

E-LEARNING IN PHYSICS COURSES: A PRELIMINARY OF STUDENTS' ACCEPTANCE

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Abstract— This paper explored on readiness and level of acceptance and perceptions towards e-learning among Physics students of Physics with Electronic Programme of University Malaysia Sabah. A constructive approach (i.e., Problem-Based Learning (PBL)) was implemented using an e-learning as its main medium of teaching and learning (T&L). Two (2) physics subjects were involved (i.e., Thermodynamics Physics and Statistical Physics) which were offered on Semester 1 and Semester 2 respectively which took twenty eight (28) weeks durations. During the class, teaching and learning activities were done via e-learning including some of their assessment (i.e., online discussion, forum, uploading and downloading files, etc.). A set of questionnaire was distributed to twenty five (25) second year students before and after e-learning was implemented. Students' response towards e-learning also enclosed in this paper.

Index Terms—e-Learning, students' acceptance

I. INTRODUCTION & STUDY REVIEWS: STUDENTS' READINESS TOWARDS E-LEARNING

The emergence computer and internet over the world contributed to more promising future for e-learning and create more opportunity to develop this learning approach. e-learning defined as an association between *computers and interactive network simultaneously*, which is the significant involve in learning activity [1]. e-Learning in this study defined similar with the similar understanding described by Son [2] as teaching and learning process which involve of intentional use of networked information and communications technology. The concept of e-learning in this study also agreed with study by Hiltz and Turoff [3] and Oblinger and Oblinger [4] as revised in Moore et al., [5] describe e-learning as not only education process being able to accessed through only but also connectivity, flexibility and ability to promote into various interaction. E-learning have proliferated over the years and it is viewed as vital to learn on students' perspective, besides to

make the development of e-learning success, it is important to learn on students' attitude towards e-learning. In addition, study on response towards e-learning could provide necessary suggestions to instructors, teachers or facilitators for better learning process in future [6]. Hart [7] study shows how student persistence contributes on students' decision to drop a course in e-learning. Quality of interactions or feedback, satisfaction and relevance, social connectedness or presence, support, barriers to persistence (i.e., auditory learning style, basic computer skills) are some the shortlisted of factors contributed to students' persistence on participate in e-learning summarized by Hart [7]. Quality of interactions or feedback for example as important to students' persistence on e-learning as good feedback and response support students to complete their task, this also lead on improve students motivation and perceptions.

Henceforth, social connectedness or presence as other example show how students' view on e-learning influence their persistence on e-learning, usually as summarized by Hart, students who found comfortable using e-learning as a medium of learning will be more persistence compared to students who uncomfortable on e-learning. Similarly show in basic computer skills factor, students with less skills on computer felt unmotivated and lead to less persistence in e-learning. It is different with students with good skills on computer, they will find e-learning as an enjoyable learning approach [7]. Lim [8] in their paper list the factors contributing to the critical problems on implement e-learning in Iranian society which some are related to Malaysian's society such as weak IT education. Lack of IT education among Malaysian lead to their incertitude towards e-learning neither sharing information nor looking for facts to be share.

Thus, with government and higher institution keen of e-learning structure, the future of e-learning was optimistic however curricular must be flexible as new generations are query on their advancement in skills and career and relations with their study [9]. Other than that, the features of facilities

for utilizes e-learning should assist by government and higher institutional [10].

II. METHODOLOGY

The purposed of this survey was to disclose the readiness and level of acceptance and perception towards learning through online amongst student. A set of an established survey questionnaire with the Cronbach alpha value is between 0.90 to 0.97 was distributed to 25 second year students of Physics with Electronics at the same institute before and after the intervention of online PBL introduced. The set of questionnaire was divided into three (3) themes; *anxiety*, *individuality of learning* and *self-motivating learning* where it is set of close-ended question divided into three (3) points of Likert Scale, from agree, neutral and disagree.

A. Subjects of Study

The subject of this study was twenty five (25) students (i.e., 16 females and 9 males) from second year of Physics with Electronics programme in University Malaysia Sabah (UMS). Students were enrolled in the courses offered (i.e., Thermodynamics and Statistical Physics) in Semester 1 and 2 continuously. These courses were compulsory course for second year students of Physics with Electronics with three (3) credit hours each. Hence, students were exposed to e-learning for 28 weeks with 14 weeks on each course. Student's age was ranged in between 20 to 23 years old with mean of the age is 22.24 years old and 68% (N=17) of them were staying inside campus where internet can be accessed 24 hours.

B. e-Learning Platform

Teaching and learning (T&L) activities in these two physics courses were implemented using social network facebook (FB) as the main platform. The T&L activities were including online discussion with peers and facilitator, forum, uploading downloading files, searching information and managing learning activities. All of these T&L were done via facebook platform. It is worldwide known Facebook was one of social networking actively used by various kind of people such as teenager, adult, politician, professional, businessman, laborer and students. Facebook was chosen as the main e-learning medium for this study as it can be accessed easily by anyone and one of the ideal potential platforms for e-learning activities in this study [9].

C. Data Analysis

All data in this study was analysed by using SPSS (Statistical Package for Social Science ver. 20). Descriptive statistics used in this presentation of data is percentage (%) and number of students (N).

III. RESULTS AND DISCUSSION

A. Students' Demographic

The students' demographic survey designed as an open-ended question was distributed before students introduced with the e-learning activities. This survey was disclosed to study on their basic background on numerous elements such as a gender, age, accessible on internet connection and personal computer. The data enclosed in Table I.

TABLE 1. Students' Demographic

Gender		Have Personal Computer at Home	Have Internet Connection at Home
Male	Yes	9	9
	No	-	-
	Total	9	9
Female	Yes	15	13
	No	1	3
	Total	16	16

B. Students Response Towards e-Learning

Findings towards students' response and readiness on e-learning were discloses in Table II which shows their response towards e-learning after being experienced with it for two semesters.

TABLE 2. Students' Response Towards e-Learning

Item	Statement	Component Percent (%) Number of student (N)		
		Disagree	Neutral	Agree
1	I feel comfortable learning via a PC and in online learning	24 (6)	24 (6)	52 (13)
2	I feel comfortable working with a PC (e.g. doing assignments, assessment, etc.)	12 (3)	16 (4)	72 (18)
3	I feel comfortable communicating with other classmates online	24 (6)	28 (7)	48 (12)
4	I feel comfortable communicating with my instructor/lecturer online	16 (4)	28 (7)	56 (14)
5	I feel comfortable searching for information online	8 (2)	4 (1)	88 (22)
6	I feel comfortable sharing my knowledge with friends and facilitator online	4 (1)	28 (7)	68 (17)
7	I am comfortable changing my source of learning with friends via online	8 (2)	20 (5)	72 (18)
8	I know how to use a standard word processor, such as Microsoft Word, Microsoft Works, or Word Perfect	-	20 (5)	80 (20)
9	I feel capable of determining main ideas and concepts when reading notes, text books or other knowledge sources online	4 (1)	32 (8)	64 (16)
10	I feel I am a self-motivated, independent learner, when it comes to learning online	12 (3)	32 (8)	56 (14)
11	I am comfortable with file management on a PC, such as moving files around different directories and drives, saving files, or deleting files.	4 (1)	8 (2)	88 (22)

12	I realised and aware my actions are influenced by my thoughts and feeling	-	16 (4)	84 (21)
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As the response divided by three (3) feedback, disagree, neutral and agree, it is shows most students agree to the statements towards e-learning except for two (2) items which is item 1, *I feel comfortable learning via a PC and in online learning* and item 3 *I feel comfortable communicating with other classmates via online*. Though theses statement still favor to positive side of the statement (agree) nevertheless it shows quiet large number of student (N) response disagree (i.e., N=6) for both items.

The outcome reflects few possible factors contributed:

- a. Students disagree on feeling comfortable learning via personal computer (PC) and in online learning caused by the lack of internet coverage within their respective place. The comfy they felt when working with PC will lead them felt satisfied on e-learning, Young [10] stated dissatisfied within working with PC or e-learning is when lack of technical support or limited on technical skills.
- b. Student disagree on feeling comfortable communicating through online caused by the limitation on vocabulary and words as they felt freely spit out the word by oral speaking without thinking on the vocabulary etc. This also indicates students felt easy to deliver and explain the fact or information to their friends via oral speaking rather than typing or writing. This limitation next lead to frustration among students and choose to prefer traditional approach [11].

C. Limitations

The existence of limitations in this study is such as the size of the sample, as the size of the sample is small these findings may not completely representative of the majority of students experiencing e-learning or online learning. Secondly, as the sample in this study only exposed to e-learning approach for two courses while the others courses still using the traditional approach, students familiarity and comforts towards e-learning was not firm.

IV. CONCLUSION

Students seem ready and adapting well in e-learning activities as they responds favor to the positive advantages they gain by going through e-learning. This was supported by their interactions and relationship within member, communication and being able to give commitment amongst peers. In order to implement success and effective e-learning activities particularly for a new constructivist approach such as PBL, limitation such as lack of internet connectivity within institutional education should receive mass attention as this will lead to students' satisfactory towards their study and learning process. This is in line with Fauziah's [11] work

where the internet plays an important facility to students' necessity nowadays in order for them to learn in a supportive atmosphere.

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