We are IntechOpen,
the world's leading publisher of
Open Access books
Built by scientists, for scientists

4,800

Open access books available

122,000

International authors and editors

135M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities

CLARIVATE ANALYTICS

BOOK CITATION INDEX

INDEXED

WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com

Self-Directed Learning Readiness Factors in Physicians for Implementing E-Learning in the Continuing Medical Education Programs

Tahereh Eslaminejad[1] and Nouzar Nakhaee[2]
[1]Educational Development Center (EDC), Kerman University of Medical Sciences,
Kerman Medical University (KMU),
[2]Neuroscience Research Center, Kerman University of Medical Sciences, Kerman,
Iran

1. Introduction

The implementation of e-learning as part and parcel of the delivery mechanism for training and education requires tremendous amount of investment on the part of an organization or institution. However, in this highly-computerized age, learning needs are dynamic and e-learning is one of the many responses to the society's thirst for efficient, effective and appealing strategy for delivering information and knowledge. As a result, e-learning opens new ways of teaching and learning, leading to new methods of thinking and organizing learning content (Askar & Halici, 2004). One of the natural settings for e-learning is in the area of continuing education. In considering a large number of the adults as learners in an e-learning setting or in any traditional classroom for that matter, it is necessary to plan the needs of the employee, the educator and the organization involve in the learning process. Goldstein and Ford (2001) argued that more organizations are progressively considering continuous learning as an important factor in maintaining their competitive advantage. Borotis and Poulymenakou (2004) believed that e-learning initiatives can be considered as the proper solution for delivering continuing educational programs at a lower cost with ubiquitous offering of a wide range of information and knowledge that are different from the traditional approach. Also Hall (2001) posed that e-learning can be an effective method of learning for adults who have busy schedules or live in remote areas, and unable to attend an everyday traditional classrooms. This innovation allows the learners to learn at their own pace, saving time and money, and they can pursue continuing education on computers in the workplace or in the home (Randell, 2001).

In the area of Andragogy, it is argued that adult learners need to know why they have to learn something before undertaking it. At the same time, they are motivated to learn only to the extent that they perceive the knowledge will help them perform tasks they confront in their life situations (Knowles, 1987). Since the learners are ready and willing to take the responsibility for their own learning, the participants' learning style is a factor that may affect learner readiness for e-learning process. Rosenberg (2001) argues that willingness to learn and motivation for successful training and learning are very important and suggests

that creating the right incentives can encourage participation. Sound time management is another important factor that should be considered imperative for effective e-learning, Frankola (2001) states if participants do not have time or motivation and willingness to take the given time off for learning, e-learning will not succeed. Knox (1986) delineates several characteristics of adult learners in four categories: enhancing proficiencies, development and learning, influences on participation, and the importance of active learner participation that can enable educators to plan and organize learning activities around adults' background and aspirations. In addition Rogers (1986) identifies four characteristics of this adult natural learning process and pointed out that, in pursuing self-directed learning, each adult adopts one own learning style and a range of strategies employed is typical of adults than by other group of learners. He increased, since self-directed learning is directed toward specific goals, adult learning tends to focus on how to cope with the particular situation rather than the general principles. Thus, one of the characteristics of the individual that allied itself to the benefits and success of online learning is self-directed or autonomy in learning. Self-directedness involves the learners taking the initiative to identify their own learning needs and goals, selecting and using the learning strategies that work best for those needs and is able to use basic skills, organize time, and develop a plan for completing work given to them. A self-directed learner is responsible for development of her/his learning skills and deciding when and how she/he going to learn. The benefits of self-directed learning include having a greater control over learning and an increase in self-concept, motivation, and sense of self-control, since the learners are expected to function without an instructor (Knowels, 1975). Most literature (for example, Bernard et al., 2000; Chen & Lin, 2002; Clark & Mayer, 2002; Urdan & Weggen, 2000) concurs with Guglielmino (2003) in considering learners as an important factor in e-learning readiness.

Self-directed learning (SDL) is related to independence or autonomy in learning; it is a logical link for readiness for e-learning. A self directed learner accepts responsibility for own learning and view problems as challenges and not obstacles (Guglielmino, 1977). Self-direction in learning refers to two distinct but related dimensions. The first of these dimensions is a process in which a learner assumes primary responsibility for planning, implementing, and evaluating the learning process. The second dimension refers to as learner self-direction, centers on a learner's desire or preference for assuming responsibility for learning. Therefore, self-direction in learning refers to both the external characteristics of an instructional process and the internal characteristics of the learner, where the individual assumes primary responsibility for a learning experience (Brockett & Hiemstra, 1991). In this study based on the ongoing works on self-directed learning readiness for SDL investigate four categories involves self knowledge, attitudes, skills, and habits as self-directed learners.

1.1 Self-directed knowledge

Self-knowledge is a philosophical concept of self awareness person, understanding him or herself. It is also commonly referred to knowledge of one's particular mental states, including one's beliefs, desires, and sensations. The learners with self directed knowledge have the ability to be aware of "self." This attribute is closely related to some of the executive processes identified with metacognition. It enables learners to be aware of their learning processes, of their weaknesses and strengths, to know if they can call up additional powers of concentration,

to know of their ability to use a different approach, to know how and what is distracting in their environment, to know the importance of a given learning activity, to know when they need assistance, to have a realistic perception of their ability to achieve their learning goal. Self directed knowledge can be accomplished through reflection and usually self directed learning enhance by knowledge of one's preferred learning style (Guglielmino, 2003).

1.2 Self-directed attitude

Several studies have suggested that attitudes may be an important element in teaching computers (Woodrow, 1991). Todman & Dick (1993) for example, suggested that the teacher's attitude towards computers may have an effect on the quality of experience a child has with computers in the school. Many researchers reported that children like computers and are positively motivated to use them (Shade, 1994).

A review of the literature on attitudes toward computers by Lawton and Gerschner (1982) showed that children found computers to have infinite patience, never to get tired, never to forget to correct or praise, to be impartial to ethnicity and gender, and to be great motivators. In the same review, it was shown that students liked computers because they were self-paced, gave immediate feedback, and did not embarrass them when they made mistakes. The early studies found that negative attitudes and fears about computers were exhibited mostly by teachers, not children, thus general teacher attitude plays an important role in the educational process (Muller, Husband, Christou, & Sun 1991). Mason and Weller (2000) found that children do not see computer technology as a science but as a tool to be used in everyday life. The learners who have self directed attitudes usually have characteristics such as able to make decision and doing it successfully, to have positive thoughts about their potential for success in their plans, are independent learning, prefer to work alone, go to new activities, to reach new levels of performance, and learning online, are open mind, and try to learn anything they need.

1.3 Self-directed skills

The fundamental skills are needed for effective self-directed learning. Guglielmino (2003) state a self directed learner usually is skilled at identifying and analyzing its learning needs. The individual has a moderate allocation of the identified personality attributes and the skills appear to be particularly important in successful self-directed learning. They also may have limited observational skills that inhibit their ability to determine what is important in their learning environment. Therefore, some effort is often required to develop these skills before a person becomes a successful self-directed learner. Thus, when working with people with little experience in self-directed learning, careful attention should be given to helping them to imagine possible outcomes of results of their learning, and then encouraging them know how and why to choose from among multiple desirable goals (Long, 2006). Gugilielmo (1977) cited in Griffin (1989) has developed a self-directed learning readiness scale, she considered factors such as openness to learning opportunities, self-concept in an effective learner, initiative and independence in learning, informed acceptance of responsibility, love of learning, creativity, future orientation, and ability to use basic study skills and problem-solving skills. Some skills related to meeting learning needs include the using learning methods, making decision for effective learning new skills, able to engage in divergent thinking, writing skills, reading skills, using online tool for working with others, able to collecting require data from various sources,

to able organize, analyze, and evaluate data for answering to question, set goals, effectively planning for activities, and translate learning needs into learning goals.

1.4 Self-directed Habits

The positive habits are very important in use of various technologies that used for e-learning and their development can be streamline and anchor the effective e-learning. Guglielmino (2003) posed that one of the most important habits on self directed learning is persistence; it is emphasizing on doing a work or reach a goal. Also the reflective individual and environmental scanning from own performances are worth emphasizing. Habits include such things as to be self-discipline, willingness try to search and know new idea, steadiness for completing works and own decisions, trying out how to find work problem, resistance and stability in analyzing material, and constantly expressing thoughts and idea to writing.

This paper attempts to identify the various concepts related to self-directed learning and also the various components of the doctors' self directed learning readiness which influence the successful adoption of e-learning in the field of continuing medical education

2. Methodology

This descriptive study examines the self-directed learning (SDL) readiness for e-learning in the physicians who participate in CME programs in Iran.

The research questionnaire consist of statements regarding factors about self directed learning readiness for e-learning in four categories and was distributed to 461 medical doctors who participated in the CME programs. All items were measured on a five-point Likert scale, with 5 indicating "strongly agree" and 1 indicating "strongly disagree".

Factor analysis, correlations, and ANOVA were the main methods of data analysis. Factor analysis was conducted to extract major factors that influence the e-learning readiness with using Varimax rotation with Kaiser Normalisation. In the factor designation, individual loadings of 0.5 or greater were used to interpret the results and factors with Eigenvalues equal to or greater than one were extracted.

3. Findings and discussion

The analysis of this study was the identification of factors influencing the nedical doctors' self-directed learning readiness for e-learning. By Principal Component Factor Analysis (PCFA) extracted factors and labels are suggested for each of factors according to their statements.

There were four domains for the learner's self directed learning for e-learning readiness namely Knowledge, Attitude, skills, and habits. Each item in each domain contained relevant statement pertaining to e-learning readiness, followed by a five-point Likert scale ranging from "strongly disagree" to "strongly agree". The average mean of SDL readiness was 3.35±.43 with a maximum mean of 3.83 for SDL attitude readiness and SDL habits having the lowest mean of 2.79 as summarized in Table 1 Further analysis is given in the next section.

Most participants evaluated their SDL readiness moderate (38%). Thirty six percent assessed themselves as good and 10% excellent. Only 16% claimed they were weak and very weak. Regarding doctors' attitude, 71% of the respondents had positive attitude toward e-learning.

Domains	Mean	SD
Knowledge	3.44	.60
Attitude	3.83	.35
Skill	3.35	.63
Habit	2.79	.43
Total	3.35	.43

Table 1. Mean and SD in learners' SDL readiness

The majority (87%) claimed that they prefer learning through independent project or research instead of structured assignment and 72% prefer to conduct research activities to reach new levels of performance or find new ways to learn anything. Doctors also said they believe that high quality learning can take place without having face to face interaction. For knowledge, skills, and habits of self directed learning most of doctors were in an intermediary range (between 2.79 and 3.44). Only 8% reported that they had no adequate knowledge and less than 20% are not well skilled in self directed learning.

Concerning identifying factors that influence self directed learning readiness in learners, in this study Exploratory PCFA process on the knowledge domain extracted factors in self need assessment; components included diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. Having knowledge to guide and direct their own learning, enable learners to control their own processes of learning making their learning more effective. Being familiar with self directed learning principles are important components in self need assessment. It may reduce the number of misunderstandings, lead to a deeper understanding of the subject or domain in question, and may further integrate new knowledge on the basis of their previous understanding. Knowles (1987) pointed out; clinicians in SDL first identify a clinical problem, then pursue the learning task, next acquire the new knowledge or skill, and finally practice the new knowledge or skill. Also in SDL attitude, respondents emphasized on factors such as comfortable with independent study, innovation in learning and comfortable with relevant and applicable subjects. These findings are also supported by other studies. Knowles (1975) argued there is convincing evidence that people who take the initiative in learning (proactive learners) learn more things, and learn better, than do people who sit at the feet of teachers passively waiting to be taught (reactive learners), because they enter into learning more purposeful and with greater motivation. This is because they retain and make use of what they learn better and longer than do the reactive learners. Further he claimed that learning is maximized when it is self-directed, because learners study material that is most relevant to them.

The analysis of the readiness factors in SDL skills domain, brought up by the respondents was ability to self evaluate and self develop. Adult learning theory posits that adult learners can identify their learning needs, find solutions to problems, base learning on experience, and self-direct their education. Knowles (1987) also stated an essential aspect of self maturing is developing the ability; it is increasing responsibility for their own lives - to become increasingly self-directed. Shin and Haynes (1993) also demonstrated that learning behaviors taught during medical school will have an effect on practice; therefore, medical educators should emphasize self-directed learning skills during residency training.

In the area of SDL habits, learner identified two important factors that included: self discipline and to self motivate learning. These factors contain components such as self

discipline, motivation to try and search for new idea, steadiness for completing projects and expect to succeed in own decisions, try to find work problem and constantly express thoughts and idea to writing, accustomed to search for new idea, techniques, equipments, and programs, assess performance and initiate learning. Regarding the importance of positive habits on SDL, Guglielmino (2003) posits one of the most significant habits on SDL is persistence, it emphasized doing work to reach a goal.

Some research regarding enhancing learning in SDL emphasized that skills and habits play a critical role in learners' success. For example Sparling and Lewis (2001) stated that students need to be able to ignore distractions, and concentrate on their work. In addition, learners may need to use your basic academic proficiencies, such as skimming for information and then reading the important portions more carefully because reading a textbook is quite different from reading a newspaper.

To be self-disciplined and self motivate are critical factors in online programs, since in an online class, there is no instructor standing to monitor progress. If learners are not a self-disciplined person, it might be very difficult to have an efficient and effective e-learning process. It is often really difficult to make up for lost time. Online learners particularly doctors need to rely on their own problem solving abilities. They must know what resources are available to assist them, for instance, online help, tutorials, or telephone hot-lines. In this regards Wolfgang and Dowling (1981), and Kuh and Cracraft (1986) found that self motivation in nontraditional learner is one of the most significant factors which foster the personal growth and influence academic achievement. Therefore learners who have the ability of self motivation and are self discipline, identify their learning needs and also find solutions for problems, support their learning on experience and practice and finally direct their education. In this regard, doctors use problem-based learning, because their patients become the impetus for their learning experience and clinical practice. These characteristics will prepare them to be ready for e-learning and learner's readiness is one of the most important factors for having an efficient and effective e-learning process. The summary of the findings related to extracted factors on learners is presented in Table 2.

Domain Category	SDL Readiness Factors
Knowledge	- Familiar with self need assessment
Attitudes	- Comfortable with innovation in learning
	- Comfortable with self development
	- Comfortable with independent study
Skills	- Ability to use online learning
	- Ability to self develop
Habits	- Accustomed to be serious and critical learning
	- Get used to be Initiate own learning
	- Accustomed to be performance evaluation

Table 2. Factors extracted by Category in SDL readiness domain on learner with Interpretative Labels

4. Conclusion

Self directed learning (SDL) readiness domain as one of the critical characteristics of online learning is that learners can control the pace of their own learning. The most important

factors that learners identified in this domain were; familiarity with learning need assessment, comfortableness with independent study, innovativeness in learning, the relevant and applicable subjects, self evaluation ability, self development ability, self discipline in learning, and so accustomed to be self motivation in habits domain. Concerning self-directed learning is an important aspect in the adult lifelong learning. Thus, university of medicine turn toward the implementation of e-learning for the training of doctors are needed a particular model to assess and identify factors that influencing on self directed learning readiness to improve them because the self-directed adults will learn more, learn better, retain, and make better of learning than do reactive learners and so have more power in creating their own path in the journey of continuous learning throughout their life.

5. Acknowledgments

6. References

Askar P., & Halici U., (2004) E-learning as a catalyst for educational innovation, In C. Ghaoui (Ed). E-education applications: Human factors and Innovative Approaches. IGP publishing, USA

Bernard, R. M., Rojo de Rubalcava, B., & St-Pierre, D. (2000). Collaborative online distance learning: Issues for future practice and research, Distance Education. 21(2), 260-277. Retrieved May 31, 2007, from http://clp.cqu.edu.au/offline_articles_A-K.htm

Brockett, R.G., and Hiemstra, R. (1991). Self-Direction in Adult Learning: Perspectives on Theory, Research, and Practice. London and New York: Routledge & Kegan Paul.

Borotis, S. Ap. & Poulymenakou, A. (2004). E-Learning readiness components: key issues to consider before adopting e-Learning interventions. Paper presented at the World Conference on E-Learning in Corporate 2004, Washington, DC, pp. 1622-1629. Retrieved November 2, 2005, from
http://www.eltrun.gr/papers/eLReadiness_ELEARN2004.pdf

Chen, N. s. & Lin, K. M. (2000). Factors affecting e-learning for achievement. [Electronic Version] from, http://lttf.ieee.org/icalt2002/proceedings/t502_icalt148_End.pdf

Clark, R. C., & Mayer, R. E. (2003). e-Learning and the science of instruction: Proven guidelines for customers, & and designers of multimedia learning, S. F., CA: Pfeiffer

Frankola, V. (2001). Why online learners drop out. Workforce, 80(10), 52-60. Journal of Education for Teaching. 4(2), 183-191. Retrieved June 15, 2001, from
http://www.workforce.com/feature/00/07/29

Guglielmino, L. M. (1977). Development of the self-directed learning readiness scale (Doctoral dissertation, University of Georgia, 1977). Dissertation Abstracts International, 38, 6467A.

Guglielmino, P. J. & Guglielmino, L. M. (2001). Learner characteristics affecting in electronic distance learning. In H. B. Long & Associates, 21st century Advances in Self-Direction Learning. Schaumberg, IL: Motorola University Press.

Guglielmino, P. J. & Guglielmino, L. M. (2003). Are your learners ready for e-learning? In G. M. Piskurich (Ed.), The AMA handbook of e-learning: Effective design, implementation, and technology solutions, New York: AMACOM, 87-98.

Goldstein, I. L., & Ford, J.K. (2001). Training in organizations (4th ed.): Wadsworth Publishing.

Hall, B. (2001). E-Learning Guidebook. Six Steps to Implementing E-Learning. Retrieved Jan. 16, 2006, from http://www.brandonhall.com/public/forms/sixstepdb

Knox, A.B. (1980). Proficiency Theory of Adult Learning. Contemporary Educational Psychology. 378-404.

Knowles, M.S. (1975). Self-directed Learning. New York: Association Press.

Knowles, M.S. (1980). The Modern Practice of Adult Education: From Pedagogy to Andragogy. (2nd ed.) . New York: Cambridge Books.

Knowles, M. S. (1987). Adult learning, Training and Development Handbook. R. L. Craig (Ed.). New York: McGraw-Hill. Ch.9.

Kuh, G., & Cracraft, L. (1986). Predicting adult learners' success in higher education. In J. A. Lucas (Ed.), The Adult Learner: Four Aspects, AIR File 27. Tallahassee, FL: Florida State University, Association for Institutional Research.

Lawton, J., & Gerschner, V. T. (1982). A Review of the Literature on Attitudes toward Computers and Computerized Instruction. Journal of Research on Development of Education, 16, 50-55.

Long, H. B. (2006). SKILLS for SELF-DIRECTED LEARNING. Available from http://faculty-staff.ou.edu/L/Huey.B.Long-1/Articles/sd/selfdirected.html

Mason, R., & Weller, M. (2000). Factors affecting students' satisfaction on a web course. Australia Journal of Educational Technology, 16(2), 173-200

Mueller, R.O., Husband, O.H., Christou, C., Sun. A., 1991. Preservice Teacher Attitudes towards Computer Technology: A Log-Linear Analysis. Mid-West Educational Researcher Vol. 4,   2, P.23-27

Randell, D. (2001). E-learning for continuing education: exploring a new frontier electronic learning, http://findarticles.com/p/articles/mi_m3230/is_8_33/ai_78057546/pg_1

Rogers, A. (1986). Teaching Adults. Milton Kaynes, England: Open University Press.

Rosenberg, M. J. (2001) E-Learning: Strategies for building online learning in the digital age. New York: McGraw-Hill

Shade, D.D. (1994). Computers in early education: Issues put to rest, theoretical links to sound practice, and the potential contribution of microworlds. Journal of Educational Computing Research 6 (4): 375–92.

Shin JH. , Haynes RB. (1993).. Effect of problem-based, self-directed undergraduate education on life-long learning. CMAJ. 1993 Mar 15; 148(6):969–76. [PubMed]

Sparling, J., & Lewis, I. (2001). Learningames: The abecedarian curriculum, 12-24 months. Chapel Hill, NC: Early Learning, Inc

Todman, J., & Dick, G. (1993). Primary children and teachers' attitudes to computers. Computers and Education. 20, 199-203.

Urdan, T. A. & We ggen, C. C. (2000). Corporate E-learning: Exploring a New Frontier, Retrieved April 14, 2001, from http://www.wrhambrecht.com/research/coverage/elearning/ir/ir_explore.pdf

Wolfgang, M., & Dowling, W. (1981). Differences in motivation of adult and younger undergraduates. Journal of Higher Education, 52(6), 640-648.

Woodrow, J. (1991). Locus of control and computer attitudes as determinants of the computer literacy of student teachers. Computers and Education, Vol. 16, 237-245
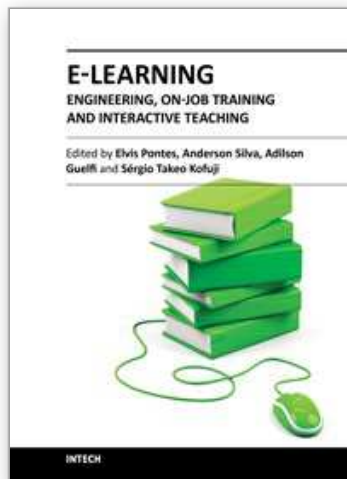
E-Learning - Engineering, On-Job Training and Interactive Teaching

Edited by Dr. Sergio Kofuji

Adaptive E-learning was proposed to be suitable for students with unique profiles, particular interests, and from different domains of knowledge, so profiles may consider specific goals of the students, as well as different preferences, knowledge level, learning style, rendering psychological profile, and more. Another approach to be taken into account today is the self-directed learning. Unlike the adaptive E-learning, the Self-directed learning is related to independence or autonomy in learning; it is a logical link for readiness for E-learning, where students pace their classes according to their own needs.This book provides information on the On-Job Training and Interactive Teaching for E-learning and is divided into four sections. The first section covers motivations to be considered for E-learning while the second section presents challenges concerning E-learning in areas like Engineering, Medical education and Biological Studies. New approaches to E-learning are introduced in the third section, and the last section describes the implementation of E-learning Environments.

How to reference

In order to correctly reference this scholarly work, feel free to copy and paste the following:

INTECH
open science | open minds