
	no	1	1	-	1	-	-	3	-	6
Analyzing information	yes	2	17	6	1	3	1	22	-	52
	no	7	18	-	5	-	2	15	1	48

Table 6 shows the number of hours a week in the use of computers at the university with the number of access to classnetwork.net in Semester 2, 2007. Students are accessing the classnetwork.net once a week, twice a week or at any time according to their needs. But most of the students, 46 out of 51 students, are

TABLE 6:
Crosstabulation Table of Hours a Week in Using of Computers at the University with
the Number of Access to Classnetwork.net in Semester 2, 2007

		Numbers of Access to classnetwork.net in Semester 2, 2007			Total
		Once a week	Twice a week	According to my needs	
How many hours a week do you use a computer at university?	1-3 hrs	5	0	46	51
	4-6 hrs	3	2	17	22
	7-9 hrs	0	0	4	4
	10-13 hrs	2	1	3	6
	14-16 hrs	0	0	3	3
	20 hrs above	0	1	3	4
	None	0	0	1	1
Total		10	4	77	91

accessing the classnetwork.net between 1-3 hours a week according to their needs. Some spent more hours in surfing the classnetwork.net according to their needs. The rest might go for once or twice a week.

What about accessing the classnetwork.net at home? Table 7 shows the number of hours a week in the use of computers at home with the numbers of access to classnetwork.net, in Semester 2, 2007. *Firstly,* more students (34 out of 35) spent 4-6 hours to access classnetwork.net according to their needs. *Secondly,* 29 out of 37 students spent more than 20 hours a week in accessing the classnetwork.net according to their needs. The rest spent a variety of hours in accessing classnetwork.net either once a week or twice a week.

TABLE 7:
Crosstabulation Table Showing the Number of Hours a Week at Home in Accessing Classnetwork.Net in Semester 2, 2007

		Numbers of Access to classnetwork.net in Semester 2, 2007			Total
		Once a week	Twice a week	According to my needs	
How many hours a week do you use a computer at home?	1-3 hrs	3	0	6	9
	4-6 hrs	1	0	34	35
	7-9 hrs	1	0	5	6
	10-13 hrs	1	0	5	6
	14-16 hrs	0	2	1	3
	17-20 hrs	0	0	3	3
	20 hrs above	5	3	29	37
	None	0	0	1	1
Total		**11**	**5**	**84**	**100**

From table 2 to table 7, a summary of the effectiveness of the classnetwork.net is made possible as follows: (1) The students have more time of accessing the internet at home as compared to the time used at the university; (2) Most of the students accessed internet at home and university for games and pleasure; (3) Most of the students have not denied the purpose of using internet to help them in their teaching and learning. The students are most likely to use computers at home and at the university for their teaching and learning purposes; and (4) The students have benefited most of the facilities in classnetwork.net especially in downloading and seeking for relevant information to support their learning activities.

What problems students and lecturers faced in implementing of this online tool in delivery of knowledge among students? Problems faced by the students in teaching and learning are: (1) Focusing on several areas not in teaching and learning, researching but game and pleasure; (2) Not analyzing/synthesizing materials

downloaded; (3) Not using time management well; and (4) Technical – university's server has a problem, cannot download, upload, save and print, and cannot access classnetwork.net.

Table 8 shows the number of access to classnetwork.net with the use of computers in teaching and learning. The data shows that majority of the students used classnetwork.net in their learning activities whenever there is a need. In other words, the students were likely to access classnetwork.net at their own pace and time either at home or at the university.

TABLE 8:
Crosstabulation Table for Numbers of Access to Classnetwork.Net with the Use of Computers in Teaching and Learning

Numbers of Access to Classnetwork.net	Do you like to use computers in teaching and learning?	
	Yes	No
Once a week	10	0
Twice a week	5	0
According to my needs	81	2

The findings in table 9 shows that the students are competent at skills in searching information through the internet, downloading sources from the internet, communication and note taking from classnetwork.net. They have potential in

TABLE 9:
Distribution of Mean and Standard Deviation for Online and Learner Success Skills

Mean Indicators	SKILLS	Mean	Min	Max	STD
3.00 and above	Searching information to internet	3.96	2.00	5.00	.98
	Downloading sources from internet	3.94	2.00	5.00	1.00
	Communication	3.61	2.00	5.00	.96
	Note taking	3.35	1.00	5.00	.91
2.50 – 2.99	Learning skill	2.99	1.00	5.00	.79
	Information skill	2.98	2.00	5.00	.86
	Information processing skill	2.84	1.00	4.00	.78
	Time management	2.70	1.00	5.00	.87
	Critical thinking	2.60	1.00	5.00	.75
Below 2.50	Analyzing skill	2.47	1.00	5.00	.81
	Synthesize	2.35	1.00	5.00	1.01

Note: Scale
  1 – Don't Know   2 – Know at least   3 – Know better
  4 – Know best   5 – Expert

learning skill, information skill, information processing skill, time management and critical thinking. The students lacked analyzing and synthesizing skills.

The problem faced by the lecturer is when dealing with student's who failed to understand the material downloaded by their students before discussing it in tutorials and lecture. This is can be proved in table 4 and 5 where students are likely not analyzing the information especially when accessing information at home. Other problems are: (1) Technical when server failed, cannot upload updates on lectures and learning materials; and (2) Updating skills – skills in technical areas, e.g. new version and old version of the windows, compatibility, when asked by students, e.g. file cannot open from one version to another.

DISCUSSION AND CONCLUSION

Delivering materials through World Wide Web can be difficult if the students are not ready. R.M. Pallof & K. Pratt (2001:110) stated that the online classroom can provide an alternative that may be quite useful for some students, "*broaden the learner's experience of the subject matter, and elicit active and critical reflection by learners on their growing experience base*". Meanwhile Crystal Lau Chun Yun (2007) mentioned "*through WebCT, the students could feel closer to the learning materials and lecture. They found it particularly efficient and helpful in which they could save, print, reprint, or access to from any computer at any time, from anywhere*" (p.37). Online teaching and learning is a powerful medium to deliver academic content. Online learning reduces the dependence of printed and traditional means of communications (Norizan Abdul Razak, 2007).

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Abdul Halim Mohamed, Hisham Dzakiria & Azilah Kasim (2000) mentioned that the web-based classroom taught students to collaborate and participate in classroom discussions. While T. Fetherston (2001) mentioned that the challenges facing the use of the web in universities are: (1) to use the web to encourage good learning behaviors in students; (2) most good learning behaviors rely on metacognition – universally regarded as an essential attribute of good learning; and (3) encouraging metacognition develops students' knowledge of the nature of their learning, of their effective learning strategies, and of their learning strengths and weakness.

The study on classnetwork.net involves the activities of undergraduates in university learning. Online learning is a fairly new phenomenon in education and is often new to university academic staff. Since online learning research involves lecturers and students, the findings can be translated into practice even though the
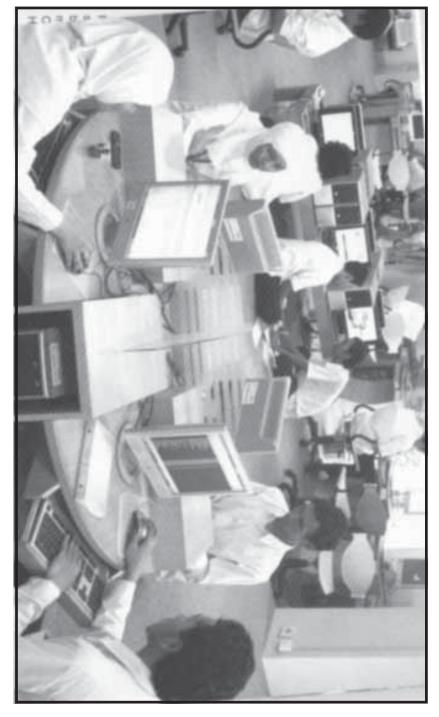
findings of online learning study vary depending on which methodology is being adopted and which specific area is being looked into. The impact of technology in education namely online learning has changed the role of lecturers and students drastically (Fulton, Glenn & Valdez, 2003). Previously, the role of lecturers was seen solely from the perspective of an academician and the undergraduates as active learners in taking or writing notes during lectures. At present, greater emphasis has been given more attention on the managerial works. Academics can not only view themselves as researchers, but they are expected to undertake a multi-functional role with an emphasis on research, teaching and consultations. In view of the online learning, the role of the academics is to work more closely with staff in support services.

The proportion of online activities to offline activities is highly depending on pedagogical and the operational preferences of the higher institutions. Pedagogical refers to the types of activities that best used in the course and for the particular group of undergraduates, in this case teacher education students (Watkins, 2005). The use of classnetwork.net in this case is more inclination towards blended learning where online learning is only part of the whole course management.

REFERENCES

Abdul Halim Mohamed, Hisham Dzakiria & Azilah Kasim. (2000). "Computer-Mediated Communication (CMC): A Learning Tool to Improve Students' English as a Second Language (ESL) Writing at Universiti Utara Malaysia" in *Proceeding on Strategising and Learning in the 21st. Century*. Bangi: Faculty of Education, Universiti Kebangsaan Malaysia.

Ally, M. (2004). "Foundations of Educational Theory for Online Learning" in A. Terry & F. Elloumi [eds.]. *Theory and Practice of Online Learning*. Athabasca, Canada: Athabasca University.

Anderson, T. (2004). "Toward a Theory of Online Learning" in A. Terry & F. Elloumi [eds.]. *Theory and Practice of Online Learning*. Athabasca, Canada: Athabasca University.

Childress, M. (n.d.). "Advantages and Disadvantages of Web-Based Instruction Retrieved from www". Available at http://idt.emporia.edu/childress/it820/AdvDis.htm [accessed in Bandar Seri Begawan: May 2nd, 2008].

Crystal Lau Chun Yun. (2007). "Using WebCT to Facilitate Student-Centred Learning in a Large Commerce Mathematics Class" in Abdul Wahab bin Abdul Ghani *et al*. [eds.]. *Proceedings on Changing Contours of Education: Future Trends, 12Th*. Bangi: UKM, International Conference on Education, 21-24 May, pp.29-38.

Fetherston, T. (2001). "Pedagogical Challenges for the World Wide Web" in *Educational Technology Review*, 9:1. Retrieved from http://www.aace.org/pubs/etr/fetherston.cf [accessed in Bandar Seri Begawan: January 21, 2002].

Fulton, K. *et al.* (2002). *Preparing Technology-Competent Teachers for Urban and Rural Classrooms: A Teacher Education Challenge*. Naperville, IL: North Central Regional Educational Laboratory. Retrieved from http://www.ncrel.org/tech/challenge/ [accessed in Bandar Seri Begawan: February 27, 2003].

Fulton, K., A. Glenn & G. Valdez. (2003). *Three Pre-Service Programs Preparing Tomorrow's Teachers to Use Technology: A study in Partnerships.* Naperville, IL: North Central Regional Educational Laboratory. Retrieved from http://www.ncrel.org/tech/preservice/ [accessed in Bandar Seri Begawan: May 14, 2004].

Kyong-Jee Kim & Curtis J. Bonk. (2008). "The Future of Online Teaching and Learning in Higher Education: The Survey Says … A Survey Substantiates Some Ideas About Online Learning and Refutes Others". Retrieved from ttp://connect.educause.edu/Library/EDUCAUSE+Quarterly/TheFutureofOnlineTeaching/40000?time=1216430552 [accessed in Bandar Seri Begawan: May 2nd, 2008].

Mohamed Amin Embi. (1998). "Pengajaran dan Pembelajaran Bestari Bahasa Inggeris Melalui *Smart-Net*: Satu Model Belajar Cara Belajar Bahasa Inggeris Berbantukan Internet" in *Prosiding Seminar Isu-isu Pendidikan Negara.* Kuala Lumpur: 26-27 November.

Mohd Fadzli Ali & Gordon Joyes. (2007). "Online Technology and Tutor's Roles in a Blended Classroom Setting" in *Proceeding International Conference on Lifelong Learning (ICLL).* Bangi: Universiti Kebangsaan Malaysia.

Mohd Sharif Abd Manap *et al.* (1998). "Internet dalam Pengajaran di Sekolah: Isu dan Harapan" in *Prosiding Seminar Isu-isu Pendidikan Negara.* Kuala Lumpur: 26-27 November.

Norizan Abdul Razak. (2007). "Online Lifelong Learning in Malaysia: Research and Practices" in *Proceeding International Conference on Lifelong Learning (ICLL).* Bangi: Universiti Kebangsaan Malaysia.

Ng Poh Yen & Goi Chai Lee. (2007). "E-Learning in Malaysia for Lifelong Leraning: Motivation and Hindrances" in Abdul Wahab bin Abdul Ghani *et al.* [eds.]. *Proceedings on Changing Contours of Education: Future Trends, 12Th.* Bangi: UKM, International Conference on Education, 21-24 May, pp.39-49.

Pallof, R.M. & K. Pratt. (2001). *Lesson from the Cyberspace Classroom: Realities of Online Teaching.* San Francisco, CA: Jossey Bass. A Wiley Co.

Pondered.Org. (2006). "The Advantages & Disadvantages of the Internet". Retrieved from http://www.pondered.org/the_internet.html [accessed in Bandar Seri Begawan: May 2nd, 2008].

Rosnah Abdul Karim & Mohd Izham Mohd Hamzah. (2007). "A Blended Learning Approach Towards Lifelong Learning Among Adult Learners" in *Proceeding International Conference on Lifelong Learning (ICLL).* Bangi: Universiti Kebangsaan Malaysia.

Watkins, R. (2005). "Preparing E-Learners for Online Success". *Article* retrieved from http://www.learningcircuits.org/2005/sep2005/watkins.htm [accessed in Bandar Seri Begawan: November 10th, 2007].

The implementation of classnetwork.net by undergraduates enrolled in various teacher education programmes in the University of Brunei Darussalam.