TEACHING AND LEARNING IN INDUSTRIES: ARE WE MALAYSIAN WORKERS REALLY READY FOR THE E-TRAINING?

Hasmadi bin Hassan
Center of Modern Language and Human Science, Universiti Malaysia Pahang.

ABSTRACT

E-training style requires a strong readiness level among industrial workers in order to ensure that they gain its optimum advantages. The purpose of the study is to explore analytically how the demographic factors affect the computer usage attitude, computer literacy, computer facility and access technology. The study also explores analytically the e-training readiness level in terms of computer usage attitude, computer literacy, computer facility and technology access among industrial workers. Four hundreds industrial workers from electronics industries, food industries, poultry industries and textile industries in Batu Pahat, Johore were involved in this study. The data were collected using questionnaires and were analyzed quantitatively. Through multiple regression analysis, the findings showed that some demographic factors (workers' characteristics and work place) were significant at predicting the computer usage attitude, the computer literacy, the computer facility and the technology access. The findings also showed that there was a high level of e-training readiness among industrial workers in the aspect of computer usage attitude. But the aspects of computer literacy, computer facility and technology access showed only a moderate level of readiness. In general, the e-training readiness level among industrial workers is still moderate. This situation should be overcome in order to ensure that the e-training approach which has been emphasized in Malaysian Occupational Skills Development and Training Master Plan 2008-2020 would be implemented successfully. Therefore, some suggestions for improvement have been presented toward enhance the e-training readiness among industrial workers.

***Keywords**: E-training Readiness, Computer Usage Attitude, Computer Literacy, ICT Facilities, Technology Access*

1 INTRODUCTION

In Malaysian Occupational Skills Development and Training Master Plan 2008-2020 (KSM, 2008), one of the most important strategies upgrading and updating the employers and employees' skills and knowledge in terms of building human capitol and providing k-workers is to firstly upgrade and update the methodology of training styles among workers. As organizations are moving from an industrial to a knowledge society (Aydin & Tasci, 2005), they face an increasing concern about how to utilize training systems to develop a continuous learning philosophy in workplace training. Organizations view continuous learning as the key source of competitive advantage and training is seen as one component of a larger orientation towards continuous improvement (Guglielmino & Guglielmino, 2003). E-training is considered to be an appropriate tool for workplace training due to the advantages it offers. These advantages have been presented comprehensively in the literature and present positive implications for organizations, trainees in all levels, and even society. Moreover, the changing fast knowledge and skills demands, geographic scattering of workforce and the need for decreasing costs, call for a just-in-time and accessible from anywhere/anytime way of learning. E-training or e-learning appears to be the one-way solution in these situations. This scenario is confirmed by the huge investments it attracts. In order to develop a common sense for the rest of our study, we need to define the term of e-Learning readiness for an organization who intends to initialize or adopt a new wave of e-Learning.

> *"... e-Learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is networked, delivered to end user through standard Internet technology, and focuses on the broadest view of learning".*
>
> (Guglielmo, 2004)

Webster defines readiness in his dictionary as *"… the mental or physical preparation for some experience or action"*. Thus, we define e-Learning readiness for an organization who intends to adopt e-Learning as *"the mental or physical preparedness of an organization for some e-Learning experience or action"*.

In the definition, we interchanged the term "preparation" with the term "preparedness" because readiness can't take only binary values. As more and more organizations decide to join and expand e- Learning interventions, it becomes more than critical to assess their readiness to utilize technology in order to implement successfully (Henderson, 2004) and adjust their learning strategies with their e-Learning efforts. Moreover, past failures of e-Learning interventions lead us to enforce a comprehensive readiness assessment in order to decrease the risk (ASTD, 2002).

2 THEORETICAL FRAMEWORK

The theoretical framework for this study is based on constructivism (Brooks & Brooks, 1993). The learning theories of Dewey, Piaget, Vygotsky and Bruner (Brooks & Brooks, 1993) propose that learners will construct new knowledge based on their prior knowledge. In this perspective the instructor is a facilitator of knowledge. For Dewey (Cockburn, 1996) knowledge is based on active experience. The main purpose of education is to improve the reasoning process as applied to solving problems. Knowledge builds around the process of discovery and is dynamic (Minton, 2000) placed additional

emphasis on the social context of learning. His theory called social constructivism stressed the importance of interaction with other people, i.e. other students and teachers.

2.1 Purpose

The main purpose of the study is to explore analytically the e-training readiness level in terms of computer usage attitude, computer literacy, computer facility and technology access among industrial workers. The study also explores analytically how the demographic factors affect the computer usage attitude, computer literacy, computer facility and technology access. The research questions of the study have been formulated as:

1. What is the e-training readiness level among the industrial workers in the aspects of computer usage attitude and computer literacy?
2. What is the e-training readiness level among the industrial work places in the aspects of ICT facilities and technology access?
3. How good are the demographic factors (such as sex, races, age, secondary school streams, academics qualifications, positions, working fields and working experiences) at predicting the computer usage attitude and computer literacy among industrial workers?
4. How good are the demographic factors (such as the types, the sizes, the locations and the business networking of the industries at predicting the ICT facilities and the technology access?

3 METHODOLOGY

3.1 Research Design

The design of the study is an analytically and a quantitatively exploring survey which is to measure the readiness level of e-training among industrial workers in Malaysia. Secondly, it is also to determine the influences of the demographic factors such as sex, races, age, secondary school streams, academics qualifications, positions, working fields and working experiences toward the computer usage attitude and the computer literacy among the industrial workers and the influences of the of the demographic factors such as the types, the sizes, the locations and the business networking of the industries toward the aspects of the ICT facilities and technology access in workplaces. The descriptive statistical analyze is used to measure the e-training readiness level among industrial workers and the inferential statistical approach using a multiple regression analyze is used to determine how good those demographic factors at predicting the aspects of computer using attitude, computer literacy, ICT facilities and technology access.

3.2 Research Model

The research model is designed to show all factors which are involved in the study. The factors are divided into two major groups. The first group consists of race, sex, age, secondary school stream, academic background, position, work field and working experience. These factors will be determined in how good they are when predicting the aspects of computer usage attitude and computer literacy. The second group includes the

types, sizes, locations and the business networking of the industries. These factors will be determined in how good they are when predicting the aspects of ICT facilities and technology access at the workplaces. Figure 1 show the research model used in the study to answer all the research questions

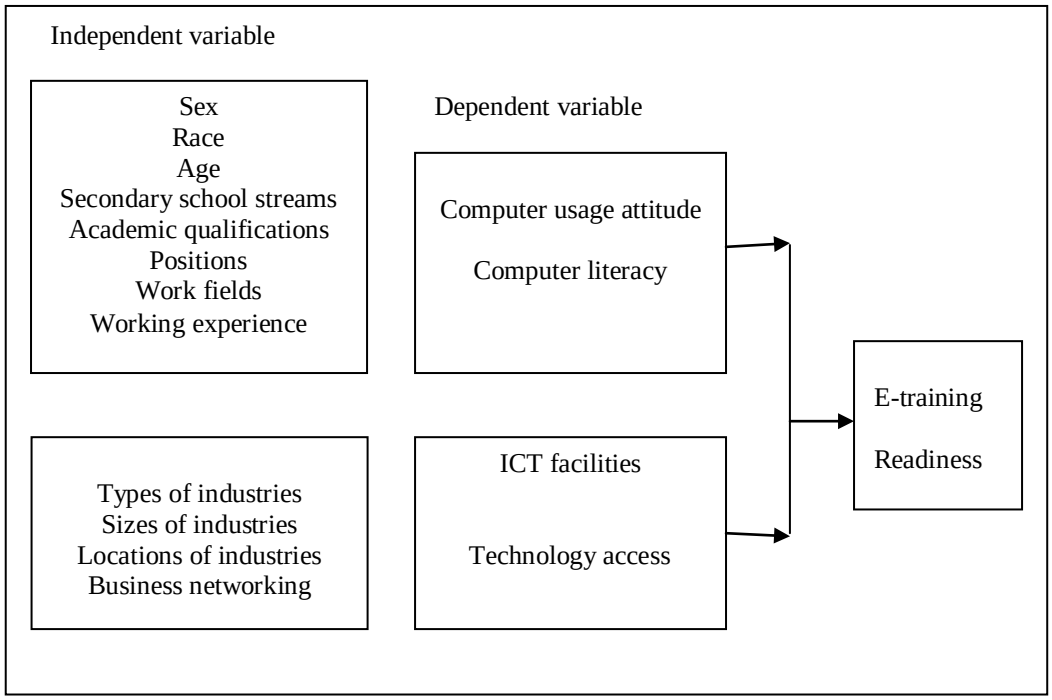

Figure 1: Research Model

3.3 Population and Sampling

The population involved in the study is all the industrial workers in Malaysia. The cluster sampling approach is used to determine the samples in this study. Based on the Krejcie and Morgan Formula (1970), 400 industrial workers from the industries of textiles, electronics, foods and poultries in Batu Pahat, Johore were selected for the study in representing the population of all industrial workers in Malaysia.

3.4 Research Instrument

A set of questionnaire applying a five Likert scales is used in this study to collect the data. The questionnaire is adopted and based on E-Learning Readiness Self Assessment (Guglielmino & Guglielmino, 2003), Online Learner Self- Assessment (Watkins, 2003), E-learning Readiness Survey (Aydin & Tasci, 2005) and E- learning Readiness Components (Spiros & Angeliki, 2004).

Table 1: The Items of Questionnaire

Parts	Items	Number of questionnaire	Total

A	Demographics	1,2,3,4,5,6,7,8,9,10,11,12	12
B	Computer Usage attitude	1,2,3,4,5,6,7,8,9,10	10
C	Computer Literacy	11,12,13,14,15,16,17,18	8
D	ICT Facilities	19,20,21,22,23,24,25,26,27	9
E	Technology Access	28,29,30,31,32,33,34	7
			46

3.5 Data Analysis

SPSS software was used to process and analyze all the data. Descriptive analysis such as mean, mode and standard deviation was used to analyze the data from questionnaires and to answer the research question one and two. Inferential statistics using a multiple regression analysis was used to answer the research questions three and four. In addition, a stepwise method was selected to analyze the data. The dummy codes were also used in the study because all data considered a categorical data. (See the Appendix 1)

4 THE FINDINGS

Research Question 1: What is the e-training readiness level among the industrial workers in the aspects of computer usage attitude and computer literacy?

Table 2: The e-Training Readiness Level in the Aspects of Computer Usage Attitude and Computer Literacy

Readiness level	Low	Moderate	High
Computer Usage Attitude	-	-	3.99
Computer Literacy	-	3.17	-

The findings show a high e-training readiness level in terms of computer usage attitude among the industrial workers *(Mean: 3.99; Standard Deviation: 0.64).* But in the aspect of computer literacy, the findings show a moderate level of e- training readiness (*Mean: 3.17; Standard Deviation: 0.99*).

Research Question 2: What is the e-training readiness level among the industrial work places in the aspects of ICT facilities and technology access?

Table 3: The e-training readiness level in the aspects of ICT facilities and technology access

Readiness level	Low	Moderate	High
ICT Facilities	-	2.92	-
Technology Access	-	3.40	-

The findings show a moderate e-training readiness level in terms of ICT facilities in workplace *(Mean: 2.92; Standard Deviation: 0.98)* and also a moderate e-training readiness level in terms of technology access (*Mean: 3.40; Standard Deviation: 0.69*).

Table 4: The E-training Readiness Level Among Malaysian Industrial Workers

Readiness level	Low	Moderate	High
Computer usage attitude	-	-	3.99
Computer Literacy	-	3.17	-
ICT facilities	-	2.92	-
Technology access	-	3.40	-
Total	-	3.39	-

In conclusion, we can say that the e-training readiness level among the Malaysian Industrial workers show a moderate level (*Mean: 3.39*).

Research Question 3: How good are the demographic factors (such as sex, races, age, secondary school streams, academics qualifications, positions, working fields and working experiences) at predicting the computer usage attitude and computer literacy among industrial workers?

Through the multiple regression analysis, the findings show that there are four variables reaching a significant level in predicting the aspect of computer usage attitude, as shown by Model 4 ($R^2 = 0.226$, $F(4, 394) = 8.196$, $*p<0.05$). All the factors describe 22.8 % of the variants towards the aspect of computer usage attitude.

Table 5: Regression Model in Predicting the Computer Usage Attitude

Predictors	B	SE B	β
Model 4			
Constant			
Science	3.81	0.03	
Stream	0.26	0.09	.17*
Bachelor	0.57	0.11	.28*
Diploma	0.27	0.09	.15*
Assistant Officer	0.41	0.14	.14*

Note: Model 4 ($R^2=0.228$, $Adj.R^2=0.221$, $F(4, 395) =8.207$, $* p<0.05$)

Through the multiple regression analysis, the findings show that there are six variables reaching a significant level in predicting the aspect of computer literacy, as shown by Model 6 *($R^2=0.267$, $Adj.R^2=2.56$, $F(6, 393) =5.110$, $* p<0.05$).* All the factors describe 26.7% of the variants towards the aspect of computer literacy.

Table 6: Regression Model in Predicting the Computer Literacy

Predictors	B	SE B	β
Model 6			
Constant	3.21	0.86	
Bachelor Degree	0.89	0.17	.28*
Science Stream	0.48	0.13	.28*
Malay Race	-0.32	0.09	-.16*
Diploma	0.42	0.13	.15*
Management	-0.32	0.10	-.16*
Officer	0.60	0.26	.11*

Note: Model 6 (R^2=0.267, Adj.R^2=2.56, F (6, 393) =5.110, p<0.05*

Research Question 4: How good are the demographic factors (such as the types, the sizes, the locations and the business networking of the industries at predicting the ICT facilities and the technology access?

Through the multiple regression analysis, the findings show that there are two variables reaching a significant level in predicting the aspect of ICT facilities, as shown by Model 2 *(R^2=0.416, Adj.R^2=0.414, F (2, 397) =7.979, * p<0.05).* All the factors describe 41.6% of the variants towards the aspect of ICT facilities in workplace.

Table 7: Regression Model in Predicting the ICT Facilities

Predictors	B	SE B	β
Model 2			
Constant	2.62	0.49	
Electronics	1.38	0.09	.61*
Local business networking	-0.29	0.11	-.11*

*Note: Model 2 (R^2=0.416, Adj.R^2=0.414, F (2, 397) =7.979, * p<0.05)*

Through the multiple regression analysis, the findings show that there are two variables reaching a significant level in predicting the aspect of the technology access, as shown by Model 2 *(R^2=0.204, Adj.R^2=0.200, F (2,397) =31.325,* p<0.05).* All the factors describe 20.4% of the variants towards the aspect of technology access in workplace.

Table 7: Regression Model in Predicting the Technology Access

Peramal	B	SE B	β
Model 2			
Constant	3.35	0.04	
Small Medium Enterprises	-1.21	0.16	-.35*
Electronics	0.40	0.07	.25*

Note: Model 2 (R^2=0.204, Adj.R^2=0.200, F (2, 397) =31.325, p<0.05)*

5 DISCUSSION, CONCLUSION AND SUGGESTION

In general, the study shows a moderate level in terms of the e-training readiness level among Malaysian Industrial workers. This situation should be overcome to ensure that the Malaysian Occupational Skills Development and Training Master Plan 2008-2020 (KSM, 2008) would be implemented successfully. It is important to avoid the ungainly investments when the e-training approach wouldn't reach the goals and achieve its advantages. The success of any initiatives to implement technology in an educational program depends strongly upon the support and attitudes of teachers involved. It has been suggested that if teachers believed or perceived proposed computer programs as fulfilling neither their own or their students' needs, they are not likely to attempt to introduce technology into their teaching and learning. Among the factors that affect the successful use of computers in the classroom are teachers' attitudes towards computers (Theriot, 2004; Watkins & Corry, 2004). Attitude, in turn, constitutes various dimensions. Some examples of these are perceived usefulness, computer confidence (Khan, 2005), training (Romiszowski, 2004), gender (Judith, 2002), knowledge about computers (James & Voigt, 2001), anxiety, confidence, and liking (Selim, 2003).

Mastering computer technology and harnessing it for widespread and comprehensive use among the workers is not an easy task. This becomes even more challenging when this technology is progressing and changing rapidly. Workers or students need to have the right kind of attitudes to be able to keep up-to-date with the rapid changes that occur in computer technologies. According to Judith (2002), developing positive attitudes among the learners is more critical than merely increasing students' computer skills because "positive attitudes will automatically lead to the learning of computer skills". Learners' attitudes toward computers must be clearly identified so that recommendations can be made to the relevant parties, such as trainers, teachers, organizations administrators, administrators at the human resources department level, employers, NGOs and also working society. The information will allow them to gain insights on best approaches to integrate computer technologies for teaching and learning. There are a limited number of empirical research studies concerning the issue of computer access. One international study conducted by Henderson, (2004) compared computer access and attitudes of 829 business and education students from five geographic locations including the United States. The study revealed that computer access has an impact on how college students perceive and feel about computers. The greater the access, the more positive are the students' attitudes towards technology.

An international study conducted by Henderson, (2004) revealed that individuals from wealthier nations perceived computers to be more useful and a higher level of computer access than those from less wealthy nations. Similarly, this study concluded that the degree of computer and Internet access and the frequency of computer and Internet use by business students impacts whether they perceive e-learning tools to be easy to use. A technology assessment should be utilized by e-learning educators and learners to measure the level of computer and Internet access. Frequent computer use and access will improve students' self-confidence towards computers (Ryan *et. al* (2004). Similarly, the results of this study revealed that students' feelings about using e-learning tools are influenced by their level of computer and Internet access. While the Ryan *et al.*, (2004) study investigated high school students, this study focused on college students. To promote positive attitudes regarding e-learning tools, educators should develop strategies

to improve the level of computer and Internet access of their students. Through multiple regression analysis, the findings showed that some demographic factors were significant at predicting the computer usage attitude, the computer literacy, the computer facility and the technology access. Besides the main factors such as attitude, literacy, facilities and technology access, these demographic factors should come along in order to overcome some lacks in e-training readiness among the industrial workers.

As a final note, studying the e-training readiness among industrial workers in terms of the aspects of computer usage attitude, computer literacy, ICT facilities and technology access are critical for the successful implementation of e-training approach in workplaces. Findings of such studies will determine the proper ideas, thoughts, direction, implications, actions and obligations toward the success of e-training incorporation in the workplaces. Additionally the instilling of positive attitude toward computers usage will assist the industrial nation to achieve its first goal of an information literate society who is able to keep abreast with the latest technology development.

REFERENCES

ASTD (American Society for Training and Development) (2002). *State of Industry Report*. Retrieved on Mac 19, 2005 from www. Astd.org.

Aydin, C. H., & Tasci, D. (2005). Measuring Readiness for e-Learning: Reflections from an Emerging Country. *Educational Technology & Society*, 8 (4), 244-257.

Brooks, G. J. & Brooks, G. M. (1993). *In Search of Understanding: The Case for Constructivist Classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Cockburn, A. D. (1996). Primary Teachers Knowledge and Acquisition of Stress Relieving Strategies. *British Journal If Educational Psychology*. 15(4), 473-489.

Guglielmino, P., & Guglielmino, L. (2003). *Are your learners ready fore-learning?* In Piskurich. G. (Ed.). The AMA handbook of e-learning. New York: American Management Association.

Guglielmo, T. (2004). E-Learning and The Third Age : Blackwell Publishing Ltd. *Journal of Computer Assisted Learning*. 20, pp21–30.

Henderson, R. (2004). A Theoretical Extension of the Technology Acceptance Model (TAM): Four Longitude Field Studies. *Management Science*. 46, 2000, 186-294.

Henderson, R. (2004). The Digital Divide: Does it exist and Should CTE Educators is concerned? New Dimensions in Business, Marketing and Information Technology Education. *Proceedings of the Annual Atlantic Coast Business, Marketing & Information Technology Education Conference (21st, Raleigh, North Carolina, February 19-20, 2004).*

James, M., & Voigt, M. (2001). Tips from the trenches: Delivering online courses effectively. *Business Education Forum*, 55(3), 56-57.

Judith, B.S. (2002). An Asssesment of the Effectiveness of e-Learning in Corporate Training Programs. *The International Review of Research in Open and Distance Learning*, Vol 3 No 1.

Khan, B.H. (2005). *Managing E-Learning: Design, Delivery, Implementation and Evaluation*. USA: Information Science Publishing.

Krejcie, R.V, & Morgan, D.W (1970). Determining Sample Size for Research. *Educational and Psychological Measurements.* 30, 607-610.

KSM (Kementerian Sumber Manusia) (2008).*Pelan Induk Latihan Dan Pembangunan Kemahiran Pekerjaan Malaysia 2008- 2020.* Selangor: Promark Marketing.

Minton, M. C. (2000). Is your organization ready for e-learning? Seven key questions you need to answer. *Communication Project Magazine, 3* (1), Retrieved July on 25, 2005, from, http://www.comproj.com.

Romiszowski, A.J. (2004). How's e-learning baby? Factors leading to success or failure of an educational technology innovation. *Educational Technology, 44(1), 5-27.*

Ryan,W., Doug, L., & Don, T., (2004). Assessing Readiness for E-Learning. *Performance Improvement Quarterly*. 17(4) pp.66-79.

Selim, H. (2003). An empirical investigation of student acceptance of course websites. *Computers & Education, 40*(4), 343-60.

Spiros, A. P. & Angeliki, P. (2004). E-Learning readiness components: key issues to consider before adopting e-Learning interventions. *E-learning 2004 Conference Proceedings*, pp. 1622-1629. Theriot, P. (2004). Student values and ethics in an e-learning environment. In Christopher, D. & Jaderstrom, S. (Eds.), *NBEA 2004 Yearbook, 42*, 13-25.

Watkins, R., & Corry, M. (2004). *E-learning companion: A student's guide to online success*. New York: Houghton Miffl in.

APPENDIX 1

Table 9: Nominal Variables, Dummy Variables and Dependent Variables

Nominal Variables	Dummy Variables	Dependent Variables
Sex	Male	Computer Usage Attitude
	Female Malay	Computer Literacy
Races	Chinese Indian	
	Others	
	18 – 25 Years	
	26 – 35 Years	
Ages	36 – 45 Years	
	46 Years and above	
	Science	
	Art	
Secondary School Streams	Technics and Vocational	
	LCE MCE HSC	
	Polytechnics Certificates, etc	
Academic Qualifications	Diploma	

Table 9 (Continue)

Nominal Variables	Dummy Variable	Dependent Variables
Positions	Manager	
	Assistant Manager	
	Officer	
	Assistant Officer	
	Engineer	
	Supervisor	
	Clark	
	Technician	
	Mechanic	
	Production Operator	
	Store Keeper	
	General Worker	
Work Fields	Management/Administration	
	Operation/Production	
Working Experiences	Below 5 Years	
	5 – 10 Years	
	11 – 15 Years	
	16 – 20 Years	
	21 Years and above	
Types of Industries	Electronics	
	Poultry	ICT Facilities
	Food	Technology Access
	Textile	
Location of Industries	Town	
	Rural	
Sizes of Industries	Big	
	Small Medium Enterprise	
n = 12	*n = 49*	*n=4*