

ASSESSING THE ATTITUDES OF DISTANCE LEARNERS TOWARD THE USE OF ICT IN EDUCATION

Dr. Rugayah HASHIM
Hashim AHMAD
Che Zainab ABDULLAH

Faculty of Administrative Science & Policy Studies,
Institute of Education Development
University Technology Mara (UiTM)
Shah Alam, Selangor, MALAYSIA

ABSTRACT

The objective of this study was to assess the attitudes of distance education students toward the use of ICT in learning and teaching. The sample and units of analysis were 500 adult students undertaking distance education studies at the Institute of Education Development (InED), UiTM. The variables studied were computer anxiety, confidence, liking and, usefulness.

The response rate was 56.8%. The findings showed that even in this K-economy, there are still some students who are uncomfortable with using ICT, that is, the students do not favor the use of ICT through InED's learning management system. The findings are important to gauge the students' performance as well as to modify and strengthen InED's policy for using ICT and other technologies to impart knowledge and education.

Keywords: Distance education, ICT usage, e-learning, computer attitude, computer anxiety.

INTRODUCTION

University Technology Mara (UiTM) Shah Alam is the oldest and biggest public institution of higher learning in Malaysia. In the Shah Alam campus alone, the student population comes to about 150,000 (UiTM Strategic Planning Center, 2007). One of UiTM's objectives is to educate the students to become professionals of high caliber who will be independent, knowledgeable and morally upright in the conduct of competing in business, trade, science and technology. With this objective in mind, it is crucial that UiTM students realize that computers have ubiquitous, that is, computers have invaded all aspects of our lives and therefore, the anxiety, nervousness, computer phobia or any dislike towards computers should not be inherent in them. Furthermore, in the Information Era, ICT is the foundation for all of our needs.

EDUCATION IN MALAYSIA

Malaysia looks to education as the key to its socioeconomic development particular in the Knowledge Economy. Furthermore, with the dawn of the new millennium a market-sensitive education system is evolving here in Malaysia and strategic plans have been concocted by the Federal Government to make Malaysia the education hub of Asia. According to the web site of the Ministry of Higher Education Malaysia (2008), "Our schools and universities are taking up the challenge of globalization by changing not only the content of curriculum and programs but more importantly the delivery systems. IT-enhanced teaching and learning are already making computers in schools, distance learning, video conferencing and Internet link a common place for interaction. We have to race ahead to achieve a significant transformation of our educational infrastructure in order to meet the next millennium as a technologically competent and scientifically

adapt society.” With this goal in mind, Malaysia hopes to become a fully industrialized country by the 21st century because by that time, the young person entering the workforce will be judged not so much on the knowledge and skills acquired, but on the capacity for lateral thinking, creativity and an integrated approach to learning. Again, according to the Ministry of Education’s (2008) web site, “The university system is expected to bridge the fundamental shift from an information-based society to a knowledge-based one. Malaysia is therefore putting in place the ‘hardware’ and ‘software’ to equip students to take advantage of the opportunities offered by an increasingly interconnected world.”

TECHNOLOGY AND CHANGE IN MALAYSIA

In this Digital Era, the world of work has changed considerably. The proliferation of personal computers throughout the business environment will continue to place demands on workers at all levels to develop proficient computer skills. The nature of work will be more complex, and the demand will be for a new type of industrial worker, that is for one who will be able to deal with machines and computers in his daily work. The Knowledge Era has arrived and as Internet technology become pervasive and cheap, it will offer an enormous opportunity to diminish a different, but real divide (Compaine, 2001). This is the critical divide between those who can read well and take full advantage of the treasures of information that will be so widely available and those who are not fully computer literate and, cannot take advantage of easily accessible information resources provided by ICT.

The ICT advantage as set out by the Malaysian Ministry of Education in its web site states the science and technology, commerce and industry and even the arts and humanities have been swept along by the powerful currents of the Information Revolution. Therefore, the Ministry of Higher Education (2008) has responded by implementing wide-ranging reforms to give schools, universities and other higher education institution skills and competence to ride the crest of the IT wave. “Already the education system is putting interactive IT at the core of the teaching and learning and, management process. Smart Schools are being set up where learning will be dynamic, lively and brimming with interaction through the use of multimedia technology and worldwide networking” (Ministry of Higher Education, 2008).

Capron (1987) made several statements relating to the computer in our future, which include: there will be a computer on almost every desk by mid-1990s; the computer will lead the way in increased productivity; and computer-based word processing will be the means of recording and transmitting the written word – typewriters will be in museums.

The effective application and exploitation of information technology for national socioeconomic growth and development in Malaysia is now at a critical state. Emerging cultural, social and economic trends arising from the pervasive use of information technology have indicated that information and knowledge of computers are also strategic factors besides land, labor, capital and entrepreneurship in determining the future potentials of our nation. Today, skills, concepts, information and knowledge are the new tools of competition. Human skills and knowledge of computer technology will play a significant role in the national drive to achieve a fully developed country status. The Information Technology advantage as written on the web site of the Ministry of Education - Malaysia, states that “Science and technology, commerce and industry and even the arts and humanities have been swept along by the powerful currents of the Information Revolution. The Ministry of Higher Education (2008) has responded by implementing wide-ranging reforms to give schools, universities and other higher education institution the skills and competence to ride the crest of the IT wave.”

STATEMENT OF THE PROBLEM

The problem of the study was gauging the attitudes toward ICT of distance education learners at the Institute of Education Development (InED), UiTM. This problem cropped up when these students requested to have more face-to-face seminars when their mode of learning and teaching was through the use of ICT. By having more traditional teaching would defeat the purpose of having e-learning for InED, UiTM.

In addition, feedbacks received from the distance learners through InED's public forum showed that the use of computers as a mode of education exchange do not augur well for them.. Thus, this study was conducted at an appropriate time as both parties need to have a win-win situation. The identification of attitudes relating to age, education background, program registered for, gender, work sector and level of computer usage would support the research hypotheses.

Also, the relationship of these demographic variables with computer usefulness, confidence, liking and anxiety would provide sufficient empirical evidence for InED to adjust to the students needs. Furthermore, the findings from this study would be relevant as one of the sources of reference for other institutions of higher learning that offers e-learning programs and courses.

By improving the condition of the curricula, the top management of InED and UiTM would be able to ascertain the ICT needs and trends and to suggest recommendations for changes.

RESEARCH OBJECTIVE

The objective of this study is to determine the students' attitudes toward ICT relative to age, qualification, program registered for, gender, and computer skill level.

RESEARCH APPROACH AND METHODOLOGY

This study will employ the usual traditional approach to descriptive and practical research with quantitative analyses used to derive the empirical evidence that would answer the research questions (Coakes, 2005; Sekaran, 2003; Heiman, 2001). Cross sectional and convenience sampling techniques were used to determine the scope and unit of analysis (Coakes, 2005; Sekaran, 2003; Heiman, 2001). The instrument used has been pre-designed, that is, the questionnaire was replicated from Loyd and Gressard's (1988) study. Previous researches using the same questionnaire for example, Hashim and Mustapha (2004) and Hashim, Latiff and Kassim (2007) have proved the validity and reliability of the instrument. For this study, the Cronbach Alpha score was 0.869, which means that this questionnaire is valid and reliable.

As mentioned before, the purpose of this study was to gather information concerning the attitudes toward information and communication technologies (ICTs) of distance education students at InED, UiTM. The four attitudes are anxiety, confidence, liking and usefulness. Consequently, these attitudes will be correlated with the six demographic variables such as gender, age, level of education, and previous computer experience.

Sample Size and Sampling Techniques

500 respondents were targeted for this research. This number is 10% of the overall population of distance education learners registered with InED, UiTM. Two sampling techniques were employed; cross-sectional and convenience samplings. Cross-sectional sampling technique was used in order to obtain samples at a single point in time where exposure and outcome are simultaneously determined (Coakes, 2005; Sekaran, 2003; Heiman, 2001). The second sampling technique is convenience sampling. This technique is required as the questionnaires were given to respondents who were conveniently

available when they were distributed by the research assistant (Coakes, 2005; Sekaran, 2003; Heiman, 2001).

Measurement and Instrument Design

The instrument used in this study was replicated from the revised version of the Survey of Attitudes Towards Learning About and Working with Computers which was developed by Dr. Brenda H. Loyd and Dr. Clarice P. Gressard (1984). Using the permission granted by Dr. Brenda Loyd's assistant, Sandra L. West, University of Virginia, U.S.A, in September of 2001, the questionnaire was reproduced to fit with the research setting undertaken including translating the questionnaire to Bahasa Malaysia (Malay Language). The instrument consisted of two sections. Section A dealt with the demographic profiles of the respondents.

These questions provided data for categorical analyses of responses. On the other hand, Section B consisted of 40 statements rated on a five-point Likert scale from '1=Strongly Agree' to '5=Strongly Disagree'.

Of these 40 statements, 20 were worded positively and 20 were worded negatively.

Procedure

Five hundred sets of questionnaires were administered to the students in the various classrooms. This occurred whilst the students were attending their various seminars at UiTM's campus Section 17, InTEC Shah Alam, Selangor.

Data analysis

Data were analyzed using the Statistical Package for Social Science (SPSS) software. The demographic variables for this study were discrete data (nominal and ordinal), therefore, descriptive statistics were used to run for frequencies, mean, and standard deviation (Coakes, 2005; Beins, 2004; Sekaran, 2003; Stangor, 2004; Blaikie, 2003; Heiman, 2001). The 40 attitudes scores and subscores were continuous data (interval or scale), hence, parametric analysis will be used such as T-Test (to determine whether there is a significant difference between two sets of scores or to compare means) and correlation, that is, looking at the relationship between two variables in a linear fashion (Coakes, 2005).

Specifically, the Pearson Product-moment correlation coefficient will be used to describe the relationship between the attitudes' scores or bivariate correlations. Chi-square analysis, which is a non parametric measure was used to statistically analyze bivariates of nominal versus interval data (Coakes, 2005; Sekaran, 2003; Stangor, 2004; Heiman, 2001). Conceptual Framework The independent variable or predictor variable in this study is the attitude towards ICT. Attitude is further divided into four subscores labeled as usefulness, confidence, liking and anxiety. The dependent variable or outcome variable for this study is the usage of computers or ICT by the adult students registered with InED, UiTM.

FINDINGS

As mentioned previously, the response rate was 56.8 % or 284 useful data. Mean scores for the four attitudes of usefulness, confidence, liking and anxiety were later analyzed for the minimum and maximum values, and, mean and standard deviation of these four variables (Table 1).

As shown in Table 1, anxiety showed the highest mean score of 28.87, followed by liking at 28.02. The variable, 'confidence' came in third at 27.62 and last was usefulness at 25.98. The graphical representation of these subscores are shown in Figure 1.

Table:1
Descriptive Statistics for Attitudes' Subscores

	Min	Max	Mean	Std. Deviation
Anxiety	20.00	99.00	28.8718	15.54801
Confidence	19.00	99.00	27.6207	15.84088
Liking	15.00	99.00	28.0199	16.22616
Usefulness	14.00	99.00	25.9829	15.07485

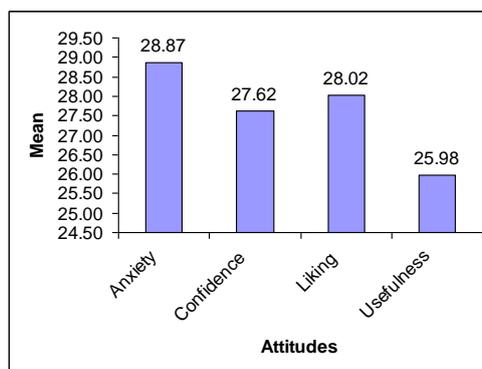


Figure:1
Bar Chart for Mean Subscores of the four Attitudes

In addition, a t-test was conducted to compare the means of the four attitude variables or subscores as shown in Table 4.2. The results indicated that there were significant differences between the four means, that is, the significant value (p-value) is less than 0 ($p < 0$). Further explanations for this will be elucidated in the next section where the research questions will also be answered. The following are findings based on research questions:

a) What are the mean scores for the four attitude?

The mean scores for the four attitudes are: usefulness = 25.98, confidence = 27.62, liking=28.02 and anxiety=28.87. In the questionnaire, the attitudes are measured on a scale of 1 to 5 (Strongly Disagree to Strongly Agree) (Table: 2).

Table: 2 Comparison of Means (t-test) for the four Attitudes

	Test Value = 0					
	T	Df	Sig. 2-tailed	Mean Diff.	95% Confidence Interval of the Difference	
					Lwr	Uppr
Anxiety	34.8		.000	28.9	27.2	30.5
Confidence	32.5		.000	27.6	26.0	29.3
Liking	32.3			28.0	26.3	29.7
Usefulness	32.3		350	26.0	24.4	27.6
			347			
			350			
			350			

b) Is there a difference between gender and attitudes toward ICT for the ePJJ students?

From the output in Table 4.3, it is found that there is no difference between gender and attitudes toward ICT with respect to computer anxiety, confidence, liking, and usefulness.

All four attitudes have Pearson Chi-square significant values well above the alpha level of 0.05 where usefulness = 0.557, confidence=0.120, liking=0.094 and anxiety=0.686.

Therefore, the null hypothesis is accepted as all the p-values are greater than 0.05; and all the alternative hypotheses are rejected. Furthermore, the minimum expected cell frequencies for usefulness = 28, confidence = 27, liking = 28 and anxiety = 28 which are all greater than five (>5).

Thus, we can be confident that we have not violated one of the main assumptions of chi-square.

Therefore, in examining the observed cell frequencies, it can be concluded that gender do not show a significant difference for any of the four attitudes, $X^2(16, N=339) = 14.558, p>.05$; $X^2(13, N=336) = 19.096, p>.05$; $X^2(16, N=339) = 23.787, p>.05$; and $X^2(15, N=339) = 11.909, p>.05$ respectively.

Table: 3
Chi-Square Tests for Gender & Attitudes
Chi-Square Tests: Gender * Usefulness

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.558(a)	16	.557
Likelihood Ratio	16.472	16	.421
Linear-by-Linear Association	.059	1	.808
N of Valid Cases	339		

a 18 cells (52.9%) have expected count less than 5. The minimum expected count is .28.

Chi-Square Tests: Gender * Confidence

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.096(a)	13	.120
Likelihood Ratio	22.181	13	.053
Linear-by-Linear Association	.005	1	.942
N of Valid Cases	336		

a 11 cells (39.3%) have expected count less than 5. The minimum expected count is .27.

Chi-Square Tests: Gender * Liking

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.787(a)	16	.094
Likelihood Ratio	25.410	16	.063
Linear-by-Linear Association	3.008	1	.083
N of Valid Cases	339		

a 17 cells (50.0%) have expected count less than 5. The minimum expected count is .28.

Chi-Square Tests: Gender * Anxiety

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.909(a)	15	.686
Likelihood Ratio	12.730	15	.623
Linear-by-Linear Association	.471	1	.492
N of Valid Cases	339		

a 16 cells (50.0%) have expected count less than 5. The minimum expected count is .28.

c) Is there a relationship between the adult students' age and his/her attitude towards ICT?

d)

Firstly, the output for the individual attitudes were:

- age and usefulness (r = 0.001, p > .05), where p = 0.992
- age and confidence (r = 0.101, p > .05), where p = 0.062
- age and liking (r = .108, p < .05), where p = 0.045
- age and anxiety (r = 0.078, p > .05), where p = 0.149

The p-values for usefulness, confidence and anxiety are greater than the alpha value, that is p > .05, therefore, we can accept the null hypothesis, that is, there are no significant relationships between age and usefulness, confidence and, anxiety.

On the other hand, there is a significant relationship between age and liking since the p-value is less than alpha (0.045 < 0.050), hence the alternative hypothesis is accepted. In simple words, this means that the significant positive relationship between age and liking would indicate that liking for ICT increases with age (r = 0.108, p < .045).

e) Does the level of computer skill exerts a positive influence on the attitudes of the ePJJ students? The results were:

- Computer skill and usefulness (r = 0.004, p > .05), where p = 0.948
- Computer skill and confidence (r = -0.019, p > .05), where p = 0.724
- Computer skill and liking (r = 0.297, p > .05), where p = 0.761
- Computer skill and anxiety (r = -0.019, p > .05), where p = 0.185

The p-values for all the four attitudes of usefulness, confidence, liking and anxiety are > .05, therefore, previous computer experience does not exert a positive influence on any of the four attitudes. Consequently, all four attitudes showed significant positive correlations towards computer skill. The correlations for anxiety, confidence, and liking are negative, although not significantly different from zero because the p-values are greater than 0.10; this suggests that the students should not focus their efforts on these three variables because there isn't an appreciable effect on attitudes. It should be noted that a directional hypothesis was not stated, a one-tailed probability test or partial correlation is not necessary.

f) Is there a relationship between the students' qualification and their attitudes toward ICT?

g) From the output, the following results were obtained:

- Usefulness ($p = -.054$, $p > .05$) where $p = .325$)
- Confidence ($p = -.022$, $p > .05$) where $p = .695$)
- Liking ($p = -.027$, $p > .05$) where $p = .626$)
- Anxiety ($p = -.055$, $p > .05$) where $p = .313$)

Based on the above results, it can be concluded that there were no relationships between qualification and attitudes as the p-values for these attitudes were $> .05$. Also, it was determined that negative correlations derived from the analyses, would not be significantly different from zero because the p-values were greater than 0.10. This suggests that the qualification has no appreciable effects on attitudes.

DISCUSSIONS

The discussions presented were drawn from the results or findings of this research project. First of all, the survey results indicated that anxiety has the highest mean score of 28.87, followed by liking, confidence and usefulness. Therefore, it can be safely assumed that the ePJJ students were apprehensive and probably 'technophobic' toward ICTs. Hence, the Institute of Education Development (InED), UiTM should look into this matter seriously because non-usage of computers in distance education or e-learning defeat the purpose offering flexible learning programs and investing in ICT. Close to the heel of anxiety is the attitude, liking. This indicated a high positive attitude, which meant that the ePJJ students like using ICTs but were anxious and unsure of what to do with certain features in customized software particularly InED's learning management systems (LMS). InEd's current LMS is called i-class. Proper training should overcome this attitude. But, on average, confidence and usefulness show high mean scores, that is, the students have positive attitudes toward ICT.

Secondly, the results indicated that there are no differences between gender and the four attitudes. In fact, all four attitudes have Pearson Chi-square significant values well above the alpha level of 0.05 where usefulness = 0.557, confidence=0.120, liking=0.094 and anxiety=0.686. Hence, there is no gender discrimination towards ICT and working with computers as neither male nor female students have any reason not to embrace ICT in their daily work.

Third, the results showed that there are no significant relationships between age and usefulness, confidence and, anxiety. This means that age is not a factor that inhibits the students' usage of ICT. On the contrary, there is a significant positive relationship between age and liking. The results indicated that liking for ICT increases with age.

Fourth, the findings also indicated that the level of computer skills does not exert a positive influence on any of the four attitudes. Hence, it can be assumed that previous computer experience doesn't make any difference to usefulness, confidence, liking and anxiety.

This is in contradiction to literature reviewed as previous computer experience would ensure higher computer usage. Certainly, anxiety towards ICT use would be greatly reduced but somehow the results did not show a high correlation towards the three positive attitudes of usefulness, confidence and liking.

Perhaps, this is an indication that further research should be conducted to investigate and determine the absolute correlation between previous computer experience and attitudes.

Finally, the findings also showed that there are no relationships between qualification and the four attitudes. This means that the InEd has to divert their efforts on ensuring that the students have more training on the use of the LMS, the i-class. Furthermore, depending on the level of study that the student is undertaking, such as a the diploma level, then there is a need to have more training sessions as most of the student

population at this level have not taken proper computer classes. This is because their previous background was at high school or secondary school level. Moreover, at the undergraduate level, the minimum requirement for entry is the subject on computers and information processing (CSC134). Henceforth, the implications from the above discussion and of researching on attitudes toward ICT would involve long term benefits and strategic exploitation of ICT investment and the future of e-learning. It is important to remember that ICT is a tool or an enabler towards better delivery of education, but the user is the key. If the students exhibit negative attitudes toward ICT, then e-learning would not be their choice of seeking higher education.

CONCLUSION

To conclude, ICT is the foundation for e-learning. Without ICT there would obviously be no e-learning. In distance education, ICT is the enabler for most means in imparting education. Hence, the requests by students to have more face-to-face seminars rather than online teaching should not be catered to. Furthermore, the findings from this research proved that attitudes toward ICT is more of the selfish nature of the adult students'. If traditional teaching is preferred, then being a full-time student would be the solution.

BIODATA and CONTACT ADDRESSES of AUTHORS



Rugayah HASHIM is an Associate Professor at the Faculty of Administrative Science & Policy Studies, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia. She has published her research papers in several refereed journals as well as presented her papers at many international conferences. She is also on the editorial and review board of several high impact journals. Her areas of research interest are in MIS, e-government, e-learning, social capital and sustainable development.

Dr. Rugayah HASHIM
Faculty of Administrative Science & Policy Studies,
Institute of Education Development
University Technology Mara (UiTM)
Shah Alam, Selangor, Malaysia.
603 5544 4158 (T), 603 5544 4131 (F)
Email: guy73106@yahoo.com



Hashim AHMAD is a senior lecturer and distance learning Coordinator at the Institute of Educational Development, Universiti Teknologi MARA (UiTM). He has conducted several research projects on e-learning, distance education and learning management systems, and have presented and published the findings in several international conferences and journals.

Hashim AHMAD
Email: hashimbm75a@yahoo.com
Faculty of Administrative Science & Policy Studies,
Institute of Education Development
University Technology Mara (UiTM)
Shah Alam, Selangor, Malaysia.
603 5544 4158 (T), 603 5544 4131 (F)



Che Zainab ABDULLAH is a senior lecturer at the Faculty of Information Management, as well as a distance learning Coordinator at the Institute of Educational Development, Universiti Teknologi MARA (UiTM). She has conducted several research projects on distance education, library science and knowledge management. She has also presented and published her papers in several international conferences and journals

Che Zainab ABDULLAH
Faculty of Administrative Science & Policy Studies,
Institute of Education Development
University Technology Mara (UiTM)
Shah Alam, Selangor, MALAYSIA.
603 5544 4158 (T), 603 5544 4131 (F)
Email: cheza347@salam.uitm.edu.my

REFERENCES

- Beins, B.C. (2004). Research Methods: A Tool for Life. Boston, MA: Pearson.**
- Blaikie, N. (2003). Analyzing Quantitative Data: From Description to Explanation. Thousand Oaks, CA, USA: Sage.**
- Capron, H.L. (1987). Computers: Tools for the Information Age. Menlo Park, CA: Benjamin-Cummings.**
- Coakes, S.J. (2005). SPSS: Analysis Without Anguish: Version 12.0 for Windows. Queensland, Australia: Wiley.**
- Compaigne, B. 2001. Declare the War Won. In B. M. Compaigne (Ed.) The Digital Divide: Facing a Crisis or Creating a Myth? p. 315-336. Cambridge, MA: MIT Press.**
- Hashim, R. and Mustapha, W. N. (2004). Attitudes Toward Learning about and Working with Computers of Students at UiTM Shah Alam. Turkish Online Journal of Education Technology, Vol. 3, Issue 2.**
- Hashim, R.; Rahman, A.L.A and Kassim, A. (2007). Antecedents of Computer Attitudes: A Case of the Royal Malaysia Police, Sabah. Unpublished research paper.**
- Loyd, B.H. and Gressard, C.P. & (1988). The nature and correlates of computer anxiety in college students. Journal of Human Behavior and Learning, 3, 28-33.**
- Heiman, G.W. (2001). Understanding Research Methods and Statistics: An Integrated Introduction for Psychology. 2nd edition. Boston, MA: Houghton Mifflin.**
- Ministry of Education Malaysia. (2008). Retrieved on September 30, 2008 at <http://www.moe.gov.my/educ3.htm>**
- Sekaran, U. (2003). Research Methods for Business: A Skill-Building Approach. 4th Edition. Singapore. John Wiley & Sons, Inc.**
- Stangor, C. (2004). Research Methods for the Behavioral Sciences. 2nd Edition. New York. Houghton Mifflin.**
- Ward, J. and Peppard, J. (2002). Strategic Planning for Information Systems, 3rd. Ed. England, Great Britain: Wiley.**