Comparing Student Teachers' Preferences and Perceptions on E-Learning

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ABSTRACT

Electronic learning is a new trend in higher education institutes around the globe but there is a paucity of solid research concerning student teachers' readiness for this direction. A questionnaire was developed by adapting Hiltz's framework to determine student teachers' perceptions on areas that contribute to the success of electronic learning. A total of 70 student teachers participated in the survey. 44 of them took at least one information technology module and the remainder took no information technology modules. The two groups of students gave high ratings on most items asked. However, their perceptions on group dynamics and mode of teaching were significantly different. The research findings and the implications for use in teaching education are discussed.

1. INTRODUCTION

Information technology plays an important role in the modern world by providing easy access, flexibility, support for multimedia presentations, enabling communication virtually with anyone in the world. The development of information technology also has a significant impact on education by supporting a paradigm shift, i.e., shifting from a teacher-centred to a student-centred mode of teaching and learning. "We are finding that, for a small but growing percentage of people, new forms of communications, publications, and collaboration and the way data are accessed, represented and manipulated are changing the way knowledge is conceived, challenged, justified, and disseminated in their disciplines" [1]. Indeed, some universities offer online courses to cater for those who prefer to study using online platforms to complement face-to-face teaching. Myers, Bennett, Brown & Henderson [2] found that "Educational technologies may open new avenues for more students to access opportunities and information, increase forms of interactions among teachers and students and encourage collaboration across institutions" (p. 84). It was also suggested that academics who use E-learning may become better teachers as they may reflect on their teaching and also initiate more dialogue with other teachers on the potential benefits of various teaching methods [2].

The Hong Kong Institute of Education (HKIEd) is a tertiary teacher education institute in Hong Kong. It was realized that information technology has been used to support many projects related to assisting teaching and web-based learning in the past few years. HKIEd has adopted a popular learning platform, namely Blackboard, to facilitate this new mode of learning. Although there are many articles on methods for measuring the success of e-learning at different higher educational institutes [3, 4] there are very few articles that focus on factors affecting E-learning for teacher education. It is understood that it might not be feasible or desirable to completely replace face-to-face lectures with an e-learning mode as presentation and communication skills are considered essential attributes for effective teaching. However, given the positive feedback on the use of discussion forums to complement face-to-face learning at the HKIEd [5], and the easy access and high availability of computers at schools in Hong Kong [6], it is now an appropriate time to explore factors affecting the success of E-learning implementation, and also to determine whether student teachers are ready to learn some modules completely online.

2. A FRAMEWORK FOR E-LEARNING

The success of E-Learning can be measured from both students' and faculty members' perspectives by using educational outcomes as an indicator. To align with the educational reforms, learners should be prepared to develop "learning how to learn" skill and other generic skills in addition to basic content acquisition [7]. Drawing from diverse literature, Hiltz [8] came up with a research framework with the independent variables of technology, and course and student characteristics; intervening factors of amount and type of use of virtual classroom; and a dependent variable - better learning experiences.

Technological determinism - The efficiency and effectiveness of system design and implementation will directly influence user behaviour [9]. Specific resources such as hardware, software, and communication technologies could be important factors affecting user accessibility and reactions to particular aspects of E-Learning.

Social-psychological approach - The attitudes and capabilities of educators and learners when using information technology can be grouped as: 1) the perceived value of computer-based information, and 2) computer literacy. Both are accepted as important factors influencing the success of E-Learning [8, 10-12] .

Human relations school - The relationships and interactions among educators and students could be a significant facilitator or inhibitor to teaching and learning in the E-Learning mode. Implementing E-Learning successfully requires task interdependence in which agreement and collaboration of members are necessary and essential. It is imperative that members are comfortable with open discussion of and decision making in relation to E-Learning [8, 13].

Interactionist perspective - The success of E-learning depends on the interactivity among elements mentioned above, and these are influenced by information culture and national culture. Information culture refers to the characteristics of administrators, learners and educators in the use of collaborative information technology for knowledge sharing [12, 14]. National culture refers to "the collective programming of the mind that distinguishes the members of one group or category of people from another" [15]. In the learning environment, interactivity involves the way people think, act and communicate.

A questionnaire was developed based on Hiltz's [8] research framework. However, various independent variables are reworded so that they are more appropriate to the learning environment under study, they are: system resources, computer literacy, and perceived value of computer-based information, group dynamics and learning culture. Since it would be very difficult to measure human learning process and outcomes, the effectiveness of outcomes could be measured through the perception of students and their preferences [8, 16, 17]. Thus, the dependant variables for the success of E-Learning could be interpreted in terms of perception and preferences. Two sets of hypotheses are formulated as follows:

1(a): *System resources* are positively related to student teachers' *perceptions* of E-Learning for teacher education.

1(b): *Computer literacy* is positively related to student teachers' *perceptions* of E-Learning for teacher education.

1(c): *Perceived value of computer-based information* is positively related to student teachers' *perceptions* of E-Learning for teacher education.

1(d): *Group dynamics* are positively related to student teachers' *perceptions* of E-Learning for teacher education.

1(e): *Learning culture* is positively related to student teachers' *perceptions* of E-Learning for teacher education.

2(a): *System resources* are positively related to student teachers' *preferences* of E-Learning for teacher education.

2(b): *Computer literacy* is positively related to student teachers' *preferences* of E-Learning for teacher education.

2(c): *Perceived value of computer-based information* is positively related to student teachers' *preferences* of E-Learning for teacher education.

2(d): *Group dynamics* are positively related to student teachers' *preferences* of E-Learning for teacher education.

2(e): *Learning culture* is positively related to student teachers' *preferences* of E-Learning for teacher education.

3. THE STUDY

There were seventy participants who were pre-service student teachers studying for the Bachelor of Education (Primary) at the HKIEd. Forty four of them took an information technology (IT) module either as an elective or as one of their IT minor studies module. They were mainly year 1 or year 2 students and they were classified as IT students in this paper. The other twenty six participants took general studies as their major and did not take IT as their minor, and they did not take electives and they were year 4 students (non-IT students). IT student teachers were asked to fill in an online questionnaire during their break time towards the end of the semester whilst the non-IT student teachers filled in the same questionnaire using hard copies as there were only a few computers accessible in their classroom. They were not obliged to fill in the questionnaire as no identity was required.

4. FINDINGS AND DISCUSSION

The questionnaire was in a 5-likert scale with strongly disagree, disagree, agree, strongly agree and not applicable. It was found that participants were mostly positive on the items asked as most items had more than half as "agree" or "strongly agree" answers. The answers to "not applicable" are not shown as they were rather insignificant. When these two categories of answers are combined, it was found that they gave the highest rating to the *question 3.3 - usefulness of computer-based information* (95.77%), followed by *2.2 - My level of computer competency is good enough to access different materials* (90.14%) *1.1 - Easy to get access to computer facilities outside campus (88.73%)*. In fact, *question 1.1- easy to get access to computer facilities outside campus* had the highest strongly agree answer. This implies student teachers have good connected computer facilities at home.

It is interesting to observe that some items show dichotomous results. Two out of three items of learning culture had polarized results. About half of them enjoyed reading on-line materials and take part in on-line discussions whilst the other half

preferred the opposite (question 5.1 and 5.2). There were slightly more students preferred more face-to-face learning (question 7.1).

Despite adequate student teachers' computer competence and having appropriate infrastructure in place, they were unwilling to take online modules. They gave the lowest rating to *question 7.2 - I prefer to take some modules completely delivered online (35.21%), 4.4 - if my views are different from others in a group, I am reluctant to express it out (36.62%)*, and *6.4 - I learn more using traditional board and chalk method (40.85%)*. The findings suggest that students were still more comfortable with the traditional mode of learning where the educator is the expert and they are not completely confidence on their own learning as they "*still need some instructions from instructors rather than control my own learning process*" (question 4.3, 88.13%). They were more likely to accept lectures' instruction rather than questioning them (question 4.2, 85.92%).

This finding is somewhat disturbing as they did not seem to have adapted to the new mode of learning and it seems that they may have been adopting a surface learning approach. "Students who believe that knowledge is handed down by authorities or experts would not bother too much in questioning or understanding the learning materials, which would be committed to memory by the surface strategy" [18]. Perhaps it is the Chinese culture to accept and respect their seniors that make them unwilling to take some modules online. The findings further suggest that the learning culture and perhaps the national culture have a strong impact on student teacher's preferences even though they had good perceptions on E-learning.

Multivariate Correlation was used to test the strength between two variables for the hypotheses under investigation. It was found that most variables were significant at the 0.05 level (see Table 4). Hypothesis *2(b): Computer Literacy is positively related to student teachers' preferences of E-Learning for teacher education* was not significant at 0.05 level, that means computer literacy does not affect respondents' preferences on e-learning. All other hypotheses were significant means that all other independent variables affect respondents' preferences and perceptions on e-learning.

The two groups of student teachers were analysed using One-way analysis. It was found that all 5 items of group dynamics (*question 4.1 - To express my views or ideas that contradict what instructors say is not comfortable, 4.2 - I am more likely*

Table 1. Top ranking

Rank	Items	S. Disagree	Disagree	Agree	S. Agree
1	3.3 Perceived value of computer-based information as Useful	2.82	1.41	73.24	22.54
2	2.2 My level of computer competency is good enough to access different materials	1.41	8.45	73.24	16.90
3	1.1 Easy to get access to computer facilities outside campus	4.23	7.04	56.34	32.39

Table 2. Ambivalent finding

Items	S. Disagree	Disagree	Agree	S. Agree
5.2 I like to take part in discussion about my learning with instructors or other students by using e-mail or discussion board rather than doing the work alone.	4.23	45.07	45.07	4.23
5.1 I enjoy reading academic material on-line rather than listening to instructors in classrooms.	2.82	42.25	45.07	5.63
7.1 I prefer to have more E-Learning "lecture" to replace face-to-face learning	5.63	47.89	39.44	4.23

Table 3. Bottom ranking

Rank	Items	S. Dis-agree	Dis-agree	Agree	S. Agree
Last	6.4 I learn more using traditional board and chalk method	47.89	33.8	7.04	9.86
2nd Last	4.4 If my views are different from others in a group, I am reluctant to express it out.	7.04	54.93	30.99	5.63
3rd Last	7.2 I prefer to take some modules completely delivered online	11.27	50.7	29.58	5.63

Table 4: The relationships between the dependent variables (Perceptions, Preferences) and the independent variables (Resources, Computer Literacy, Perceived value of computer-based information, Group Dynamic and Information Culture). (N=70)

Correlation	Resources	Computer Literacy	Perceived value	Group Dynamic	Information Culture
Resources	----				
Computer Literacy	0.2014	----			
Perceived value	0.5391*	0.4030*	----		
Group Dynamic	0.1082	0.4681*	0.3307*	----	
Information Culture	0.4535*	0.3854*	0.4401*	0.4539*	----
Perceptions	0.5086*	0.4012*	0.5692*	0.4770*	0.5918*
Preferences	0.5695*	0.2161	0.5085*	0.2868*	0.6160*

* Correlation is significant at the 0.05 level

to accept lectures' instruction rather than questioning them, 4.3 - I still need some instructions from instructors rather than control my own learning process, 4.4 - If my views are different from others in a group, I am reluctant to express it out and 4.5 - I am more likely to discuss assignments with my friends rather than tackling them alone.) and item *6.4 - I learn more using traditional board and chalk method* are significant at $p < 0.01$ level but all other comparisons between the two group of student are not statistically significant. This finding suggests both groups of student teachers are positive regarding their ability to adapt to e-learning, and yet their preferences of learning mode and learning style were very different.

5. LIMITATIONS

Although all the respondents were studying the same programme, the IT and non-IT respondents were studying at a different level. Furthermore, the sample sizes of the two groups of students were also rather different. Therefore, one would be cautions at generalizing the findings in this paper to the student teacher population at HKIEd.

6. CONCLUSION AND IMPLICATIONS

This research has provided a first step in exploring the different factors affecting the successful implementation of E-learning for teacher education and to determine the differences between IT module students and non-IT module students. It was encouraging that student teachers were positive regarding most of the items asked which showed that they were ready to take part of the modules using the E-learning mode but they were unwilling to take modules completely online. The group dynamic is the only critical factor that affects IT and non-IT groups in their own preferences and preferences on e-learning. This suggests it is the knowledge and exposure rather than the skills that affect the perceptions and preferences of e-learning.

The findings were very informative and have four major implications; the first implication is that the HKIEd have provided a conducive environment for learners to engage in E-learning. The second implication is that student teachers were well prepared to study online as they did not encounter any problems regarding systems resources, individual differences and learning culture. The third implication is that it would be best to teach using blended learning as there is no unanimous preference regarding face-to-face versus e-learning. The fourth and possibly the most important implication is that; knowledge and experience with using IT to learn rather than the skills makes a big difference to preferences and perceptions towards e-learning.

We are mindful that this is only a preliminary finding and there is a great need to determine whether the IT student teachers were influenced by the concepts they learnt from the IT module or whether they were a group of students who were more proactive and therefore more positive on initiatives and innovative practices. The findings can be constructively complemented by focus group meetings to search for patterns of inter-relationships between different variables. It is appropriate to adopt a holistic view for any forward planning. The results would become more comprehensive and convincing with a larger sample for investigation.

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