Technicality Factors in an Online Learning:
A Case Study from Students' Perception

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ABSTRACT

This paper reports the results of a study concerning of Malaysian undergraduate science physics students' and pre-service science teachers' perceptions of learning through online learning. Specifically, it required to ascertain whether students had positive perceptions of the new teaching and learning medium. 102 students were involved in this study which consists of 61 students from the School of Science and Technology (SST, science student) and 41 students from the School of Education and Social Development (SESD, pre-service science teachers). Both programmes were offered in University Malaysia Sabah. The students then followed all learning activities for sixteen weeks through online. The online learning environment (i.e., learning management system, LMS) was used as the main medium to carry the full learning process throughout the second semester of 2008/2009 academic year. Data gathered from an established open-ended questionnaire that administered after they completed with the learning activities at the end of the semester. Students' perceptions after experiencing the online learning were analysed into three main themes: *how students were able to access course material; time management; and technical issues encountered when learning use of computers*. Generally, though the results yield that students perception were vary but it has shown clearly that technicality support is very important in order to ensure the online learning works effectively.

Keywords: Online learning; technical support

1. Introduction

Online learning is comparatively new in Universiti Malaysia Sabah (UMS). Even though in early 2000, UMS has been introduced with an electronic teaching aid such as Blackboard and several computer aided instruction as one of the teaching and learning tool, both from School of Engineering and Information Technology (SEIT) and School of Education and Social Study (SESD), until now the usage of these teaching aid seems not been utilised at all or at least part of it. In School of Science and Technology (SST), a very small number of lecturers prefer to use online

learning as the teaching and learning medium or at least part of it. They were really comfortable with the existing medium (i.e., face-to-face lecture based) as to deliver course syllabus and content objective throughout semester. Ironically Malaysian government through the 9 challenges in Vision 2020 that must be achieved in order to be a well developed, advanced and higher income country in 2020 had stated through the 6th challenge that Malaysian citizens must try to adapt with these cutting edge technology and must also contribute to the science and technologies civilizations. Additionally, the Prime Minister also states the Information Communication Technology (ICT) and education service are two main key of the National Key Economic Area (NKEA), thus must be utilised very well in our daily life scenario to ensure the higher income economically and productivity country objectives can be achieved (Razak, 2010). Therefore as a rapid develop country, Malaysia really need to explore the potentials of these NKEA especially in higher leaning institution in order to reply the Prime Minister's call.

Media & Educational Technology Unit (METU) was then established in UMS to ensure the nation's vision and mission in higher education particularly in UMS can be achieved. The main objective for METU is to cater the service and facilities in Information Communication and Technology (ICT) such as computer and software component to the university including the teaching and learning aspects, besides it is also deliver digital information across all academic disciplines for research, administration and management of the university activities (Media & Educational Technology Unit, 2012).

Therefore this preliminary research was to address an issue concerning about online learning and what was really happen when the online learning being implemented in UMS. It's critical for researchers to considerate many factors before implementing online learning fully. As stated by Kiśićek, Lauc and Garić (2012) understanding students' preferences can guide to a better learning instruction through online. Additionally the use of ICT in modern teaching aid (e.g., internet technologies; web portals; and multimedia software) contribute positive output to parts of teaching and learning process such as, cooperation amongst students and the learning becomes more interactive (Mandic, Dzinovic, & Samardzic, 2012). It also might be one of the powerful tools to lesser lectures' teaching workload. Thus, though the students in this research had been intervened with a different approach (i.e., Problem-based learning, PBL) from the current conventional practice, it was the online learning aspect was the main issue. The main objective was to bring a different way of learning approach compare to the current practice (i.e., face-to-face pedagogy). Thus the researcher took steps to integrate online learning in a particular physics course. And at the end of the intervention, students' perceptions and consideration in term of three themes (i.e.; *how students were able to access course material; time management; and technical issues encountered when learning use of computers).*

2. Methodology

The study was conducted throughout Semester II during the 2008/2009 academic year at the University Malaysia Sabah (UMS), Malaysia. One hundred and two students were involves, which consist of sixty-one science physics students from Physics With Electronic Programme at the

School of Science and Technology (SST), and another forty-one pre-service science teacher from Science Education Programme at the School of Education and Social Development (SESD). The samples pursued all the learning activities in an online learning environment (i.e., learning management system, LMS) which acted as the main medium to support the full learning process throughout the semester. The flow of group sample shows in Figure 1.

Figure 1: Group Sample for the Study
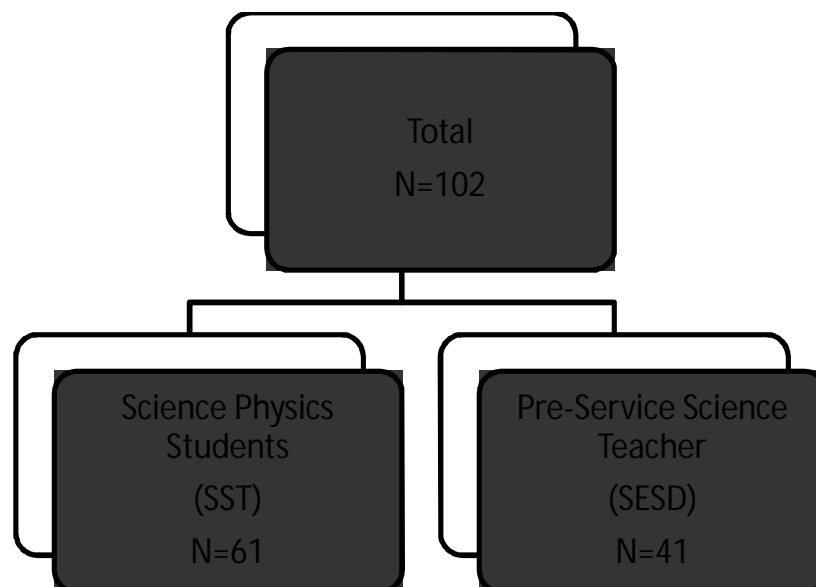
The teaching and learning via online was conducted within 16 weeks. During this intervention, all assessment being delivered using the LMS organised by Educational Technology and Multimedia Unit (ETMU) at the Universiti Malaysia Sabah. The researcher prepared the LMS followed the PBL and traditional criteria to fulfilled the learning and teaching activities via online.

The learning activities started with problems. After they encounter with the problem, they have to find their own information, knowledge and sources in order to find the appropriate solution. They can either find the solution via Internet, interview lectures or tutors, from text books, observation or any other methods in sequence to find adequate information to solve their problems. The students in PBL group also have to access to the LMS to do their chat room at least once in a week and monitored by a facilitator. In this chat room they will argue, share thoughts and most probably constructed their own thinking regarding to the particular problems. They also be able to enter the forum room to post any inquiries or any ideas asynchronously. Additionally some linkages, sources and lecture note also uploaded by the facilitator for them just to ensure the students did not lose their ways in sequence to find the suitable solution and just to give them the correct path in searching their resource. They had been given two weeks for each problem to solve before passing

up, and there were five problems need to be solved throughout the semester. This LMS system was using Moodle2007 course management systems. Jayasundara et al. (2007) suggested that the PBL online service and implementation rate of system perhaps more improve and even better if it is incorporated with existing course management systems such as Moodle2007 and Blackborad2007.

In this study the intention was to investigate Malaysian Undergraduate Science Physics Students' and Pre-Service Science Teachers' Perceptions of online learning especially from the technical part. The data were collected through a well developed survey which has $\alpha = 0.81$ Cronbach's Alpha. The survey was filled one week after their finish with the intervention.

3. Findings

Research question for this paper concerned the Malaysian undergraduate physics students' and pre-service science teachers' perceptions of learning through online learning. Specifically, it sought to ascertain whether students held positive views of the intervention.

Therefore this paper seeks to see understand students' awareness regarding online learning in terms of students' reflection on their learning of the Modern Physics course which involved online work. Student responses are presented overall and any differences for students from the SST program and SESD program are then detailed.

Additionally, this paper also try to identify students' views regarding online learning in terms of their experiences in learning Modern Physics. There are three key themes which together comprised the survey: how students were able to access course material; time management; technical issues encountered when learning use of computers. The questions in the survey are not necessarily presented in the above sequence, because the items in the survey were mixed to make it less repetitive for the students.

i. How Students were able to access Course Material

The statement under this theme asked students how they felt about their capability for determining most important ideas and concepts while reading course content online (statement 9). The responses shown in Table 1 suggest that most of the pre-service teachers preferred listening rather than reading the course content, with almost 40 percent of them saying they preferred listening to reading about things, compared with only 25 percent of the science students. Nevertheless, about 40 percent of the science students said that they have to hear information from others in order to retain the main ideas and concepts, compared with about 20 percent of the pre-service teachers.

Table 1 *Themes of how students were able to access or figure out stuff used for the course for SST and SESD*

	Statement	Majority of Students' Answer	SST (N=61) Percent (frequency)	SESD (N=41) Percent (frequency)
9	How capable are you of determining main ideas and concepts when reading your course notes through the Internet?	I prefer listening to reading about things.	24.6 (15)	36.6 (15)
		I have to hear information in order to retain it.	39.3 (24)	22.0 (9)

ii.   Time Management

There were four statements which queried the students concerning this theme (statements 7, 8, 11 and 12). In the responses to Statement 7: *I can meet deadlines without needing frequent prodding* the majority of the pre-service teachers (78%) reported they managed to meet their deadline whilst only about 55 percent of science student thought the same. In addition, almost 10 percent of science students responded that they were likely to postpone their work. As for Statement 8: *Will you be able to set aside some time to participate in weekly online discussions*? almost half of the pre-service teachers answered that they have allowed period for this course compared to around 40 percent from the science cohort who said the same. As for Statement 11 and Statement 12 there was no great difference recorded for both cohorts of students Details are shown in Table 2.

Table 2 *Themes of time management on online learning for SST and SESD*

	Statement	Majority of Students' Answer	SST (N=61) Percent (frequency)	SESD (N=41) Percent (frequency)
7	I can meet deadlines without needing frequent prodding.	I generally meet my deadlines.	55.7 (34)	78.0 (32)
		I am a terrible procrastinator.	9.8 (6)	-
8	Will you be able to set aside some time to participate in weekly online discussions?	Yes. I have allowed time for this course.	39.3 (24)	51.2 (21)

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11	Which of the following describes your time management skills?	For the most part, I get things done on time.	70.5 (43)	68.3 (28)
12	How much time do you expect to spend studying for this course?	The same amount as attending and studying for a traditional course.	45.9 (28)	46.3 (19)

iii.   Technical Issues encountered when learning Use of Computers

Under this theme there were no major differences noted between the science students and pre-service teachers for all six statements, as detailed in Table 3. The only wide difference between the cohorts is from Statement 16: *My keyboarding skills are good,* where there was approximately 15 percent in difference, favoring the pre-service teachers who responded that they were capable typists and they typed their own task. This indicated that both cohorts of students managed handling the technology while experiencing the online learning.

Table 3 *Themes of handling technology while learning computer use in online learning for SST and SESD*

Statement	Majority of Students' Answer	SST (N=61) Percent (frequency)	SESD (N=41) Percent (frequency)
14 I know how to turn on and off the computer system on my computer.	Yes. I know my system's shut down process.	98.4 (60)	100 (41)
15 I am comfortable using a mouse.	Yes, I use a mouse all the time.	93.4 (57)	87.8 (36)
16 My keyboarding skills are good.	Yes I am a capable typist. I type my own work.	73.8 (45)	85.4 (35)
17 I am comfortable with file management on my computer, such as moving files around different directories and drives, saving files, and deleting files.	Yes, I am pretty comfortable.	95.1 (58)	95.1 (39)
18 I have used a browser to surf the Internet.	Yes. I spend a lot of time on the net.	58.5 (24)	60.7 (37)
19 I can handle the situation when my Internet connection is interrupted for a period of time.	Yes, I will just use another lab on-campus, or a friend.	63.9 (39)	63.4 (26)

4.   Discussions and Conclusion

The research findings reported reveal several themes regarding the students' perceptions of learning through online learning. Overall, it seems that the majority of the science students and pre-service teachers were satisfied with their online learning experience. They presented several main themes: *how students were able to access or figure out stuff used for the course* (e.g., managed to read directions directly from the LMS); *time management on online learning* (e.g., can meet deadlines without frequent prodding, allowed time for this course); and *handling technology while learning computer use in online learning* (e.g., knowing how to handle computers when something goes wrong). In general, the students from either the PBL or traditional group were positive about online learning and it seems there was good engagement while learning this way. This is in line with Strnadova and Vobornik (2011) where they utilised the positive side of e-learning in a special course. Razak (2005), in her work based in the Malaysian context, also reported that students who were involved in online learning were receptive of the intervention. This is also supported in work by Coleridge (2005) who stressed that using ICT had an positive overall impact on students' learning or access to learning, for example, ease and quick access to data and information from the Internet, that is, students were able to construct cognitive activities and develop a mental picture of the problem and the conceptual network upon which it was based. Additionally, the literature suggests that online learning can facilitate the clear, fast and accurate representation of scientific data, allowing the focus of a lesson to move to a meaningful discussion (Miller, 2001). It also seems that online leaning is highly motivating because of access to information and ways to communicate that information effectively. Whilst Rahmat (2013) work also reveals that the needs of on-line learning facilities are critical in order to cater students hunting new knowledge as much as possible easily.

As a conclusions technicality is really important to be considered first along with other factors before implementing on-line or e-learning approach especially in higher education institution. This paper at least reveals some of the student needs in order to ensure their learning process develops and progressing well.

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