

The Learners' Satisfaction of E-learning: A Review Article

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Abstract The present study was conducted with the aim of "evaluation of the evidence on students' satisfaction of e-learning and the impact of key factors upon e-learning and their usefulness in teaching." The present systematic review was done on 16 studies from around the world. The inclusion criteria were: use of the specified terminology in the title, designing research, and searching the database of Medline, Elsevier, Proquest, Google, Google Scholar, SID, MagIran. In order to determine the quality of quantitative researches, the scale of Jaddad et al was used. The results indicated that factors influencing the learners' satisfaction of e-learning were divided into three categories: the factors related to the learner, to the instructor (curriculum designing, , and to the management and technical support. In order to increase the learners' tendency toward using this method, the effective factors should be studied and based on which this method be used.

Keywords: satisfaction, student, e-learning, web-based learning

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1. Introduction

The unprecedented increasing speed of science, the fundamental changes in people's lives today, a fresh look at education, and the efforts made to establish justice in education are some of the reasons for the presence of information technology in education [1]. The increasing need for education in the world where more than 50 % of men need training and the fact that by 2025 it is estimated that 160 million people across the world will need to be educated at universities, make the necessity to use e-learning in the forms such as on-line learning, computer-based learning, network learning, web-based learning, and off line learning all the more remarkable [2]. There is no single definition of e-learning. The use of the Internet and Intranet technologies for learning [3], providing a set of educational activities using electronic means [4], a new platform for the delivery of educational materials, and facilitation of interaction between learner and instructor using computer network [5] are some of the definitions given for e-learning. But Gerkin, Taylor and Weatherby believe that the most common definition ever given is: "a set of educational activities by using electronic devices such as audio, video, computing, and networking" [6].

Of the advantages of e-learning, one can mention standardizing educational content, exercising responsibility, avoiding the dispersion of materials, increasing

multicultural interactions, quick and easy overview of contents, empowering learner's meta-cognitive capacity, shifting toward education for all, overcoming the shortage of human and financial resources for education, and reducing physical requirements [7,8]. E-learning besides contributing to the advancement of knowledge, institutionalizes education [9]. E-learning is a bridge between old and new skills, and because it overcomes the limitations of time and place, it is called anytime-and-anywhere learning [10]. The educational environment can be fully or partially online or in combination with traditional environments. However, this method has some challenges, such as impairment of interaction with others, technical problems, anxiety due to lack of skills or low quality technology [11]. Also, the shift from the traditional education to e-learning faces the institution with some challenges such as lack of expertise, lack of skills in using computer, lack of facilities, and etc. [12]. These challenges may affect the learners' use or non-use of the method) [13]. The satisfaction of the users of this method plays an essential role in the usage and sustainment, especially in developing countries [14]. In the classic evaluation model of Kirkpatrick's, the first assessment level goes to the learners' satisfaction with this method [15]. The learners' satisfaction, in fact, ensures his effective learning and increases his competence which would guarantee his proper function [16]. It is necessary that the educational method and its teaching be selected so that it provides learners' satisfaction and their desire to

continue e-learning [17]. In fact, the learners' satisfaction indicates the success of the educational program and its continuation or not [18]. And, the core success of every educational program is the satisfaction of it [19]. Curbelo believes that the learners' satisfaction and the success of the educational program go hand in hand, each contributing to the other [20]. Torres et al believe that for e-learning to survive in the world of education it has to be able to keep up with the needs of learners and gain their consent) [21]. Chena believes that for e-learning to survive, it has to win satisfaction of the learners, because there is a direct correlation between the formation of the learner's academic and social identities and his satisfaction with the educational method [22]. Various studies have examined the factors affecting student satisfaction, such as Attwell 2007 which pointed out factors such as providing infrastructure required for e-learning (governmental decision, support of executive centers, proper management of the organizations which provide e-learning, granting official degrees, choosing appropriate curriculum) as being effective upon students' satisfaction of e-learning [23]. Yengin, however, believes that these measures have no role in the students' satisfaction of e-learning [24].

Given the importance of e-learning and its undeniable role in education, it merits special attention. The first, this study was designed to examine evidence in the field of e-learning and satisfaction of medical students, but the number of studies in this field was low. So, the researches set out to conduct a study with the aim of "evaluation of evidence on students' satisfaction of e-learning and the impact of key factors upon e-learning and their usefulness in teaching."

2. Methods

2.1. Systematic Literature Review

In the present review research, which was done systematically, the information published in the databases of Medline, Elsevier, Proquest, Google, Google Scholar, SID, Magiran was collected, reviewed, organized, and then compared without any time limit. In order to determine the quality of quantitative research, the scale of Jaddad et al was used. Keywords such as computer-based learning, online learning, offline learning, E-learning, b-based learning, network learning, Internet-based learning, advanced distributed learning, computer-assisted instruction, e-training education, open/flexible learning, and satisfaction were used for researching.

2.2. Data Collection

The criteria for being included in the research were: using the terms specified in the title, research design, quantitative or qualitative methods of research, and the criteria of exclusion were the studies limited to abstracts and the ones which had a language other than English or Farsi. The repeated researches were excluded by software Endnote.

In the first step, only studies using quantitative methods were included, but since the researcher encountered qualitative studies during the search, which had valuable information, they were also included in the study. In order to determine the quality of the quantitative researches the

scale of Jaddad et al was used [25]. As for quantitative studies, those that met the inclusion criteria were coded. Therefore, using this scale, rating was based on the study design (suitable 1, unsuitable 0), sampling method (random 1, non-random 0), and description of sample loss or exclusion criteria (Yes 1, No 0). If a study was experimental with random sampling and a thorough explanation of how the sample was selected, a rating of 3 was assigned.

3. Results

3.1. Overview

A total of 123 articles were found during the time period of 2003-2013, of which 16 articles met the inclusion criteria and were confirmed by Jaddad. 13 articles were quantitative researches, 2 articles qualitative researches, and one article a combination of research methods. The results showed that of all articles 2 were in medical and nursing. 6 articles (37.5 %) specifically evaluated the students' satisfaction of computed-based learning, and 10 articles assessed satisfaction of all kinds of e-learning. The review of literature suggests that much attention has been paid to the students' satisfaction of e-learning in recent years (Table 1). Regarding the fact that factors such as the role of the learner, consideration of individual differences, instructor's features are of high importance in education, the authors started researching by posing questions such as: what is the nature of e-learning? What are the positive or negative effects of increasing students' satisfaction on e-learning? What are the aspects of students' satisfaction of e-learning? Then, according to the process of searching articles, the following findings were obtained in response to the questions.

Table 1. The Characteristics of the Samples of the Present Study (16 Articles)

Characteristics	Number (per cent)
Date of Publication	
2003	2(12/5)
2004-2007	4(25)
2008-2010	5(31/25)
2011-2013	5(31/25)
Type of Research	
Qualitative	2(12/5)
Clinical Trial	3(18/75)
Descriptive-Analytic	10(62/5)
Combination	1(6/25)
Country	
The US	5(31/25)
Malaysia	2(12/5)
The Netherland	1(6/25)
Pakistan	2(12/5)
Taiwan	3(18/75)
South Korea	1(6/25)
Germany	1(6/25)
Turkey	1(6/25)
Source	
Thesis	2(12/5)
Article	14(87/5)

What is the nature of e-learning?

Unlike the unchanging nature of classroom-based training, e-learning has a flexible nature and the learner

can have access to the study materials at any time and repeat them. As such, learning is more durable in this method [26]. In contrast to some who think that the e-learning does not follow any philosophy and theory [27], Anderson believe that the theories of cognitive, behavioural, and social learning play a vital role in e-learning. The attempts made to establish a connection between the old and new theories, using senses in learning, communicating with students, and indicating the amount of information required testify to application of cognitive theory in this approach. The use and repetition of positive reinforcements, encouraging interaction, and assessment by fellow members indicate application of behavioural and social learning [28]. The dominant philosophical view in this educational method is cooperative structuralism rooted in the principles of interactions proposed by John Dewey. Dewey believes that knowledge is dependent on the learner and in the same condition, learners acquire different awareness. In the e-learning method, based on structure-oriented perspective, the learner, actively and persistently dealing with learning materials, shapes and builds knowledge [29].

What are the positive and negative impacts of raising learners' satisfaction upon e-learning?

Manocher believes that learners play a significant role in using or not using a learning method. Learning style plays a significant role in the learner's satisfaction of a learning method. Based on Kolb's principles of learning, he believes that all people can learn, but their styles of learning are different, hence different styles for different courses. Thus, before using e-learning, the instructor needs to be aware of students' learning styles, because choosing a wrong method may lead to failure of the e-learning program [30]. Graff and Davis also believe that repeatability and possibility of amendment and trust in the instructor and other learners can play roles in the learner's positive attitude toward e-learning and increasing their satisfaction of it, thereby leading to the positive attitude toward this method and increasing the individual learning [31]. However, prolonged use of this educational method results in the learner's increased skills and desire to use the method, hence increasing the efficiency of e-learning [32]. On the other hand, disadvantages such as computer addiction, poor interaction with the environment, and the health complications can lead to negative effects on satisfaction of this method [33].

What are the aspects of learners' satisfaction of e-learning?

The factors related to the instructor:

Malik et al, in their investigation of the factors affecting students' satisfaction of e-learning, showed that 55 % of learners found suitable the use of conceptual maps and images related to the course objectives in learning and expressed pleasure with the instructions which were based on that [34]. Swan said, only when the course materials are prepared by an experienced instructor, the curriculum developed for e-learning would have the greatest impact and would bring about the learners' satisfaction [35]. Malik also in his developing a conceptual framework for the learners' satisfaction of e-learning, concluded that the design must be the result of interaction between educational environment, objectives, strategies, activities and interactions among co-workers and classmates [36].

About the educational environment and that if this environment is better to be simple or if one or several

methods of teaching be used simultaneously, the best method recommended is using texts along with podcast [16,37,38]. However, some other believe that simple learning environment may reduce the learner's interest in learning and the use of several methods, such as podcasts, games, chat and You Tube can be helpful [39,40]. Ahmad and Tarmudi in their investigation of satisfaction of 100 employees in higher education stated that a simple learning environment reduces the rate of anxiety and increases learning abilities [37]. Ong and Lai had drawn attention to the pre-organizers in significant learning [39]. The correspondence between evaluation and the content and quality of information provided [19] are some of the most important factors related to the instructor.

The factors related to the learner:

Park, in a study, in 2009, investigated the factors that affect adult learners' decision-making to pursue e-learning, pointing out the role of age in learners satisfaction of e-learning, hence believing that the age of the person is involved in continuing to use e-learning or not. Of 147 subjects participating in this study, it was reported that 53 people (54.1 %), aged between 20-29, were more satisfied with e-learning, and 14 people (14.3 %), aged over 40, were less satisfied with e-learning [41]. Doing a survey study in 2008 over across countries, Cyr designed a website appropriate for the learners' cultures. Canadian participants in this study (36.5 %), Germany (7 %), Chinese (12.2 %), Spanish (8 %), and Japanese (5/9 %) mentioned the role of age in e-learning satisfaction, and stated that designing age-appropriate curriculum increases satisfaction of e-learning and learning [42]. Lang and Leen hold that the less the age of the learner, the more his tendency to use e-learning and his satisfaction of it [43]. The participants aged 18-25 (69.8 %) in this study preferred E-learning to traditional learning. However, other studies have shown that the people aged between 25 to 50, due to their high responsibility and the problem of physical presence in the classroom, had more satisfaction with e-learning [44,45]. Some studies suggest that gender affects e-learning satisfaction. The studies, however, do not specify what and why a gender is more satisfied with e-learning. Items such as one's experiences and computer skills [46,47] are some of the factors which affect learner's satisfaction. Park and Choi maintain that the learner's positive attitude toward using computer as a result of the ease of use of computers and creativity, can affect his satisfaction [44]. Team works and the interaction between learner and instructor and other learners increase their learning and develop the ability of analytical and critical thinking in them. Moreover, the student's interaction with his peers leads to increased human and collective efforts to better understanding, significant learning, and discussions. The interaction with instructor, not only contributes to the learner's better understanding, it reduces his anxiety. According to the theory of constructivism, a part of one's knowledge is formed through his interactions with others [48].

Factors related to management and support:

The suitable speed of Internet (60%) and provision of services by the institution (33%) are two of the most important factors influencing participants' satisfaction (Rosenblatt, 2004). In Rosenblatt's study, efforts made to have the participants engaged, preparing security and support teams, the server bandwidth [47] were among the

factors mentioned as having impact on increasing the learners' e-learning satisfaction.

4. Discussion

With the rapidly growing science, a new approach for delivering educational content and facilitating learner-instructor interaction has been developed worldwide using computer network known as e-learning, hence its impact upon education all around the world and the educational revolution caused. Despite the increasing growth of e-learning in education, few studies concerning factors affecting student satisfaction of e-learning have been conducted around the world [49]. In the present study, only 16 articles between 2003 and 2013 were found in this regard which can attest that there are few studies on this issue. Studies have shown that those who employ this educational method in their competition with other methods, have to consider different aspects of learners' perceptions and needs and identify what satisfies their physical-mental needs while ensuring his advancement toward reaching competence [50,51].

The search done on the nature of e-learning indicated that there was no single all-encompassing definition of e-learning acceptable to all users. On philosophy and theory involved in e-learning, Felix maintains that we cannot say that all three behavioural, social and cognitive theories are involved in this method of learning. But, the foundational theory of e-learning is cognitive theory [52]. Koohang et al believe that applying one theory in designing e-learning has led to the failure of the program and in design this educational method, all three behavioural, cognitive, and social theories need to be used [53].

In response to the second question, the positive and negative effects of the learner satisfaction on development of e-learning; the results showed that the student's learning style, trust in instructor, and possibility of error amendment had a positive impact on learners' satisfaction. Strother also believes that designing a curriculum fitting students' learning styles, especially in the elementary level learners, can have positive effects on the learner's tendency to utilize this training [11]. Sun et al, however, do not consider the role of learning styles essential in the success of e-learning and more emphasize the personality traits of introvert and extravert people. They also believe

that introvert people are more inclined to use e-learning and using this method for them has a higher success rate [54]. Selim, in his research, has studied the success factors of e-learning. He believes that the success or failure of e-learning program depends on several factors. Thus, it cannot be limited to the presence or absence of one or more factors in a clear-cut way) [55].

In response to the third question about the aspects of learners' satisfaction of e-learning, we can say that the educational method plays a significant role in increasing the accountability of the individuals to update their knowledge and skills. Choi and Park had divided the individuals' satisfaction of this method in two groups: the factors before starting the course (age, gender, employment status, his knowledge of e-learning, attitudes and motivation) and external factors (financial problems ,the facilities provided by the Institute, the Institute support, the preparation of educational materials, and their quality [44]. Also the use of podcasts, particularly at pedagogic level, has an important impact upon their understanding and satisfaction (Maag, 200) . The satisfaction of learners can be divided into three factors: learner-related (age, gender, ...), instructor-related (information quality, use of pre-organizers, etc.), and management- and-support related (internet speed, bandwidth, etc.) Figure 1. The most important results found in the literature was consideration of the content of courses (curriculum) available in electronic form [10,16,34,36]. What we obtained from the literature is that to develop competence in learners and to prepare them for the labour market, they must be properly trained. The increasing rate of science production throughout the world has made impossible no use of e-learning. E-Learning has had a significant role in overcoming geographical, cultural, economic, and individual limitations. However, some cases of failure of e-learning have been witnessed [44]. The conclusion we could make of the present studies was that there was no single definition of e-learning and in the present researches, a different terminology is used for this training, for instance, some had used terms of learner satisfaction with distance education, online education, or satisfaction of computed-based education, and had not explained about them in the text or methodology of their researches.

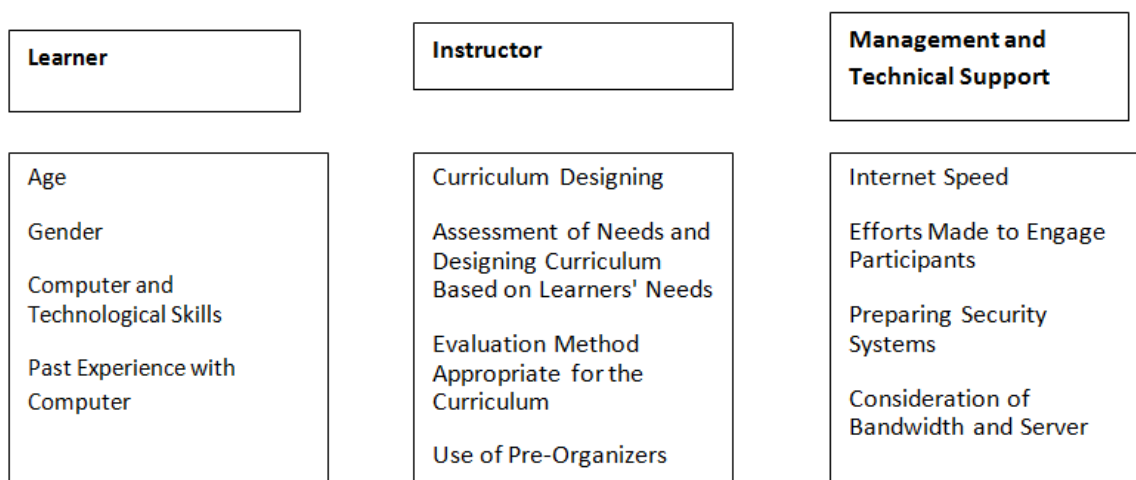


Figure 1. The Factors Influencing the Learners' Satisfaction of E-Learning

Regarding the points mentioned about the learners' satisfaction of e-learning, the researchers suggest that in the same way that the learner has to prepare the syllabus appropriate for the learning objectives and his needs before attending the class, the instructor also has known the learner well and after deciding on his needs, manage to state the objectives and skills, collect educational materials, prepare suitable scenarios, decide on using figures and images, correct and review the materials again and again in his designing curriculum. Perhaps, it would not be appropriate to design the curriculum individually as it needs a team consisting of experts in computer programming and those who are familiar with curriculum designing. Some arrangements should be made that before starting the course, the learners using e-learning learn the basic computer skills. Learning these skills cases them to have a positive attitude toward information technology and fewer problems with choosing contents. It is recommended that the learners and their abilities to use simple or complex educational environments be identified and decided on. Perhaps it is necessary to use pedagogical approach for younger learners. At first simple educational environments be used and gradually the educational environments with multiple teaching methods be attempted. As the research results indicated, in presenting the course educational materials, it is better to use pre-organizers such as illustrations, graphs, or story in order to maintain continuity of new materials with the old ones.

5. Conclusion

The authors believe that, if there was a single definition of e-learning or if authors of articles would have stated their definition of e-learning, the factors affecting e-learning would be identified. Thus, it is recommended that some studies be conducted in order to reach a single definition of e-learning, and some researches be done on the factors influencing learners' satisfaction of e-learning. Also, since the author did not come across sufficient information about medical students' satisfaction of e-learning during review of literature, it is recommended that a research be done on the factors influencing medical students' satisfaction, including the nursing students', of e-learning. It seems that it is necessary to set up a strong support system for providing quality services in order to succeed in e-learning, especially now that establishment of virtual colleges and the use of e-learning are growing. Constructing proper infrastructure, passing policies, programs, and laws, developing the institutions executing e-learning, reviewing curriculum, and changing the learners' stance toward e-learning are some of effective factors in increasing learners' satisfaction in using this educational method. Finally, the researchers recommend that it is advisable for learners before starting an e-learning course that their needs be surveyed and identified, and then, the e-learning program is designed based on them. The authors recommend that some researches be conducted on Iranian learners' satisfaction and more specifically on the effective factors in e-learning in medical sciences, because the satisfaction varies with the learners' situation and condition. And, these differences need to be detected. It is also recommended, given that in medical sciences, the use of e-learning has become

popular, before designing an e-learning course, the learners' needs and the necessary infrastructure and facilities be assessed and, then steps be taken to bring about learners' satisfaction.

Statement of Competing Interests

The Authors Have No Competing Interests.

References

- [1] Ruiz, J.G., M.J. Mintzer, and R.M. Leipzig. "The impact of e-learning in medical education". *Academic medicine*, 81(3), 207-212, 2006.
- [2] Hrastinski, S. "A study of asynchronous and synchronous e-learning methods discovered that each supports different purposes. Asynchronous & Synchronous E-Learning." *Educause Quarterly*, 4, 2008.
- [3] Seow, C., Stewart, B.L. "Valuing the adult learner in e-learning: part one-a conceptual model for corporate settings." *Journal of Workplace Learning*, 17(5/6), 337-345. 2005.
- [4] Bakia, M., Shear, L., Toyama, Lasseter, Y. "A. Understanding the Implications of Online Learning for Educational Productivity." Office of Educational Technology, US Department of Education, 2012.
- [5] Zamzuri, N.H., Shahrom, M., Kasim, E.S., Nasir, H.M. and Mamat, M.N., "The Role of Cognitive Styles in Influencing the users' Satisfaction on E-Learning System." *Procedia-Social and Behavioral Sciences*, 67, 427-435. 2012.
- [6] Gerkin, K.L., T.H. Taylor, Weatherby, F.M. "The perception of learning and satisfaction of nurses in the online environment." *Journal for Nurses in Professional Development*. 25(1), E8-E13.2009.
- [7] Haydn, T. "Using new technologies to enhance teaching and learning in history."Routledge. 2013
- [8] Darvish, A., Bahramnezhad, F., Keyhanian, S. "The Role of Nursing Informatics on Promoting Quality of Health Care and the Need for Appropriate Education." *Global journal of health science*. 6(6), 11. 2014.
- [9] Paavilainen, E. Salminen-Tuomaala,M. "Web-based learning for continuing nursing education of emergency unit staff." *Journal for Nurses in Professional Development*. 26(4),159-163. 2010.
- [10] Katuk, N., J. Kim, Ryu, H. "Experience beyond knowledge: Pragmatic e-learning systems design with learning experience." *Computers in Human Behavior*. 29(3), 747-758. 2013.
- [11] Strother, J.B. "An assessment of the effectiveness of e-learning in corporate training programs." *The International Review of Research in Open and Distributed Learning*. 3(1). 2002.
- [12] Kim, J. Lee , W. "Assistance and possibilities: Analysis of learning-related factors affecting the online learning satisfaction of underprivileged students." *Computers & Education*. 57(4), 2395-2405. 2011.
- [13] DeBourgh, G.A. "Predictors of student satisfaction in distance-delivered graduate nursing courses: what matters most?." *Journal of Professional Nursing*. 19(3), 149-163. 2003.
- [14] Lee, B.-C., J.-O. Yoon, Lee, I. "Learners' acceptance of e-learning in South Korea: Theories and results." *Computers & Education*. 53(4), 1320-1329. 2009.
- [15] Ozturan, M. , Kutlu, B. "Employee satisfaction of corporate e-training programs." *Procedia-Social and Behavioral Sciences*, 2(2), 5561-5565, 2010.
- [16] Muylle, S., Moenaert, R., Despontin, M. "The conceptualization and empirical validation of web site user satisfaction." *Information & management*, 41(5), 543-560. 2004.
- [17] Keller, J.M. "First principles of motivation to learn and e3-learning." *Distance Education*, 29(2), 175-185, 2008.
- [18] Cocea, M. Weibelzahl , S. "Motivation: included or excluded from E-learning. 2006.
- [19] Maag, M. "iPod, uPod? An emerging mobile learning tool in nursing education and students' satisfaction. in Who's learning? Whose technology? Proceedings ASCILITE 2006." 2006. Citeseer.

- [20] Curbelo, A.M. "Agricultural Education Students' Perception of WebCT in Puerto Rico". 2005. Available at: webct.confex.com/webct/2005/preliminaryprogram/abstract_1176.htm.
- [21] Martínez-Torres, M., Toral, F. Barrero, S. "Identification of the design variables of eLearning tools." *Interacting with Computers*, 23(3), 279-288. 2011.
- [22] Chen, S. W., Hsieh, H. C., Huang, L. L." Learning satisfaction of undergraduates in single-sex-dominated academic fields in Taiwan." *Procedia-Social and Behavioral Sciences*, 15, 2487-2493. 2011.
- [23] Attwell, G." Personal Learning Environments-the future of eLearning? ." *eLearning papers*. 2(1), 1-8. 2007.
- [24] Yengin, I., Karahoca, A., Karahoca, D."E-learning success model for instructors' satisfactions in perspective of interaction and usability outcomes." *Procedia Computer Science*, 3, 1396-1403. 2011.
- [25] Jadad, A.R., Moore, R.A., Carroll, D., Jenkinson, C., Reynolds, D.J.M., Gavaghan, D.J. "Assessing the quality of reports of randomized clinical trials: is blinding necessary? ". *Controlled clinical trials*, 17(1), 1-12. 1996.
- [26] Moore, M.G. "Handbook of distance education." 2013: Routledge.
- [27] Van Mierlo, C., "Cognitive load theory and e-learning. Zheng Yan, Encyclopedia of Cyberbehavior." IGI Global, 2011.
- [28] Anderson, T." The theory and practice of online learning." Athabasca University Press. 2008.
- [29] Clark, R.C., Mayer, R.E." E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning." John Wiley & Sons. 2011.
- [30] Manochehr, N.N. "The influence of learning styles on learners in e-learning environments: An empirical study." *Computers in Higher Education Economics Review*, 18(1), 10-14. 2006.
- [31] Davies, J., Graff, M. "Performance in e-learning: online participation and student grades." *British Journal of Educational Technology*, 36(4), 657-663, 2005.
- [32] Paulsen, M.F., Nipper, S., Holmberg, C." Online education: Learning management systems: Global e-learning in a Scandinavian perspective." 2003.
- [33] Cook, D.A." The failure of e-learning research to inform educational practice, and what we can do about it." *Medical teacher*, 31(2), 158-162. 2009.
- [34] Malik, M.W., Mubeen, G." Student satisfaction towards e-learning: influential role of key factors." in *COMSATS INTERNATIONAL BUSINESS RESEARCH CONFERENCE (CBRC)*, 2nd. 2009.
- [35] Swan, K." *Learning effectiveness online: What the research tells us*. Elements of quality online education." *practice and direction*, 4, 13-47. 2003.
- [36] Malik, M.W. "Factor Effecting Learner's Satisfaction Towards E-Learning: A Conceptual Framework." *OIDA International Journal of Sustainable Development*, 2(3), 77-82. 2010.
- [37] Ahmad, M.A., Tarmudi, S.M. "Generational Differences in Satisfaction with E-Learning among Higher Learning Institution Staff." *Procedia-Social and Behavioral Sciences*, 67, 304-311. 2012.
- [38] Lin, W.S. "Perceived fit and satisfaction on web learning performance: IS continuance intention and task-technology fit perspectives." *International Journal of Human-Computer Studies*, 70(7), 498-507, 2012.
- [39] Ong, C. S., Lai, J. Y." Developing an instrument for measuring user satisfaction with knowledge management systems. in *System Sciences. Proceedings of the 37th Annual Hawaii International Conference on IEEE*. 2004.
- [40] Overbaugh, R.C., Nickel, C.E." A comparison of student satisfaction and value of academic community between blended and online sections of a university-level educational foundations course." *The Internet and Higher Education*, 14(3), 164-174. 2011.
- [41] Park, J.-H., Choi, H.J." Differences in personal characteristics, family and organizational supports, and learner satisfaction between dropouts and persistent learners of online program. in *World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*." 2007.
- [42] Cyr, D." Modeling web site design across cultures: relationships to trust, satisfaction, and e-loyalty." *Journal of Management Information Systems*, 24(4), 47-72. 2008.
- [43] Leen, E.A., Lang, F.R." Motivation of computer based learning across adulthood." *Computers in Human Behavior*, 29(3), 975-983, 2013.
- [44] Park, J. H., Choi, H.J. "Factors Influencing Adult Learners' Decision to Drop Out or Persist in Online Learning." *Educational Technology & Society*, 12(4), 207-217. 2009
- [45] Brouwers, M.C., Makarski, J, Levinson, A.J." Study protocol A randomized trial to evaluate e-learning interventions designed to improve learner's performance, satisfaction, and self-efficacy with the AGREE II." *Implementation Science*, 5, 2010.
- [46] Rosenblatt, M.A." The educational effectiveness of problem-based learning discussions as evaluated by learner-assessed satisfaction and practice change." *Journal of clinical anesthesia*, 16(8), 596-601. 2004.
- [47] Donkor, F." Assessment of learner acceptance and satisfaction with video-based instructional materials for teaching practical skills at a distance." *The International Review of Research in Open and Distributed Learning*, 12(5), 74-92, 2011.
- [48] Wang, Y. S., Wang, H.-Y., Shee, D.Y."Measuring e-learning systems success in an organizational context: Scale development and validation." *Computers in Human Behavior*, 23(4), 1792-1808. 2007.
- [49] Prineus, M., Cini, M. "Assessing learning in online education: the role of technology in improving student outcomes." 2011.
- [50] Khan, B.H. "Managing e-learning: Design, delivery, implementation, and evaluation." IGI Global. 2005.
- [51] Isik, O." E-learning satisfaction factors. in *Proceedings of 39th Annual Meeting of the Decision Sciences Institute*." 2008.
- [52] Felix, U." E-learning pedagogy in the third millennium: the need for combining social and cognitive constructivist approaches." *ReCALL*, 17(01), 85-100. 2005.
- [53] Koohang, A., Riley, L., Smith, T. and Schreurs, J., "E-learning and constructivism: From theory to application." *Interdisciplinary Journal of E-Learning and Learning Objects*, 5(1), 91-109. 2009.
- [54] Sun, P.C., Tsai, R.J., Finger, G., Chen, Y.Y. and Yeh, D., "What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction." *Computers & education*, 50(4), 1183-1202. 2008.
- [55] Selim, H.M." Critical success factors for e-learning acceptance: Confirmatory factor models." *Computers & Education*, 49(2), 396-413. 2007.