Colloquium

Attitudes towards computers among students in higher education: A case study in Singapore

Timothy Teo and Chwee Beng Lee

Address for correspondence: Timothy Teo, 1 Nanyang Walk, Technological University, Singapore 637616; Email: timothy.teo@nie.edu.sg

Introduction

Over the years, the use of computer has become an integral part of education and its impact on teaching and learning is widely accepted (Mitra et al., 2000). The successful integration of computers in educational environments depends, to a great extent, on students’ attitudes towards them (Palaigeorgiou, Siozos, Konstantakis & Tsoukalas, 2005). Computer attitude has been defined as a person’s general evaluation or feeling of favour or antipathy towards computer technologies and specific computer-related activities (Smith, Caputi & Rawstone, 2000). Of the various variables associated with computer attitude, Woodrow (1991) suggested: (1) computer importance (CI) (perceived usefulness); (2) computer enjoyment (CE) (liking); and (3) computer anxiety (CA) (student’s confidence in using the computer).

CI refers to the degree to which computer is perceived to be needed for present and future work and computer liking has been described as how much a user enjoys or like working with computers (Al-Khaldi & Al-Jabri, 1998). As such, CE is expected to correlate positively with positive attitudes towards computers as it is likely that an enjoyable activity would be repeated. CA refers to negative emotions in cognitive states evoked in actual or imaginary interaction with computer-related technology, and students who experience a high level of CA have been found to avoid computers or general areas where computers are found, to be extremely cautious with computers, and to possess negative feelings about computers and shorten the necessary use of computers (Gaudron & Vignoli, 2002).

Method

The aim of this study is to examine the computer attitudes of postsecondary students by examining the extent to which students perceive computers to be important, are enjoyable, and are anxious when dealing with computers from an Asian perspective.

Participants were 138 volunteer students enrolled at a polytechnic in Singapore. Their mean age was 18.2 years (SD [Standard Deviation] = 1.20) and consisted of 80 males.
(52%) and 58 females (42%). A questionnaire assessing demographic information such as gender, age and ownership of a personal computer at home was used. Additionally, participants responded to an abridged version of the Computer Attitudes Questionnaire by Knezek, Christensen and Miyashita (1998) using the Likert scale that comprised five points ranging from strongly agree (5) to strongly disagree (1).

For purposes of this study, only three subscales were used. These are CI (six items), CE (six items) and CA (eight items). The reported internal consistencies for the three subscales were assessed by computing Cronbach alphas: 0.82 (CI), 0.82 (CE) and 0.84 (CA). Using a mixture of positively and negatively worded statements (10 items), a high score on CI and CE corresponds to higher perceived CI and enjoyment. A high score on the CA scale corresponds to lower anxiety. The Cronbach alpha for the overall 20 items is 0.91, indicating that this questionnaire has a high internal consistency.

**Results**

**Overall profile of the Comatts**

Table 1 shows the mean and SD for each of the three subscales and overall computer attitudes. The high means for the three subscales reflected positive computer attitudes and the low SDs reflected a minimum spread of participants’ responses, suggestive of a fairly uniform response of the sample as a whole. The correlations among the three subscales and Comatts were significant at the 0.01 level. Internal consistency for each factor and overall computer attitudes computed using Cronbach alphas were high.

**Regression analysis**

A stepwise was performed using computer attitude as the dependent variable using age, gender and computer ownership as the independent variables. Result revealed that the full model $R^2$ was significantly greater than zero ($F[2, 135] = 26.90, p < 0.001, R^2 = 0.29$).

**Computer ownership**

There was a high level of computer ownership (92.8%). Only 10 (7.2%) participants reported that they did not have a computer at home. Students who own computers had higher means for all subscales than those who do not own computers at home, with the largest mean difference for CA. A MANOVA on the three subscales and computer ownership revealed a significant difference between the attitudes for students with com-

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>SD</th>
<th>Alpha</th>
<th>CI</th>
<th>CE</th>
<th>CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Importance (CI)</td>
<td>3.81</td>
<td>0.67</td>
<td>0.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Enjoyment (CE)</td>
<td>3.70</td>
<td>0.66</td>
<td>0.82</td>
<td>0.77*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Anxiety (CA)</td>
<td>3.90</td>
<td>0.72</td>
<td>0.84</td>
<td>0.61*</td>
<td>0.64*</td>
<td></td>
</tr>
<tr>
<td>Computer Attitude</td>
<td>3.81</td>
<td>0.61</td>
<td>0.91</td>
<td>0.87*</td>
<td>0.89*</td>
<td>0.89*</td>
</tr>
</tbody>
</table>

*Significant at $p < 0.01$ level.
Participants who own computers at home reported lower CA (\(M = 4.01, SD = 0.61\)) than those who do not own computers at home (\(M = 2.43, SD = 0.43\)).

**Discussion and conclusion**

The purpose of this study is to explore the computer attitudes of higher education students in Singapore. A fairly high level of positive computer attitudes was found in this study (mean = 3.81). This is attributed to the high availability and accessibility afforded to students at various stages of their schooling (Ministry of Education, 2006). Consistent with current research, greater usage and experience for the computer, positive attitudes are developed (Garland & Noyes, 2004). In this study, the ownership of personal computers at home correlated significantly with positive computer attitudes, a finding consistent with similar research (Garland & Noyes, 2004; Smith et al., 2000).

This study contributes to the literature by providing empirical data on the computer attitudes among students in Singapore. The authors attributed the students’ positive computer to the equal opportunities given to all students to use and learn computers in schools (Ministry of Education, 2006). Further research could examine the impact of other student variables such as length of computer use, level of computer experience, level of computer literacy and internet access on computer attitudes.

**References**


