

The Influence of Study Mode and Gender on Student's Actual Use of Computer: An Empirical Study in Hong Kong Higher Education

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Abstract—This study aims to assess the relationship between gender, study modes and actual use of computer in Hong Kong higher education. Questionnaire survey was applied and 220 questionnaires were collected. The findings showed that there was no significantly correlation between gender and prior experience, as well as study modes and prior use of computer.

Index Terms—gender, study modes, use of computer, Computer-Assisted Instruction, Hong Kong higher education

I. INTRODUCTION

Technological advancement today has impacted many aspects of life and led to new and innovative ways of learning. The way education is being provided in Hong Kong has been changed significantly because of the technological developments. Whilst universities have made great strides in addressing issues of access, cost of higher education and quality through Computer-Assisted Instruction (CAI). Universities in Hong Kong integrate technology into education delivery process in different extent. Besides the availability of facilities and students' ability, a more essential thing to consider the factors affecting the actual use on CAI. Thus, the question in this research was "can gender and study mode influence learners' actual use in CAI in Hong Kong higher education?"

II. LITERATURE REVIEW

Various exciting studies have found that males tend to have positive attitudes towards using technology than females. Since using computer is a male dominant activity, females found it less enjoyable to learn, and thus, tend to use less computer [1]. Moreover, even there is an equal access, females are less likely to make use of computers than males due to the perception of using technology as masculine [2]. That is to say, it is believed that gender difference has influence on students' actual use of computer.

H1: Prior Experience is different between genders.

In university, there are mainly two modes of study, full time and part time. A related study point out that part-time students have to bare workloads other than the study workloads [3]. Thus, part-time students tend to have less opportunity to use technology for learning, and may have less prior experience of using technology due to less practice on it.

H2: Part-time students have less prior experience of use of CAI than full-time

III. METHODOLOGY

Questionnaire survey has been chosen as the research method in this study to collect data for examining the relationship between gender and prior experience in CAI, as well as the relationship between study mode and prior experience in CAI. Three variables were included to examine the relationship which are "Gender", "Study Mode" and "Prior Experience". The variable "Gender" included two alternatives, "Male" and "Female". The variables "Study Mode" consists of two alternatives, "Full-time" and "Part-time". The experience score are built based on the number of years a student had been using internet and using computers to assist his/her learning as well as the time they spent on computer per day for non-educational purposes and educational purposes the five questions are as shown in Table I. Then, a more or less experience student is defined based on the median data.

TABLE I
ITEMS OF QUESTIONNAIRE (Prior Experience)

Question	Items
1.	How long have you been using computers to assist your learning? How long have you been using the internet?
2.	How often do you use the internet?
3.	How many time do you spend on computer per day for non-educational purposes?
4.	How many time do you spend on computer per day for educational purposes?

The development of questionnaire is based on the factors and the relationships hypothesized. When the distributable version of questionnaire is completed, pilot test is conducted. The purpose of pilot test is to ensure that the subjects can understand the questions and also understand them in the same way. 10 questionnaires were distributed to my friends

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and classmates who are currently under higher education. Participants were asked to give feedback about the questionnaire individually. It was found that the questionnaire could be understood by all of the participants in this pilot study. The questionnaires are distributed after finalized. The target group of this survey is the students under higher education in Hong Kong.

Questionnaires were distributed during the short breaks of lectures, as this is the easiest way to distribute large number of questionnaires and the return rate is high. Also, questionnaire distribution in canteens during lunch time can be a possible way to boarder the variety of respondents. For the students in other universities, it may need the kind help from my friends for the distribution of questionnaires in their universities.

320 questionnaires distributed and 273 questionnaires were returned. There were 220 out of 273 questionnaires fully completed. Therefore, the response rate was:

$$\begin{aligned} \text{Effective response rate} &= \text{Total number of complete questionnaires returned} / \text{Total number of questionnaires distributed} \\ &= 220 / 320 \times 100 \% \\ &= 68.75 \% \end{aligned}$$

The questionnaire consisted of 8 questions in total for three variables. Four of the questions were about respondents' demographic information and four were about their previous experience on computer usage.

IV. RESULTS

273 questionnaires were collected and 220 questionnaires were treated as "completed". About 49.1% of respondents were male and 50.9% of respondents were female. In this study, there were total 5 age groups. There were 0.9% of respondents aged under 18; 72.7% aged 18 – 22; 18.2% aged 23 – 27; 4.5% aged 28 – 31; 3.6% aged above 31. Therefore, most respondents were aged 18 – 22. 3.2% were Year 1 students, 30.5% were year 2 students, 31.4% were year 3 students, 4.5% was year 4 or above students, 28.2% were postgraduates, and 2.3% are under other level, such as taught postgraduate. About the respondents' mode of study, 88.6% were full time students, 10% were part time students and 1.4% were exchange students. Finally, 40.9% were more experienced students and 59.1% were less experienced students.

Independent Samples T-test was applied to verify whether there is statistically difference between two groups of factor. The text consists of two parts which are "Levene's Test for Equality of Variances" and "t-test for Equality of Means". Levene's Test would be used to test whether the variance of two groups is the same, and determine which t-value is more suitable. If the significance level for the Levene's test is greater than 0.05 which means the two groups have equal variance, use the results that assume equal variances for both groups [4]. Meanwhile, "t-test for Equality of Means" would be used to decide whether there is a significant difference between the groups. If significance (2-tailed) level is equal to or less than 0.05, there is significant difference between the mean scores of the two groups [4].

TABLE II
INDEPENDENT SAMPLES TEST (Gender)

		Levene's Test for Equality of Variances (Sig.)	t-test for Equality of Means Sig.(2-tailed)
Prior Experience	Equal variances assumed	.000	.150
	Equal variances not assumed		.160

According to Table II, the significance value under Levene's Test was 0.000 ($p = .000 < 0.05$). It means that we can assume that male and female had no equal variances and thus the values in the row of "Equal variances assumed" was used. The value of significance (2-tailed) under "t-test for Equality of Mean" was 0.16 (> 0.05). Therefore, there was no significant difference between the two subgroups, which means there is not different between male and female on the prior experience. Based on the above results ($p=0.16 > 0.05$), the hypothesis H1: Distribution of computer usage is different between genders was rejected.

TABLE III
INDEPENDENT SAMPLES TEST (Study Mode)

		Levene's Test for Equality of Variances (Sig.)	t-test for Equality of Means Sig.(2-tailed)
Prior Experience	Equal variances assumed	.332	.446
	Equal variances not assumed		.464

According to Table III, the significance value under Levene's Test was 0.332 (> 0.05). Thus, it was assumed that use the results in the row of "Equal variances assumed". The value of significance (2-tailed) under "t-test for Equality of Mean" was 0.446 (> 0.05). Therefore, there was no significant difference between the two subgroups, which means there is not different between male and female on the prior experience. Based on the result of independent t-Test ($p=0.446 > 0.05$), the hypothesis H2: Part-time students have less prior experience of use of CAI than full-time students, was rejected.

V. DISCUSSION

There was no significant difference between male and female with distribution of computer usage. Although some research reported that there were biological and social characteristic differences between male and female [4] [5], the result in this study shew that female students and males

do not have significant different on their previous technology experience. Those study explained the difference between genders with two reasons, one is about the unequal access to computer, which means they suggested that using technology is a man dominant activity thus they would have more opportunity to use computer technology; another reason is the gender stereotypes in the society that depreciate females' intention to use computer technology. However, the result of this study shew that the situation is changed. One reason to explain this phenomenon is that the technology advance make it easier for the students, both males and females, to come across different kind of technologies. Furthermore, the government has put many effort on promoting computer assisted education, which make all the student can be exposed to technology in the earlier stage in their study life [6]. Therefore, the effect of the unequal access to computer is reduced.

Besides that, the result found that there was no significant difference between full-time students and part-time students with different level of prior experience in using technology for educational and non-educational purpose. A previous study pointed out that part-time students have to bare workloads other than the study workloads, and thus, have less opportunity to use technology as well as opportunity to use computer to assist learning and that explained why they prior experience scored lower than full-time students[3]. However the result in this study showed no statistically significant relationship between level of prior experience on using computer technology and internet and study mode. One reason to explain this difference between the result of this study and other studies is that some of the respondents of this research were in internships or had part time jobs even they were studying in full-time programs, thus their workload would be as high as the part time students. There was no significant difference between the workload of full-time students and part-time students in this study, and hence, no significant relationship between experience difference and mode of study.

VI. CONCLUSION

It can be concluded that gender and study mode are not significant factors that would influence actual use of computer of students under higher education in Hong Kong. Since the target participants were students in higher education, the findings of this study contributed to those educators who are teaching in higher education. Base on the findings, the factors, such as gender and mode of study, which were proved to be influential are not are not significant in current circumstance in Hong Kong. In order to enhance the extent of implementation of CAI in Hong Kong, educators have to identify the major factors that would affect students' perception and the usage of computer.

The limitations of this study are small sample size and uneven distribution of education level. If sufficient resource is provided, the sample size is enlarged which the education level will be more evenly distributed.

As this study revealed that gender and study mode are not the major factors, future studies can be done to investigate other factors, such as age, grade level and access to computer.

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