ANTECEDENTS OF ICT ATTITUDES OF DISTANCE EDUCATION STUDENTS

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ABSTRACT
The objective of this study was to assess the antecedents of ICT attitudes of distance education (e-PJJ) students at the Institute of Education Development (InED), UiTM. The antecedents studied were computer anxiety, confidence, liking and, usefulness. The findings are important to strengthen InED's policy for using ICT and other technologies to impart knowledge and education at the diploma and undergraduate levels.

Five hundred students were the units of analysis for this study and the response rate was 56.8%. Even in this Information Age, the findings showed that there are still some students who are uncomfortable with using ICT or educational technology for e-learning.
Keywords: Computer attitude, e-learning, ICT usage, distance education, computer phobia.

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 of which more than 5,000 are following various diploma and undergraduate programs via the e-learning mode (UiTM Strategic Planning Center, 2007). It is an affirmative action university set up by the government of Malaysia to correct the economic and social imbalances that occurred amongst the various races in Malaysia. A good academic qualification will guarantee a person to a well-paid job and hence enjoy a better standard of living. In certain circumstances it can lead one's family out of poverty. Almost ninety percent of students are of the Malay race while the remaining balance of ten percent consists of various indigenous races.

Distance learning program was offered by the university with the aim of providing opportunities for the working population in Malaysia to further their study. All students who enrolled in InED's e-PJJ program are working adult and have at least a year working experience. Distance learning in InED UiTM is being done through blended learning. Beside a two-hour face-to-face meeting per course per month (ten hours per semester), students were supplied with self-instructional materials or study guide to help them with their learning. The face-to-face meeting that is known as seminar only permits the course facilitator to conduct discussion with their students.

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 are 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.

Thus the policy makers of InED was far-sighted and wise to make the decision to shift its conventional distance learning to electronic distance learning or e-PJJ in 1997. The embarkation from conventional distance learning to e-PJJ marked a new era of learning in Malaysia. It was a bold move then, taking into consideration the low level of ICT literacy among the students, lack of accessibility and insufficient financial support from the university. Problems aside, the desire to elevate InED's distance learning program to a formidable level as well as technologically innovative, a smart partnership with a technology provider was duly concluded.

e-PJJ was introduced by InED in the first place with the hope of enhancing students learning due to limited time for interaction with the course facilitator during seminars. Through e-PJJ, students should be able to communicate, discuss and interact with their facilitators and colleagues via on-line or the internet anywhere and at anytime convenient to them. Additional course materials can be posted on-line and easily access by students twenty-four hours a day. Time is not a limiting factor anymore for students to interact and engage in their study, and for the facilitators to impart knowledge to them.

Education in Malaysia
Malaysia looks to education as the key to its socio-economic development particularly 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 inter-connected 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 socio-economic 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 e-PJJ students 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 International Education Center (INTEC) Campus, Section 17, 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 sub-scores 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 sub-scores 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 4.1). As shown in Table 4.1, 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 sub-scores are shown in Figure 4.1.

Table 4.1 – Descriptive Statistics for Attitudes' Sub-scores

	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 4.1 – Bar Chart for Mean Sub-scores of the four Attitudes
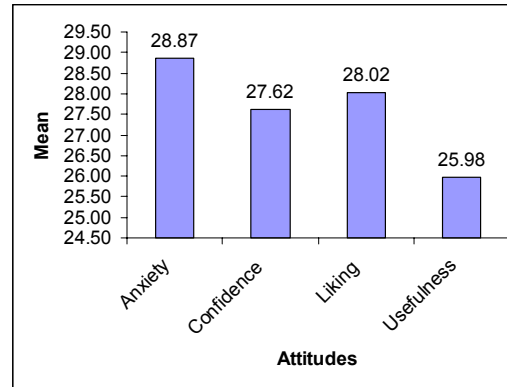
In addition, a t-test was conducted to compare the means of the four attitude variables or sub-scores as shown in Table 4.2. The results indicated that there were significant differences between the four means, that is, the significant value (p-value) is less than 0 ($p < 0$). Further explanations for 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 attitudes?
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 4.2).

Table 4.2 – 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	350	.000	28.9	27.2	30.5
Confidence	32.5	347	.000	27.6	26.0	29.3
Liking	32.3	350	.000	28.0	26.3	29.7
Usefulness	32.3	350	.000	26.0	24.4	27.6

b) Is there a difference between gender and attitudes toward ICT for the e-PJJ 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, $X^2(16, \underline{N}=339) = 14.558$, p>.05; $X^2(13, \underline{N}=336) = 19.096$, p>.05; $X^2(16, \underline{N}=339) = 23.787$, p>.05; and $X^2(15, \underline{N}=339) = 11.909$, p>.05 respectively.

Table 4.3 – 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?
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** ($r = 0.078$, $p > .05$), were $p = 0.149$

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** ($r = 0.108$, $p < .045$).

d) Does the level of **computer skill** exerts a positive influence on the **attitudes** of the e-PJJ 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** ($r = -0.019$, $p > .05$), were $p = 0.185$

The *p*-values for all the four attitudes of usefulness, confidence, liking and anxiety are $> .05$, therefore, previous computer experience <u>does not</u> 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.

e) Is there a relationship between the students' **qualification** and their **attitudes** toward ICT?
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 <u>no relationships</u> 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. Results related to each research question are discussed as follows:

Research Question One
What are the mean scores for the four attitudes?
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 e-PJJ 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 of offering e-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 e-PJJ 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* which made its debut in June 2007. As many students were used to the old LMS, they need time to adopt and adapt i-Class. The present situation does not allow students to have a proper and adequate training on the use of i-Class. Training was done by only giving a short briefing on the features and their usage to the new students and no *hands-on* training were ever given. Students are expected to do their own training base on the manual provided. Feedbacks received through InED's general forum showed that quite a substantial number of students voiced their dissatisfaction on the use of i-Class. Laments from students that the old LMS is more user-friendly than i-Class were occasionally heard. As such, a well-organized and proper training should be conducted to overcome this attitude. But, on average, confidence and usefulness show high mean scores, that is, the students have positive attitudes toward ICT.

Research Question Two
*Is there a difference between **gender** and **attitudes** toward ICT for e-PJJ students?*
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 learning. As all respondents are e-PJJ students they must possess adequate ICT skill and knowledge to enable them to engage in e-learning. The bulk of teaching and learning process are done on-line, so students have no choice but to embrace it. This will ensure that they are at par with their fellow students in learning and preparing for all the courses that they enrolled for. The situation at the work place also warrants them to acquire certain level of ICT skill in carrying their daily routines be it in the public or the private sector. As ICT usage at their work place increases steadily, what choice or reason do they have for not embracing it?

Research Question Three
*Is there a relationship between student's **age** and his/her **attitude** towards ICT?*
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**.

As e-PJJ students, they must at least possess a minimum level of ICT skill to enable them to operate the features in the LMS. Without this skill they will not be able to operate the LMS or i-Class for their learning purposes such as on-line discussion, assessment, accessing additional study materials posted and other virtual class activities. So, all e-PJJ students, regardless of their age, must have the necessary ICT skill and knowledge as to enable them to engage in e-learning.

The younger generation in Malaysia were fortunate as they were exposed to ICT at an early age in comparison to their elders. They were already introduced to ICT at the primary school level whereas the older generation, quite a large number of them, were introduced to ICT later and mostly at their workplace. It's a new and interesting experience for them as they discovered the wonders of ICT in assisting their work and enhancing their learning. This should explain the craze for ICT by the older students. To the younger generation, ICT is nothing new to them as they were exposed to its usage since their primary school days.

Research Question Four
Does the **level of computer skills** exerts a positive influence on the **attitudes** of the e-PJJ students?
The findings 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.

Research Question Five
*Is there a relationship between the **qualification** and the students' **attitudes** toward ICT?*
Based on the findings, there are no relationships between **qualification** and the four attitudes. This means that 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 at 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 are more of the selfish nature of the adult students. If traditional teaching is preferred, then being a full-time student would be the solution.

RECOMMENDATION

The recommendations put forth were based on the research findings and other observations:

1. The results indicated high anxiety when using ICT and working with computers among the respondents. A needs assessment should be conducted in order to determine the various components of computer training for the students.
2. Also, the findings from the survey indicated that students with no experience in ICT usage have more negative attitude towards ICT. Further research should be conducted to determine the reasons for this and to suggest possible solutions.

To enforce the above recommendations, Ward and Peppard (2002) suggested the following which InED should pay heed to. This would allow InED to reduce the students' complaints on the non user-friendliness of the current LMS, the i-*class*.

1. Perceived credibility gap between the 'hype' of the ICT industry and what ICT can actually do and how easy it is to do it. Given these difficulties, InED may not be able to claim the benefits offered by ICT.
2. Despite the difficulty in expressing all ICT benefits in economic terms, InED, UiTM and the Ministry of Higher Education should not demand to see financial justification for investments in ICT. Producing quality graduates who are skilled in most aspects of ICT usage should be the objective of InED. Producing better workforce to meet Malaysia's market needs would also ensure other economic gains from other stakeholders. Ensuring better ICT infrastructure and Internet access would cushion the impact of globalization, yet generate wealth through knowledge and information.

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