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Fulltime Students' and Working Adults' Perceptions of E-learning in Malaysia

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ABSTRACT :

E-learning is becoming very popular nowadays : it attracts different learners - particularly working adults and fulltime students. This study reports the benefits of e-learning from the viewpoint of learners, and moreover the limitations of e-learning from the viewpoint of these learners. From the results, it may be beneficial for e-learning providers to improve themselves. Ultimately, this paper examines the differences in their perceptions towards the e-learning benefits and limitations between working adults and fulltime students. The results from the findings showed that e-learning was perceived as beneficial by both groups of learners but that the working adults perceived significantly more limitations in their e-learning. The findings from this study therefore supported the concept of creating different e-learning products customized for different learner groups.

1. INTRODUCTION :

1.1 A Brief Overview :

E-learning is evolving from its predecessor namely distance learning. Since then, it attracted many learners from all over the globe mainly because of its flexibility. It is not surprising to see more and more companies venturing into e-learning businesses when the global market for e-learning in 2002 reached US$90 billion (Yong, 2003, p.19). In another case cited in Morgan (2001) who referred to *Fortune Magazine's* estimation in May 2000, the on-line learning market will reach US$22 billion market in 2003. All these seemed to suggest a bright and prospective market for e-learning.

The popularity of e-learning is not limited only to working adults who are seeking higher qualifications without leaving their jobs and losing their earning power (Lau, 2003). This trend seems ever increasing as the Internet and computer technology have become widespread as a daily necessity of the younger generation. According to Lau (2003), research revealed that 16- to 18-year-old teenagers are really keen on on-line learning or e-learning. These two groups formed the majority of e-learning learners. The former are working adults and the latter are likely to be fulltime students.

Since e-learning is gaining popularity globally, it is also taking shape in Malaysia and this can be seen from the fact that there are two e-learning based universities in Malaysia namely University Tun Abdul Razak (UNITAR) and the Open University of Malaysia (OUM). There are colleges starting to offer e-learning courses as well, therefore fulltime students are also targeted users of e-learning. In addition, some training centers and companies also offer e-learning courses such as the YTL e-learning centre. However, e-learning has yet to gain momentum in Malaysia because it is new (*Online Tech Courses*, 2003). It is therefore beneficial to conduct a survey to know the perceptions of learners towards e-learning.

Besides, it is important to find out the perceptions held by two major groups of learners namely fulltime students and working adults who form the target groups of e-learning as mentioned earlier on. Their perceptions are really important to improve e-learning services in Malaysia.

In order to understand the concept of e-learning, it is beneficial for the readers to understand more about e-learning. Therefore, some basic information about e-learning is discussed in this paper.

1.2 Basic Concepts of e-Learning :

Generally, Schank (2002), Roffe (2002), Sambrook (2003) and Tsai & Machado (2002) refer to e-learning as communication and learning activities through computers and networks (or via electronic means). To be more specific, Fry (2000) defines e-learning as the "delivery of training and education via networked interactivity and a range of other knowledge collection and distribution technologies". Furthermore, Evans & Hasse (2001) pointed out that technology is indeed needed in e-learning to educate the learner through the usage of two-way video, two-way computer interaction, cable, satellite downlinks and the Internet. Honey (2001) provided many good examples of learning activities that involved ICT. These examples include learning from e-mail, online research, online discussion, and coaching by e-mail. From these definitions and examples, we can therefore define e-learning as learning activities that involve computers, networks and multimedia technologies.

1.3 Research Aim :

The overall research aim is to find out the perception level of e-learning users – and this study will focus on working adults and fulltime students in the Klang Valley, Malaysia - to suggest ways to improve e-learning for e-learning providers in Malaysia. The specific objectives are shown as follows ;

(1) to find out the perception levels of fulltime students and working adults towards e-learning benefits and limitations,
(2) to find out whether there are significant differences between the working adults and the fulltime students in their perception levels towards e-learning benefits and limitations, and
(3) to suggest ways to improve e-learning services in the Klang Valley based on these research findings especially on users' perceptions towards e-learning limitations.

2. LITERATURE REVIEW :

2.1 Overall View :

This literature review will cover some existing literature reviews on e-learning benefits and limitations. These e-learning benefits and limitations are used as variables in a questionnaire in this study. Moreover, some previous comparative studies are also discussed in this section. At the end of this section, a theoretical framework is presented together with its rationale.

2.2 Perception Definitions :

Perception is defined as the way people sense and interpret the world around them (Arnould, Price & Zinkhan, 2002). Morever, Arnould, et al. (2002) explained that perceptions are results from acquisition, consumption and disposal of goods. While Kolesar & Galbraith (2000) suggested that perceptions are a consumer's opinions and attitudes towards any products after purchasing them. With regard to the present study, we are investigating how consumers feel about e-learning services after purchasing and using them.

2.3 Selected Previous Research into the Benefits of e-Learning :

From a literature review, perhaps the most studied benefit variables are with respect to flexibility. This includes flexibility in time, place and pace in learning. Some researchers such as Collins (2002), Hitlz (1997), and Koory (2003) use the terms 'flexible' and 'convenient' very generally to represent e-learning flexibility, However in this study we use these terms took to mean flexibility only to mean at any time and at any place, following Baldwin-

Evans (2004) and Evans & Haase (2001). Nevertheless, we do recognize that researchers have found that a key benefit of e-learning is that it is flexible in terms of being self-paced learning (Baldwin-Evans, 2004 ; Koory, 2003 ; Smith & Rupp, 2004). Additionally, e-learning is also flexible in a financial or economic sense in that the student can remain working to earn money (Oakley, 2004), and also flexible in providing just enough learning as desired by the individual (Baldwin-Evans, 2004).

Another benefit that has been well researched concerns the interactivity in e-learning. We define interaction in terms of the two variables ; gaining more knowledge, and improving understanding. Some researchers define it more generally with regard to the quality of the interaction, in terms such as interaction-enhanced learning or interaction facilitates learning for example in the studies of Grooms (2003), Hitlz (1997), Rourke & Anderson (2002) and Shea, Pickett & Pelz (2003). Since there is no clear definition from reviewing these studies, we define interaction in terms of gaining more knowledge as well as improving understanding. Other studies have also reported that interaction correlated directly with a gain in more knowledge (Akar et al., 2004 ; Oakley, 2004). Another study found that interaction improved understanding (Rovai & Jordan, 2004).

The other benefit variable that is well researched is cost-saving in tuition fees (Collins, 2002 ; Oakley 2004). Homan & Macpherson (2005) and Vaughan & MacVicar (2004) stated that e-learning can also save training costs. Another variable is time-saving - e-learning saves time found especially in the study of O'Malley & McGraw (1999). The facility of a digital library is another benefit being found in the literature. Most respondents in the study of Mason & Rennie (2004) agreed that the Internet can help them to obtain information. Cost-saving and time-saving are two variables categorised as efficiency in this study.

In the effectiveness category, multimedia is found effective to improve understanding (Evans & Fan, 2002). Besides, the other variable in the effectiveness category is electronic assessment in which learners agree that report that they can learn from online quizzes (Hannon et al., 2002).

We have also found other benefit variables that are well researched. The first variable is learning new technological skills. Learners have reported that they learned ICT, technology or computing skills (Baldwin-Evans, 2004 ; Mason & Rennie, 2004 ; Varvel Jr, Lindeman & Stovall, 2003). Similarly, learners have also reported a career-enhancement benefit in that they can obtain extra knowledge for their career advancement or even future career (Baldwin-Evans, 2004 ; Homan & Macpherson, 2005 ; Varvel Jr, Lindeman & Stovall, 2003 ; Willging & Johnson, 2004). It seemed that e-learning also enables learners to develop more-analytical minds since they are more thoughtful online than in a traditional classroom (Koory, 2003). Besides, Meyer (2003) also found out that higher-order thinking does occur in threaded discussions in e-learning. Also Theroux, Carpenter & Kilbane (2004) have also found that e-learners thought critically in performing case studies online. Finally, this literature review found the benefit variable that discrimination is eliminated since online group members are being treated fairly (Akar et al., 2004).

2.4 Selected Existing Research on e-Learning Limitations :

Perhaps, one of the most researched limitation variables is the difficulty in finding time to study. Most of the literature indicated that working adults are busy individuals who have many commitments especially concerning their family or work - Willging & Johnson (2004), Vergidis & Panagiotakopoulus (2002) and Vaughan & MacVicar (2004). Other studies have also indicated family commitments (Bird & Morgan, 2003 ; Pierrakeas et al. 2004). Since adult-learners are particularly busy, they may find it difficult to find time for their studies and could eventually stop studying as suggested from the findings of Hiltz (1997) and Pierrakeas et al. (2004). These studies reported that e-learning students may comparatively not have as

much time to study as full-time students.

A limitation that is related to time is self-discipline. Working adults are learners who face the problem of the need for self-discipline to learn since they have work and family commitments as discovered by Willging & Johnson (2004), Vergidis & Panagiotakopoulus (2002) and Vaughan & MacVicar (2004). Other studies have indicated that they felt lost in cyberspace (Dearnley, 2003 ; O'Regan, 2003). Since all these learners have many commitments and they are lost in cyberspace, they need extra self-discipline in order to be successful in e-learning.

Preparatory training is necessary for new learners, as Abouchedid & Eid (2004) found out that students are lacking in e-learning skills. Therefore, they may need a preparation course for distance learning or even e-learning (Bird & Morgan, 2003). While not directly related, one finding from O'Malley & McGraw (1999) stated that learners need significant changes in order to adapt to an online environment. Collins (2002) also found out that learners drop out because of not being knowledgeable enough. All these suggest that preparatory training is indeed required for new learners.

In order to be successful in e-learning, one has to learn new skills and technology. Evan & Hasse (2001) found that online learners are moderately lacking in computer proficiency. Moreover, Willging & Johnson (2004) found that students reported one reason for their dropping out was because they were lacking in technological skills. Therefore, we can conclude that learners need to learn technological skills in order to succeed in e-learning.

Technological limitations are major barriers to e-learning too. This can be seen from the study of Homan & Macpherson (2005) and Litto (2002) whereby companies have problems in acquiring and maintaining hardware or other ICT resources. A more appropriate finding is by Hiltz (1997) - the author reported the personal computer is a barrier for e-learners. Therefore computer hardware and other resources are a necessity for companies that wish to implement e-learning. This emphasizes the necessity for adequate computer hardware for all e-learners at home or in the office.

Another technology limitation is regarding bandwidth (Homan & Macpherson, 2005). Some other problems related to bandwidth are Internet connection, busy Internet lines and Internet traffic problems (Akar et al., 2004 ; Hiltz 1997 ; Rourke & Anderson, 2002). Since a limited bandwidth may bring all of the above problems.

Other than these time, technological and preparatory limitations stated above, learners may face problems in terms of lacking physical interactions. Studies by Evan & Hasse (2001), O'Regan (2003) and Rovai & Jordan (2004) found out that learners face limited physical interactions with others in e-learning. Some consequences from lacking physical interactions are they felt lonely (Grooms, 2003) : they could not observe non-verbal communication from others (Meyer, 2003) and therefore found it hard to work in online groups with others (Willging & Johnson, 2004).

As indicated by Homan & Macpherson (2005), it is not easy to design courseware to suit the full range of needs of e-learners and the design of courseware may be hard to understand (Akar et al., 2004). These two findings may suggest that design of courseware is really a limitation in e-learning especially it is not easy to design courseware when learners are from diverse backgrounds.

Apart from limitations in technology, poor writing skills may inhibit self-expression. Akar et al. (2004) found that learners have difficulties in understanding others when they communicate in an online environment. Other limitations in e-learning include ; (1) difficulty in ensuring academic honesty in an online environment (Kelly & Bonner, 2005), (2) unlimited learning stresses both learners and tutors as there are simply too many online learning materials (Grooms, 2003 ; Willging & Johnson, 2004), (3) difficulty in conducting synchronous learning due to different time zones (Rourke & Anderson, 2002), (4) concern about the reputation and accreditation status of an e-learning institution (Evans & Haase, 2001), and (5)

learners may hold onto pre-course negative preconceptions of e-learning (Homan & Macpherson, 2005).

2.5 Previous Comparative Research in e-Learning :

Most comparison studies are related to comparison of methods of teaching either teaching online or traditional teaching. Some of these studies were conducted by Allen & Seaman (2003), Koory (2003), O'Malley & McGraw (1999), Rivera, McAlister & Rice (2002), Woods & Ebersole (2003), Shachar & Neuman (2003) and Oakley (2004), and they found that there is no significant difference in the teaching outcome between traditional teaching and e-learning.

In addition, Hiltz(1997), Koory (2003), Rivera, McAlister & Rice (2002), O'Malley & McGraw (1999), Shachar & Neuman (2003), Tesone, Alexakis & Platt (2003), Tucker (2001), Ragan & Kleoppel (2004) and Reasons, Valadares & Slavkin (2005) also found that e-learning students performed equally well or even better than their counterparts in traditional classrooms. Besides, respondents also perceived e-learning as comparable to traditional classroom in terms of prestige and value (Evans & Haase, 2001). Only two studies in this review show that distance learning (mostly working adults) performed more poorly than their traditional classroom counterparts (Harsh & Sohail, 2002 ; Rovai & Jordan, 2004). As a result, e-learning is seemed comparable to traditional and confirmed the statements of Russell (1999) and Hutchins (2003) that there is no difference in terms of teaching outcomes between e-learning and traditional learning.

Most e-learning students are working adults as indicated in studies of Koory (2003) and Qureshi, Morton & Anstosz (2002). This is quite obvious as working adults are busy individuals who need more flexibility in their studies. Other studies that indicated e-learners need flexibility were conducted by Rivera, McAlister & Rice (2002), Tesone, Alexakis & Platt (2003), Oakley (2004) and Ross (2001). Another example to show flexibility in e-learning is the study by Evans & Fan (2002), where they found that working adults like the idea of attending virtual lectures at the workplace or at home. Since working adults needs more flexibility in studies, we can see that e-learning is suitable for them. Therefore, we can see from the study of Evans & Haase (2001) whereby they found more working adults preferred e-learning. This also can be seen from the studies of Halsne & Gatta (2002) that indicated a significant higher number of e-learning students are working adults, married and having higher incomes. Besides, e-learning students are said to be older working adults with less time who need money to support themselves (Qureshi, Morton & Antosz, 2002 ; Tucker, 2001).

Working e-learning students are also said to be more confident and like to link their studies to their jobs (Harsh & Sohail, 2002). They also preferred experience or hands-on learning (Tucker, 2001). It seems that those who participated in e-learning have better technological skills as shown in the study by Kretovics & McCambrige (2002). In addition, Koory (2003), Hiltz (1997) as well as Reasons, Valadares & Slavkin (2005) indicated that online students had more interactions and communication in an online learning environment. Online students are also said to be more thoughtful (Koory, 2003). A significantly higher number of online students is said to have post high school qualifications when compared to traditional students. Besides, master students tend to take more online courses if compared to other degree students (Allen & Seaman, 2003). This may be due to the fact that master degree students are working adults who need more flexibility in learning ultimately getting an additional degree for career advancement.

Fulltime students as we can see from the previous studies are more dependent. An example is that they need to have the tutor present for a virtual learning environment (Evans & Fans, 2002 ; Tucker, 2001). Moreover, fulltime students also learned more through the lecturer's gestures and expressions (Halsne & Gatta, 2002). Perhaps, e-learning is lacking in non-verbal communication when compared to traditional learning (Meyer, 2003). Fulltime

students are also mainly high school leavers (Halsne & Gatta, 2002).

From the above, we can see that in terms of performance and teaching outcomes, e-learning is equivalent to traditional learning. However, the status of students being either working adult students or fulltime students will affect their attitudes to learning. As an illustration, working adults are confident learners who like to apply their learning knowledge to work and prefer hands-on learning. Fulltime students however are said to be more dependent and they learn more from lectures rather than real case studies.

2.6 Theoretical Framework and Rationale :

From all the above selected literature review for this study, it seems that there is no previous study in measuring the perceptions of fulltime students and working adults towards e-learning - especially in the Klang Valley, Malaysia. From previous comparison studies, we know that most of the previous studies are used to compare the teaching outcomes instead of learners' perceptions towards e-learning. These studies have found that there were no significant differences between the teaching outcomes of traditional learning and e-learning (Allen & Seaman, 2003 ; Koory,2003 ; O'Malley & McGraw,1999 ; Rivera, McAlister & Rice, 2002 ; Woods & Ebersole, 2003 ; Shachar & Neuman, 2003 ; Oakley, 2004). What about a comparison study on perceptions of e-learning benefits and limitations? This forms the basis of this theoretical framework. The present theoretical framework is also based on the fact that working adults and fulltime students are different in many important aspects as discussed above.

As shown in Figure 1, the perceptions for working adults and fulltime students are the independent variables. Those independent variables are perceptions towards benefit and limitation perception variables. For benefit variables, they are categorised into four groups namely efficiency, effectiveness, flexibility, and other benefits. For the limitation variables, these are categorized into five groups namely technology, personal, comparison with traditional campus, design, and other limitations.

A complete list of perception variables is shown in Tables 1a and 1b. The difference between the perceptions of working adults and those of fulltime students is the dependent variable namely the difference in perception levels. The difference is the dependent variable as it depended on the perception level in order to determine the significant level of difference. Finally, the ultimate part of the research is to test for any significant difference between the level of perception of working adults and the level of perception of fulltime students.

3. RESEARCH METHODOLOGY :

3.1 Sample Size :

The selection of the sample is based on the fact that about 70 per cent (about 2.8 million) of the people in the Klang Valley are in the 16-to-64-years-old age group (Government of Malaysia, 2003). Since the target population size is large (2.8 million), an appropriate sample size number has to be determined by the researcher (Hussey & Hussey, 1997, p.64). The total sample size of 800 is based on two tables shown in Saunders, Lewis & Thornhill (2000) and also in Sekaran (2000). First, the researcher made an assumption that there are about 1 million or more people for each target group (i.e. working adults and fulltime students). Second, based on these two tables, for a population with one million or more, the sample size will be fixed at 384 respondents for each group. To improve the response rate, the sample size is increased to 400 for each group; therefore, the total sample size is 800.

3.2 Sampling Method :

After determining the sample size, the next thing that the researcher needed to do is to decide on an appropriate sampling method. The researcher used the non-probability sampling method to distribute the questionnaires in particularly purposive sampling. According to Sekaran (2000), purposive sampling is confined to specific

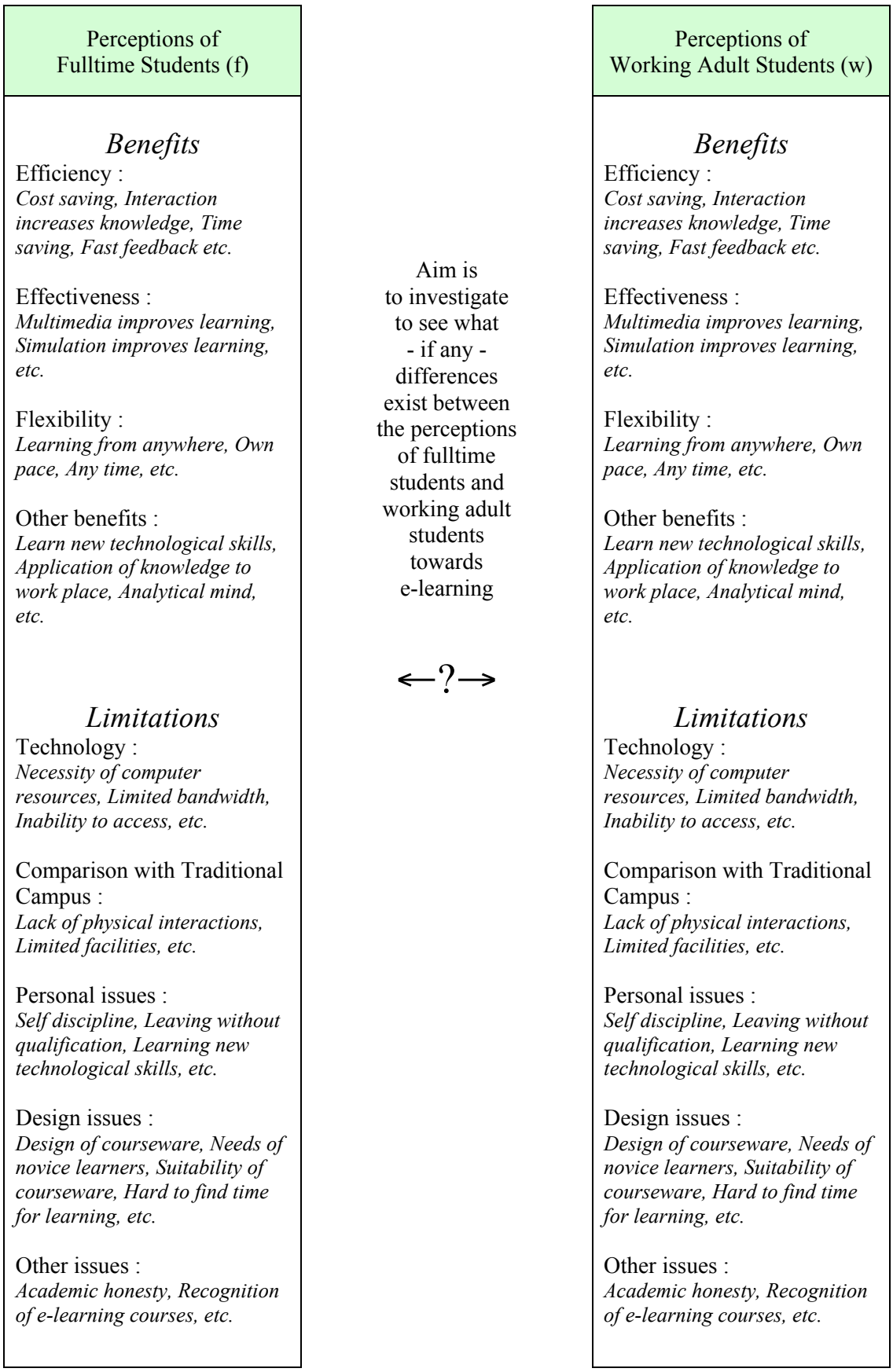

Figure 1 : Theoretical framework for this study

types of people who can provide desired information. Judgment sampling is the purposive sampling method that is used in this research. With reference to Sekaran (2000) and Hussey & Hussey (1997), judgment sampling is to obtain information from those who have best information and experience on the subject being studied. Therefore, those respondents must meet all the criteria i.e. e-learning experiences in order to be selected so that information provided is more accurate and experience-based.

3.3 Research Tool – Questionnaire :

In this research, a questionnaire is used to collect and explain the relationship between the variables (Saunders, Lewis & Thornhill, 2000). The researcher had designed a questionnaire in a paper-based format, and this was handed out to different respondents either by the researcher or his assistants. This is also called a self-administered questionnaire survey (Sekaran, 2000)..

3.4 Data Collection :

The respondents are recruited from existing students, colleagues, friends of the researcher and members of the general public but they must be Klang Valley residents. As mentioned earlier, these respondents should be fulltime students or fulltime working adults with at least 6 months e-learning experience. For students, the researcher or the research assistants can approach any prospective respondents (e-learning students) to recruit them as respondents.

3.5 Analysis of Research Findings :

The researcher used SPSS as the main tool for the analysis of the research findings as it is user-friendly and it reduces tedious ways of manual calculation (Hussey & Hussey, 1997). Student's *t*-test is the analysis method used in this research to determine whether there is any significant difference between two groups towards the same numeric variable. Besides, Student's *t*-test can be used to compare whether the mean value of one group is significantly larger than the other or vice versa (Sanders & Smidt, 1999 ; Gordon & Gordon, 1994). Therefore, it is appropriate to be used to test for any difference between working adults and fulltime students.

4. RESULTS :

4.1 The Response Rate :

The total response rate was encouraging. A total of 520 questionnaires were received back yielding a total response rate of 65%. However, 10 questionnaires were deemed void. These questionnaires were void because there were 9 respondents who did not answer any questions in the main section of the questionnaire – perception towards e-learning benefits and limitations. There was also one respondent who responded after the due date and it was also deemed void. These 10 voided questionnaires were not put into the SPSS database and were excluded from data analysis. As a result, the usable response rate is reduced to 63.75%.

4.2 Demographics :

From the analysis, the male-to-female gender ratio is approximately 4-to-5. About 70% of all respondents are less than 26 years old. There are only about 3% of respondents who are 40 years or above. Apart from fulltime students, a large majority of working adults are either professionals or executives (58.7% of all working adults). The racial response pattern is about 42% for Malay, 29% for Chinese, 19% for Indian, and 5% for other races. Most of respondents are either in bachelor or diploma studies and they comprised 70% from all education levels.

4.3 Results of the *t*-Test :

Of all variables tested for significant difference, only 15 show a significant difference between the level of perception of working adults and the level of perception of fulltime students at the 0.05 level. However, all these variables were tested in the next section on whether their mean values are significantly smaller or greater between the working adults and fulltime students groups. For those variables with a significance at $p < 0.10$, they were re-

Table 1a : Results from the *t*-Test and the related Significant Difference

Benefit Variable	Mean score		p-value
	Working adults	Fulltime students	
Efficiency			
Cost-saving	3.28	3.32	0.613
Interaction gain more knowledge	3.34	3.48	0.087***
Save time	3.54	3.52	0.84
Fast feedback	3.28	3.44	0.086***
Up-to-date material	3.49	3.53	0.549
Digital library has huge amount of information	3.81	3.55	0.001**
Machine interactivity creates unlimited learning opportunities	3.58	3.43	0.046*
Efficiency average	3.47	3.47	0.906
Effectiveness			
Multimedia improves learning	3.63	3.58	0.475
Simulation	3.61	3.44	0.025*
Electronic assessment measures level of understanding	3.31	3.32	0.828
Interactions improve understanding	3.24	3.33	0.267
Effectiveness average	3.45	3.42	0.565
Flexibility			
Learn from anywhere	4.06	3.92	0.066***
Learn at own pace	4.13	3.95	0.033*
Learn at any time	4.15	4.03	0.133
Remain working to earn money	3.99	3.82	0.045*
Adaptability of learning materials based on learners' needs	3.48	3.58	0.226
Just enough learning	3.29	3.37	0.237
Repetition of learning material	3.51	3.52	0.962
Flexibility average	3.80	3.74	0.277
Other benefits			
Learn new technological skills	3.80	3.83	0.755
Application of knowledge to workplace	3.65	3.60	0.574
Analytical mind	3.63	3.62	0.848
Safe learning environment	3.66	3.52	0.125
Management tool can track learners' progress	3.49	3.44	0.574
Shy people can express themselves	3.83	3.79	0.673
Eliminate discrimination	3.69	3.62	0.429
Authentic learning experiences	3.71	3.70	0.923
Other benefits average	3.68	3.64	0.442
All benefits average	3.62	3.59	0.455

Table 1b : Results from the *t*-Test and the related Significant Difference

Limitation Variable	Mean score		p-value
	Working adults	Fulltime students	
Technological			
Necessity of computer hardware and resources	3.89	3.64	0.001**
Limited bandwidth	3.68	3.60	0.265
Inaccessibility of e-learning services	3.76	3.65	0.182
Technological average	3.77	3.63	0.017*
Personal			
Preparatory training	3.55	3.49	0.490
Self-discipline to learn	4.11	3.69	0.000**
Termination of studies without qualifications	3.52	3.57	0.503
Learn new skills and technology	3.78	3.66	0.111
Hard to find time for studying	3.38	3.41	0.735
Poor writing skills inhibit expressiveness	3.51	3.52	0.898
Postponement of studies leads to high drop-out rate	3.65	3.46	0.016*
Personal average	3.64	3.54	0.049*
Comparison to Traditional Campus			
Lack of physical interactions	3.76	3.70	0.440
Limited facilities	3.63	3.61	0.738
Difficulty for faculty to switch to e-learning environment	3.55	3.51	0.636
Not suitable for students who need to conduct hands-on laboratory experiments	4.00	3.71	0.001**
Comparison average	3.74	3.63	0.067***
Design Limitations			
Design of courseware	3.83	3.63	0.007**
Ignoring needs of people with little or no ICT experience	3.52	3.46	0.419
Difficult to find suitable courseware	3.56	3.38	0.022*
Design average	3.64	3.49	0.011*
Other Limitations			
Hard to ensure academic honesty	3.69	3.57	0.127
Unlimited learning stresses both learners and tutors	3.41	3.44	0.708
Difficult to conduct synchronous learning due to different time zones	3.49	3.47	0.832
Limited recognition	3.62	3.64	0.782
Others average	3.55	3.53	0.716
All limitations average	3.66	3.56	0.026**

* significant at p<0.05, ** p<0.01, *** p<0.10

tested in the next section as well to tell which mean is significantly higher or lower. This is because the significant difference test is a two-tailed test, so the p-value is doubled if compared to single-tailed test (i.e. significant tests for higher or lower mean). Therefore, any variable with a p-value less than 0.1 will likely become significant in the single-tailed test. For instance in the two-tailed test the p-value is 0.09, therefore its corresponding one-tailed test is 0.045 and is significant. There are 4 variables with a p-value less than 0.10 and involved for the further *t*-test, and they are discussed in the last paragraph. Therefore, we have to test 19 variables in the next section. The following re-test symbols used in next section ; w>f to mean that the value from the working adults was significantly higher than that from the fulltime students, and w<f to mean that the value from the working adults was significantly lower than that from the fulltime students.

The first benefit variable that shows highly significant difference is *digital library* with a very low p-value of 0.001. The average values from the working adults and from the fulltime students are 3.81 and 3.55 respectively. Since the average from the working adults is higher than that from the fulltime students, then the w>f one-tailed *t*-test was conducted. *Machine interactivity* also shows a significant difference (at p<0.046) between the working adults (3.58) and fulltime students (3.43). Therefore, here also the w>f one-tailed *t*-test was conducted. *Simulation* also shows a significant difference (at p<0.025) between the working adults (3.61) and fulltime students (3.44). Therefore, the w>f one-tailed *t*-test was conducted. This was the case also for *working at one's own pace* w 4.13 > f 3.92, at p<0.033, and for the variable of *being able to remain working to earn money* w 3.99 > f 3.82 at p<0.045.

In the limitation section, many variables show a significant difference between working adults and fulltime students. All of them also show that the value from the working adults is higher than that from the fulltime students. Accordingly, only w>f tests were conducted for the following variables ; *necessity of computer hardware* (w 3.89 > f 3.64) at p<0.001, *technological average* (w 3.77 > f 3.63) at p<0.017, *self-discipline to learn* (w 4.11 > f 3.69) at p<0.000, *postponement of studies* (w 3.65 > f 3.46) at p< 0.016, *personal limitation average* (w 3.64 > f 3.54) at p<0.049, *not suitable for laboratory-based students* (w 4.00 > f 3.71) at p<0.001, *design of courseware* (w 3.83 > f 3.63) at p<0.007, *difficult to find suitable courseware* (w 3.56 > f 3.38) at p<0.022, *design average* (w 3.64 > f 3.49) at p<0.011, and *all limitations average* (w 3.66 > f 3.56) at p<0.026.

The following limitation variables showed a significant high difference at greater than p<0.01 ; *necessity of hardware*, *self-discipline*, *not suitable for laboratory-based students*, and *design of courseware*.

Additionally for those with 0.05<p<0.10, we re-tested *interactions gain more knowledge*, *fast feedback*, *learn from anywhere*, and *comparison average*.

The one-tailed *t*-test results are given in Table 2 showing almost all average values from the working adults are higher than those from the fulltime students. In general, working adults perceived the variables to have a higher value or impact on them, than did the fulltime students. Working adults are recognized to be more independent, and more experienced, and so they may be expected to reflect more deeply than fulltime students. Therefore, more w>f tests were conducted than f>w tests. Since all p-values are lower than 0.05, we can assume that the mean values of these 19 variables for fulltime students are significantly lower or higher than fulltime students. Again, if the p-value is less than 0.01, it means there is highly significant difference.

Only two variables included in further *t*-testing showed a significant lower mean value for working adults compared to fulltime students. These two are *interactions gain more knowledge*, and *fast feedback* with p-values of 0.0435 and 0.043 respectively.

Other variables that show significant higher mean values for working adults are *machine interactivity* (at p<0.023), *simulation* (at p<0.0125), *learn from anywhere* (at p<0.033), *at one's own pace*

Table 2 : Results from Further One-tailed *t*-Tests

Variable	Mean score		one-tailed t-test	p-value
	Working adults	Fulltime students		
Benefits				
Efficiency				
Interactions gain more knowledge	3.34	3.48	w < f	0.0435*
Fast feedback	3.28	3.44	w < f	0.043*
Digital library	3.81	3.55	w > f	0.0005**
Machine interactivity	3.58	3.43	w > f	0.023*
Effectiveness				
Simulation	3.61	3.44	w > f	0.0125*
Flexibility				
Learn from anywhere	4.06	3.92	w > f	0.033*
Own pace	4.13	3.95	w > f	0.0165
Remain working	3.99	3.82	w > f	0.0225*
Limitations				
Technological				
Necessity of computer hardware	3.89	3.64	w > f	0.005**
Technology average	3.77	3.63	w > f	0.0085**
Personal				
Self-discipline	4.11	3.69	w > f	0.00*
Postpone studies	3.65	3.46	w > f	0.008**
Personal average	3.64	3.54	w > f	0.0245*
Comparison				
Hands-on laboratory	4.00	3.70	w > f	0.0005**
Comparison average	3.74	3.63	w > f	0.0335*
Design				
Design of courseware	3.83	3.63	w > f	0.0035**
Suitable courseware	3.56	3.38	w > f	0.011*
Design average	3.64	3.49	w > f	0.0055**
All limitations average	3.66	3.56	w > f	0.013*

(at p<.0165), *remain working* (at p<.0225), *personal average* (at p<0.0245), *comparison average* (at p<0.0335), *suitable courseware* (at p<0.011), and *all limitations average* (at p<013).

Additionally those variables with a highly significant difference are *digital library* (at p<0.0005), *necessity of hardware* (at p<0.005), *technology average* (at p<0.0085), *self-discipline* (at p<=0.00), *postpone studies* (at p<0.008), *hands-on laboratory* (at p<0.0005), *design of courseware* (at p<0.0035), and *design average* (at p<0.0055). The working adults showed higher values than the fulltime students in all these.

5. DISCUSSION :

From the research findings, it seems that there is significant difference between working adults and fulltime students in their perception levels towards the e-learning

limitations. Working adults seem to agree significantly higher on e-learning limitations. This may be due to some facts that e-learning is mainly utilised by working adults for their studies since they learnt more from the web. Therefore, they tended to reflect higher on the e-learning limitations since they really experienced it as explained earlier. For example, Halsne & Gatta (2002) found that working adults and fulltime students are different in many aspects especially in learning style, demographics characteristics such as gender, marital status, occupation and income as well as time spent in studying. As a result, the present results are quite reasonable.

Previous studies conducted by Koory (2003), Lobel, Neubauer & Swedburg (2002), Olson & Wisher (2002), Rivera, McAlister & Rice (2002), as well as Shachar & Neuman (2003) show no significant difference in academic performance between working adults and fulltime students. This study actually indicated that working adults reflect differently on e-learning limitations. Consequently, this study is consistent with some previous studies. These studies indicated there are actually some differences such as Kretovics & McCambrige (2002) who indicated that e-learning working adults and fulltime students are different in terms of technology and theory skills, Qureshi, Morton & Anstosz (2002) pointed out the difference are in learners' characteristics and personal behaviors. Working adults perceive significantly higher in e-learning limitations like technological, personal, comparison with traditional campus and design of courseware. We will discuss all these limitations one by one.

Working adults seem to respond higher on variables in all technological limitations This caused a higher overall mean for all technological limitations for working adults which were significantly higher than for fulltime students (w 3.77 > f 3.63, at $p<0.0085$). The necessity of hardware, limited bandwidth and accessibility are problems for all learners - especially for working adults as they perceived higher on all these variables. This reflected that working adults perceived higher on the technological limitations since they relied more on technology for learning. Even with slightly lower mean values for all variables, fulltime time students seem to agree on the technological limitations of e-learning even though they may not rely solely on technology for learning. It seemed that the Internet and computer technology are becoming essential in e-learning for learners. It is therefore suggested that all students now cannot learn without ICT.

In general, working adults also seemed to agree more on personal matters that hinder them from learning. The overall mean for all personal limitation variables is significantly higher than fulltime students' overall mean (w 3.64 > f 3.54, at $p<0.0245$). Two limitation variables that working adults show significant higher mean values are *self-discipline* and *postponement of studies*. As indicated in earlier discussions, because of various commitments of working adults, it was harder for them to find time to learn. Therefore, they needed a higher-level of self-discipline. Without that, it will lead to postponement and even dropping out. Personal matters are related to personal skills and characteristics of learners as indicated in the literature review. Research from Halsne & Gatta (2002) and Choy (2002) pointed out that working adults and fulltime students were different in terms of demographics characteristics such as occupation and marital status. So, it is actually reasonable for working adults to respond higher as they had more commitments that may hinder them from learning.

Working adults also showed significantly higher mean scores in the *comparison average between traditional campus and e-learning* (w 3.74 > f 3.63, at $p<0.0335$). It may imply that they agreed that the e-learning environment is really different from the physical campus, since all these working adults may have previously attended physical school environments such as high school. The limited facility and computer-based learning environment made them agree on the differences between the e-learning and the traditional environments.

Fulltime students who used e-learning as a secondary learning mode while maintaining the normal physical campus also agreed on this difference between the traditional campus and e-learning environment but they reflected a bit lower since they also attended traditional classes. The comparison between traditional campus and an e-learning institution could be seen from the paper of McCraken (2004), in which he pointed out that e-learning institutions could not provide as many facilities as traditional institutions could such as book stores, career and development counselling. This is a major difference between a traditional campus and e-learning. Therefore, it is reasonable that e-learners demanded more online services to be provided such as online library, online bookstore, online advisement and job placement (Evans & Haase, 2001).

For the overall mean score in design limitations, working adults again showed significant higher value than fulltime students (w 3.64 > f 3.49, at $p<0.0055$). Of three variables being tested in this research, working adults were concerned more about the *design of courseware* in which they showed significant higher mean values (w 3.83 > f 3.63, at $p< 0.0035$) and *difficult to find suitable courseware* (w 3.56 > f 3.38, at $p<0.011$). As explained earlier, since working adults utilise a lot of courseware and computer technology for their learning, they will tend to agree on this. The design of courseware will definitely affect the learning ability of learners. Even though there is no significant difference between working adults and fulltime students about the design of courseware ignoring needs of ICT novices, working adults however responded slightly higher. This reflected that the design of courseware is an issue that working adults would like the e-learning providers to improve on. Besides, the study of Rivera, McAlister & Rice (2002) indicated that web-based learners were not satisfied with course design and learning. Another finding to support this is by Akar et al. (2004), in which they actually found that learners perceived the collaborative software interface hard to understand and the resolution was poor which may inhibit their learning or collaboration. It may imply that the design of courseware is important for web-based or e-learning students. Because working adults seem to use online learning and courseware more, they may reflect more on this issue. This could also be seen from the findings in the study of Reasons, Valadares & Slavkin (2005), where they found that Internet-based e-learning students (more working adults) tend to interact more with the course website to obtain materials. Therefore, design of courseware is another important issue in e-learning.

In other limitations category, working adults only showed a tendency toward higher mean value for *hard to ensure academic honesty* but it is not significant. For other limitations in this category, it reflected that working adults showed similar perception level towards *unlimited learning stressed both learners and tutors*, *difficult to conduct synchronous learning* and *limited recognition*. While all learners (both working adults and fulltime students) only perceived moderately about *unlimited learning stresses both learners and tutors*, they agreed on the rest of variables. All learners in this research showed that although they were concerned about the quality of the e-learning (*academic honesty* and *recognition*) being offered in the Klang Valley, and they only perceived moderately that e-learning stressed both learners and tutors since e-learning activities were still limited in Malaysia.

For benefits category, working adults and fulltime students do not seem to show significant difference in any mean values. This seems to suggest that both groups were equally agreeable on e-learning benefits. As the overall benefit mean and other overall mean values for each benefit category showed no significant difference. This suggests that e-learning is perceived beneficial by both working adults and fulltime students. The overall benefit for working adults and fulltime students are 3.62 and 3.59 respectively. Working adults only show higher significant higher mean values in *digital library*, *machine interactivity*, *simulation*, *learning at one's own pace*, and *their being able to remain*

working to earn money. The first three variables show that working adults seem to appreciate more computer technology as a learning source for them as they can obtain learning materials from digital libraries, obtain more information through computer links and learn from computer simulation. The last two variables show that working adults require flexibility in e-learning since they want to learn at their own pace - besides, they wish to remain working to earn money for many commitments in life. However, there are two variables in which fulltime students perceived slightly higher than working adults ; these were *interactions lead to gaining more knowledge*, and *fast feedback*. In these two situations, the results may indicate that fulltime students have more time for interaction and responding in e-learning activities. This leads to the higher mean scores being given by fulltime students.

6. CONCLUSION :

Previous studies by Rivera, McAlister & Rice (2002), Olson & Wisher (2002) as well as Shachar & Neuman (2003) indicated that there is no significant difference in terms of academic performance of part-time students (mostly working adults) and traditional fulltime students. From this research finding, it was noted that there is significant difference between the perception levels of working adults and fulltime students towards limitations of e-learning in the Klang Valley, Malaysia. Among limitation perceptions, working adults showed significant higher perceptions in limitation groups of technological limitations, personal limitations, and comparison to traditional campus limitations. Among these limitation groups, personal limitations and design limitation groups were found to show significant higher mean values for working adults compared to fulltime students.

Most benefits in e-learning do not show significant difference between working adults and fulltime students. However, there were some benefit variables that showed significantly higher or lower mean between the two groups. They are *interactions gain more knowledge*, *fast feedback*, *digital library*, *machine interactivity*, *simulation*, *learn from anywhere*, *learn at own pace*, and *remain working to earn money*. It seemed that the flexibility category of variables was perceived higher by working adults than other benefit categories. This is not surprising, since working adults need more flexibility for them to learn due to their many commitments as discussed earlier.

Since there is no significant difference between working adults and fulltime students about e-learning benefits, it appeared that fulltime students also equally agreed that e-learning is also crucial as a kind of learning and teaching method for them. All learning providers should therefore consider implementing e-learning for traditional campus-based fulltime students. Both groups have overall mean values of all benefits at around 3.6.

Perhaps further studies into e-learning should include more areas such as e-learning pedagogical tools and implementation in Malaysia. Besides, further research should also cover the whole of Malaysia. Instead of using a non-probability sampling method (as in this study), further research should use probability-sampling design methods such as a stratified sampling method. These will allow some generalisation of research findings. Further research could also usefully investigate e-learning consumers' demographics information concerning with their satisfaction towards e-learning. This may be beneficial to identify e-learning segments of users.

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