

Attitude, Perception and Use of E-Learning at Open University Malaysia¹

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To ensure the success of the e-learning initiatives, OUM has developed its own e-learning management system, known as myLMS. Since its introduction, many modifications and improvements have been introduced to increase its effectiveness. It is now timely that OUM take stock of its students' attitudes towards e-learning. Thus, a survey was conducted on about 1,000 students at one of OUM's own learning centres, that is, the Kelantan Regional Centre¹. The study indicated that generally the teacher cohort had a somewhat neutral attitude towards e-learning. The use of e-learning was more specifically aimed at achieving short term goals of obtaining good coursework and examination grades by capitalizing on the use of the Discussion Board and Courseware. A closer examination reveals that the females prefer the Discussion Board while the males prefer the Courseware. Learners in the Engineering and English programmes had more positive attitudes towards e-learning compared to learners in the Mathematics and Science programmes. Learners with CGPA>3.0 who are categorized as high achievers are more positive towards e-learning as compared to the low achievers (CGPA<3.0). Age difference, learners' income per month, learners' Internet and e-learning habits were also found to be predictors of attitude towards e-learning.

INTRODUCTION

Information and Communication Technology (ICT) has become an integral part of higher education and has made positive inroads into learning. Over the last few years, there have been a number of reports indicating that the integration of ICT into face-to-face courses can have positive effects on learning outcomes (Diochon and Cameron 2001, Saunders and Klemmif 2003). However, there have been few investigations that have examined this integration from the learners' point of view, that is, how they feel ICT should support their learning.

Educators have known that learner attitudes and responses are correlated. Burn's (1997) study supported this statement by saying that "attitudes are evaluated beliefs which predispose the individual to respond in a preferential way". Thus, educators will have to improve delivery to instill positive learner attitudes, knowing that it would improve learning outcomes. Massoud (1991) pointed out that this correlation also exists in ICT education, and the existence of computer anxiety is based on attitudes towards computers. Consequently, individuals' attitudes towards computers should be addressed so that anxieties can be kept to the minimum, allowing learning to be cultivated in a positive manner.

Open University Malaysia (OUM) is one of the few institutions in Malaysia that offers education in an open and distance learning (ODL) mode. It subscribes to the internationally recognised blended learning pedagogy using multimode learning technology. The blended pedagogy incorporates self-managed learning using specially constructed modules, face-to-face interaction with tutors at the learning centres and e-learning/online learning. E-learning is made available 24 hours a day through OUM's e-learning platform, the Learning Management System (myLMS). MyLMS, which integrates e-mails, discussion forums, chats etc., provides a seamless support for learners. It serves as a platform for interaction among students, tutors, subject matter experts, academic and non-academic staff. One of the most popular tools used in myLMS is the discussion forum. Students usually discuss topics and issues that may have emanated from the tutorial class discussions thus sustaining the continuous learning process between tutors-learners and learners-learners.

¹ The survey was administered by Assoc. Prof. Dato' Dr Nik Najib Nik Abd Rahman, Director, Kelantan OUM Regional Centre, Malaysia.

According to Mitra and Hullett (1997), learner attitudes toward technology, prior experience with technology, experience with specific categories of computer usage and demographics all play important roles in attitude determination. In another study, Powers and Mitchell (1997) identified that peer support, learner-learner interaction, learner-tutor interaction and time demands are significant in influencing attitudes and must be considered when evaluating student attitudes toward online learning.

PURPOSE OF STUDY

The purpose of this research was (i) to study the extent of usage of Internet and e-learning among OUM learners; (ii) to determine learner-specific factors which influence their attitude towards e-learning; and (iii) based on the above findings, to provide suggestions on how to improve the use of e-learning among the “teacher” learners at OUM. The respondents in this study are the “in service” teachers from the Ministry of Education, who have joined OUM to upgrade their skills in the teaching of specialized fields. Under the first agreement, more than 18,000 learners were trained to enable them to graduate with a Bachelor of Education in six specialized fields such as Science, Mathematics, TESL, Mechanical, Electrical and Civil Engineering.

METHODOLOGY

a. The Sample

The sample of the study consisted of 994 teacher-learners from the Kelantan Regional Learning Centre. The rationale behind targeting a specific cohort (i.e. the in-service teachers from the Ministry of Education) was to identify factors that are unique only to the cohort. This would impact upon the type of learning environment they require and the technical skills they need to develop in order to utilize the support.

b. The Research Instrument

The research instrument used in the study was a set of questionnaires divided into five (5) sections. The first section collected information on learners’ demographic variables, such as gender, race, programme, CGPA, etc. The second section measured the extent of learners’ general Internet use. The third section measured learners’ use of Internet for e-learning. The fourth section consisted of Likert-type statements each with 5 choices of response ranging from “satisfactory” to “unsatisfactory” to measure the degree of accessibility to Internet. Finally, the fifth section consisted also of Likert-type statements each with 5 choices of response ranging from “Strongly Agree” to “Strongly Disagree” to measure learners’ attitude towards e-learning. Altogether, there were 40 attitude questions or items. These items were factor-analysed into 5 dimensions with each dimension consisting of different set of items.

c. Analysis of Data

The data were analysed using SPSS for Windows version 14.0. More specifically, the following analyses were undertaken:

i. Descriptive Statistics

The standard descriptive statistics (means, standard deviations, etc.) were computed for the items on Learner Profile, usage of Internet and e-learning and Learner Attitude towards E-Learning

ii. Normality Test

As all parametric technique requires normality assumption, all major attitude dimension variables were subjected to both numerical and graphical normality tests. The Kolmogorov-Smirnov test is used to test for normality.

iii. Reliability Test

Reliability of each of the dimensions was measured using Cronbach’s alpha scores and the Pearson Correlation Test was conducted to determine their convergent validity (significant at $p < 0.001$).

iv. T-test and ANOVA

These were used to test for mean differences among the following variables:

Group A variables: Age Group; Gender; Current Semester; Programme of Study; Current CGPA; Income per month; Entry Qualification and Marital status.

Group B variables: Where do you access Internet? Hours per week accessing Internet? When most frequently use Internet? and What Internet connection do you use at home?

Group C variables: How long have you been using e-learning? Hours per week using e-learning; and The most frequently used tool in e-learning

Dimension variables: Five (5) attitude dimensions have been derived using factor analysis. These were Online Benefits, Instructional Design, Online Interaction, Online Features, and Online Feedback.

RESULTS

i. Normality Test:

The Kolmogorov-Smirnov test results indicate that they do not reject the normality for the population.

ii. Reliability Test

Cronbach's alpha value was found to be 0.954. Therefore, the scale used in the study is statistically reliable.

iii. Profile

Respondents are from six Bachelor of Education programmes and the distribution of respondents by programmes is a reflection of the actual population. They comprised of first, second, third, fourth and fifth year learners. The female-to-male ratio is 65:35 and 53% are between 26-35 years old while 42% are in the 36-45 age group. The highest number of respondents (49%) came in with a Diploma qualification, 29% with an SPM and 20% with STPM certificates. Among these teachers, 93% are married. A large majority of them are doing well in their studies: 55% had achieved a CGPA of 2.0-3.0 and 44% had achieved a CGPA of 3.0 – 4.0 (see Table 1).

Table 1: Respondent's Profile

Variable	N	Category	Percentage
Gender	979	Male	35.3
		Female	64.7
Age	987	19 - 25	2.2
		26 - 35	53.1
		36 - 45	42.3
		46 and above	2.1
Marital status	967	Single	5.7
		Married	92.5
		Single Parent	1.9
Program	838	BEMATH	33.1
		BESC	21.6
		BETESL	31.9
		BEME	5.3
		BECE	6.8
		BEEE	1.4
CGPA	919	3.00-4.00	44.0
		2.00-2.99	55.1
		1.00-1.99	1.0

Entry Qualification	970	SPM	28.5
		STPM	20.1
		Diploma	49.1
		Others	2.4

iv. Internet and E-learning Use

The survey showed that 65% of OUM learners access Internet from their homes, and a majority of them (63%) spend 1-3 hours a week accessing Internet. A large percentage (64%) use Internet at night, and more than three quarters of the respondents (78%) use the Dial-up connection. OUM's learning centres also provide computer labs with Internet access. 36% of learners felt that these computer labs are accessible and 30% felt that the number of computers at learning centres is sufficient. A higher percentage of respondents (39%) have been using Internet for less than one-year, 26% between 1-2 years and 35% for more than 2 years (see Table 2).

Table 2: Internet Use

Variable	Category	Percentage
Place of access	Home	65.2
	Campus	1.3
	Home & Campus	20.4
	Office	10.2
	Others	2.8
Hours/week accessing Internet	1-3 hours	63.0
	4-6 hours	26.2
	7-9 hours	7.4
	> 10 hours	3.5
Time using Internet	Morning	8.1
	Afternoon	8.9
	Evening	19.1
	Night	64.0
Internet Connection	Dial-up	78.3
	Broadband	12.5
	Leased line	5.2
	Others	4.0

The majority of respondents (59%) spend 1-3 hours a week using e-learning, 30% spend 4-6 hours and 11% spend more than seven hours a week using e-learning. Among the most frequently used tools in e-learning is the discussion board (55%), followed by courseware (23%) and e-mail (12%) (see Table 3).

A cross tabulation of the current CGPA versus e-learning tools showed that 62% of the high achievers (CGPA of 3.1-4.0) as opposed to 47% of the moderate achievers (CGPA of 2.1 – 3.0) use the discussion board. The usage of the discussion board is more popular among the females (66%) compared to males (34%). On the other hand, the males (68%) prefer the courseware compared to the females (32%).

Table 3: E-learning Use

Variable	Category	Percentage
Duration of use	0-6 months	18.6
	7-12 months	20.4
	1-2 years	26.0
	> 2 years	35.1
Hours/week	1-3 hours	59.5
	4-6 hours	30.5
	7-9 hours	7.3
	> 10 hours	2.6
E-learning Tools	Courseware	22.6
	Discussion board	54.6
	Chat	1.7
	E-mail	11.5
	Others	9.6

v. Item Means

The means of 40 items ranged from 2.96 to 3.64 with an average of 3.23. The highest mean score was for item “I must go online, otherwise I would lose 5% of course marks” while the lowest score was for item, “When I post the question on the forum, I get the reply within 2 days.” (see Appendix)

vi. Dimension Means

The means of each dimension ranged from 3.16 to 3.24. The respondents are most positive towards Instructional Design (3.24) and least positive towards Online Features (3.16).

Table 4: Means and Standard Deviations of Dimensions

No	Dimensions	Mean	Standard Deviation
1	Online Benefits	3.20	0.59
2	Instructional Design	3.24	0.60
3	Online Interaction	3.22	0.54
4	Online Features	3.16	0.59
5	Online Feedback	3.17	0.62

vii. Mean differences between Group A Variables and Dimensions

- a) Gender: The t-test indicated that there is a significant difference in only one dimension, that is, Online Features ($t=2.74$, $p<0.006$) (see Table 5). The male learners were found to be more positive towards Online Features, which include items such as “speed of response of online learning is acceptable; I find navigating e-learning easy; there is good integration between text, voice and graphic; layout of screen is attractive and help facility is useful”.

Table 5: Gender versus Dimension

Gender	Male	Female	t	p
Online Benefits	3.2478	3.1761	1.821	0.069
Instructional Design	3.2497	3.2366	0.330	0.742
Online Interaction	3.2200	3.2171	0.080	0.936
Online Features	3.2289	3.1225	2.735	0.006
Online Feedback	3.1828	3.1640	0.456	0.648

- b) Age Group: There are significant differences among means of Online Benefits ($F=2.62$, $p<0.049$), Instructional Design ($F=4.08$, $p<0.007$), Online Interaction ($F=4.34$, $p<0.005$) and Online Features ($F=2.95$, $p<0.032$) (see Table 6).

Table 6: Age Group versus Dimension

Age Group	19-25	26-35	36-45	Above 46	F	p
Online Benefits	3.5038	3.1819	3.2014	3.3611	2.623	0.049
Instructional Design	3.5636	3.2540	3.1964	3.4714	4.075	0.007
Online Interaction	3.6111	3.2214	3.1905	3.2751	4.339	0.005
Online Features	3.4909	3.1736	3.1257	3.1333	2.945	0.032
Online Feedback	3.4659	3.1690	3.1536	3.2381	1.858	0.135

- c) Program: There are significant differences among means of Online Benefits ($F=5.662$, $p<0.001$), Instructional Design ($F=3.108$, $p<0.009$), Online Interaction ($F=8.603$, $p<0.001$) and Online Features ($F=3.494$, $p<0.004$) (see Table 7)

Table 7: Programme versus Dimension

Programme	BEMATH	BESC	BETESL	BEME	BECE	BEEE	F	p
Online Benefits	3.0851	3.1825	3.3427	3.1212	3.2588	3.2639	5.662	0.000
Instructional Design	3.1953	3.1786	3.3427	3.2818	3.2754	3.4833	3.108	0.009
Online Interaction	3.1219	3.1560	3.3891	3.2121	3.2125	3.4259	8.603	0.000
Online Features	3.0852	3.1573	3.2352	3.0364	3.1860	3.5833	3.494	0.004
Online Feedback	3.1841	3.1105	3.2163	3.2500	3.1535	3.3125	1.229	0.293

- d) Income per month: There are significant differences among means of Online Benefits ($F=2.48$, $p<0.043$) and Online Interaction ($F=3.26$, $p<0.011$) (see Table 8).

Table 8: Income per Month versus Dimension

Income per month	<RM1000	RM1000 - RM2000	RM2001 - RM3000	RM3001 - RM4000	>RM4000	F	p
Online Benefits	2.7727	3.2024	3.2645	2.9000	2.4167	2.477	0.043
Instructional Design	3.0364	3.2356	3.3304	3.0800	3.0000	0.986	0.414
Online Interaction	2.9394	3.2121	3.3418	2.6889	2.8889	3.260	0.011
Online Features	3.0000	3.1605	3.1870	2.8800	3.0000	0.557	0.694
Online Feedback	3.0682	3.1678	3.2201	2.9000	3.5000	0.534	0.711

- e) Current CGPA: In this section, CGPA is divided into two groups (see Table 9). Learners with CGPA 3.0 and above are classified as high achievers and the others are classified as low achievers. High achievers had significantly more positive attitude towards online interaction and online features. However, there were no significant differences in students' attitudes towards online benefits, instructional design and online feedback among high and low achievers.

Table 9: CGPA versus Dimension

Dimension	CGPA		p
	3.0 – 4.0	2.99 and below	
Online benefits	3.20	3.13	0.268
Instructional design	3.49	3.20	0.477
Online Interaction	3.68	3.49	0.036
Online Features	3.66	3.16	0.007
Online Feedback	3.86	3.17	0.780

- f) Year of study: All dimension means are significant based on the year of study: Online Benefits (F=5.114, p<0.0001); Instructional Design (F=5.475, p<0.0001); Online Interaction (F=5.475, p<0.0001); Online Features (F=7.301, p<0.0001); and Online Feedback (F=5.990, p<0.0001). Year 1, 2 and 3 are more positive towards e-learning compared to learners in year 4 and 5 (see Table 10).

Table 10: Year of Study versus Dimension

Year of Study	1.00	2.00	3.00	4.00	5.00	F	p
Online Benefits	3.3348	3.2344	3.1270	3.1565	3.1058	5.114	0.000
Instructional Design	3.3948	3.2229	3.2062	3.1554	3.1349	5.475	0.000
Online Interaction	3.3930	3.1864	3.1758	3.1554	3.0653	8.655	0.000
Online Features	3.3293	3.1542	3.1053	3.0973	3.0000	7.301	0.000
Online Feedback	3.3373	3.1215	3.1493	3.0760	3.0675	5.990	0.000

- g) Marital Status and Entry Qualifications: There are no significant differences among means for all 5 dimensions.
- viii. Mean differences between Group B Variables and Dimensions

Hour per week accessing Internet: There are significant differences among means of Online Benefits (F=7.849 p<0.001), and Online Interaction (F=7.181 p<0.001) (see Table 11).

Table 11: Hours per Week Accessing Internet versus Dimension

Hours per Week Accessing Internet	1-3 hours	4-6 hours	7-9 hours	10 hours or more	F	p
Online Benefits	3.1344	3.3109	3.2940	3.4167	7.849	0.000
Instructional Design	3.2117	3.3043	3.2069	3.3853	2.208	0.086
Online Interaction	3.1674	3.2821	3.2917	3.5229	7.181	0.000
Online Features	3.1285	3.2086	3.1722	3.3412	2.299	0.076
Online Feedback	3.1333	3.2568	3.1563	3.2426	2.590	0.052

ix. Mean differences between Group C Variables and Dimensions

- a) How many hours per week using e-learning: There are significant differences among means of Online Benefits (F=6.169 p<0.001), Online Interaction (F=7.143 p<0.001) and Online Feedback (F=4.664 p<0.003) (see Table 12).

Table 12: Hours per Week Using E-Learning versus Dimension

Hours per Week Using E-Learning	1-3 hours	4-6 hours	7-9 hours	10 hours or more	F	p
Online Benefits	3.1450	3.3124	3.1921	3.4063	6.155	0.000
Instructional Design	3.2114	3.3033	3.2222	3.3583	1.840	0.138
Online Interaction	3.1609	3.3257	3.2361	3.4167	7.143	0.000
Online Features	3.1303	3.2298	3.1278	3.2083	1.966	0.117
Online Feedback	3.1180	3.2836	3.1736	3.2292	4.664	0.003

- b) How long you have been using e-learning: There are no significant differences among means of Online Benefits (F=0.308 p<0.802), Instructional Design (F=0.478 p<0.698), Online Interaction (F=0.719 p<0.541), Online Features (F=0.689 p<0.559) and Online Feedback (F=0.371 p<0.774) (see Table 13).

Table 13: How Long Have You Been Using E-Learning versus Dimension

Duration of E-Learning Use	0-6 months	7-12 months	1-2 years	More than 2 years	F	p
Online Benefits	3.1676	3.2016	3.2214	3.1986	0.308	0.820
Instructional Design	3.2895	3.2414	3.2286	3.2274	0.478	0.698
Online Interaction	3.2132	3.2682	3.1958	3.2136	0.719	0.541
Online Features	3.1884	3.1935	3.1575	3.1265	0.689	0.559
Online Feedback	3.1424	3.1949	3.1881	3.1542	0.371	0.774

DISCUSSION OF RESULTS

The respondents of this study are in-service teachers from the Ministry of Education. Being working adults, they are burdened by many responsibilities outside their learning. To lessen this burden, they need to be more flexible in their approach towards learning. One such flexibility is offered by online learning. One would then expect that these working adults are very receptive and have a very positive attitude towards e-learning which had been found by a prior study which indicates that the working students are more ready than non-working students towards online learning (Silong, A.D., Ibrahim, D.Z. and Samah, B.A., 2001).

However, the present study reveals that OUM “teacher-learners” are somewhat neutral in their attitude towards the use of e-learning. To identify the factors that influence such an attitude, the following variables were investigated: Gender, Age, Programme, Income per Month, Current CGPA, Year of Study, Hours per week accessing internet, Hours per week using e-learning and How long you have been using e-learning.

With respect to Gender, the study found that except for the Online Interface (males are more positive towards e-learning), there is no significant difference in attitude between male and female learners in the other dimensions of e-learning. This is in line with the findings of Macleod, *et al*, which states that since the early 1990s, the overall attitudes towards the use of ICT has become more positive, and the differences in attitude between men and women have become insignificant (Macleod *et al*, 2002).

A closer examination on the types of e-learning tools used by learners reveals that the females prefer the Discussion Board while the males prefer the Courseware. This appears to indicate that women value social

interaction in learning more highly than men. This is consistent with what was reported by King, (2000) that females were slightly more positive about ICT as contact and information channel than males.

Age difference of learners appears to exert a significant influence on learner attitude towards e-learning. The younger learners (19-25 years) tend to exhibit a more positive attitude compared to the older ones. This appears to be in line with the fact that younger learners are more comfortable with computers and Internet (*the digital natives*) while the older generation is not as comfortable and confident (*the digital migrants*). This finding however seems to contradict the finding of Colley (1994).

Learners in different programmes demonstrate different attitudes towards e-learning in four of the five dimensions. The most positive attitude was shown by learners in the Bachelor of Education (Teaching of English as a Second Language) (BETESL) and Bachelor of Education (Electrical Engineering) Programmes (BEEE). In the case of BETESL, the need for online discussions is paramount. As for BEEE, the exposure of the learners to e-learning is probably higher compared to the other engineering programmes. In this regard, learners in the Bachelor of Education (Science) (BESC) and Bachelor of Education (Mathematics) (BEMATH) are least receptive to e-learning.

While the majority of the learners are in the RM1,000 – RM2,000 income group, the RM2,000 – RM3,000 income group shows the most positive attitude towards e-learning. This probably reflects the degree of affordability to purchase a computer and obtain a reasonable access to Internet on the part of the learners. The percentage of learners in the income groups higher than RM3,000 is only 0.6% and therefore is ignored in this discussion.

In all the five dimensions, the high achievers (CGPA>3.0) are more positive towards online learning as compared to the low achievers (CGPA<3.0). However, the differences are statistically significant in only two dimensions, namely Online Interaction and Online Features. This difference is probably due to the higher level of confidence and motivation, which presumably influences the quantity and quality of online interaction.

The study indicates that the duration of study has a negative influence on the learners' attitude towards e-learning. This was probably due to the impact of the "Learning Skills for Open and Distance Learners" course which was introduced only two years ago and thus could have exerted a considerable influence on the Year 1 to 3 learners. The learners who are in the system beyond Year 3 did not take the course and therefore may not have the same level of confidence in e-learning skills.

In the learner profile category, marital status and entry qualifications are not significant in influencing learner attitude towards e-learning.

Other than learner profile, learners' Internet and e-learning habit may also have an influence on their attitude towards e-learning. In this regard, the study found that the longer a learner spends on accessing Internet and using Internet for e-learning (more than 10 hours), the more positive they are towards e-learning especially in the Online Benefit and Online Interaction Dimensions. This appears to be in line with the results of prior studies (Kian Sam Hong, *et al*, 2003).

The number of e-course materials is rather limited in OUM, and this could also be one of the factors that contribute to learners' attitude towards e-learning. More efforts should be channeled to develop e-content and make e-content accessible in order to fully unleash the potential of e-learning for enhancing learners' learning experience.

CONCLUSION

The study indicated that generally the teacher cohort had a somewhat neutral attitude towards e-learning. The use of e-learning was more specifically aimed at achieving short term goals of obtaining good coursework and examination grades by capitalizing on the use of the Discussion Board and Courseware. A closer examination reveals that the females prefer the Discussion Board while the males prefer the Courseware. Learners in the Engineering and English programmes had more positive attitudes towards e-learning compared to learners in the Mathematics and Science programmes. The high achievers (CGPA>3.0) were more positive, particularly in the Online Benefits and Online Interaction dimensions compared to the low achievers. Besides the above factors, age difference, learners' income per month, learners' Internet and e-learning habits were also found to be predictors of attitude towards e-learning

The degree to which the discussion board and email are being used to maintain contact with tutors and peers suggests that learners are keen to use e-learning in OUM. However, the same learners are probably reluctant to see face-to-face contact be replaced with online interactions. This is similar to the feelings of the majority of academic staff (Butler and Sellbom 2002) who believes that face-to-face interaction cannot be replaced effectively online. However, the economic realities of today give us no alternative but to harness the best of our ICT options in e-learning. OUM will have to demonstrate more acceptable, useful and affordable ways of integrating ICT into the face-to-face courses. Perhaps linking the use of e-course materials to performance and academic achievement could improve learners' use of e-learning. In addition, presenting materials in more stimulating ways and focusing on knowledge sharing and reflection opportunities that learners' value would enrich learners' learning experience.

REFERENCES

- Burns, R.B. (1997), Introduction to research methods 3rd Edition. Longman, Melbourne
- Butler, D.L. and M.Sellbom (2002) Barriers to adopting technology for teaching and learning,
- Colley, A.M. Gale, M.T. & Harris, T.A. (1994) Effects of gender role identity and experience on computer attitude components. *Journal of Educational Computing Research*. **10**, (2), 129-137.
- Diochon, M.C. and A. F. Cameron (2001) Technology based interactive learning: designing and international student research project, 2, (2) 114-127.
- Kian-Sam Hong, Abang Ahmad Ridzuan, Ming-Koon Kuek: Students' attitudes toward the use of the Internet for learning: A study at a university in Malaysia. *Educational Technology & Society* 6(2): 45-49 (2003)
- King, L. (2000). Gender issues in online communities. *Computer Professionals for Social Responsibility Newsletter*, 18(1). <http://www.cpsr.org/publications/newsletters/issues/2000/Winter2000/index.htm>
- Macleod H., Haywood D., Haywood J and Anderson C., (2002) "Gender and Information and Communication Technology, *Techtrends*, 46(6) 11-15, Association for Educational Communications and Technology (AECT)
- Massoud, S.L. (1991), Computer attitudes and computer knowledge of adult learners. *Journal of Educational Computing research*, 7(3). 269-291
- Mitra, A. & Hullett, C. (1997). Toward evaluating computer aided instruction: Attitudes, demographics, content. *Evaluation and Program Planning* 20(4), 379-391.
- Powers, S. M., & Mitchell, J. (1997). Student perceptions and performance in a virtual classroom environment. Paper presented at the American Educational Research Association, Chicago, IL, March.
- Saunders, G. and Klemmif, F. (2003) Integrating technology into a traditional learning environment; Reasons for and risks of success. *Active learning in higher education*, 4(1), 74- 86.
- Silong, A.D., Ibrahim, D.Z. and Samah, B.A. (2001), "Perception of working adults toward online learning in a virtual university", available at: <http://gdenet.idln.or.id/Technology/TechnologyInterpInteracIntegratedAbuDaud.htm>

APPENDIX

DIMENSIONS		N		Mean
		Valid	Missing	
ONLINE BENEFITS				
1	E-learning is more convenient than attending tutorials	931	63	2.99
2	Communicate more using e-mail and forums with other students than face to face	932	62	3.04
3	Communicate more using e-mail and forums with other tutors than face to face	933	61	3.10
4	More enjoyed and motivated to learn via online than tutorial	932	62	3.02
5	Learn great deal more via e-learning compared to conventional tutorial	932	62	2.98
6	E-learning is an effective supplement than conventional tutorial	927	67	3.15
7	Between online and face to face mode of learning, I prefer the online mode	896	98	3.07
8	I would like to discuss topics with peers from different centers	926	68	3.20
9	Audio and video material can improve my learning	925	69	3.42
10	ICT can improve my learning	923	71	3.53
11	I would like to study using a computer even when it is more complicated	923	71	3.37
12	I must go online, otherwise I would lose 5% of course marks	879	115	3.64
INSTRUCTIONAL DESIGN				
1	Online material in the module was well organised and easy to find	918	76	3.19
2	Online text was easy to read and understand	916	78	3.29
3	Graphics were helpful to my learning materials	919	75	3.33
4	Audio and video was helpful to my learning materials	915	79	3.36
5	Online materials contain a lot of information about the topics covered	912	82	3.34
6	Online materials are both interesting and engaging	914	80	3.30
7	There are many examples and illustrations used in the online module	915	79	3.23
8	Graphics, video and audio used in the module are relevant to the content	896	98	3.18
9	The content was organised in an appropriate sequence	892	102	3.21
10	The content covered all essential information (both theory & practical)	891	103	3.20
ONLINE INTERACTION				
1	I interact a greater number of times with my tutor via online than in a face to face format	901	93	3.12
2	My online interaction is a higher quality than the face to face interaction	899	95	3.08
3	I'm highly satisfied with the interaction I have with my tutor about course via online	894	100	3.15
4	I found the online discussions with my tutors and peers useful & valuable	896	98	3.24
5	The interactions with my tutor affect my assignment grades	891	103	3.33
6	Tutor was very enthusiastic about student using forum for discussion	868	126	3.25
7	Engaging in debate and discussion with other students helps me to learn more	877	117	3.35
8	Online group provided opportunity to ask questions of the course at any time	872	122	3.36
9	Discussion forum was an integral part of the course rather than optional	872	122	3.34
ONLINE FEATURES				
1	Speed of response of online learning is acceptable	886	108	3.10
2	I find navigating in the e-learning easy	890	104	3.15
3	There is good integration between text, voice and graphics	887	107	3.20
4	Layout of the screen is attractive	893	101	3.22
5	Help facility is useful	894	100	3.22
ONLINE FEEDBACK				
1	When I post the question on the forum, I get the reply within 2 days	878	116	2.96
2	Tutor marked and returned my assignments within 2 weeks	880	114	3.28
3	Tutor support with respect to e-learning is very good	882	112	3.26
4	I received prompt feedback from my tutor about my assignments	883	111	3.27

