EXPLORING ADULT LEARNING PRINCIPLES BY KNOWLES AND GENDER DIFFERENCES OF USM DISTANCE LEARNERS

**Senior Lecturer Dr. Siti Hajar HALILI
(Corresponding author)
Department of Curriculum & Instructional Technology,
Faculty of Education, University Malaya,
50603, Kuala Lumpur, MALAYSIA**

**Associate Professor Dr. Shukri SULAIMAN
School of Distance Education,
Universiti Sains Malaysia, 11800 Penang, MALAYSIA**

**Associate Professor Dato' Dr. Mohd Razha Abd. RASHID
School of Distance Education,
Universiti Sains Malaysia, 11800 Penang, MALAYSIA**

ABSTRACT

This study is aimed at identifying the differences on the adult learning principles by Knowles based on gender with the use of videoconferencing technology. The theoretical foundation for this study is the andragogy theory by Knowles (1980) that holds a set of adult learning principles such as learners' self concept; motivation to learn, readiness to learn, role of learners' experience, learners' need to know and learning orientation. A total of 394 respondents answered the questionnaire distributed to them and collected data were analyzed using chi-square test, t-test and descriptive analysis (mean and standard deviations). The SPSS software version 17 was utilized for data analysis.

This study showed that significance differences existed between the adult learning principles by Knowles (1980) with the use of videoconferencing technology based on gender.

The researchers recommend that further studies explore other adult learning theories looking at the gender differences besides including a larger sample from different institutions. Male and female students need to have the same opportunities in education with the use of technology to support teaching and learning process.

Keywords: Gender, adult education, distance education, videoconferencing technology.

INTRODUCTION

The role of media in the learning process can be defined as technology that brings information which can be used for fulfilling teaching and learning (T&L) needs. Information technology (IT) has opened a new information delivery platform in the teaching and learning process, especially for distance learning program. The use of videoconferencing technology in teaching and learning is related directly to the concept of use of IT in education because it can help to narrow the gap between students and teachers who are in different locations (Visser, 2002).Videoconferencing technology also known as "USMVideoNet" had been introduced at School of Distance Education, Universiti Sains Malaysia (SDE-USM) since 1995 as one of the teaching and learning delivery mechanism.

1

The videoconferencing technology connects the USM main campus to other regional centers throughout Peninsular Malaysia. This technology uses international internet protocol of H.323, including the ability to integrate data and video with the TCP/IP network.

Many literatures showed that there are many advantages of videoconferencing in educational institutions. According to Martin (2005), Rose et al. (2000), Townes-Young and Ewing (2005) and West (1999), videoconferencing technology minimizes the time and costs savings between remote locations, helps to fill in the gaps of teaching services besides improving access to learning.

The effectiveness of videoconferencing as a teaching tool has been researched thoroughly. (Katz, 2002; Wheeler, 2002). Findings by Carville and Mitchell (2001) showed that student have developed learning strategies and skills with the use of videoconferencing technology. However, the technology capacity and constraint should be given attention as it would affect the students' learning process Belanger and Jordan (2000), Simpson (1991), Holden (1994), Yocom and Whitson (1995) stated that voice acceptance will be unclear at the different locations when the students speak slowly. Latchem and Rapley (1992) also found that during videoconferencing implementation, many problems occurred as seen from the quality of audio, screen and image.

One-way communication can also occur if the student did not participate during the session. A study conducted by Shaffe (2000) found that students were more passive to interact during the videoconferencing session.

Distances between location of the campus or regional center are usually far apart. Distance, time and cost of travelling to attend the videoconferencing session may account for failure to attend the live videoconferencing.

Students in SDE-USM are mainly composed of adult students. Adult students have their own careers, family responsibility and have years of experience. They bring years of experience and knowledge to any learning situation. Andragogi adalah salah satu perintis konsep mengenai pembelajaran orang dewasa. Knowles (1980) has listed several criteria and characteristics of adult learners, namely: adult learners are free to act in a self-directed way, lecturers neeed to play a role and thus must obtain the views, opinions and ideas of learners related to the topic being taught. This is because adult learners often will associate their learning with their existing experiences. They are more experienced and knowledgeable in various aspects involving work and are those who have family responsibilities. Adult learners also have objectives that need to be achieved.

The lecturer only functions to help the learners achieve their goals at the start of the course. The main aim of learning among adult learners centered on the objective and knowing the real reason for their learning. The learning process can be applied at work to add value. Hence, it is important for lecturers to identify the learning objectives of the learners before the course begins.

Further, Knowles also stated that adult learners are more interested in knowledge and skills that can benefit them. Lecturers need to explain in a much clearer way regarding how the learning will be useful in their career and life. The experience and knowledge possessed by adult learners must be respected and appreciated.

These learners must be given equal opportunity to give their opinion related to their experiences and knowledge. Hence, adult learning needs to look into the needs to learn a certain matter, besides being suited to the existing attitude, knowledge and skills possessed by the adult learners.

According to Waldeck et al. (2001), Yu et al. (2001), and Santovec (2002), although literature review related to gender has been studied widely, there is still a lack of research related to the aspect of gender and learning style, online learning and student involvement in the T&L process.

Thompson (2002) and Kramarae (2001) stated that of late, female students were found to enroll in online courses as compared to male students. Rooney et al. (2006) predicted that beginning in 2006 until 2015, females will be starting to participate in programs offered by educational institutes to enhance their qualifications. Richardson and King (1991) as well as Perraton (1993) declared that female learners dominate entry into distance learning (DL) programs. In the SDE-USM program, data on the number of students for the Academic Session 2009/2010 also shows that female students outnumber males in furthering their education online.

In an internet-based learning environment, Lee (2002) found that male learners showed more positive change in behavior and higher motivation for learning as opposed to female students. In looking at the gender aspect with respect to efficacy in computer usage at the Open University Malaysia (OUM), male students were found to be more skilled in operating equipment and maintaining the computer as opposed to females (Abdul et al., 2003). According to Demiray and Sensu (2000), the skills knowledge level of women in daily life is lower as compared with males in general in Turkey. One of the best ways for women to get an education is to follow DL programs. DL programs give them the opportunity to enhance their qualifications and open wider opportunities for career advancement. Fischer (1992) and Dimmick et al. (1994) stated that the differences with respect to gender can also lead to differences in usage of media between males and females in the teaching and learning process. Nancy and Barbara (2011) also stated that when adult students especially women are pursuing degrees, they will face particular constraints such as family responsibility, economic and workplace matters.

A study by Idrus et al. (2001) found that at the initial stage, female adult students had to make some sacrifices when they became students at Universiti Sains Malaysia (USM). In contrast, male students do not face this conflict although they have a minimal time to spend with family. Atan et al. (2003) discovered a significant reduction in adult learners' time spent on family and recreation activities when they joined the distance learning program. Sorenson (1995) also found that as compared to female students, male students are participate more and have a positive attitude toward the teaching and learning process.

Busch (1995) reported that in the 1980s and early 1990s most studies on the aspect of gender mainly investigated the issues of self efficacy of students in the mathematics and science subjects. The aspect of computer use in the teaching and learning process also showed that a significant difference existed from the aspect of gender. On the whole, findings of studies show that male students had higher self efficacy than female students in the related fields. The study by Margolis and Fisher (2002) revealed that male students, unlike female students, favored the use of computers in the teaching and learning process. Through a ten-year analysis of the trends in educational technology, Masood (2004) stated that delivery systems were revolutionized by the new technologies.

A study by Bray, Aokyi, and Dlugosh (2008) found that 69.3% of student responded that the advantages of distance learning are the ability to study at anytime and anywhere they decide.

Kear, Williams, Seaton, and Einon (2004) suggested that the use of information and communications technology (ICT) in a distance learning course should support a resource-based learning approach which means that students are given the choice of

3

learning materials, allow them to participate in virtual communication as well as to promote an active learning approach.

Thus, this study attempts to fill the gap in adult education research by investigating the impact of information technology, specifically videoconferencing technology for distance learners. The main objective of this study is to identify the application of adult learning principles by Knowles (1980) across gender with the use of videoconferencing technology in SDE-USM.

METHODOLOGY

This study is a descriptive study on the aspect of adult students in SDE-USM. Descriptive research is suitable for use in research that aimed at describing a scenario that is happening in the population. This study focus on the videoconferencing technology as it is one of the educational tools for the teaching and learning process in SDE-USM and the best tool that has been recognised in Malaysia (Md Noor, 2001). The adult learning approach or better known as andragogy theory introduced by Knowles (1980) is used in this research to identify the differences in principles of adult learning in usage of the videoconferencing mode. Andragogy theory holds a set of assumptions about how adults learn and put emphasis on the value of the learning process. It uses approaches of problem-based and collaborative learning as well as underline more equality between the teacher and learner.

Knowles had outlined several learning principles known as the andragogy model that can be used as a guideline in evaluating effectiveness in the adult learning field. Knowles identified the six principles of andragogical assumptions such as learners self concept, motivation to learn, readiness to learn, role of learners' experience, learners' need to know and learning orientation. According to Merriam (2001), andragogy is accepted as a guide in adult learning. It is clear that learners in the distance learning program in SDE-USM are adult learners. This model is suitable for use in this research to help and thus encourage the process of more effective T&L among adult learners using videoconferencing technology.

Source information used in this study consisted of primary and secondary data. Primary data were obtained through the use of a questionnaire. The secondary data were obtained by reviewing reference books, journals, theses, and internet online sources. All respondents in this study were off-campus undergraduate students enrolled in a Bachelors degree program for courses such as Management, Social Sciences, Humanities and Sciences. Researchers used stratified random sampling to ensure that the subjects are truly represents the population in SDE-USM. 394 students were selected as the subjects and they answered the questionnaire distributed to them.

A number of statistical parameters have been used to analyze the data such as Chi-square test and *t*-test. Chi-square test was used with significance level of .05 to indicate the level of confidence in making the decision on whether to accept or reject the hypothesis of this study (Majid, 2000). Meanwhile, *t*-test was used to compare and determine the differences between variables with the significant level of .05. The data were then analyzed using statistical analysis of SPSS software version 17.0.

FINDINGS AND DISCUSSION

In this research, the researchers assumed that a significant difference existed among students of different gender toward the use of videoconferencing technology. To answer the hypothesis that is to determine the differences between adult learning principles by Knowles (1980) with gender, chi-square test was used with the confidence level of .05.

4

The findings showed that the significant values for male and female are smaller than the significant level of .05. Thus, the hypothesis which states that there are significant differences between adult learning principles by Knowles (1980) with gender is acceptable.

From the students' responses, it is clear that there are significant differences based on gender with the use of the videoconferencing technology in the teaching and learning process.

Table: 1
Chi-square test for gender

	Adult learning principles by Knowles		
	Chi-Square Value	df	*p*
Gender	12.411	5	0.000

df – degrees of freedom, p – significant value, * Significant level of 0.05

The *t*-test analysis was used to determine the significant value that is statistically different from each group with the significant level of .005 and 95% confidence level.

Referring to Table: 2, the result showed that the *p*-value for the learners' self concept, motivation to learn, readiness to learn, role of learners' experience, learners' need to know and learning orientation are less than the significant level of .05.

This means that there is a significant difference between six principles of adult learning principles by Knolwes (1980) with male and female students.

Thus, this study found that male and female students in SDE-USM have different preferences on the adult learning principles, which were learners self concept, motivation to learn, readiness to learn, role of learners' experience, learners need to know and learning orientation via videoconferencing technology in the teaching and learning process.

Table: 2
Result of the *t*-Test for gender

Differences between adult learning principles by Knowles with gender			
There is a significant difference	*p*	There is no significant difference	*p*
Learners self concept	0.00		
Motivation to learn	0.00		
Readiness to learn	0.00		
Role of learners' experience	0.00		
Learners need to know	0.00		
Learning orientation	0.00		

p – significant value, * Significant at the level of .05

Further analysis such as descriptive analysis (means and standard deviations) were used to determine the differences between adult learning principles by Knowles with male and female students. This analysis is appropriate to be used to analyze the value of the mean score that differed significantly.

Table: 3 showed that female students choose the learners' self concept 3.10 (0.64), readiness to learn 2.82 (0.78), learners' need to know 2.72 (0.76) and learning orientation 2.68 (0.73), whereas male students agreed on the motivation to learn 2.89

5

(0.74) and role of learners' experience 2.80 (0.79) with the use of videoconferencing in the learning process.

In summary, this result suggests that female students who followed the DL program at SDE-USM favored the learners' self concept, readiness to learn, learners' need to know and learning orientation, whereas male students agreed on the motivation to learn and role of learners' experience with the use of videoconferencing technology.

Table: 3
Means and standard deviations of adult learning principles based on gender

Adult Learning Principles	Gender	Means	Standard Deviations
Learners self concept	Male	2.59	0.62
	Female	3.10	0.64
Motivation to learn	Male	2.89	0.74
	Female	2.80	0.69
Readiness to learn	Male	2.78	0.72
	Female	2.82	0.78
Role of learners' experience	Male	2.80	0.79
	Female	2.71	0.75
Learners need to know	Male	2.69	0.74
	Female	2.72	0.76
Learning orientation	Male	2.60	0.70
	Female	2.68	0.73

Each student is an individual with different objectives, learning style, ability and ambitions. Male and female students need to have the same opportunities in education and derive benefit from the teaching style, orientation of education, counseling and curriculum free from gender bias (Hata & Sadatul, 2005). The female students, especially married females and those who had responsibilities as mothers, usually face various challenges in terms of allocating time and energy when furthering their studies. Houtz and Gupta (2001) stated that although males and females showed a positive attitude to technology usage, the male students had a more positive view of technology use as opposed to the females. Emine and Sensu (2000) also stated that in general the level of knowledge and skills of female students in all aspects of daily life is low when compared with male students. This study implies that there are significant differences based on gender with the use of the videoconferencing technology in the teaching and learning process. Female students who followed the DL program at SDE-USM agreed on four adult learning principles, which were learners' self concept, readiness to learn, learners' need to know and learning orientation. In contrast, male students were more in favor for motivation to learn and role of learners' experience with the use of videoconferencing technology in T&L process.

CONCLUSION

Distance education program is different from conventional programs. Limited contact and student-lecturer interaction may make the students experience feelings of isolation when enrolling in a distance education program.

It is clear that students following the distance learning program are adult learners who usually already have families and careers. Of late, changes have occurred in trends of learners entering distance learning programs nowadays; it was found that younger learners in their twenties are also following distance learning programs. Even so, the

6

studies they undertake are only part-time considering that they have their own careers to manage.

They need to allocate time for studying, completing their coursework or assignments and they need to sacrifice their weekends to attend lectures. Allocating a special time and scheduling time for career, family and learning is very much needed so that adult learners can succeed in their learning when following a distance learning program.

Hence, learning among adult learners need to address the needs to learn a topic, and accommodate the attitude, knowledge and skills they already possess.

The use of videoconferencing has its own advantages in the teaching and learning process. Awareness of the adult learning principles with may help the institution to design an effective course and teaching instruction to the students. Perhaps, the institution will provide new methods of instruction for teaching and learning process that match with the learners' needs and also provide better student support services. It is important for the lecturers to ensure that their instructional methods match the needs of the learners during the teaching and learning process. Researchers also suggested that students should take their own initiative to work in a group, sharing ideas as well as initiate discussion in order to avoid feeling isolated and unmotivated when they sign up for distance education programs.

BIODATA and CONTACT ADDRESSES of the AUTHORS

Dr. Siti Hajar HALILI is a Senior Lecturer at University of Malaya, Kuala Lumpur. Currently, she is actively researches and publishes in the areas of Educational Technology, Adult Education, Distance Education, E-Learning and Curriculum & Instructional Technology.

Senior Lecturer Dr. Siti Hajar HALILI
(Corresponding author)
Department of Curriculum & Instructional Technology,
Faculty of Education, University Malaya,
50603, Kuala Lumpur, MALAYSIA
Phone: 603-7967 5055
Email(s):   ajai912@gmail.com or siti_hajar@um.edu.my

Associate Professor Dr. Shukri SULAIMAN is Associate Professor at Universiti Sains Malaysia, Penang. His research focuses on Computational Solid State Physics and Distance Education.

Associate Professor Dr. Shukri SULAIMAN
School of Distance Education,
Universiti Sains Malaysia, 11800 Penang, MALAYSIA
Phone: 604- 6553388
Email: shukri@usm.my

7

Dr. Mohd Razha Abd. RASHID is Associate Professor at Universiti Sains Malaysia, Penang. His areas of expertise include Asian Etnology, Heritage and Transformation, Social Capital, Social Safety Net and Distance Education.

Associate Professor Dato' Dr. Mohd Razha Abd. RASHID
School of Distance Education,
Universiti Sains Malaysia, 11800 Penang, MALAYSIA
Phone: 604- 6553388
Email: raza@usm.my

REFERENCES

Abdul, R. H., Mohd, Z. A. N., Mohammad, F. N., Hafiz, M. S., Mohd, S. Z., Yazrina, Y. & Mohd, Z. M. (2004). *Information communication & technology*. Second Edition. Kuala Lumpur: MzGraw-Hill (Malaysia) Sdn. Bhd.

Atan, H., Jaafar, I, Guan, S. K., Azli, N. A. & Abd Rahman, Z, Idrus, R. M. (2003). Selftransitional characteristic of distance education learnes: A case study of three Malaysian Universities. *Turkish Online Journal of Distance Education-TOJDE*, 44. Retrived on March 19, 2004]. Available from http://tojde.anadolu.edu.tr/tojde12/articles/Jaafar.htm

Belanger, F. & Jordan, D. H. (2000). *Evaluation and implementation of distance learning: Technologies, tools and techniques.* Hershey, PA: Idea Publishing Group.

Bray, E., Kumiko, A. & Larry, D. (2008). Predictors of learning satisfaction in Japanese online distance learners. *International Review of Research in Open and Distance Learning*, 9 (3), 1-24.

Busch, T. (1995). Gender differences in self-efficacy and academic performance among students of Business administration. *Scandinavian Journal of Educational Research,* 39, 311-318.

Carville, S. & Mitchell, D. R. (2001). It's a bit like star trek: The effectiveness of videoconferencing. *Innovations in Education and Training International,* 37 (1), 42-49.

Dimmick, J., Sikand, J., & Patterson, S. (1994). The gratification of the household telephone: Sociability, instrumentality and reassurance. *Communication Research,* 21, 643-663.

Demiray, E. & Sensu, C. (2000). Distance education for women's development: a case study at Anadolu University, Turkey. *Jurnal Pendidikan Jarak Jauh*, [Online]. 2 (2), retrieved on 19 February 2004. Available from http://www.freewebs.com/mjdisted/pastissues.htm

Fischer, C. S. (1992). *American calling: A social history of the telephone to 1940*. Berkeley: University of California Press.

8

W. & Sadatul, M. (2005). *8 basics declaration draft in Putrajaya*. Kuala Lumpur: Mingguan, Malaysia.

Holden, G. (1994). Multipoint videoconferencing. *Epistolodidaktika,* 1, 72-83.

Houtz, L.E., & Gupta, U.G. (2001). Nebraska high school students computer skills and attitudes. *Journal of Research on Computing in Education*, 33(3), p. 316-328.

Idrus, R. M., Azli, N. A., Rahman, Z. A., Atan, H., Awang, N. M., Jaafar, I. , Saw, K. G., & Laiff, Z. A. (2001). Educational transition characteristics of female distance learners. In: A. Hamzah, N. A. Wahab, F. H. Shah and T. Pham (eds.). *Women in the New ICT Era: Challenges and Opportunities.* Kuala Lumpur: United Nation Development Programme.

Katz, Y. J. (2002). Attitudes affecting college students' preferences for distance learning. *Journal of Computer assisted Learning,* 18, 2-9.

Kear, K., Williams, J., Seaton, R. & Einon, G. (2004). Using information and communication technology in a modular distance learning course. *European Journal of Engineering Education, 29* (1),17-25.

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy.* 2nd ed. New York: Cambridge Books.

Kramarae, C. (2001). *The third shift: Women learning online*. Washington, DC: American Association of University Women Educational Foundation.

Latchem, C., & Rapley, P. (1992) Trial by satellite videoconferencing for continuing education for rural area nurses. *Distance Education*, 13 (1), 118 – 130.

Lee, I-S. (2002*)* Gender differences in self-regulated on-line learning strategies within Korea's University context. *Educational Technology Research and Development*, 50 (1), p.101-109.

Margolis, J., & Fisher, A. (2002). *Unlocking the clubhouse: Women in computing*. Cambridge, MA and London: The MIT Press.

Martin, M. (2005). Seeing is believing: The role of videoconferencing in distance learning. *British Journal of Educational Technology*, 36 (3), 397 - 405.

Majid, M. K. (2000). *Education research methodology.* Kuala Lumpur: Dewan Bahasa dan Pustaka.

Md Noor Saleh. (2001). *Distance education.* Universiti Sains Malaysia: Utusan Publications & Distributors Sdn Bhd.

Masood, M. (2004). A ten-year analysis: trends in traditional educational technology literature. *Malaysian Online Journal of Educational Technology,* 1 (2). Online]. Retrieved on 13 April 2004. Available from http://pppjj.usm.my/mojit/articles/V1N2-final/MOJIT-Mona.htm

Perraton, H. (1993). *Distance education for teacher training*. New York: Routledge.

Richardson, J. T. E. & King, E. (1991). Gender differences in the experience of higher education: Quantitative and qualititative approaches. *Educational Psychology,* 11, 363-822.

Rooney, P., Hussar, W., Planty, M., Choy, S., Hampden-Thompson, G., Provasnik, S., Fox, M. A., Kridl, B., Livingston, A., & Synder, T. (2006). The condition of education 2006. NCES 2006-071. Washington, DC: National Center for Education Statistics. (In ERIC Document Reproduction Service No. ED 491909).

Rose, D. A. D., Furner, S., Hall, A., Montgomery, K., Katsavras, E., & Clarke, P. (2000). Videoconferencing for speech and language therapy in schools. *BT Technology Journal,* 18, 101-105.

Santovec, M. (2002). Balancing act: Online learning becomes the "third shift" for women. *Distance Education Report,* 6 (2), 1-2.

Shaffe Mohd Daud. (2000). Research on the effectiveness of teaching and learning process via videoconferencing in SDE-USM. Doctoral thesis, Universiti Sains Malaysia.

Simpson, H. (1991). An experimental two-way video teletraining system: design, development and evaluation. *Distance Education*, 12 (2), 209 - 231.

Sorenson, C. K. (1995). *Evaluation of interactive television instruction: Assessing attitudes of community college students.* [Online]. {Accessed 13 April 2004}. Available from http://www.ed.psu.edu/acsde/deosnews5_9.htm

Thompson Learning. (2002). *Blended learning is superior.* [Online]. {Accessed 23 August 2006}. Available from http://www.learningcircuits.org/2002/mar2002/newsbytes.html#mar1

Townes-Young, K. L., & Ewing, V. R. (2005). Creating a global classroom. *T.H.E. Journal,* 33 (4), 43-5.

Visser, L. (2002). The role of the instructor in helping students to be successful and the role of students in helping the institution to be successful. *Open Praxis*. 1, 5-9.

Waldeck, J., Kearney, P. & Plax, T. (2001). Teacher e-mail message strategies and students' willingness to communicate online. *Journal of Applied Communication Research*, 29 (1), 54-70.

West, G. B. (1999). Teaching and technology in higher education: Changes and challenges. *Adult Learning,* 10 (4), 16 - 18.

Wheeler, S. (2002). User reactions to video-conferencing: Which students cope best?. *Education Media International*, 37, 31 - 38.

Yocom, D. J., & Whitson, D. (1995). Compressed video delivery of a coaching/mentoring modul for teacher/education *Journal of Educational Technology Systems*, 23 (3), 265-275.

Yu, B., Kim, K. & Roh, S. (2001). *A user analysis for web-based distance education. Proceedings of The annual topics on distance learning conference*, USA. [Online]. Retrieved on 13 April 2004. Available from http://www.calumet.purdue.edu/todl/proceedings