

The Effectiveness of Virtual Training of Islamic Culture and Civilization Course on Attitude, Learning and Satisfaction of Students in Tehran University of Medical Sciences

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Abstract

Background: Nowadays, E-learning is considered as a hot topic in higher education. This study aimed at investigating the effectiveness of virtual training of Islamic culture and civilization course on attitude, learning, and satisfaction of students in University of Medical Sciences in Tehran.

Methods: In this quasi-experimental study with two groups, we studied 107 students who took the Islamic culture and civilization course in the second semester of academic year in 2014 - 2015. 50.47% of them were Medical students (19.62% face to face, 30.84% virtual) and 49.53% of them were nursing students (21.50% face to face, 28.04% virtual). In the intervention group, 63 students received virtual training using university education system, and in the control group, 44 students received face to face training. In both of the groups, the degree of learning was examined using a written test. A questionnaire was used in order to investigate satisfaction with the teaching method and attitude. The reliability of the researcher-made attitude measurement questionnaire was confirmed using Cronbach's alpha (0.89) and its validity was confirmed through content validity. The Data was analyzed using SPSS software, version 16 and using T-tests. The significance level was set at 0.05.

Results: The results showed that the two groups had a significant difference in terms of attitude ($P < 0.001$). The students were also more satisfied with the virtual training ($P < 0.006$). The rate of learning between the students of virtual and face to face training groups didn't show any significant difference ($P < 0.199$).

Conclusions: Students were more satisfied with the virtual training method and they had a positive attitude towards the virtual training, but the rate of learning was similar in both of the methods. Therefore, it is recommended to use the virtual training courses as complementary courses in the face to face training methods.

Keywords: Virtual Training, Islamic Culture and Civilization, Attitude, Learning Level, Satisfaction

1. Background

With the development of information and communication technologies, the internet and web-based applications have created remarkable opportunities for guiding the process of learning, and this phenomenon has led to the E-learning development in recent years (1). In fact, this method has provided lifetime learning and a new paradigm in education field which creates equal educational opportunities for every person in any field and at any time and in any place (2, 3). Virtual Learning Environment has been designed as a software system to contribute to teaching and learning process. This environment has increasingly become more popular not only due to its flex-

ibility, but also for providing a wide variety of tools and facilities that enable teachers and students to have access to the contents of the lectures, to read announcements, to establish relationship with each other, to do homework, to participate in the discussions, and to do teamwork and tests (4). Studies show that E-learning has a positive effect on learning due to its flexibility in the management of time and knowledge and widespread access to information (5). One of the main advantages of E-learning is that students are able to set their own learning and learn wherever they are and whenever they want; they also can choose the appropriate contents and tools according to their interests and skill levels. Of course, E-learning also has some disadvantages, for example, students are required to have access

to computers, internet, and computer programs and possess skills such as typing and computer communication. Moreover, the low speed of internet makes it difficult for students to have easy access to educational contents; another disadvantage of E-learning is that it requires a high-level of self-discipline and personal time management; students do not see each other face to face and this may cause them to feel that they are isolated from the professors and other classmates (6). In developing countries, the information and communication technologies are considered as a potential to increase access to education and improve its quality (7). Due to the different natures of the two methods of learning, E-learning and face to face learning, making effective changes from face to face learning courses to E-learning requires extra effort, appropriate planning, and monitoring and control. In Iran, many applications for face to face learning are not available in the classroom settings. Therefore, E-learning can compensate some of the weaknesses of face to face learning method (2). Studies have shown that multimedia-based training can help students to improve their comprehension and retention of contents. Computer-assisted teaching with multimedia capabilities, which simultaneously employs several feelings in the experience process, can provide different people featuring different characteristics with the optimal learning environment (8). In a study carried out by Shahi et al., they compared the two different teaching methods of face to face and web-based teaching (WBT) through the group discussion method on 114 students of nutrition field; the findings indicated that there are significant difference between the knowledge level of students who were taught by the two methods according to the post-test results (9). Furthermore, in the study conducted by Sharifi et al. on the effect of teaching endocrine physiopathology with the two virtual and face to face teaching methods on medical students and their satisfaction from the teaching methods, the findings showed that there's no significant difference between the two teaching methods of virtual and face to face in terms of the scores obtained by the students (10). Although running the virtual courses will provide students with some opportunities including the possibility of getting benefit from the courses in any time and every place (2, 3), using a variety of different learning styles, its flexibility (5), the use of electronic multimedia contents, etc; but they also pose some debates and challenges to the field of teaching such as the issue of keeping students active and establishing student-professor interaction. Therefore, using this method in teaching of different courses has yet some ambiguities, since the nature of general courses such as Islamic civilization and culture is such that there is much need for numerous debates and challenges to create motivation and attitudes in students. As a result, in or-

der to create appropriate motivation and attitude in students, and since it is believed that the development of electronic contents can be enriched with the image and sound (multimedia) to help students to get the lessons better, and teachers involved in the course may spend most of their time for getting involved in answering the debates and develop the table of contents one time for all and to use them frequently in the repeated sessions, some researchers sought to compare this method with the face-to-face training method in the classroom, so that if virtual teaching is proved to be effective in learning, attitudes, and satisfaction of the students, then this method can be introduced to other universities. Thus, the present study was designed and implemented with the aim of investigating the effectiveness of virtual training of Islamic culture and civilization course on attitude, learning, and satisfaction of students in Tehran University of Medical Sciences.

2. Methods

This research is a quasi-experimental study with two groups in which two faculties were randomly selected from among the faculties that had the Islamic culture and civilization course in their curriculum in the second semester of the Academic Year in 2014 - 2015. That is to say that the two faculties of medicine and nursing were chosen with the lucky draw out of the all faculties that presented the Islamic culture and civilization course. Then two classes were randomly selected from each faculty and the teaching methods (face to face / virtual) were randomly allocated to each of these classes. So, both methods (face to face / virtual) were implemented in each faculty. The total number of students who have taken this course in both of the faculties were 107 students; general medicine (54 individuals), bachelor of nursing (53 individuals). In sum, 50.47% of them were among medical students (19.62% face to face, 30.84% virtual) and 49.53% were among nursing students (21.50% face to face, 28.04% virtual). The inclusion criteria for the study included taking Islamic culture and civilization course, and satisfaction form participation in the study. The exclusion criterion included dissatisfaction from participation in the study. After determining the training methods in each class through the lucky draw, at the first session, the students filled out a written informed consent to participate in the study. Then, the questionnaires of demographic characteristics and the researcher-made attitude measurement questionnaire were filled out by the participants before the intervention. In the face to face training method, the contents of Islamic culture and civilization course were presented to the students for 16 consecutive weeks, two hours per week, in the form of lectures and questions and answers by a professor in a face

to face classroom. In the virtual training method, teaching sessions took place non-simultaneously in the Namad system environment by the same professor. The contents of teaching were identical in both of the methods. Virtual faculty system of Tehran University of Medical Sciences with the address of <http://namad.tums.ac.ir/> was used for virtual training. In this system, the course contents were loaded in the form of Flash Files, Podcasts, Pdf, Word, PowerPoint, etc. The teaching-learning activities are accessible by taking exams, submitting assignments and feedbacks, and holding discussions. The students are also able to interact with other peers and professors through sending messages to them. In this method, at first, a justification face to face session was held at the beginning of the semester on how to use the system and how to access the system icon and the facilities in the system, and all the questions and doubts were answered in this regard. Using the virtual training method, the students received the determined contents in 16 sessions through the system. In both of the methods, the teacher in charge of teaching was the same person. After the end of 16 weeks, in order to evaluate the learning rate, a written exam on educational contents was administered to the students in both of the groups. At this stage and after the exam, the Attitude Measurement Questionnaire was given to the students in order to investigate their satisfaction from the two teaching methods and students filled out it.

The data collection tool was a researcher-made questionnaire that included four parts: the first part of which is related to demographic characteristics of students (age, marital status and occupation, residential status, and computer skills), the second part is concerned with the Attitude measurement questionnaire containing 20 items on a five-point Likert scale (where 1 equals very low, 2 equals low, 3 equals medium, 4 equals high, and 5 equals very high); in total, the scores ranged from 20 to 100. The third part was related to the questionnaire of the degree of students' satisfaction from the teaching methods which contained 15 items on five-point Likert scales (strongly agree - agree - no idea - disagree - strongly disagree) which was scored from five to one for each answer; in total, the scores ranged from 15 to 75 for this questionnaire. Finally, the fourth part was concerned with a checklist to record the students' written test marks on their learning rate.

The validity of attitude measurement questionnaire was confirmed using content validity, so that seven faculty members of the department of Islamic studies reviewed the tool and their suggestions and comments were applied in the questionnaire. Reliability of the tool was confirmed by Cronbach's alpha of 0.89. The validity and reliability of the satisfaction measurement questionnaire has been investigated in the study done by Zolfaghari (11).

The data was collected and given to SPSS, version 16, and investigated with T-tests (to compare the data in the two groups) and paired t-test (to check the data before and after the intervention in a group).

3. Results

From the total number of 107 students, 85 of them filled out the attitude measurement and satisfaction measurement questionnaire (79.4% response rate). 60 percent (51 subjects) of the students were taught with the virtual training method and 40 percent (34 subjects) were taught with the face to face training method. In total, 57.17% of them were medical students (21.2% face to face, 36.5% virtual) and 42.3% of them were bachelor students of nursing (18.8% face to face, 23.5% virtually). Other demographic variables are presented in Table 1.

As can be seen in Table 1, comparison of the demographic variables showed a significant difference ($P < 0.05$).

A chi-square test was used in order to assess the homogeneity of the two groups in terms of qualitative variables. The results of this test showed that the two groups were not homogeneous in terms of demographic variables.

The analysis of findings showed that the score of attitude is normal in both of the groups ($P > 0.05$). The score of attitude didn't have any significant difference before teaching students in the two groups ($P = 0.054$). The mean score of attitude was (3.85) before teaching students who were taught virtually and the mean score of students who have been taught face to face was (3.61). Therefore, the two groups were homogenous in terms of this variable. The normal distribution of pre-test score of attitude before training with Shapiro - Wilk test is presented in Table 2.

The score of attitude after teaching and learning and satisfaction scores are given in Table 3.

4. Discussion

The results of the study indicated that there are significant differences between the attitudes of students in the two groups after completion of the training course. This means that the virtual training improved students' attitudes more than the face to face training course. It is likely that the attitude of students is affected by understanding and easy use of E-learning courses and E-learning platform performance and skill level of students in using computers (12). This positive attitude is because of the fact that today's students are the generation of digital world and they learn the way of using technology so easily; and they believe that internet, computer, and applications are the easiest way to access information.

Table 1. Comparison of the Demographic Variables Between the Two Groups of Face to Face and Virtual

Variable	Face-to-Face		Virtual		Chi-Square Test (χ^2 , df, P Value)
	Frequency	Percentage	Frequency	Percentage	
Education					$\chi^2 = 1.988$, df = 1, P < 0.159
General practitioner	18	52.94	31	60.78	
Nursing	16	47.06	20	39.22	
Marital status					$\chi^2 = 116.424$, df = 2, P < 0.001
Married	3	8.82	6	11.76	
Single	31	91.18	45	88.24	
GPA					$\chi^2 = 45.647$, df = 4, P < 0.001
below 16	17	50	13	25.49	
16 - 17	13	38.24	25	49.02	
above 18	2	5.88	13	25.49	
unanswered	2	5.88	-	-	
Accommodation conditions					$\chi^2 = 63.376$, df = 3, P < 0.001
House	22	64.71	27	52.94	
Dorm	10	29.41	18	35.29	
Studentship home	2	5.88	6	11.76	
Access to computer					$\chi^2 = 85.871$, df = 3, P < 0.001
Yes	19	55.88	39	76.47	
Somewhat	3	8.82	8	15.69	
No	1	2.94	4	7.84	
unanswered	11	32.36	-	-	

Table 2. Normal Distribution of Pre-Test Score of Attitude

Variance		Shapiro - Wilk Test			
		Test	Degrees of Freedom	The Significance Level	Result
Attitude before training	Face to face	0.149	34	0.054	normal
	Virtual	0.093	51	0.200	normal

Table 3. Comparison of the Scores of Attitude, Satisfaction, and Learning Level in the Two Virtual and Face to Face Training Groups

Variable		Face to Face Group		Virtual Group		Statistical Test		Significance Level
		Mean	SD	Mean	SD	df	T	
Attitude	Before	3.61	0.64	3.85	0.45	83	2.83	0.054
	After	3.74	0.31	4.08	0.41	81	4.105	0.001
Satisfaction	After	3.45	0.52	3.86	0.73	83	2.83	0.006
Learning	After	18.59	0.86	18.19	1.67	83	-1.295	0.199

In a study conducted by Shu-sheng et al. on attitudes of professors and students toward E-learning, the statistical analysis showed that professors and students had a good

idea about it, and students said that when training is self-directed and multimedia and virtual training is used under the guidance of professor, then the virtual training can

be the main affecting factor and they showed a positive attitude to this approach (13).

The results of this study also showed that the satisfaction level of students from the virtual training was more compared to the face to face training method. Since satisfaction rate is an effective variable on efficiency or decision-making level; therefore, for E-learning, the student's satisfaction is positively related to the academic performance. Satisfaction from E-learning environment includes learning management system (LMS), learning content, quality of service and its interactions with the perception of usefulness and perception of its ease of use (14).

In this study, the students of virtual class had more positive attitudes towards their training method and were more satisfied with it compared to the students in the face to face class; this is because they didn't forced to attend face to face classes, allowing them more flexibility in learning time and place; therefore, they expressed more positive attitudes towards their training method and were more satisfied with the teaching method compared to the students in face to face class with regard to the educational approach. In the virtual method, the students manage their learning time themselves and have a self-directed learning and act independently in their learning management, and these factors increase the motivation, self-confidence, and satisfaction levels in students. An instructor plays a leading and an important role along with the students in the process of learning. In addition, the user-friendliness of the system, the quality of contents generated, and the ways of interaction with professors are among the factors affecting the students' satisfaction. The results of a study conducted by Chensun in Taiwan on the factors influencing the student's satisfaction from the E-learning showed that students' stress, professor's attitude towards E-learning, flexibility of E-learning courses, quality of E-learning courses, its useful perception, perceiving its ease of use, and diversity of assessing are among the factors affecting the students' satisfaction from the virtual training (15). Furthermore, in a study carried out by Wu on the students' satisfaction with the blended learning environment, the findings indicated that lack of personal computer, performance expectations, system performance, content features, interactions, and learning atmosphere are among the determining factors affecting students' satisfaction from the virtual training (16). In another study, Yam investigated a combination of two methods of internet and face to face learning in nursing students in Korea. Students had a high level of satisfaction from the courses of blended learning method and majority of the nursing students demanded that more courses should be offered in this way (17).

The results of the present study showed that there is

no significant difference between the mean scores of students in the virtual and face to face groups. That is, the learning outcomes were similar through the two methods of teaching. This finding is in line with the results of some other studies. In a study done by Zolfaghari on the effect of the two methods of electronic and traditional teaching methods on nursing students' learning level, the results showed that the rate of learning by the two methods are similar to each other (11). In a study conducted by Karanjam et al., they concluded that there's no significant difference between the mean scores of attitude and knowledge after the training through the two methods (18). Moreover, in a study carried out by Khatooni et al., it was concluded that both methods were equally effective in the learning rate (19).

Yet, in a study conducted by Esfahani Shahsavari on nursing students, in one group, the theoretical content was presented through lectures and the practical content (unit) through a lab environment. In the second group, the theoretical and practical contents were taught through the virtual systems and interactive animations. The results of investigating the theoretical and practical mean scores' differences between of the two groups showed that there's a significant difference in the test scores of students in the theoretical field, and the students who were taught through the virtual training had a higher mean scores compared to the students who were taught through the face to face training method. While the mean scores on practical exams didn't show any significant difference (20). In another study, Pourghaznein conducted a research on the effect of E-learning, lecture, and role playing on the knowledge acquisition, learning, and satisfaction on nursing students; the results indicated that lecture was better than role playing and students were less satisfied with E-learning than lecture and role playing (21).

It seems that the use of different teaching methods and different content type is a determining factor in students' learning rate; however, absence of some students at the first session to be familiar with the system, lack of access to computers and high-speed internet to download the contents of educational materials, submission of the projects and assignments in the system, as well as non-participation of students in discussion and group work can be considered as effective factors determining the outcomes of this study. It is likely that if these identified factors were elevated, then the level of learning in the virtual training method was far more than face to face approach. In addition, the low degree of attention that students devoted for the Islamic culture and civilization course as a general course compared to the specialized courses led them to allocate less time for studying and active participation in the discussion and doing collaborative work, all of

which contributed to the problem. However, in this study, it was tried to use multimedia files to make the contents attractive and enhance students' motivation to study more; students were also able to have access to the written files in the form of Pdf, and audio files in the form of audio podcasts and visual files in multimedia form according to their learning styles. Furthermore, an asynchronous forum had been predicted to activate students.

Therefore, it is recommended to use E-learning method as a supplementary learning method along with the face to face learning methods; this can be a useful approach to increase the knowledge level of students to achieve more skills. However, prior to using this method, it's better to provide IT and Internet infrastructures and teach the culture of using this method. Although students are not required to attend in face to face classes based on the pre-determined hours, but using the virtual training method is much more time-consuming and learning with such method is much more difficult than face to face methods, since in the virtual training, students have the main responsibility of learning by themselves (22). As a result, in order to use this method for teaching the general courses, it is recommended to increase students' motivation, and in doing so, it is recommended that teachers prepare the educational contents in various and different formats with regard to their learning styles, and use authentic and up to date resources and take advantage of interactive animations and forum to activate students as much as possible. In addition, it is recommended for the universities to hold some empowerment courses in order to empower the teachers and to change their attitudes towards the virtual training of courses; the students should also pass the required training courses before the starting of the course.

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Footnotes

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Conflict of Interest: This article results from the approved project plans of Tehran University of Medical Sciences ethics committee on May 12, 2015, No. 26676-176-03-93, registered under No. IRCT2015051322263N1 in the clinical trial system.

References

1. Cheng YM. Antecedents and consequences of e-learning acceptance. *Inform Sys J*. 2011;**21**(3):269–99. doi: [10.1111/j.1365-2575.2010.00356.x](https://doi.org/10.1111/j.1365-2575.2010.00356.x).
2. Hassanzadeh A, Kanaani F, Elahi S. A model for measuring e-learning systems success in universities. *Expert Syst Appl*. 2012;**39**(12):10959–66. doi: [10.1016/j.eswa.2012.03.028](https://doi.org/10.1016/j.eswa.2012.03.028).
3. Emami H, Aghdasi M, Asousheh A. Electronic learning in medical education. *J Res Med Sci*. 2009;**33**(2):102–11.
4. Ho W, Higson HE, Dey PK, Xu X, Bahsoon R. Measuring performance of virtual learning environment system in higher education. *Quality Assurance Educ*. 2009;**17**(1):6–29. doi: [10.1108/09684880910929908](https://doi.org/10.1108/09684880910929908).
5. Aixia D. Factors influencing learner attitudes toward e-learning and development of e-learning environment based on the integrated e-learning platform. *Inter J e-Education, e-Business, e-Management and e-Learning*. 2011 doi: [10.7763/jjeeee.2011.v1.43](https://doi.org/10.7763/jjeeee.2011.v1.43).
6. Abdelaziz M, Samer Kamel S, Karam O, Abdelrahman A. Evaluation of E-learning program versus traditional lecture instruction for undergraduate nursing students in a faculty of nursing. *Teaching Learning Nurs*. 2011;**6**(2):50–8. doi: [10.1016/j.teln.2010.10.003](https://doi.org/10.1016/j.teln.2010.10.003).
7. Aktaruzzaman Huq shamim R, Kum-clement CH. Trends and issues to integrate ict in teaching learning for the future world of education. *Inter J Engin Technol*. 2011;**11**(3):114–9.
8. Noroozi D, Ahmadzade bian A, Aghabarati N. Efficacy of multimedia teaching on learning and retention of arithmetic in autistic students (In Persian). *Psychol Exception individual*. 2011;**1**(4):23–51.
9. Mohammadshahi M, Hosseini Ahangari S, Hoseini S, Haidari F. Comparing two different teaching methods: Traditional and teb log-based teaching (wbt) by group discussion (In Persian). *Educ Develop Jundishapur*. 2014;**5**(2):156–63.
10. SHarifi F, Feyzi A, Arteshehdar E. Knowledge and satisfaction of medical students with two methods of education for endocrine pathophysiology course: E-learning and lecture in classroom (In Persian). *J Med Educ Develop*. 2013;**6**(11):30–40.
11. Zolfaghari M, Mehrdad N, Parsa Yekta Z, Salmani Barugh N, Bahrani N. The effect of lecture and elearning methods on learning mother and child health course in nursing students (In Persian). *Iranian J Med Educ*. 2007;**7**(1):31–9.
12. Rhema A, Miliszewska L. Analysis of student attitudes towards e-learning: The case of engineering students in Libya. *Issue Sci Inform Technol*. 2014;**11**:169–90.
13. Shu-sheng L, Hsiu-Mei H, Gwo-Dong C. Surveying instructor and learner attitudes toward e-learning. *Computer & education*. 2007;**9**(4):1066–80.
14. Lee J, Lee W. The relationship of e-Learner's self-regulatory efficacy and perception of e-Learning environmental quality. *Computers Human Behav*. 2008;**24**(1):32–47. doi: [10.1016/j.chb.2006.12.001](https://doi.org/10.1016/j.chb.2006.12.001).
15. Sun PC, Tsai RJ, Finger G, Chen YY, Yeh D. What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*. 2008;**50**(4):1183–202. doi: [10.1016/j.compedu.2006.11.007](https://doi.org/10.1016/j.compedu.2006.11.007).
16. Wu JH, Tennyson RD, Hsia TL. A study of student satisfaction in a blended e-learning system environment. *Computers & Education*. 2010;**55**(1):155–64. doi: [10.1016/j.compedu.2009.12.012](https://doi.org/10.1016/j.compedu.2009.12.012).
17. Yom YH. Integration of Internet-based learning and traditional face-to-face learning in an RN-BSN course in Korea. *Comput Inform Nurs*. 2004;**22**(3):145–52. [PubMed: [15520584](https://pubmed.ncbi.nlm.nih.gov/15520584/)].

18. Karanjam S, Kiany Yazdi F, Zarifsanaiey N. The comparison of the effect of traditional and off-line electronic educational methods on the knowledge and attitude of the undergraduate dental students of Shiraz University of Medical Sciences (In Persian). *Media*. 2015;**6**(3):20-30.
19. Khatoni A, Dehghan Nayery N, Ahmady F, Haghani H. Comparison the effect of web-based education and traditional education on nurses knowledge about bird flu in continuing education (In Persian). *Iranian J Med Educ*. 2011;**11**(2):140-7.
20. Shahsavari Isfahani S, Mosallanejad L, Sobhanian S. The effect of virtual and traditional methods on students learning and competency-based skills (In Persian). *Hormozgan Med J*. 2010;**14**(3):184-9.
21. Pourghaznein T, Sabeghi H, Shariatinejad K. Effects of e-learning, lectures, and role playing on nursing students' knowledge acquisition, retention and satisfaction. *Med J Islam Repub Iran*. 2015;**29**:162. [PubMed: [26000257](#)].
22. Yaghoubi J, Malek Mohammadi I, Iravani H, Attaran M. Desired characteristics of faculty members and students in e-learning in higher education of iran: Virtual students' viewpoint. *Quarter J Res Plan Higher Educ*. 2008;**14**(1):160173-0.