



The effectiveness of E- learning in learning: A review of the literature

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ABSTRACT

Entry to the information age and effective life in information-oriented society requires an understanding of its characteristics. One of the social institutions that will undergo extensive changes at this age is general and higher education and training institutions. The aim of this review study is to evaluate the effectiveness of e learning in learning. This paper is a review study carried out using Medline and CINAHL databases and Google search engine. The studies used include review articles and English meta-analysis of language. Of the retrieved results, 38 documents including articles, books and web sites were investigated and classified. At first, the background of e learning was studied history and in the next section its effectiveness in learning was briefly examined. The overall benefits of e-learning include the promotion of learning, independence and individual satisfaction, learning at anytime, anywhere and with any background, learning without the same prerequisites, speed and process of learning due to individual needs, individual learning along with cooperative learning, saving time and costs significantly, the possibility of teaching and learning for all people, mutual teaching and learning, getting quick results in learning, learning more by using multimedia and maintaining resources and reducing environmental and audio pollution. The results of studies suggest positive effects of e-learning on learning thus it is suggested that this approach be used more in education, which requires building the required grounds.

Keywords: E learning, effectiveness, learning

INTRODUCTION

Teaching means a purposeful and preplanned activity whose aim is to provide opportunities to facilitate and speed up the learning within learning and developing systems [1]. Learning is a process to achieve knowledge, skill and ability to make decisions and performance that ultimately leads to a change in their behavior [2-4]. In the present era, education as a basic human right has been identified as the cause of change and social progress [5] and at the

same time with the rapid changes and the advent of new techniques and skills in information technology and its impact on the ways and means of living, education process, which is one of the fundamental pillars of society, changes, too. [6]

With communication between communities and emergence of different needs and innovation human entered a period which it called information era. Increasing and strong tendency towards e-learning shows the various benefits of this method compared to traditional methods of instruction [7]. In addition, many educational psychologists believe that learning should be organized in a way that each learner based on their ability is engaged in learning activities [8]. In this regard, it should be noted that e learning is an individual training where learners are able to achieve educational goals based on their own talents and, in fact, they learn how to learn, and this is one of the educational goals, because learning continues throughout life. On the other hand, we are moving from the industrial society to an information-driven society. In other words, we pass from the physical world to the virtual world. Entering the information era and effective life in the information age requires an understanding of its characteristics. One of the social institutions that will undergo extensive changes at this age is general and higher education and training institutions[9]. Therefore, the aim of this review study is to evaluate the effectiveness of e learning in learning.

Method:

This paper is a review study carried out using Medline and CINAHL databases and Google search engine. The key words used were e-learning, learning and effectiveness. According to the purpose of the study, the retrieved results were restricted to the documents in English, as well as review articles and meta-analysis. Thus, 38 documents including articles, books and web pages were studied.

Results:

Teaching methods are classified into two conventional and distance teaching methods. Conventional teaching is teacher-centered. In this regard, traditional methods of education, which now run, alone are not able to respond to the move of knowledge and constantly changing needs of communities in the world of informatics. In addition, educations at some fields do not finish at the university but should continue throughout the career. Thus, familiarity with modern methods of education will be very important. The use of modern methods of education is so important that some education experts consider mastery over the mentioned methods as to be more important than a teacher's scientific knowledge and scientific information [10]

Increasing demand for learning science, the limits of the traditional educational system and the development of learning methods have led the world to the ways in which time has lost its intrinsic value. Thus, e-learning can be seen as the most important scientific-cultural leap of the world. Very soon, this factor will be enumerated as one of the main indicators of the information society. One of the things that have been considered advantages of e-learning is equalizing educational opportunities for all [11]. So the existence of several problems associated with the presence of expert faculty members, new training facilities in the region and access to new education technologies and the problems of learners' presence in a classrooms have led to the development of learning-teaching methods and strategies of distance learning by software and so on. However, of the characteristics of the distance learning program is student-centeredness and the separation of teacher and student. Media is the provider of non-adjacent relationship between these two important educational components [12]

In the primary form of e-learning, information used to be stored and be available on large computers known as [main frame] and access to them was possible through primary terminals, but with the invention of the first personal computers, at the same time production and development of web browsers created very large evolutions in educational technology [13].

Internet came to the world of communication in the '90s and its growth has been faster than other media before it. As in 1997, its users were about 87 million, in 2003 half a billion and in 2003 more than one billion eight hundred million [13-14]. Currently penetration rate of the Internet in North America is 76.2 percent and 28.8 percent in the Middle East [15]. From 1996 on, the government put development of e-learning systems approach on its agenda at the universities [16].

Statistics show that in 1999, the mostly used teaching methods [53%] has been using educational CDs, but in 2004 E-Learning has won the first place in education [17]. The importance of ICT is to the extent that after the end of the

first decade of the twenty-first century, few educational activities and research are carried out without the use of Internet and computer communications [18]. In the last decade, due to the impact of information technology on education, traditional educational institutions have used this technology approach to compete and to prevent the isolation of their education system [19]. This is to a degree that, today due to the rapid growth in scientific production, we will be able to train this vast amount of information only if beside cross-training, we teach how to gain up to date information and tailored to job requirements, using modern methods. According to the definition of modern educational systems, learning is a constant and long-term process, and e-learning has brought about the continuous relationship between education and work, and provides education in all stages of life [20-21]. E learning refers to an educational system where the trainer and the learner are separated by physical distance, but due to the means and tools at their disposal brought by technology, they are linked [22]. E Learning created a new concept in the field of education and learning that has created the possibility of learning in any subject, at any time and in any place forever. [9]

Bach et al suggest promoting educational methods that cause more meaningful learning in students, and improve critical and creative thinking skills and promotes them, along with lecturing method [9]. Research shows that students who use CD instead of booklets are more motivated to learn [23]. And also that e-learning increases learning up to 20% to 30% compared to traditional classrooms [24]. In a study, it was reported that 94 percent of distance learners who completed the training courses believe that they have learned more compared to traditional classes [25].

Norris et al considered electronic self-care education programs as good ways to teach these patients due to increased autonomy and participation of patients in their care [26]. In e-learning method, with respect to the fact that the learner accepts the his own responsibility for learning, a deeper learning occurs, so that in this method training focus is on building knowledge and not necessarily on the acquisition of knowledge. In fact, in this way, students learn how to learn [27-29]. In a poll done on the students, they stated that, in the e-learning method, the ability to use learning is more. A study carried out on students' learning in e-learning method has found that the extent of learning in electronic method is more than the traditional system of learning and has acknowledged that learners in electronic methods will have access to more information. In the method that is self-strategy learning, students learn to assume responsibility of their own learning and at any time they want they are able to have access to educational content and ease of use in this method is higher [22]. These findings correspond with the opinions of others who believe that comfort and ease of access to educational content via computer leads to an increase in learning ability in the learners. Moreover, learning by attending a classroom that leads to fatigue and commitment to learning at a specific and pre-determined time can lead to the restriction of the learner in learning [30].

E-learning method has more independence. Some experts believe that in learning, learner autonomy and self-determination are important [28]. They also believe that education and distance learning derive from technological teacher and student separation, where learner frees from restriction of movement and travel and inflexible scheduling [31]. In addition, in computer learning, student himself starts his training and leads educational requirements [10]. Comprehensive independence in the use of this teaching method can lead to increased satisfaction and have widespread and positive outcomes. As mentioned in a study, there is a positive relationship between satisfaction of learning and ease of its application, and learners who are more than 100 miles away from the school and are 40 or over satisfaction from training via computer was more [32]. According to the results of this study, it appears that the use of e-learning in the educational system can be used as a strategy for responding to growing demand for higher education, given the provision of infrastructure and the necessary conditions and the proper design of the education system in virtual environments [13].

In a study by Mohammadi et al [2013] with the purpose of comparing the effects of e electronic and booklet on women's satisfaction with postpartum care, it was shown that e-learning increases the level of satisfaction of nulliparous women in the aftermath of labor, where this increase in satisfaction was significantly more than the control group. Patient satisfaction means his report of the quality of care and the interplay between patient and health service providers [33].

In a study by Lin et al [2008] in Taipei that was carried out to determine the effect of e-learning program on satisfaction of nulliparous pregnant women, there was a significant relationship between the two groups of intervention [e learning] and control [regular education] in terms of satisfaction of nursing education, to the extent that women's satisfaction with nursing training in e-learning was more than the control group [34].

Li et al also carried out a study with the aim of developing and evaluating the effect of self-care education via the Internet. After the intervention, a significant difference in fasting blood glucose levels was observed in the intervention group [35].

According to the studies carried out, of the benefits of e-learning acquiring basic skills, increased training time, support for students with disabilities, expanding access, improving quality of teaching and learning, increasing flexibility, reducing costs, increasing speed, skill development, saving natural resources needed at macro level can be pointed out [36]. Now many of the world's largest universities have combined e-learning with traditional education methods [37].

Of the other advantages of e-learning the following can be mentioned: learning at anytime, anywhere in any field without similar learning prerequisites, individual learning along with cooperative learning, determining the pace of learning process and according to individual needs, 50% savings in time, 60% savings in cost, the possibility of teaching and learning for all people, training and learning bilaterally, getting fast results in teaching and learning, learning by using multimedia features and conservation of resources and reduction of environmental and noise pollution. [13]

Computer-assisted learning has its own limitations including the fact that it may not be able to replace the teacher, emotional human interaction, and face-to-face interaction that can be created in the classroom [38]. Supply and demand system of higher education does not still have the detailed understanding of training in virtual environments and is not very familiar with its capabilities and functions of information technology and its basic skills. This method requires appropriate infrastructure and broadband communications to transmit and receive data [5]. Learner's success depends on his technical skills in the use of computers and the network. To provide creative training methods, school of the future should deal with independent learning and continuous evaluation so that the active participation of the learner is predicted [28-29].

DISCUSSION AND CONCLUSION

E learning and teaching is an issue that needs to be considered further. Every day in the big cities such as Tehran, huge cost are paid for the urban commuter students, environmental pollution and noise, and education expenses. Moreover, the damaging effects of inter-city and international migration should not be ignored. The government must provide the appropriate infrastructure, such as high-speed Internet lines, convenient and inexpensive hardware and software, support of scientific founders of these scientific projects and the promotion of e-learning among the people to create a fertile ground for the growth and promotion of scientific level of the country. Although e-learning is in its start and at the beginning of its movement towards the future, it cannot be ignored, and background needed for its use should be provided. With a review of the literature, it is found that elearning has a significant impact on learning and teaching and should be considered.

REFERENCES

- [1] Charmi L, Kalkhali T. Triage in medical service (prehospital and hospital) what that nurses know. Tehran; Strategy for Increasing Crisis Management in Disaster, 2006. (Persian)
- [2] Karimi S, Kazemi M, Shabani Z, Vazirinejad R. Comparison between lecture method and pamphlet method on knowledge and attitude in high school students Sirjan city about HIV. Hormozgan Med Univ Sci J. 2006;10(3):285-90. (Persian)
- [3] Hasanpordehkordi A, Delaram M, Safradi F, Salehitali S, Hasheminiya SAM, Kasiri K, et al. Compare lecture method and self training method in knowledge of parents of children with major Thalassemia on caring their children's. Shahrekord Univ Med Sci J. 2008;1(2):52-8.
- [4] wang Y SH. Assessment of learner satisfaction with asynchronous electronic learning systems. Information & management. 2003; 41(1):75-86.
- [5] Manii, R. Development of distance learning in higher education (opportunities and challenges). Rahyaaft, 2003. 31: 43-55
- [6] Factors related to the adoption of e-learning in nursing students. Mohammad Mehdi Salari. Journal of Education Strategy Volume 2 Issue 3. 2009 / pp. 103-108
- [7] Niknam, M. 2000. Education of library and information studies. Journal book. Summer, p, 113

- [8] M. Nada. Distance learning. Monthly News School of Nursing and Midwifery, Tehran University of Medical Sciences. 2002 / 2 (16) (9).
- [9] Walker T. 20 Most Popular Open Source Software Ever. (Cited 201\ Aug 14). Available from: <http://www.tripwiremagazine.com/2010/03/20-most-popular-open-source-software-ever-2.html>
- [10] The effects of e-learning and lecture on maternal and child health of nursing students' learning. Iranian Journal of Medical Education / Spring and Summer: 2007 (1) 7 31-39 Zolphagharieh Mitra et al
- [11] Clark, J. M., & Pavia, A. (2003). Dual coding theory and education. *Educational psychology Review*. 3, 149-210.
- [12] Shabani H. Educational methods: Ways and teaching method. Tehran: University of Human Sciences; 2007. (Persian)
- [13] E-learning and its place in university education, Journal of the Paramedical College of Allied army of the Islamic Republic of Iran. Leila Gholamhosseini third year Number 2 Summer 2008
- [14] Phillip B. Enhancing sustainability and effectivity of training and education by online learning. CRYSTAL network for Training and Learning Media 2002. (Cited 2010 August 1). Available from: <http://www.crystal-elearning.net>.
- [15] World Internet Users and Population Stats. Internet World Stats. Miniwatts Marketing. Group (Cited 2010 August 1). Available from: <http://www.internetworldstats.com/stats.htm>.
- [16] Zandi S, Abedi D, Yousefy Ar, Changiz T, Yamani N, Kabiri P. Electronic learning as a new educational technology and its integration in medical education curricula. Iranian journal of medical education 2004; 4(1 (11)):61-69. (Persian)
- [17] Kombod M. 2006. E-Learning. Virtual Developer Conference and Festival in Iran. Winter 2006.
- [18] Araasteh, HR. The role of higher education on the development prospects of 0.1404 2003 .31 approach. 33. 42
- [19] Mitchell AW, Batorski RE. A study of critical reasoning in online learning: application of the Occupational Performance Process Model. *Occup Ther Int*. 2009;16(2): 134-53.
- [20] Howlett DC, Connelly JP, Vincent T. Real-time, online teaching to enhance undergraduate learning. *Med Educ*. 2009;43(11): 1115-6.
- [21] Urbanczik R. Online learning with ensembles. *Phys Rev E Stat Phys Plasmas Fluids Relat InterdiscipTopics*. 2000; 62(1):1448-51.
- [22] Thiele JE. Learning patterns of online students. *J Nurs Educ* 2003 Aug; 42(8): 364-6
- [23] Trepka MJ, Newman FL, Davila EP, Matthew KJ, Dixon Z, Huffman FG. Randomized an interactive multimedia food safety education program for clients of the special supplemental nutrition. *J Am Diet Assoc*. 2008;108(6):978-84.-
- [24] Hasanzadeh M. Electronic learning. Tehran: Tadbir Publication; 2002. (Persian)
- [25] Fredericksen E, Pickett A, Pelz W, Swan K, Shea P. Student satisfaction and perceived learning with online courses-principles and examples from the SUNY Learning Network. (cited 2007 Jun 25). Available from: http://www.sloan-.org/conference/proceedings/1999summer/papers/99summer_fredericksen2.pdf
- [26] Pyper C, Amery J, Watson M, Crook C. Patients' experiences when accessing their on-line electronic patient records in primary care. *Br J Gen Pract*. 2004 Jan;54(498):38-43.
- [27] Twomey A. Web-based teaching in nursing: lessons from the literature. *Nurse Educ Today* 2004 Aug; 24(6): 452-8.
- [28] Taylor JH. Facilitating distance learning in nurse education. *Nurse Educ Pract* 2003; 3(1): 23-9.
- [29] Choi H. A problem-based learning trial on the Internet involving undergraduate nursing students. *J Nurs Educ* 2003 Aug; 42(8): 359-63
- [30] Buckley KM. Evaluation of classroom-based, web-enhanced, and web-based distance learning nutrition courses for undergraduate nursing. *J Nurs Educ* 2003 Aug; 42(8): 367-70.
- [31] Frith KH, Kee CC. The effect of communication on nursing student outcomes in a Web-based course. *J Nurs Educ* 2003 Aug; 42(8): 350-8.
- [32] Billings DM, Connors HR, Skiba DJ. Benchmarking best practices in Web-based nursing courses. *ANS Adv Nurs Sci* 2001 Mar; 23(3): 41-52
- [33] Comparing the effect of electronic learning and booklet on women's satisfaction of postpartum care. S. Mohammadi et al. *Journal of Obstetrics Gynecology and Infertility*. 16 (61): 2013. 1-8
- [34] Lin SS, Chien LY, Tai CJ, Lee CF. Effectiveness of a prenatal education programme on breastfeeding outcomes in Taiwan. *J Clin Nurs* 2008 Feb;17(3):296-303.
- [35] Lee TI, Yeh YT, Liu CT, Chen PL. Development and evaluation of a patient-oriented education system for diabetes management. *Int J Med Inform*. 2007;76(9):655-63.

- [36] Dorrian J, Wache D. Introduction of an online approach to flexible learning for on-campus and distance education students: lessons learned and ways forward. *Nurse Educ Today* 2009; 29(2): 157-67.
- [37] Pavlica P. E-learning: online training and updating. *Radiol Med*. 2001;102(12): 20-2.
- [38] Twomey A. Web-based teaching in nursing: lessons from the literature. *Nurse Educ Today* 2004 Aug;24(6): 452-8.