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A Study on Students' Background and Attitudes Towards Computer Skills in Selected Secondary Schools in Segamat

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ABSTRACT

This study is carried out to identify whether students of different backgrounds differ in their computer skills and at the same time to identify whether there is a correlation between students' attitudes and their computer skills. The final objective of this study is to investigate which variable (background or attitudes) has a greater influence on the students' computer skills. All the Form Five students from the three different types of schools in the Segamat district were chosen as samples. T-test, ANOVA, Pearson correlation and regression analyses were used to analyze the data. The study showed that there was a significant difference between the types of schools the students were in, students' computer ownership and the students' computer club membership with their computer skills. In addition, the findings also revealed that there was a significant correlation between the computer attitude subscales with the students' computer skills. The multiple regression analysis showed that there was a relationship between the students' computer confidence, computer ownership, computer anxiety, school computer club membership and type of schools towards the students' computer skills. However, we found that students' confidence in using the computer had a greater influence than computer ownership and other characteristics.

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Introduction

Background of the Study

In 1992, the Ministry of Education introduced the Computer in Education program. This is an integrated program to incorporate computer usage in teaching, learning and school management. The main activity implemented in this program is Computer Literacy and Teaching-and-Learning aided by computers (Norizan, 2002). Computer literacy was first introduced in 90 schools to Form One students. In 1998, Information Technology was taught as a subject in 26 selected schools to Form Four and Form Five students and became one of the elective subjects for the Sijil Pelajaran Malaysia (SPM).

To further promote the use of computers in education, the Ministry of Education and the Multimedia Development Corporation initiated a pilot project in 1997 where 90 schools were selected from all over the country to "go smart" by July 2002. Eventually, by the year 2010, all of Malaysia's primary and secondary schools are supposed to transform to Smart Schools. The Ministry of Education is also encouraging schools to 'go smart' on their own initiative. While the Ministry provides the necessary know-how and guidelines, the transition is financed either by private companies or fund raising initiatives (Minges & Gray, 2002).

Problem Statement

Despite all the efforts made by the Ministry of Education in achieving the transformation of Malaysian primary and secondary schools to smart schools, studies have revealed that the computer awareness among students ,especially rural school students was still very low (Norizan, 2002). This was proven by the low number of school computer club members, which indicated that there was not much effort or interest to seek additional knowledge in computers besides the knowledge gained in the classroom (Norizan, 2002). Hence, the present study was conducted to further investigate the root of such problems.

This study will address the following research questions:

1. Do students of different backgrounds differ in their computer skills level?
2. To what extent do the students' attitudes correlate to their computer skills?
3. Which factor is more influential on students' computer skills: students' background or their attitudes?

Objectives of the Study

We would like to find out whether students of different backgrounds differ in their computer skills level and at the same time to identify whether there is a

correlation between students' attitudes and their computer skills. The final objective of this study is to investigate which variable (background or attitudes) has a greater influence on the students' computer skills.

Scope of the Study

The study will be limited to students in three selected secondary schools with different backgrounds in the district of Segamat namely Sekolah Menengah Teknik (technical), Sekolah Menengah Kebangsaan Agama (religious), and Sekolah Tinggi Segamat (ordinary) schools.

The respondents in this study will be all the Form Five students in the three selected schools and thus, findings cannot be generalized to all secondary school students in the district. This is because; each school practices a different educational system. For example, a technical school concentrates more on the technical subjects and small parts of engineering subjects. However, Sekolah Menengah Agama (religious school) focuses more on religious studies other than the subjects taught in ordinary schools.

Literature Review

Most of the previous studies found a positive relationship between computer attitudes and computer skills. A study conducted by Cheri Speir et al. (2003) revealed that subjects who perceived computers to be easier to use and who perceived computers as useful tend to exhibit greater skills in their performance. Similar findings were reported by other researchers (Kageni Njagi et al., 2003; Young, 2000; Houtz and Gupta, 2001).

Existing research also indicated that computer experience was significantly related to positive attitudes (Levin and Gordon, 1989) and students with experience are more confident in their use of computers than students with little experience (Loyd and Gressard, 1984). In addition,previous studies also proved that prior computer exposure, particularly having a computer at home, had a strong influence on computer attitudes (Nash and Moroz, 2003; Geissler and Horridge, 1993; Harvey & Wilson, 1985; Levin & Gordon, 1989; Loyd & Gressard, 1984).

Researches have also reported that educational background of the students also influences the students' computer performance. However, most studies in this area made comparisons between elementary and high school students (Loyd and Gressard, 1986), coeducational and same-sex schools (Houtz and Gupta, 2001), students and non-student respondents (Turnipseed and Burns, 1991), as well as comparing re-entry and traditional college students (Klein and Knupfer, 1993) in their attitude towards computers.

Based on the literature review we found that research to date has not extended to the relationship of educational background particularly the types of schools with students' computer performance. Thus, this study was conducted to further investigate the issue and to gain a better understanding of the relationship between those variables. It is hoped that the findings would contribute to new knowledge in the field of research.

Methodology

Population

The target population was all the Form Five students from the three selected schools in Segamat district. Form Five students were selected because we assumed that they have reached the highest level of secondary school education before entry into institutions of higher learning. There were 217 students from Sekolah Menengah Tinggi, 349 students from Sekolah Menengah Teknik and 102 students from Sekolah Menengah Kebangsaan Agama. The overall population from all the three schools was 668 students.

Instrumentation

A questionnaire was designed to elicit information from the students. The first section of the questionnaire was the students' profile, which is a type of nominal data. The second section was on the students' attitudes towards computers while the third section was the students' self-rating on computer skills. The second and third section of the questionnaire consisted of Likert-type statements, each with four choices of responses from 'strongly agree' to 'strongly disagree'. The Likert scale is the most frequently used variation of summated rating scale, which is a type of interval data. It helps to compare one-person scores from a well- defined sample grouped (Cooper & Schindler, 2003)

Variables

The dependent variable in this study was the students' computer skills in using the computer, whilst the independent variables were divided into two categories: students' background and attitudes. The variables to be considered for the students' background were the types of school and their computer experiences. On the other hand, the variables for students' attitudes comprised their confidence, interest, anxiety and perceived usefulness of computers.

Reliability and Validity

The reliability of each test scores refers to its degree of consistency. The reliability coefficients were calculated in each of the four subscales in the attitudes survey and also to look at the internal consistency in the students' self–rating computer skills level. In general, reliabilities less than 0.6 are considered poor (Sekaran, 2000).

A pilot study was done in another secondary school in Segamat and the questionnaires were checked for validity.

Findings and Discussion

Students' Profile

From the survey, we found that 59.6% of the students were male while 40.4% were female. This showed that the number of male students outnumbered the female. A majority of our sample (52.4%) came from Sekolah Menengah Teknik and the least number of students (15.2%) were from Sekolah Menengah Kebangsaan Agama.

The students' background also indicated that the majorities (65.2%) of them do own a computer at home and some (37.1%) had joined the school computer club to gain some experience in using a computer.

Students' Computer Skills Level

The measurements of self-rating computer skills level were based on 10 statements, which can be categorized under word processing, spreadsheet, Internet, e-mail and general use of computer. Reliability analysis for the computer scale level was tested and the coefficient alpha value was 0.884, indicating that the scales were highly reliable.

The scales for each question were rated between 1 to 4, where 1 indicated 'strongly disagree', 2 indicated 'disagree', 3 indicated 'agree' and 4 indicated 'strongly agree'. Thus, the total scores for each student on the 10 statements ranged from 10 to 40. The higher scores indicated that the students had a higher level of computer skills.

Research Question 1:

Do students of different backgrounds differ in their computer skills level?

The hypothesis tested related to the above research question was:

H_{01}: There is no statistically significant difference in the students' computer skills with different backgrounds.

This hypothesis tested whether the students' computer skills could be determined by several variables. The variables that we assumed would influence the computer skills were the type of schools that the students were in, computer ownership and computer club membership.

i. Do students from different types of schools differ in their computer skills level?

The results showed that the mean scores for Sekolah Tinggi was 29.306, Sekolah Menengah Teknik, 28.410 and Sekolah Menengah Kebangsaan Agama, 31.168.

The ANOVA Procedures was used to test the null hypothesis that there was no statistically significant difference in the computer skills level among students in the three selected schools. The null hypothesis was rejected ($p < 0.05$, $F = 9.502$) showing that there was significant difference in the students' computer skills among the three schools. Results from Least Significant Different Test showed that Sekolah Kebangsaan Agama perceived the highest computer skills level among the three schools.

The results also indicated that, students in Sekolah Tinggi had higher computer skills level than those in Sekolah Teknik ($p < 0.05$). A possible reason to the highest computer skills among students in Sekolah Kebangsaan Agama may due to the selection system into a fully residential school. From the literature review done, we found that most studies focused on the differences in the sample in terms of level of education such as comparing college and university students, elementary and high school students (Loyd and Gressard, 1986), coeducational and same-sex schools (Houtz and Gupta, 2001), students and non-student respondents (Turnipseed and Burns, 1991), as well as comparing re-entry and traditional college students (Klein and Knupfer, 1993) in their attitude toward computers. However, research to date has not extended to the differences of educational background particularly the school types on students' computer performance.

ii. Do students who own a computer differ in their computer skills level compared to those who do not own a computer?

The independent sample t-test was used to test the null hypothesis that no statistically significant difference exist between the students who owned a computer and those who did not in their computer skills level. The result showed that the null hypothesis was rejected ($t = 8.565$, $p < 0.05$). It is clear that students who owned a computer at home displayed better computer skills than those who did not.

The mean scores for those who owned a computer was 30.4378 with standard deviation 5.1425 whilst the mean scores for those who did not own a computer was 26.6509 with standard deviation 5.9488.

The above finding was supported by that of Nash and Moroz (2003), Geissler and Horridge (1993), Harvey and Wilson (1985), Levin and Gordon (1989), and

Loyd and Gressard (1984) who also reported that computer ownership had a strong influence on computer attitudes and skills.

iii. Do students who join a school computer club differ in their computer skills level compared to those who do not?

All the three selected schools had a computer club for the students' benefit, but unfortunately not all students made use of this opportunity.

The hypothesis that there was no statistically significant difference between students who joined and did not join the school computer club had been rejected at p-value less than 0.05 and t value equal to 7.160. This result revealed that the students who joined the school computer club showed higher computer skills than those who did not. The mean scores for those who were computer club members was 31.1134 with standard deviation 5.3787 whilst the mean scores for those students who did not join a computer club was 27.9427 with standard deviation 5.6013. The students who joined the computer club generally had the basic skills in using the computer, which indirectly increase their computer skills. This supports the findings by Norizan, (2002) that by joining a computer club, students tend to be more confident in using the computer and this helps to develop their mastery skills in using the computer.

Research Question 2:

To what extent do the students' attitudes correlate to their computer skills?

The hypothesis tested below was used to find the correlation between students' attitudes and their computer skills level.

H_{02}: There is no correlation between students' computer attitudes towards their computer skills.

The students' attitudes were grouped according to four subject matters that included confidence, anxiety, interest and perceived usefulness of computers. The students were asked to rate their level of agreement to the statement relating to their attitudes towards computers. The total scores for each student on the four subscales were then calculated.

i. Is there any correlation between students' computer confidence and their computer skills?

Five items were used to measure the students' confidence towards using a computer. The internal consistency of the items was 0.769, which indicated high reliability. Results from Pearson correlation revealed that there was a significant relationship between the students' confidence and their computer skills at p-value less than 0.05. The r-value was 0.483 and this indicated a moderate positive correlation between the students' confidence and their computer skills. This implies that students with a higher confidence in using a

computer displayed a higher computer skills level. This finding is supported by that of Loyd and Gressard; (1984), Byrnes and Johnson (1981), Koohang (1986) and Marcoulides (1985).

ii. Is there any correlation between students' computer anxiety and their computer skills?

There were five statements to measure students' computer anxiety towards their computer skills with the internal consistency of 0.791.

The result of the Pearson correlation coefficient showed a significant relationship between students' computer anxiety and their computer skills. An r-value of negative 0.355 and was significant at 0.05. This implied a moderate negative correlation between students' computer anxiety and their computer skills. A negative coefficient indicated that when students' anxiety towards computer was lower, their computer skills were found to be higher. Furthermore, increased knowledge and skill in productivity programs such as word processing or spreadsheet (Koohang, 1989; Sheffield, 1996), Internet instruction in methods courses (Ropp, 1999) contribute to lessening computer anxiety.

iii. Is there any correlation between students' computer interests and their computer skills?

There were five statements to measure students' computer interest towards their computer skills with the internal consistency of 0.711.

The null hypothesis that there was no significant relationship between students' computer interest and their computer skills was rejected at p-value less than 0.05. This showed that there was a relationship between students' computer interest and their computer skills. The Pearson r-value was equal to 0.340 meaning that there was a weak positive correlation between students' computer interest and their computer skills. Students who have more interest in computers will produce higher computer skills.

iv. Is there any correlation between students' perception towards the usefulness of a computer and their computer skills?

There were six statements to measure students' anxiety towards their computer skills with the internal consistency of 0.663, which can be considered as acceptable.

The Pearson coefficient of correlation was used to test the null hypothesis that there was no significant relationship between students' perception towards the usefulness of computers and their computer skills. The null hypothesis was rejected indicating that there was a significant relationship between students' perception towards the usefulness of computer and their computer skills. The r-value equal to 0.189 indicated a weak positive relationship between the two variables and significant at $p < 0.05$.

The above findings match previous studies, which found a positive relationship between computer attitudes and computer skills. A study conducted by Cheri Speir et al. (2003) revealed that subjects who perceived computers to be easier to use and who perceived computers as useful tend to exhibit greater skill performance. Similar findings were reported by other researchers (Kageni Njagi et al., 2003; Young, 2000; Houtz and Gupta, 2001).

Research Question 3:

Which factor is more influential on students' computer skills: students' background or attitudes?

A multiple regression analysis was applied to determine which independent variable has more influence on the dependent variable. Here, the dependent variable was the students' computer skills and the independent variables were their background and their attitudes towards computers.

The table below shows the summary of students' computer skills against their attitudes and background:

Table 1: Multiple Regression Results

Variables	Coefficient	Std. Error	p-value
(Constant)	18.360	0.351.558	0.000
Confidence	0.838	0.079	0.000
Computer Ownership	2.311	0.386	0.000
Anxiety	-0.376	0.066	0.000
Computer Club Membership	2.034	0.376	0.000
Sek. Menengah Teknik	-.1.776	0.526	0.001
Sek Tinggi Segamat	-1.239	0.558	0.027
R Square 0.364			

In stepwise regression procedure, the independent variable with the greatest contribution is added first (Hair, 1998). From Table 1, the first variable entered into the regression model was the students' computer confidence. Since confidence was one of the attitudes subscales, thus we concluded that attitudes rather than the students' background had a greater influence on their computer skills.

Overall, the regression results indicated that the students' computer skills level was significantly related to the students' confidence, computer ownership, computer anxiety, school computer club membership and the types of schools. These results matched the results obtained from the statistical tests earlier. The students' interest and perceived usefulness of computers was dropped from

the model and were not significant. The R-square value was 36.4% and was significant at 0.05 levels. This means that 36.4% of the total variation in the students' computer skills was explained by the independent variables.

Conclusions and Recommendations

This study aimed to investigate the relationship of students' background and attitudes towards their computer skills. We selected three different types of schools with different backgrounds as samples in this study. We used independent t-test, ANOVA, Pearson correlation and Multiple Regression to analyze the data. From our analysis we arrived at the following conclusions:

i. Students from Sekolah Kebangsaan Agama perceived the highest computer skills level among the three schools. This was probably due to the selection system of students' enrollment to the fully residential schools.
ii. Students who owned a computer at home displayed better computer skills than those who did not own a computer.
iii. Students who joined the school computer club showed a higher level of computer skills compared to those who did not. This is probably due to the experience and exposure that the students received which influence them to have a more positive reaction in their perspective towards computer.
iv. There was a significant correlation between the students' computer confidence and anxiety towards their computer skills. Students with a positive attitude displayed a higher level of computer skills.
v. Attitudes rather than the students' background had a greater influence on their computer skills.

Recommendations

Based on the above findings, we would like to recommend to the policy makers, particularly the Education Ministry, to offer Information Technology as a subject in all secondary schools in Malaysia. This is because we believe that students should be exposed to computer technology, as indirectly this would further upgrade their confidence and at the same time reduce their computer anxiety.

We would also like to suggest to the government to review the computer loan scheme offered to the public to make sure that each family is able to have at least one computer at home. The campaign "a computer for every home" should be widely advertised to the public so that they are more aware of the importance of having a computer at home especially for the children's educational needs.

At the school and district levels, we would like to recommend that schools conduct more computer activities and computer–based competitions for the students and encourage students to join the computer club.

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