The Relationship Between Ability of Instructors to Interpret Knowledge to Students and In Class Engagement of Students: An Empirical Study in Hong Kong Higher Education

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Abstract—**The purpose of this study is to analyze the impact of technology using in universities on the learning outcomes of students and find out the interaction between some important factors about learning which have not discussed in previous researches in Hong Kong higher education. This study used the questionnaire survey and the questionnaires were delivered to target respondents. Three hundred questionnaires were distributed and 185 copies were collected. The findings show that the instructors with good communication skills would increase the in class engagement of students.**

Index Terms — **ability of instructors, in class engagement, Hong Kong higher education**

I. INTRODUCTION

Traditional lecture dominates the education for a long time. Lowerison et al. (2006) claims that the learning outcomes of students are measured by final examination because faculty tended to rely on lectures and readings from texts [1]. The position of students is passive and controlled by their school that they need to memorize the information given by their instructors and use this information for tests. Fortunately over the past few decades, the technology using in higher education has been steadily increasing that technology is a part of learning. Lowerison belief the learning environment of students can become more active and subject to the control of students after technology apply in the learning environments. Craig and Amernic (2006) reported that more than 400 million PowerPoint were in circulation in 2002 and this number has increased [2]. The lectures in different schools are linked with each other and the teaching materials are packaged with many electronic teaching supplements. One of technology, Internet, can be used in conventional face-to-face courses can enhance student's learning by giving a chance for students to collaboration with their instructors and students and they can make and get material online and then share with others by using online tools. The learning abilities of students are different, instructors can apply new teaching methodologies with technology in order to help more students to understand the teaching material.

This study aims to fill this research gap and answer the research question "How technology can enhance learning"

II. LITERATURE REVIEW

With the advent of multimedia and technologies, learners are no longer multi-tasking only; they are also multi-processing. Technology can become a intellectual partner of students and help them analyze, synthesize and organize their knowledge and comprehension [3] because it can amplify students' intellectual and physical capacity [4]. Although students' learning process will be facilitated once they choose to use these tools to help them learn, students cannot use these tools without thinking deeply about the content that they are learning [5].

The degree of student engagement in the tasks depends on the motivation of the students. Teacher can effect on student motivation if the students find their teachers credible as sources of information and identify with them sufficiently to begin to model their attitudes and behavior. In present study, teacher presentation is variables, teacher comments made while presenting tasks to students that communicate expectations about the degree to which the tasks are likely to be interesting and challenging of classroom motivation which affects the task engagement directly. As a result, communication skills, which includes in "Ability of instructors to interpret knowledge to students of instructors", affect in class engagement of students directly. Therefore, the below hypothesis is suggested:

H1: Ability of instructors to interpret knowledge to students has a positive effect on in class engagement of students

III. METHODOLOGY

In this study, a questionnaire survey has been conducted to collect the data in order to examine the gender differences in using the technology for learning. The 'confidence' variable of the modified Fennema-Sherman Attitudes Scales [6] has been used in this questionnaire, which is used to investigate the gender difference of students' confidence in using technology for learning. This variable consisted of five questions (Table I) which were rated from a 5-point Likert type scale, ranging from 1 "strongly agree" to 5 "strongly disagree".

Question	Item	Factor loading
1	The instructor's ability to emphasize important points..	0.783
2	The instructor's ability to present information in a clear and understandable manner	0.849
3	The instructor's ability to summarize important points.	0.850
4	The instructor's use of examples or illustrations to clarify important	0.830
5	The effective use of class time. material	0.782
6	The total amount of material that is covered, assuming more coverage is preferable to less coverage he effective The total amount of material that is covered, assuming more coverage is preferable to less coverage he effective	0.535
7	The complexity of the material covered se of class time.	0.489
8	Your attentiveness in class	0.823
9	Your overall attendance for the class	0.752
10	The quantity and quality of notes you take	0.849
11	Your level of participation in class discussions	0.828

The questionnaires were distributed after the pilot test in a large scale. According to Michelle [7], piloting the questions on a small group of people could certainly save valuable time because any problems should be revealed at this stage thus the quality of the questionnaire can be improved. In the pilot test, ten university students are invited to complete the questionnaire without explanation thus we can know whether they could understand the questionnaire or not. They gave feedback about the questionnaire after completed the questionnaire. The question of "Do you have any working experience" in the general information part was deleted after pilot test because it has not relation with learning outcome.

After the questionnaire has been modified according to the pilot test, the questionnaires were distributed to the target group, i.e. students in higher education. These questionnaires were distributed during the lectures, in libraries and laboratories in universities. Large numbers of questionnaires could be distributed and collected but some students had not returned the questionnaires.

After the process of distribution and collection of the questionnaires, all of the questionnaires were checked to ensure all information were valid and completed without any missing items for further analysis..

Totally, 300 questionnaires were distributed physically and 185 copies were returned.

However, just 140 copies are valid. The invalid questionnaires are incompletion or data invalid. The successful response rate was:
= collected and valid samples / total numbers of questionnaires distributed
=140/300 x 100%
=46.7%

The raw data which were some number from the valid questionnaires was inputted into the software Statistical Production and Service Solutions (SPSS) so as to facilitate data analysis process [8]. A meaningful datasheet will be generated by using Statistical Production and Service Solutions (SPSS) for data analysis.

Prior to bivariate analysis, data was examined to ensure that it was amenable to the use of these techniques. This involved examining the responses to each question for invalid responses and missing values. Then reliability analysis including Cronbach alpha, were used to test the reliability of the variable. The Cronbach alpha value of ability to interpret knowledge and in class engagement were 0.858 and 0.829. Normally, the alpha value should be greater than 0.7 for well established measures [9]. As no alpha value in this survey study was less than 0.7, the results were considered to be consistent and reliable.

Moreover, a factor loading of Cronbach alpha of the variable was obtained. Factor loadings less than 0.3 were omitted as it is accepted that only factor loadings on the attributes greater than 0.3 were suitable for interpretation [10]. Since the factor loadings for the items ranged from 0.489 and 0.850 (Table I), all items were retained.

IV. RESULTS

One hundred and eighty five students returned the questionnaire and one hundred and forty copies are valid. Of the questionnaire returned, 53.6% were completed by males and 46.4% were completed by females. 30.71% of respondents were under age 20, 50% of respondents ranged between 20 and 23, 19.29% of respondents were above age 24. 0.71% of respondents were year 1 students, 55.71% were year 2 students and 18.57% were year 3 students. In addition, 82.86% were full time students and 15% were part time students.

The means and standard deviation were used to conduct the bivariate analysis. The result was shown in the Table II. The mean value of ability to interpret knowledge was 3.6286 while that of in class engagement was 3.4929. It showed that ability to interpret knowledge was more improved by technology for learning than in class engagement.

	N	Mean	Std. Deviation
Ability_to_interpret_knowledge	140	3.6286	.63259
In_class_engagement	140	3.4929	.73696
Valid N (listwise)	140		

Since the Pearson correlation coefficient between ability of instructors to interpret knowledge to students and in class engagement of students was +0.474 ($p<0.01$), the relationship between them was positive and significant. Hence H1 is supported with the result of Pearson Correlation Test.

V. DISCUSSION

The result shows that teachers' communication skills affect the engagement of students directly and the instructors with good communication skills would increase the in class engagement of students. These instructors are able to affect the motivation of students in learning such that the students find their teachers credible as sources of information and identify with them sufficiently to begin to model their attitudes and behavior. As a result, the motivation, such as interest, of students would be increased if the instructors have these abilities. The students would more engage in the class if they have enough motivation thus the in class engagement of students depends on Ability of instructors to interpret knowledge.

Therefore, we can conclude that if the instructors have high ability to interpret knowledge to students such that the instructors can interpret the knowledge clearly by interesting way, the motivation of students to involve in the class would be increased thus the in class engagement of students would be increased. It also means that the degree of in class engagement of students reflects the degree of Ability of instructors to interpret knowledge to students. The person correlation between them is +0.474 which refer to medium correlation but it is near to +0.5 thus the correlation between them can be consider as high correlation. As a result, in class engagement of students is an important factor which can measure the Ability of instructors to interpret knowledge to students.

VI. CONCLUSION

It is concluded that ability to interpret knowledge was more improved by technology for learning than in class engagement. The major contribution of this research is mainly for faculties and educators in higher education. It is useful for faculties and educators in higher education to make use of the result of analysis in this study. Educators can take an advantage from this study to know how to enhance each factors of learning in order to enhance the learning outcomes of students. Also, the educators in higher education can figure out which element in the whole courses or which behavior of them are more effective and have more positive impact on students' learning hence they can create competitive academic advantage through the use of authentic learning strategies by focusing on the core learning elements.

The main limitation of this study is the uneven sample size of respondents. Random sample of the respondents should be used instead of a convenience sample for more representative studies [11]. The majority of the respondents are studying bachelor degree but less of them are master or PhD students. The reason is the teaching and learning environment for postgraduates is not equal to undergraduates so result in this project is limited to represent the student in higher education with the education level that is bachelor degree but not above. Besides, most of respondents come from the same university in Hong Kong. The reason is respondents from other universities were not willing to finish the questionnaires. For this university, we can have better communication with lecturers so we can distribute the questionnaires in the lecture. Although the teaching and learning format in a university should be similar that in another university in the same country or region but this assumption is not strong without data or evidence.

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