

**INFORMATION AND COMMUNICATION TECHNOLOGY CAPACITY IN  
ENHANCING LEARNING : ISSUES OF INTERACTIVITY IN THE  
MALAYSIAN CONTEXT OF DISTANCE EDUCATION**

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Information Communication Technology (ICT) has flourished in almost all sectors. In education, ICT is used to maximize educational potential, and it is now widely use as a teaching and learning tool. In distance learning for example, ICT has expanded the potential for interaction between DLs with instructors, tutors, fellow learners and has aid the learning process. One of the factor affecting distance learners' (DLs) satisfaction in distance education (DE) is the amount of *interaction* that occurs between *instructors*, *course content* and *distance learners (the interactive learning triangle of DE)*. Nevertheless, the literature seems to suggest that there is still a lack of understanding particularly on the role of interactivity in distance learning. This research was an attempt to seek an in-depth understanding of ICT in promoting interactivity within distance learning. In particular, this paper looks at the issue of building and sustaining interactivity with the support of ICT in distance learning. This study employs a qualitative approach as its research instrument. 12 research informants were approached and interviewed. Two themes surfaced as being significant issues in promoting interactivity: *student's needs* and *student's support*. Since training is perceived to be beneficial, the opportunities and diversity of training on ICT usage must be given a priority. To conclude, adequate provision of ICT facilities and training combined with DLs' positive acceptance to ICT may help DE institutions achieve its DE objectives, and produce an information rich and computer literate learners.

## 1.0 Research Background

Distance Education (DE) holds notable potential to prospective learners in Malaysia. Much development on DE in this country have surfaced over the last two years. UNTEM, the Malaysia Open University has been officially opened and is now enrolling their third intake. Learners in general now have a bigger choice of selection on courses, programs and institutions. In addition, they can now opt to pursue education full time, part time or via distance learning. In general the development of DE in Malaysia is overwhelming, nevertheless, there are limitations to this mode of teaching and learning, particularly on issue of *interactivity* and how ICT enhance or deter interactivity to occur in DE. We need to realize that although DE providers and institutions seem excited and eager to realize the potential of DE, problems and level of interactivity is still lacking among the participants of DE i.e distance learners. The interaction between DLs with the content, the instructors and other DLs within the interactive triangle of DE as shown in figure 1 below seem to be much of a concern.

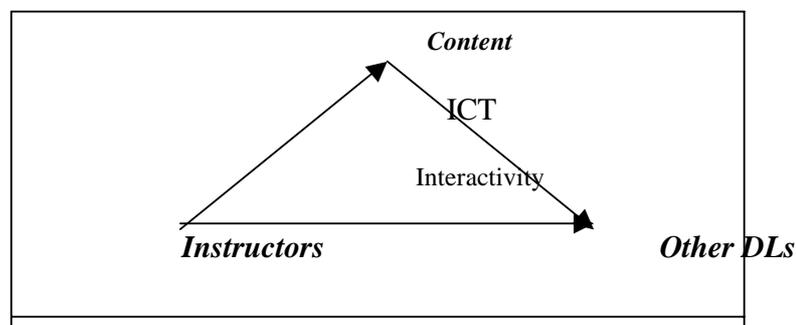


Figure 1: The ICT interactive learning triangle of Distance Learning

In line with Moore & Kearsley (1996), there are three important categories of interaction which play an important role in DE: *learner-content interaction*, *learner-learner interaction*, and *learner-instructor interaction*. *Learner-content interaction* refers to student involvement with course materials as they construct their own knowledge by accommodating new information into their existing cognitive structures. *Learner-learner interaction* refers one to one interchanges between learners, as well as communication between other groups of learners for collaboration, clarification, feedback and support. *Learner-instructor interaction* refers to communication between learners and instructors for the purpose of generating and maintaining interest: presenting, clarifying or elaborating information, support learning; or providing feedback, evaluation, support, and encouragement. The three interactions can be facilitated by technology-supported learning environments through *online databases*, *journals*, and learning activities such as independent inquiry, research, writing and browsing. *One to one* interaction that occurs between an instructor and a learner, or two learners, can be accommodated through email or one-one online chats. *One to many* communication can be supported through *list-serves*, *bulletin boards*, and *online chats*. Video-conferencing offers additional opportunities for one-one and one-many interchanges.

This research is intended to have a better understanding of how interaction can be supported or discouraged by ICT in distance learning. Specifically, this research looks at the push factors, pull factors learning barriers and other issues pertaining to interactivity supported by ICT within DE. The objectives of this study were: to determine the

importance of ICT in supporting interactions between the interactive ICT learning triangle of DE, and to identify central issues pertaining to ICT interactivity among DLs.

### **1.1 Project Informants**

This research project was motivated by my interest and desire to understand the level of 'interactivity' that occurs between *the interactive learning triangle* of DE. 12 research respondents were selected and participation was based on voluntary basis. All of them were approached individually, and briefed on: the project, its intention, informants consent procedures and ethical consideration(s) taken by the project and other related subjects.

### **1.2 Methodology**

This study followed a qualitative research approach which is exploratory, descriptive and contextual in nature. All the informants were interviewed on a one-to-one basis. In some cases, multiple interviews were carried out with the individual informant involved in the project. Individual interviews were thought to be the most appropriate method of data collection because of its ability to elicit information and experiences with some elements of intimacy. This project is participatory in nature and was build on the basis of partnership between the researcher and the informants. The interviews were conducted in a very informal settings and situations. The confidentiality of the project informants is abided to at all time. The number of interviews held depended to a large extent on the saturation of data determined through repeating themes.

## **2.0 Research Justification(s)**

ICT brings with it many potentials. It has the power to transform a person, an organization and a country. ICT preludes to an information super-highway and a knowledge powerhouse. It offers tools of resources and endless possibilities for both learners and educators. It makes the world smaller. The explosion of ICT offers the possibilities of extending and enriching educational experiences in many ways. As learners are the end-users of ICT, so their acceptance and attitude towards the ICT are important to be explored and studied. Understanding of the DLs attitudes and ICT behaviors will determine the success of formation of an information-rich society in Malaysia. A positive attitude will ensure optimal utilization of ICT facilities. Most important of all, understanding how ICT support or discourage interactivity in distance learning will enable DE providers and institutions, DE instructors and other stakeholders to reflect on the matter and make constructive changes to accommodate better distance learning. This in turn will slowly but surely help in the creation of information rich Malaysian, with truly information technology literate-citizens, who know where to retrieve relevant information and how to use it effectively.

## **3.0 Literature Review**

It is obvious that over recent years the emerging of ICT has had a significant impact on education. Certainly, much has been written about ICT. This literature review tends to fall into a number of categories. The largest of which deals with development and general

definitions and terms relating to the ICT facilities and what it provides (Gould, 1990; Stix, 1994).

Jefferies & Hussain (1998) and Joia (1997) studies have concluded that the usage of ICT as learning and teaching support in learning institutions is increasing. It was also found that the demand from learners to access information through network and computers are growing exponentially in every part of the world (Debrenceny & Ellis, 1998). Today, many more learners are using ICT for both the academic and non-academic purposes (Joia, 1997). However, Jefferies & Hussain (1998) discovered that learners have the inclination to use ICT more towards entertainment rather than for academic purpose. They were found to surf ICT not only in schools and campuses, but also at other places such as libraries, cyber cafes and other locations that offer internet services (Jefferies & Hussain, 1998 and Applebee, Clayton & Pascoe, 1997).

With the increasing pervasiveness of ICT usage in DE, it has become increasingly crucial to gain better understanding on DLs acceptance of ICT, their attitude and behavior towards it. Attitude is defined in this research as the acquired habitual mental reactions towards ICT. The ICT interactivity and attitudes of the respondents in this study were ascertained through careful examination of learners' general awareness and willingness to accept ICT, their enthusiasm and willingness to respond to the ICT services and activities and how they use ICT to assist their learning. Research investigating on PC usage (PC is the medium to use ICT) revealed that there are several factors which were related to PC acceptance such as perceived usefulness, perceived use (Davis, Bagozzi & Warshaw, 1989), perceived entertainment (Igbaria, Schiffman and Wieckowski, 1994), relative advantage, image, compatibility, demonstrability, visibility (Moore and Benbasat, 1993), complexity, job fit and facilitating conditions (Thompsons, Higgins & Howell, 1994).

There are some studies which have specifically examined gender issues in computing anxiety and attitudes, while others did so in the context of other research variables (Teo & Lim, 1996). Such research by Qureishi and Hoppel (1995) found that demographic variables such as gender, status, GPA average, area of specialization, prior computer experience and anticipated future use of computers show significant differences in how learners accept and use computers. On the other hands, Harrison and Rainer (1992) concluded that individual differences such as age, gender, prior computer experience, computer anxiety and cognitive style are associated with the level of computer skills.

#### **4.0 Role of 'Interaction' in Distance Learning**

Interactions of different kinds within the learning process are vital towards ensuring success in learning. The interactivity can be defined as the way in which the learner interacts with the course materials and content, or people (instructors and fellow learners) during the learning process. The human interactions or communication can further be broken to *one to one*, and *one to many* interaction. To realize effective interaction(s) in the learning process can be challenging not only to the conventional learners (who study full time, campus based), but also to for DLs (Muiehead, 2000). There have been various research and attempts to study the issue of interactivity in learning. Milheim (1996) for example, has reviewed the literature on *interactivity* within a computer based education

and concludes that interactivity is the most important element in instructional design. The higher the level of interactivity that occurs, learners will be more interested, and active participation will be surfaced. The end result will yield better, effective learning which will satisfy both the learners and instructors. Such interactions will improve cognitive processes i.e thinking, analysing, etc. In addition, interactivity also enhances group interaction/communication, group learning skills, and the building of network of learners. All of which is important in DE. Interactivity definitely plays an important role in learning, and particularly in assisting the teaching and learning domain of a given DE course and program.

The issue of interactivity is indeed a pressing one particularly in the context of DE in Malaysia that needs attention and action by all parties involved. Ideally, effective interactivity is one that does not require everyone to be in the same place at the same time; to give that element of flexibility needed by DE learners, and one that can prosper and assist learners in their learning.

### **5.0 Role of ICT In Promoting Interactivity**

The ICT can overcome many of the learning obstacles for DE learners in many disciplines through the availability of asynchronous and synchronous facilities. Educational advantages and costs through online learning have been reviewed by many researchers (Laurillard,1993; McArthur and Lewis; Hughes and Hewson,1998; Muirhead, 2000 amongst others.) It has been argued that ICT has the potential to facilitate effective learning not easily replicated in other learning environments. Many of the benefits are similar to those of interactivity itself and it is important to understand that it is the educational processes that provide the benefit, not the tools themselves (McArthur & Lewis,1997; Dzakiria, 2002). For example, a deeper approach to learning is encouraged through active participation in an appropriate contexts (Biggs, 1987).The actively involved student is engaged in questioning and processing rarely found in the passive learner and is expected to think critically, creatively and reflectively (Savery and Duffy, 1996).

Asynchronous ICT facility can provide the convenience and flexibility for DLs at large. DLs who are heterogeneous in many ways may live in remote areas, have time constraints, have multiple responsibilities i.e are working full time, family to nurture and take care of, etc. As such, DLs may face learning barriers that full time campus based learners don't. One common disadvantage of DLs is the lack of free flowing discussion of synchronous tutorials or lectures. There is evidence that some DLs prefer immediate, or at least same day feedback (Davie,1988). The lacking of synchronous or real time interaction may result in frustration, and that could easily lead to other learning barriers. Nevertheless, the lacking of real time interaction could also provide time for reflection for DLs and instructors alike.

While opportunities exist for educators to enhance their programs by utilizing the ICT, Hara and Kling (1999) caution that the ICT too has its limitations. Their research has revealed the potential of ICT delivery frustrate learners. Frustration interferes with pursuing goals (Reber, 1985), and it demotivates the learners, and detracts them from learning. Eventually frustration could easily deter learners from ever using the technology to assist or enhance their learning.

One needs to realize that there are arrays of factors that could lead to frustrations in using ICT. For example, as shown by Stratfold,(1998) frustration can occur when DLs fall behind and may be overwhelmed with messages when re-engaging Slow and delay input, and lack of non-verbal cues may also lead to frustration and or hostility (Tolley,2000). Frustration can also be caused by lack of sensitivity to the needs of learners, which may not have been taken into account in the rush to embrace the new technology (Salmon, 2000a). Insensitivity to student diversity can also be a block to learning (Boud et.al,1985). Contrasting personality types requires different teaching strategies. Some prefer to learn in an independent situation and others prefer a more collaborative style, and courses such as science may need different approaches.

## **6.0 Research Findings - Informants Insights**

Various issues have surfaced from the findings. To start with, general reactions of the research informants were overwhelmingly positive. For example, the respondents noted that:

*This is my 7<sup>th</sup> semester in the program. Being a so much matured distance learner and with all the difficulties I went through I believe by participation in your research enable me to reflect on my own experience and hopefully to give some lights for improvement...advise to other DLs, friends, and the university...*

*Respondent 3: Interview 1*

*I do not know how much I can help...but anything to improve distance learning I am more than willing to assist.*

*Respondent 5: Interview 1*

Following are some of the verbatim transcriptions of the interviews with the research respondents. Close analysis of the transcriptions show that there are a range of different issues that could be explored:

*Interaction is the essence of distance learning. ICT has helped the learning process. Without it you can be assured that success in DE will be more challenging. Nevertheless, interactivity in distance learning is not the responsibility of just the distance learners... The reality is there's a lot more to do like providing effective IT infrastructure, better access to ICT facilities, training, and much more. We don't get enough support"*

*Respondent 1: Interview 4*

*I was quite disappointed in the course in the end. I mean...I got something out of it. I found some of the course interesting and entertaining, but regretfully, I felt lonely most of the duration I am in DE...I understand that most or many of my DE friends are working, but you get bogged down when your questions, or cry for help from instructors get late reply...*

*Respondent 2: Interview 3*

*You talk about technology, the government, Ministry of Education, instructors, everybody talks about IT, ICT, e-learning, e-government and what have you, but*

*reality is you are moving too fast ahead. Have you ever think about the learners? The sorts of problems that they may encounter... Respondent 3: Interview 4*

*My age is 45. I have left school and education a good 20 years. Things are different today. You have too high of a technology. Getting near to it is scary... using it is unthinkable. That was what I felt when I first came back to pursue my degree course through DE. Even today, I still feel uneasy using technology in my learning. What I need is help, coaching and more training.  
Respondent 4: Interview 4*

*Coming back for a degree has been a true challenge for me especially when the learning and teaching environment have changed drastically. What made it worse, if you are slow you'll be left out fast. I am talking not just about computers and how to use it, but learning to use it.  
Respondent 9: Interview 4*

The themes that surfaced quite clearly are the issue of *student support* and *student needs* in DE. DLs and the conventional learners attending full time campus based are never the same in terms of demography and characteristics. DLs are often heterogeneous. DLs could be the same in some ways but different in others. As such, they require different needs and support from DE providers and institutions.

In general, based from the preliminary findings, overall reaction to distance learning experienced by the research informants range from very positive to very negative. Respondent 8 for example when asked:

*Q: Since you are in semester 8 going to 9, you are almost completing the program. How do feel about your achievement thus far?*

*R8: At the end of the day, I think there are more frustrations than joyfulness...if you know what I mean..*

*Q: I am not sure I know what you mean...*

*R8: I don't think I got the value for the money and time invested into the program. Sure...I learn something, and got something...not all courses are boring, some are very interesting, but I have to tell you that once is enough I will never do DE again, and if I failed to get the degree or any exams for that matter, I do not think that I would try again.*

*Respondent 8: Interview 2*

Nevertheless when discussing about technology and how the respondents view the use of ICT in their learning, the issue of interactivity seems to surface as a theme worth looking at. In many instances, the respondents agree that distance learning requires continuous interactions between the DLs with the course content, instructors and fellow learners. As respondent 7 pointed out:

*R7: Today's learning environment is so change and different, that when I first enrolled in DE...I was stunned not knowing what to do, how to do things, how to study and coming to terms that I have to use the computer, internet for my study and communication was initially a scary one at least for me...but what save or help me was what I called forced interactions.*

*Q: What do you mean by forced interactions?*

R7: *For the last 15-20 years, for me to go out make friends and be interactive...that is just not me...won't happen. But after struggling for 3 semesters, I learned that I need friends, I need to share my problems with the instructors, I had to learn to communicate...to my surprise it was't really bad, and the good thing is...my study benefited from the forced interactions that I had to make....more to help my study...now I can not imagine for anyone doing DE not having interactions going...*

*Respondent 7: Interview 2*

The preliminary findings particularly looking at the issue of interactivity and the use of ICT in distance learning reveal 2 distinctive emerging themes: *Needs of the distance learners and support*. The following sections are written based on the analysis of the data gathered from the research informants.

### **6.1 Needs of Distance Learners**

DE providers and institutions are concerned at the drop-out rate, deferment of enrolment and failure rate of DLs. Although such rates are not alarming, nevertheless it requires the DE providers and institutions to look at it seriously. The reasons for this attrition are varied, but include inappropriate subject selection, inadequate academic preparation, economic hardship, ineffective time management strategies, unrealistic expectations, and external pressures. Whatever the reason, the effect of such attrition is undesirable from the perspective of DLs and institutions. Not only should academic support services enhance learners' experience of studying by DE they should assist DLs in staying on. The DE providers and institutions need to be sensitive to the general 'make-up' of a distance learner i.e age, gender, academic background, family background, career, etc., and make attempt to attend to the needs. We need to realize that DLs are a different segment of learners which have different needs. As iterated by some of the respondents:

*Computers, technology, and today another buzz word ICT never have entered my life, at least not directly....at 45 having had to learn to use computers and word processor was ...don't know what to say. Reading the IDIOT books on computers was hard enough. I cannot learn it on my own just won't happen, I just don't have the confidence. What I need is special coaching or a special class at least to teach the basics of it...*

*Respondent 7: Interview2*

*Looking at the young learners, or even looking at my children who are able to use, operate computers, software and so on...and comparing to that to myself... who uses 2 fingers to punch on the keyboard, and having my heart beat beating 10 folds each time something went wrong or a window appeared on the screen, I am naïve about technology and too scared to venture. What I need is help, constant tutoring, a class that teaches lessons on computers, internet...I think such activities would be much appreciated especially for student like me...*

*Respondent11: Interview3*

DE providers and institutions have to ensure that they provide effective, fast and reliable communication to DLs. As such, any inquiries, questions by DLs will be addressed to

promptly. I think there is much room for improving and providing the needs of DLs. DE providers and institutions need to address the intricate problems that DLs face on a daily basis. One that needs attention, is the lack of experience of technology i.e computers usage among the DLs. Questions like do they use computers on a daily basis?, Do they have a computer at home, at their working place?, Do they have easy access?, all these are crucial questions. Understanding these questions will provide information on the needs of the DLs in using ICT.

## **6.2 The Role of Student Support**

In line with the needs of the DLs, distance learning support is the next crucial theme highlighted in this research. Therefore, it is crucial to ask the question of how student support fits into DE. Does the support addresses the learner needs? There have been various models and systems that different DE providers and institutions practice. One that this research recommend is student support advocated by Tait (2000). He divides the functions of student support into three main categories: *Cognitive, affective and systemic* which is aided today in many different ways by ICT. Following are the descriptions of the three:

Cognitive refers to supporting and developing learning through the mediation of the standard and uniform elements of course materials and learning resources for individual learners;

Affective on the other hand refers to providing an environment which supports learners, creates commitment, and enhances self esteem, and finally,

Systemic refers to establishing administrative processes and information management systems which are effective, transparent and overall student-friendly.

(Tait,2000:289)

As we progressed into the future, words like e-learning, e-government, e-university, wireless world, etc. are becoming common. As such, all the three domain identified by Tait can easily be managed and sustained by technology. In DE, these three domain of student support are important not only to help DLs be effective learners, but it also support and enhance the level of interactivity in the learning process.

Tait also identifies some of the common services that are employed to meet the demands of these functions, and most of it are quite visible and implemented by many DE providers and institutions. They are: *enquiry, admission and pre-study advisory services; tutoring; counseling services; assessment of prior learning and credit transfer; study and examination centers; library services; individualized correspondence teaching; record keeping, information management; services for learners with special needs and materials which support the development of study skills, program planning or career development* (Tait,2000:289-290).

What perhaps need attention, is the question of effectiveness, and how well these services have met and helped the learning objectives of the DLs. Does the use ICT support or discourage learning?

## **7.0 Changing Educational Environment and Its Impact on the Support System**

A number of issues arises from the changing of the educational environment. One in particular is the application of ICTs in the learning institutions. ICTs will enable many of the learning services to be delivered in different ways, and in some cases such services may greatly enhanced distance learning. Both Tait (2000) and Rumble (2000) have commented upon this situation. "ICTs are also enabling more established providers to rethink and re-engineer the nature of their student services. The UK Open University according to Rumble (2000:227) is involved in just such a process as part of a strategy to position the University as a global player" Universiti Utara Malaysia like most of the other public universities in Malaysia has also developed a range of online student services which can be assessed by all learners whether they are campus based, or distance learners. The development of the ICT services is propelled by three factors: (1) a long standing commitment and awareness of the needs of distance learners within the university, (2) the realisation that such services should be available to all learners and (3) a change in focus from teaching to learning.

DLs themselves, many for the first time are now "faced with a new learning environment and the expectation that they will have independent learning skills and the capacity to engage in activities that require self direction and self management of learning" (McLoughlin and Marshall,2000:1). It can of course be argued that tertiary level learners (learners at UUM, USM, UM, UNITEM, etc) should already have these attributes. However those of us can probably aver that this belief may be incorrect and that learner support system, particularly for novice users learning online are essential for successful learning outcomes.

On the surface this may suggest that distance learners may require different kinds of support services than those of their counterparts. Indeed this may prove to be the case, but I would like still maintain that principles of independent learning, self direction, and self management of time, and learning activities will basically remained unchanged. The challenge for those now involved in the development of new delivery systems is to recognize, first of all the value of services which are designed to support these principles, and then determine how they can best use the technology to provide access to them. Learning, therefore is framed and motivated by one's ability to manage time, ability to plan the learning process, and the desire to succeed. To be successful in the new learning environment, like other distance learners, these DLs too need continuous exposure and training in ICT. Accessibility, and continuos support may be an issue. How well are the working environment and their home are conducive in supporting the use of ICT?

## **8.0 Suggestions to Enhance Interactivity in Distance Learning**

Enhancing learning interactivity is not an easy task for DLs. It can not be forced on to the learners. Nevertheless, I believe the increase of interactivity is likely possible if the learners are well informed about its benefits, services and support provided. The key to increasing interactivity as advocated by this paper is 'education', and educating the learners. This can be done by:

### ***8.1 Providing Effective Communication and Knowledge***

DE providers and institutions must make it crystal clear at the appropriate time and in the most accessible medium, what is on offer, and what a DL will be taking on. Practical and clear expectations need to be laid down and be established by DLs. Most important of all, DLs need to understand the educational concept of DE, its philosophy, the teaching and learning process. DLs also need to be informed of the different support and services that the DE institutions provide to them. DLs need to know where to go, whom to contact and talk to, and what to do when confronted with problems. Start up DE booklet with comprehensive information and knowledge about the program, courses, services, people, etc. may be one idea that can be implemented where every DL gets a copy. In addition to this an effective, sustainable and friendly webpage, and online messages need to be available at all time to DLs.

### ***8.2 Providing an Effective and Continuous Induction***

The use of this word has always been associated with the addition of the compound word 'new' as in *new teachers*, *new workers*, and in this paper, new DLs. Regardless of the career background of the DLs, he or she needs an induction, and normally once DLs have registered officially with a DE institution, they will be welcomed and will be given generic learnership skills. An induction plays an important and crucial role in trying to educate and prepare DLs on what to come and expect as DLs. Induction can be offered in many ways. One that is advocated by this research is an induction using multiple modes. An integration of face to face induction by attending an orientation program is commonly practice. Nevertheless, this paper believes that continuous induction is also proper in part to supply continuous knowledge and information pertaining to different facets of DE . This can be done through the development of brochures, newsletter, and all this can be done online as well.

### ***8.3 Continuous Assessment & Introduction Course on Distance Learning***

DE providers and institutions need to assess its effectiveness continuously. Ideally, the assessment has got to be comprehensive covering every facets of DE programs, courses, administrative, infrastructure, etc. In regards to learning, DLs are the best candidate for any feedback. In preparing good DE programs and courses, we need to understand DLs experience and feelings about the program and courses that they go through. Nevertheless, DE institutions need first to accommodate the DLs when they first enroll into DE programs. One way of achieving this is by providing an introduction course on DE and distance learning. This approach has been adopted by some DE institutions, and not by others. USM for example has been adopting this approach, and the effects on DLs are quite visible. Idrus (2002) in his interview with me for example said that, the very least such program prepares the DLs with what to expect and how to survive the distance learning. It also provides many different information pertaining to DE, what to do, who to see, who to talk to when facing learning difficulties. Such an introduction is worth to look at.

## 9.0 Discussion

A lot has been said and argued by research about the use of technology like ICT in DE. ICT has great potential as a learning and teaching tool. Nevertheless, there are concerns and reservations about the use of ICT in DE particularly in the Malaysia context of DE. From the data analysis undertaken, the following conclusion could be made (while considering the fact that the values generated were pretty small).

Among them are:

1. The success on the use of ICT i.e online learning by DLs, depends a lot on the DLs skills and accessibility to the ICT facilities. This is a concern especially in the Malaysian context of DE. A lot more need to be done by all parties (the Ministry of Education, tertiary institutions and the public) in terms of providing the ICT infrastructure and training. DLs need to improve their skills and usage of ICT in their learning. In terms of accessibility, computer connected to the Internet will itself be limited to some and not all DLs. Good connections may prove to be expensive. In addition, as shown by many research, accessibility to computers by many DLs are limited to opportunities in the work place, cyber cafes, and not at home. Having a computer in the house may be perceived as an advantage, and a learning tool that might come handy but still not a necessity.
2. The quality of the educational experience available to DLs is still a prime concern. A lot is not understood about the nature of the quality of educational experience that DLs get out of their DL experience. More research needs to be done in this area. Understanding of this matter will assist DE providers and institutions to develop a better integrated learning experience to DLs. In light of the development of DE in Malaysia, one may not be to sure about the quality of educational experience gain from DE courses and programs. There have been many new developments of DE in Malaysia i.e establishment of UNITEM (Malaysia Open University, new DE programs and courses, etc.). Such development offers many new research potential, and participation of all the stake holders including the distance learners need to be pursued to give a better understanding of the teaching and learning experience of DE courses and programs.
3. ICT and its acceptance by DLs may be more variable and dependent on different learning conditions. DLs are heterogeneous in many ways. They may similar in some ways, but different in others. Exposure, and continuous experience may be an asset to distance learning. The acceptance of ICT technology such as online learning is dependent on a lot of factors-which may foster learning, or deter the learning process.
4. In addition, DLs may have different learning strategies. What works for some DLs may not be working for others. As such, group interaction and collaborative work may not be an effective and attractive mode of learning for some DLs. For some this approach may be a deterrent. Therefore how do you support the heterogeneous aspect of DLs, and make their learning a success endeavour? Embarking on a DE courses and programs is not an easy task. DE providers and institutions need to do a lot of planning, visioning, and most

important of all being sensitive to the needs and support of DLs is imperative to have effective and successful DE programs.

### **10.0 Recommendations**

Based on the findings, this study would like to suggest several recommendations. Perhaps these would be appropriate to institute of higher learning in particular and ICT service providers in general:

- a. For the administrators of higher learning institutions, we would like to recommend that a look at the opportunity to offer more training on ICT usage to learners is necessary since prior training on ICT usage was found to be beneficial to learners.
- b. Since individual differences such as gender and personal computer ownership were found to have an effect on the attitudes towards ICT. Thus, it is suggested that the implementation on training offers or ICT activities should take into consideration the differences and be sensitive to the learners need and support.
- c. ICT like the Internet is widely surfed by learners in their learning activities. It is recommended that higher education institutions should add and improve more ICT facilities to learners on campus, so that learners who do not afford to have their own personal computers will have equal opportunity to use the ICT for their academic purposes.
- d. For ICT service providers such as cyber-café, lower charge or special discount is recommended in order to encourage users to use the ICT and this, eventually will help the nation to create an information rich society in future.

### **11.0 Suggestion for Future Research**

This study is limited in scope because of limiting factors such as limited time and small number of learners involved. However, it is a good start to explore the direction for the creation of information rich society in Malaysia. A more detailed study can be done involving more learners from other universities and perhaps be undertaken over a longer period of time. In addition, more detailed studies have to be carried out to ascertain the total benefits of ICT and the effectiveness of ICT to the learners academic achievement. Such research can investigate on learners' development such as achievement, behaviors, communication skills and English proficiency that might be gained through the usage of ICT in their learning process.

### **12.0 Conclusion**

Successful utilization of ICTs require learners to be comfortable with the technology. Like wise learners undergoing training via distance need to be prepared to take more responsibility for knowledge discovery; and be highly motivated. Getting DLs to interact online is a very challenging task (Stratfold, 1998). DLs that are motivated, organised and possess language ability, and the know-how to use ICT are more likely to take advantage of the opportunities for the interaction online courses can provide (Davie,1988, Dzakiria

et.al.,2002). Nevertheless, DLs may resist new technology because as been iterated by Laurillard (1993) ICT may be viewed as a new way of learning that needs time for acceptance. As cautioned by Michael Schratz (2001) "*Nobody like changes except wet babies*". Similarly, a distance learner who may have been away from education setting for a good 10, 15 years who may not have to use technology in their profession, thus could be bogged down with technology. Getting to learn and grasp the reality of technology in DE could be a challenging endeavor and a deterrence towards learning. To be successful, DLs need to go beyond the questioning stage and to have the confidence to use ICT, to share their ideas and reflections to others and this may be quite challenging especially in the Malaysian contexts of DLs. Of greater concern, DLs may perceive the technology to be superficial and not have a significant effect on their main studies (Laurillard, 1993) i.e DLs who are modules dependent may not view the use of ICT as imperative as compared to DLs who are actively engaged with online learning and teaching. The issue of how much is the ICT is being integrated to DE courses and its syllabi needs attention. ICTs should not just be delivered in educational technology courses but also use as a teaching and learning tool in other courses.

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