

# Implementation Pathology of the E-learning Curriculum in Iran (Case Study Shahid Beheshti University of Tehran)

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## Abstract

**Introduction:** E-learning is a new emerging phenomenon that has attracted the attention of higher education authorities and researchers in this field. The aim of this study is to identify the challenges of implementing e-learning curriculum of Shahid Beheshti University from the perspective of faculty members and students.

**Methods:** The descriptive-survey method was employed in this study. Two researcher-made questionnaires were used for data collection. The study population comprised 48 faculty members and 635 students of virtual education. Statistical samples according to Morgan table were 42 and 237, respectively indicating that sampling was done by proportional stratified random sampling. The validity of research questionnaires was approved by professors and domain experts and by using Cronbach's alpha; the reliability coefficient was calculated to be 89% and 85%, respectively. For data analysis, SPSS version 21, descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (one-sample t-test and t-test) were used ( $P < 0.05$ ).

**Results:** The findings indicated that from the perspective of faculty members, the implementation of e-learning curriculum is being faced with cultural ( $P < 0.001$ ), legal ( $P = 0.001$ ), infrastructural ( $P < 0.001$ ) and financial ( $P = 0.005$ ) challenges and from the perspective of students are cultural ( $P < 0.001$ ), infrastructural ( $P = 0.033$ ), cognitive ( $P < 0.001$ ), financial ( $P < 0.001$ ), and legal ( $P < 0.001$ ) challenges. These results with respect to the level of significance that is less than  $P < 0.05$  are certainly 95% significant.

**Conclusions:** The implementation of e-learning curriculum of Sahid Beheshti University faces challenges in which the problems and obstacles can be solved through the adoption of decisions that are consistent with the research results.

**Keywords:** Curriculum, Learning, Distance Education, University

## 1. Introduction

This is the sound of education in the twenty-first century. Computer mouse is found in the hands of every student (1). In recent years, virtual education is considered as one of the vital applications of new information and communication technologies in the world and a wide range of activities have been initiated in this regard. Currently, considering the rapid changes in the surrounding environment, implementation of virtual and electronic systems is necessary in order to provide services and new technologies in teaching and learning (2), and the application of this technology is a factor for motivation, learning, experience and innovation (3). In spite of the strong and growing trend toward e-learning which suggests the various benefits of this method compared to traditional methods of education, it should also be noted that computers and e-learning methods will never completely replace the face to face education (4).

Increasing the number of applicants to advanced studies, the available face to face courses inability to meet the growing needs, the advantage of using online technolo-

gies in education that has provided opportunities to use new ways of learning and effective teaching methods (5) are among the factors that resulted in the offering of e-learning and virtual university as complementary or alternative to traditional learning. In Iranian higher education and also in the last decade, learning and e-learning have been taken into account as a result of the rising demand for higher education and the inadequacy of the budget, lack of full-time faculty and the need to eliminate geographic restrictions. There were significant changes in the nature of student learning through the use of new technologies in the field of education generally and in the field of curriculum particularly. Optimal use of these technology capacities enriched and enhanced the learning course. As stated regarding e-learning or its specific form, virtual universities as a complementary or alternative to the traditional learning require some necessary conditions and necessities and one of such important condition is the existence of suitable and efficient curriculum (6).

As Pollock claimed that the development and maintenance of virtual universities (virtual education at the uni-

versity) in addition to the infrastructure and the budget factors, is dependent on the quality of the curriculum. The curriculum as the essence of education in combination with the technological methods in the course of teaching, guarantees the efficiency and efficacy of the education system (7). In this regard, the result of Gelkari's study can be referred (2013) which indicates that the web-based curriculum influences the components of creativity such as fluidity, initiative, flexibility, expansion or enhancement (8).

On the other hand, if the curriculum does not adapt with the new changes (information and communication technology ICT), the new scientific issues as the appendage will be attached to the curriculum that in this condition, the curriculum would not have the necessary quality (9). With further examination in the topic of this paper, it becomes obvious that the correct implementation of the curriculum at all its levels also has fundamental importance, because the unimplemented program is the same as the program that has not been produced. Besides, inefficient implementation provides unsuitable and flimsy foundation for the production and implementation of similar programs in the future (10). The sensitivity and important reason of the curriculum implementation stage is that all plans and programs would be followed to make the desired changes in the case that was successfully implemented in the implementation stage (11).

Therefore, regarding the importance of the curriculum implementation, careful and adequate attention should be given to the curriculum implementation. Preparing the background and necessary foundation for successful implementation of the program requires knowledge of the factors affecting the implementation of the curriculum (12). The results related to researchers such as Mousavi, Sabouri, Nwana, Sri Datuk, Qureshi, Rajesh and Welsh et al. indicate that the implementation of e-learning is being faced with the challenges such as cultural, financial, infrastructural, information and communication technology, legal, motivation and skill (13-19). Based on this interpretation, the launching of virtual education system in general and the implementation of the curriculum in particular may be faced with challenges. In fact, in many cases, infrastructures of the curriculum implementation in the virtual education course have shortcomings and deficiencies that is problematic for the existence and structuring of an effective system of education.

In the field of e-Learning word, multiple and sometimes conflicting discussions have been used in the literature that some researchers regard e-learning as a virtual education and believe that this education takes place for collaboration in a virtual space and one of its features is creativity (20). E-learning is technology-based educa-

tion. The term e-learning, contains the huge list of applications and functions including web-based education, internet-based education, and computer-based education, electronic systems of performance support, technology-based education, online learning, distance learning, virtual learning and distance education (21). Welsh regarded e-learning as computer network technology application in education that is mainly done through the internet (22).

In this study, Horton's simple definition that is comprehensive and inclusive has been chosen to avoid dispersion and complexity in the definition of e-learning. In the view of Horton, the term e-learning is the use of information and computer technology to build a learning experience (23). Apart from the issues of definition which is related to the concept of e-learning in its practical aspect, managers and e-learning designers have tried to develop the scope of higher education to the boundaries beyond the classroom by using multimedia, hypermedia facilities, synchronous and asynchronous interactive capabilities of this environment (2). Khan about education beyond the class believes that virtual education has created a new paradigm that has provided learning opportunities in the field, for every person, in every time and every place (24). E-learning is the ability of the learner to learn at any time and place and the possibility of the teacher in transferring knowledge at any time and place (25). So in this type of education, the responsibility of education and learning to a large extent returns to the learner (26, 27). Therefore, in appropriate designing and developing of curricula, learners' activities can be directed and corrected (28, 29).

The use of information and communication technology in education definitely justifies the necessity of discussion regarding the concepts like the curriculum and e-learning curriculum.

Some people regard technology-based curriculum planning as the integration of information technology (IT) including web, with the curriculum planning process. Using information technology, guiding learners and accessing web-based materials facilitate preparation for teaching and learning process. It is necessary to vary the planning approach when planning the curriculum based on the information technology and in all parts of the curriculum, the use of technology tools should be put into consideration (30). On this basis, the curriculum designer group of virtual education courses should have a correct understanding of the virtual space features and multimedia, hypermedia and internet communication capabilities and effectively integrate these capabilities with the components of the curriculum (4). Furthermore, the correct understanding of the ICT capabilities and learner-centered learning theories, decide about goal setting resources of virtual university curriculum, and

appropriate approaches to it (21). Planning in the online education involves three main steps: planning and designing, implementation of the evaluation and educational programs. Provision of online educational materials has created several problems for educational systems designers. In fact, the difference between traditional education courses and the online education is more visible in the design stage (31). The manner of combining the elements of the curriculum and connection between them according to certain principles, which help to achieve the goal of learning, is named curriculum design (32).

Curriculum design refers to the process of identifying the elements of the curriculum and their inclusion in the program (33). The curriculum specialists do not have general agreement on the elements of the curriculum. Johnson in the year 1960 stated that the result of learning is the only element of the curriculum. Tyler, Eisner and Klein have mentioned 4, 7 and 9 elements of curriculum planning, respectively (34). The second essential step in web-based curriculum is the implementation of educational program. The implementation of educational program is the process of applying programs that are already designed, constructed and developed (33). The programs that are provided by the use of computer should have capabilities and executive guarantee. In the implementation of the curriculum in virtual space, in addition to infrastructural issues such as broadband and standards, providing effective online education requires coordination among all educational managers and staff. Also creating interaction between educators and students, supporting learners and teachers, timely fulfillment of tasks and management of learning environments are among the important points that should be considered in the implementation of online educational programs (35). From another point, success in the implementation of curriculum depends on the adoption of the program and skill in its implementation by the implementation agents (13). In addition, said factors such as active learning, support for teachers and learners, and students' performance measurement will facilitate the implementation of the e-learning curriculum (36). Curriculum implementation is generally a time-consuming process in which individuals, events and different resources, determine the success rate of the program practically and identifying all the factors affecting the implementation of the program is difficult. In spite of the difficulty of the conducted researches and studies, several factors have been identified which include: specifications and features of the new curriculum (need and agreement, complexity, clarity, quality and usefulness of materials), local conditions and contexts throughout the educational areas and schools (local strategies, in service training enforcers, information and communication systems), and the exter-

nal factors (changing policies, financial and material resources, and technical assistances) (37).

In the introduction of this study, it was referred to that this issue of information and communication technologies is affected by education generally and the curriculum planning particularly and the features of the technology have been faced with processes and features in education and curriculum planning stages particularly the implementation of the curriculum that cannot be imagined in the absence of technology. With the arrival of information technology into the education context, e-learning has emerged and has also changed the curriculum. Meanwhile what continued into their previous states are basic cases that in the curriculum planning stages particularly the implementation of the curriculum which is regarded as the theoretical foundations and practical concepts and they are also considered in the implementation of the web-based curriculum. Traditional curriculum implementation has dimensions as well as the conditions that are providing it is essential in the practical stage as these conditions and dimensions in the implementation of the web-based curriculum are considered as the basis for action but with different characteristics that is given by the web. In order to examine the implementation of the web-based curriculum in this study, concepts depending on the dimensions and conditions of traditional curriculum implementation considering the characteristics of information and communication technology were used. Conversely, with a little investigation and research, this issue can also be established that the implementation condition of the e-learning curriculum is similar to the implementation condition of e-learning. According to the two aforementioned issues and the lack of research literature in connection with the implementation of the e-learning curriculum, the research literature associated with the implementation of the e-learning was inevitably used.

Mousavi in a research regarded the implementation and development obstacles of e-learning as the lack of appropriateness between method and content, and identified the lack of access to skill, attitude, cultural, credit, incentives, infrastructure and obstacles related to the integration of e-learning with the traditional education (13).

The obtained results of Sabouri's revealed that the problems of virtual education in technical, legal, organizational and financial components have been evaluated by education managers and are in high limit whereas the assessed problems of virtual education in cultural, cognitive, executive and educational are in average limit (14). Mazini in his presented article in the second international conference on electronic municipality entitled the challenges of education in the virtual city and divided the challenges into two categories which are users' challenges (goal, low

electronic literacy, technical infrastructure, lack mass communication, etc.) and the providers' challenges (recognizing the ability of cultural infrastructure, lack of specialists, challenges and media selection, etc.) and has explained each of them (38). Nivana according to his study findings, regarded the implementation problems of e-learning as the lack of teleconferencing systems, lack of computer literacy, problems related to the use of the Internet, the problems associated with e-mail, and other problems such as high cost of digital libraries, the cost of connecting to the Internet, the cost of computers and accessories, the lack of multimedia systems, and resistance to technology (15). Sri Datak classified the obstacles and difficulties of implementing e-learning in Malaysia as lack of awareness of the population, low level of acceptance, low bandwidth, lack of information literacy, lack of high quality of electronic content, and difficulty in the interaction with online learners (16). Ghorashi's research results in Pakistan revealed that technical problems, lack of access to computers, lack of information literacy, preference of face to face interaction, low levels of awareness, resistance to change and technology, lack of technical assistance to the students, lack of privacy limits and security are the challenges being faced in the implementation of e-learning in the higher education system of Pakistan (17). Rajash in his research identified the challenges of virtual education such as high cost of implementation, government political policies, political factors, economic factors, cultural factors, and technological factors in ICT (18). Another study entitled "challenges and opportunities in the development of ICT education" has been done in Uganda, and this research is qualitative. In this study, Welsh used the interview tool for data collection in order to find the answer to the question why technology projects is being faced with defeat or sometimes end successfully. Challenges that were identified in this study include communication problems, lack of cultural competence, and lack of organizational supplies, unwanted factors and external factors (19).

The significance of e-learning and the research gap that exists in the topic of the present study in statistical population, contributed to the conduction of the current study. It is expected that the studied virtual education practitioners, use of the findings of this study including the problems and obstacles to the implementation of virtual education course curriculum, is used as the basis for their decisions in direction of optimizing the virtual education course. And also they can be used as the basis for beginning investigation and study on the implementation obstacles of e-learning curriculum.

Following the above discussions and issues associated with the implementation of the curriculum in association with the advent of information and communication tech-

nologies (ICT) in higher education, three research questions have been proposed that include;

- 1) What are the challenges of the curriculum implementation of virtual education course of Shahid Beheshti University from the perspective of faculty members?
- 2) What are the challenges of the curriculum implementation of virtual education course of Shahid Beheshti University from the perspective of students?
- 3) Is there a significant difference between the attitudes of the faculty members and students about the challenges of e-learning curriculum implementation stage?

## 2. Methods

The present study is an applied research in terms of purpose and a descriptive-survey in terms of the method of information collection. The statistical population of this study is 48 faculty members and 635 virtual education students of the Shahid Beheshti University. The statistical sample of faculty members and students according to Morgan table are 42 and 237 individuals respectively and proportional stratified random sampling was used in the sampling of both populations. The inclusion criteria of this study include: faculty members and students who have teaching and learning experience in the virtual environments as well as willingness to participate in research. Exclusion criteria of this study include: Those who do not have the necessary knowledge of virtual training environments as well as students who have had one semester academic leave of absence.

In the present study, two researcher-made questionnaire were used to collect data and consist of 27 items that are adjusted in accordance with Likert scale and include the ratings range of very low, low, medium, high and very high respectively, in the cultural, IT infrastructures, cognition, motivational, skill, financial and legal dimensions. The compiled questionnaires were given to four professors in order to investigate the validity of content and based on their opinions; the necessary reforms were applied in the questionnaires. Cronbach's alpha coefficient was used to determine the reliability of the questionnaire. The questionnaire was administered experimentally, in other words, the questionnaire was given to 70 individuals of statistical samples of the study and after the collection of the distributed questionnaires, Cronbach's alpha coefficient was calculated for the obtained questionnaire responses for faculty members and students and the reliability of the questionnaire obtained are 0.89 and 0.85 respectively. The obtained data indicate that the questionnaire has high reliability. In this study, the ethical principles of trustworthiness and commitment to provide health data have been observed and inputting personal opinions and unveiling of

personal information have been avoided. The confidentiality of information has been preserved and plagiarism was avoided as well. The SPSS software version 21 was used to analyze data in which exist the methods of descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (single-sample T-test and T-test), ( $P < 0.05$ ).

### 3. Results

The statistical population of this study is 48 faculty members and 635 virtual education students of the Shahid Beheshti University. The statistical sample of faculty members and students according to Morgan table are 42 and 237 individuals respectively. Demographic information of statistical samples (faculty members and students) is separately mentioned in [Tables 1](#) and [2](#).

One-sample T-test was used to answer the first question that what are virtual education curriculum challenges of Shahid Beheshti University from the perspective of Faculty members? The results of one-sample T-test are presented in [Table 3](#).

In scrutinizing the first question according to the results of the analysis ([Table 3](#)), the amount of experimental mean of cultural, communicational and technological infrastructure, cognitive, financial and Legal dimensions are (2.07), (2.36), (2.65) and (2.44) respectively and by comparing it with the theoretical mean (3), it can be concluded that the experimental mean of mentioned dimensions is lower than the theoretical mean and therefore the  $H_0$  assumption has been rejected based on the lack of differences between the experimental and theoretical means and in contrast,  $H_1$  assumption has been accepted based on the differences of theoretical and experimental means. Regarding the amount of level of significance of cultural ( $P < 0.001$ ), legal ( $P = 0.001$ ), infrastructure ( $P < 0.001$ ) and financial ( $P = 0.005$ ) dimensions that is less than  $P < 0.05$ , with 95% confidence, it can be said that the difference between the experimental and theoretical means is significant. Thus, from the perspective of faculty members, the e-learning curriculum implementation is faced with cultural, communicational and technological infrastructure, financial and legal challenges. Also considering the amount of experimental mean of cognitive (3.57), motivational (3.52) and skills (3.49) dimensions and comparing it with the theoretical mean (3), one can conclude that experimental mean of mentioned dimensions is higher than the theoretical mean. Consequently, the assumption  $H_0$  is accepted based on the lack of difference between the experimental and theoretical means and in contrast, the assumption  $H_1$  is rejected based on the theoretical and experimental mean differences. Regarding the amount of level of sig-

nificance of cognitive ( $P < 0.001$ ), motivational ( $P < 0.001$ ), and skill ( $P < 0.001$ ) dimensions that is less than  $P < 0.05$ , with 95% confidence, it can be said that the lack of difference between the experimental and theoretical means is significant. Therefore, e-learning curriculum implementation is not faced with cognitive, motivational and skill challenges. To answer this question that what are virtual education curriculum challenges of Shahid Beheshti University from the perspective of students? One-sample T-test was used and its results have been presented in [Table 4](#).

In scrutinizing the second question according to the results of the analysis ([Table 4](#)), the amount of experimental mean of cultural, communication technology infrastructure, cognitive, financial and Legal dimensions are (2.69), (2.47), (2.17) and (2.74) respectively and by comparing it with the theoretical mean (3), it can be concluded that the experimental mean of mentioned dimensions is lower than the theoretical mean and therefore the  $H_0$  assumption has been rejected based on the lack of differences between the experimental and theoretical means and in contrast,  $H_1$  assumption has been accepted based on the differences of theoretical and empirical means. Considering the amount of significant level of cultural ( $P < 0.001$ ), technology infrastructures ( $P = 0.033$ ), cognitive ( $P < 0.001$ ), financial ( $P < 0.001$ ) and legal ( $P < 0.001$ ) dimensions that is less than  $P < 0.05$ , with 95% confidence, it can be said that the difference between the experimental and theoretical means is significant. Therefore, from the perspective of students, the e-learning curriculum implementation is faced with cultural, communications technology, infrastructural, financial and legal challenges.

Also regarding the amount of empirical mean of motivational (3.47) and skills (3.32) dimensions and comparing it with the theoretical mean (3), it can be concluded that experimental mean of mentioned dimensions is higher than the theoretical mean. Consequently, the assumption  $H_0$  is accepted based on the lack difference between the experimental and theoretical means and in contrast, the assumption  $H_1$  is rejected based on the theoretical and experimental mean differences. Considering the amount of significant level of motivational ( $P < 0.001$ ), and skill ( $P = 0.001$ ) dimensions that is less than  $P < 0.05$ , with 95% confidence, it can be said that the lack of difference between the experimental and theoretical means is significant. Therefore, e-learning curriculum implementation is not faced with motivational and skill challenges.

To answer this question that there is significant difference between the attitudes of faculty members and students about the challenges of e-learning curriculum implementation? One-sample T-test and independent T-test were used and its results have been presented in [Table 5](#).

According to the amount of one-sample T-test, both

**Table 1.** Results of Descriptive Statistics, Demographic Status of Faculty Members

| Variable | Gender    |          | Marital Status |           | Work Experience |            |            |          | Academic Degree |                     |                     | Educational Group |                |                |                           |
|----------|-----------|----------|----------------|-----------|-----------------|------------|------------|----------|-----------------|---------------------|---------------------|-------------------|----------------|----------------|---------------------------|
|          | Male      | Female   | Single         | Married   | 1-5             | 5-10       | 10-15      | 15-200   | Above 20        | Assistant Professor | Associate Professor | Professor         | Human Sciences | Basic Sciences | Technical and Engineering |
| No. (%)  | 42 (80.2) | 8 (19.8) | 5 (11.9)       | 37 (88.1) | 5 (16.14)       | 14 (29.33) | 16 (34.09) | 4 (13.9) | 3 (9.14)        | 26 (61.8)           | 11 (26.1)           | 5 (12.1)          | 19 (45.23)     | 13 (30.95)     | 10 (23.8)                 |

**Table 2.** Results of Descriptive Statistics, Demographic Status of Virtual Education Students

| Variable | Gender      |             | Marital Status |            | Occupation |               |               | Educational Group |                |                           |
|----------|-------------|-------------|----------------|------------|------------|---------------|---------------|-------------------|----------------|---------------------------|
|          | Male        | Female      | Single         | Married    | Jobless    | Part-Time Job | Full-Time Gob | Human Sciences    | Basic Sciences | Technical and Engineering |
| No. (%)  | 117 (49.36) | 120 (50.64) | 97 (40.92)     | 140 (59.8) | 37 (15.61) | 36 (15.18)    | 164 (69.19)   | 127 (53.58)       | 44 (27.8)      | 66 (29.2)                 |

groups of faculty members and students believe that the implementation of e-learning curriculum is faced with cultural, technological and communicational infrastructure, financial and legal challenges. Comparing their perspectives (t-test results of independent samples) reveals that in comparison with the students, faculty members believe more in the cultural, technological and communicational infrastructure and legal challenges of the e-learning curriculum implementation, but in financial challenges students believe more in the challenges in e-learning curriculum implementation. And also regarding the cognitive challenges, t-test results revealed that implementation challenge of e-learning curriculum is not considered by faculty members but from the perspectives of students, it is one of the implementation challenges of e-learning curriculum. In relation to the motivational and skill challenges, results of one sample t-test also reveal that it is not regarded as implementation challenge of e-learning curriculum by both groups. Independent samples t-test results also indicate that in this respect there is no significant difference between their perspectives. Consequently, t-test results in relation to the perspective of the faculty members and students regarding implementation challenges of e-learning curriculum (total score) indicate that both groups believe that the implementation of e-learning curriculum is faced with challenges. The results of independent samples t-test also indicate that in this regard, there is no significant difference between their perspectives.

#### 4. Discussion and Conclusions

The obtained results of the perspective of faculty members and students of Shahid Beheshti University in the present study revealed that the e-learning curriculum implementation is affected by the various obstacles and problems that are significant from the various aspects of the investigation.

The results of the analysis indicate that from the perspective of both statistical samples, namely faculty members and virtual students, the implementation of e-learning curriculum is faced with cultural challenge. The findings of this part of the research are consistent with the findings of Mousavi, Sabouri, Mazini, Nivana, Qureshi et al. Rajash, Welsh et al. (13-15, 17-19, 38).

The cultural dimension was not recognized as a challenge in the research that was conducted by Sri Datak in Malaysia (16) and is inconsistent with the research findings concerning the cultural dimension. In explaining this inconsistency, cognitive dimension of the e-learning implementation can be referred to. In the study that was conducted by Datak, the cognitive dimension was not recognized as a challenge in the implementation of e-learning in Malaysia and regarding that cognitive dimension refers to the amount of people's awareness of the benefits of e-learning and this cognitive factor is related to cultural dimension. It can be said that following the Malaysian community awareness of the benefits of e-learning in confront with e-learning do not show resistance (16). In the explanation of the relationship between cognitive dimension and cultural dimension, the results of the present study can be referred to. The results of the present study particularly from the perspective of students indicate that cognitive and cultural dimensions of the e-learning curriculum are faced with challenge. Moreover, the amount of individual's awareness of the e-learning benefits impacts the behavior of individuals faced with the e-learning. Also, the results of the analysis indicate that from the perspective of faculty members and students, e-learning curriculum is faced with infrastructure and ICT challenges. And this part of the results is consistent with the findings of Mousavi, Qureshi et al. Ghorashi and Rajesh's. (13, 14, 17, 18). From the perspective of faculty members, the implementation of e-learning curriculum is not faced with cognitive challenge. Nevertheless, the results of data analysis indicate that from the

**Table 3.** The Results of One-Sample T-Test Implementation Component of E-Learning Curriculum; P < 0.05

| Implementation Dimensions of e-Learning Curriculum | Tests   | Descriptive Indexes |             | One-Sample T-Test |    |         |
|--|---|---------------------|-------------|-------------------|----|---------|
|  |   | N                   | M ± SD      | T                 | Df | Sig     |
| Dimension of cultural                              | Use of the Internet is pervasive in society.  | 42                  | 1.94 ± 1.01 | -6.41             | 41 | < 0.001 |
|  | Community resist against the virtual education.   | 42                  | 2.26 ± 0.72 | -6.27             | 41 | < 0.001 |
|  | Virtual education is in pervasive society.  | 42                  | 2.02 ± 0.91 | -6.56             | 41 | < 0.001 |
|  | Total score (cultural challenges)   | 42                  | 2.07 ± 0.51 | -11.1             | 41 | < 0.001 |
| Dimension Of Information Technology Infrastructure | There is sufficient access to the internet.   | 42                  | 2.00 ± 1.04 | -5.92             | 41 | < 0.001 |
|  | Internet speed is appropriate.  | 42                  | 1.78 ± 0.78 | -9.60             | 41 | < 0.001 |
|  | There are electronic resources at the required level  | 42                  | 1.94 ± 1.14 | -5.70             | 41 | < 0.001 |
|  | There are home computer systems suitable for use.   | 42                  | 2.00 ± 0.96 | -6.43             | 41 | < 0.001 |
|  | Necessary software equipment is available.  | 42                  | 3.23 ± 0.63 | 2.30              | 41 | 0.27    |
|  | Necessary hardware equipment is available.  | 42                  | 3.23 ± 0.63 | 2.30              | 41 | 0.027   |
|  | Total score (IT infrastructure)   | 42                  | 2.36 ± 0.47 | -8.31             | 41 | < 0.001 |
| Dimension of cognitive                             | I am aware of virtual education needs.  | 42                  | 3.63 ± 1.05 | 3.70              | 41 | 0.001   |
|  | I have sufficient knowledge to the system environment of virtual education.                         | 42                  | 3.63 ± 1.2  | 3.25              | 41 | 0.002   |
|  | I have enough experience in the field of e-learning.  | 42                  | 3.47 ± 0.83 | 3.51              | 41 | 0.001   |
|  | Total score (cognitive)   | 42                  | 3.57 ± 0.92 | 3.89              | 41 | < 0.001 |
| Dimension of motivation                            | I would like to do group work in the system environment of virtual education.                       | 42                  | 3.26 ± 0.72 | 2.24              | 41 | 0.031   |
|  | I'd like to use a virtual environment for communication with education officials                    | 42                  | 4.00 ± 0.93 | 6.62              | 41 | < 0.001 |
|  | I'd like to participate in the cultural auxiliary program through the virtual learning environment. | 42                  | 3.31 ± 0.74 | 2.63              | 41 | 0.012   |
|  | Total score (motivation)  | 42                  | 3.52 ± 0.58 | 5.56              | 41 | < 0.001 |
| Dimension of skill                                 | I have the necessary skill to work in virtual educational space.                                    | 42                  | 3.63 ± 0.94 | 4.13              | 41 | < 0.001 |
|  | I'm necessarily mastered in English to use of virtual space.  | 42                  | 4.15 ± 0.95 | 7.55              | 41 | < 0.001 |
|  | I have the ability to communicate multilaterally in the virtual environment                         | 42                  | 3.26 ± 1.43 | 1.13              | 41 | 0.263   |
|  | I have the ability to create a multimedia education.  | 42                  | 3.21 ± 0.96 | 1.34              | 41 | 0.186   |
|  | I have the ability to participate in group work in the virtual classroom.                           | 42                  | 3.21 ± 0.84 | 1.53              | 41 | 0.132   |
|  | Total Score (skill)   | 42                  | 3.49 ± 0.63 | 4.87              | 41 | < 0.001 |
| Dimension of Financial                             | There are sufficient budgets to use high speed internet.  | 42                  | 2.68 ± 1.04 | -1.86             | 41 | 0.070   |
|  | There are necessary funds to participate in the virtual education.                                  | 42                  | 2.52 ± 1.01 | -2.90             | 41 | 0.006   |
|  | There is appropriate financial support to participate in virtual education.                         | 42                  | 2.84 ± 0.89 | -1.09             | 41 | 0.279   |
|  | Total score (financial)   | 42                  | 2.65 ± 0.7  | -3.01             | 41 | 0.005   |
| Dimension of legal                                 | There is personal ownership about initiatives and innovations in virtual education. system there.   | 42                  | 2.34 ± 1    | -3.61             | 41 | 0.001   |
|  | There is effective security in personal information.  | 42                  | 2.23 ± 0.85 | -5.52             | 41 | < 0.001 |
|  | The value of the academic degree of the virtual education is clear in society.                      | 42                  | 1.94 ± 0.9  | -7.21             | 41 | < 0.001 |
|  | There are policies and laws in support of the academic degree of the virtual education.             | 42                  | 3.23 ± 1    | 1.46              | 41 | 0.152   |
|  | Total score (Legal)   | 42                  | 2.44 ± 0.49 | -0.71             | 41 | 0.001   |
| <b>Total</b>                                       | Implementation of curriculum  | 42                  | 2.87 ± 0.31 | -2.40             | 41 | 0.021   |

perspective of students, the implementation of e-learning curriculum is faced with the cognitive challenge. The cognitive dimension is related to knowledge and awareness of the e-learning benefits in studies, except Sabouri's study which has not been taken into consideration. Cognition dimension in Sabouri's study was evaluated to be approximately average (14) which cannot say concerning the result being consistent or inconsistent. From the perspective of students, the implementation of e-learning curriculum faces skill challenge; this part of the results is consistent with Mousavi's findings (13). Conversely, from the perspec-

tive of faculty members, the implementation of e-learning curriculum is not faced with skill challenges which are inconsistent with Mousavi's findings. It is worth mentioning to say that this inconsistency in spite of the same statistical population, namely the faculty members indicates that in the meantime, some factors affect people's attitudes and this important issue require more investigation. From the perspective of faculty members and students, the implementation of e-learning curriculum faces financial challenges which is consistent with the research findings of Mousavi, Sabouri, Rajash' (13, 14, 18). From the perspective

**Table 4.** The Results of One-Sample T-Test Implementation Component of E-Learning Curriculum P < 0.05

| Implementation Dimensions of E-Learning Curriculum | Tests   | Descriptive Indexes |              | One-Sample T-Test |     |         |
|--|---|---------------------|--------------|-------------------|-----|---------|
|  |   | N                   | M ± SD       | T                 | Df  | Sig     |
| Dimension of cultural                              | Use of the Internet is pervasive in society.  | 237                 | 3.80 ± 0.880 | 13.7              | 236 | < 0.001 |
|  | Community resist against the virtual education.   | 237                 | 2.18 ± 0.962 | -12.7             | 236 | < 0.001 |
|  | Virtual education is in pervasive society.  | 237                 | 2.10 ± 0.850 | -15.8             | 236 | < 0.001 |
|  | Total score (cultural challenges)   | 237                 | 2.69 ± 0.524 | -8.67             | 236 | < 0.001 |
| Dimension Of Information Technology Infrastructure | There is sufficient access to the internet.   | 237                 | 2.32 ± 1.20  | -8.43             | 236 | < 0.001 |
|  | Internet speed is appropriate.  | 237                 | 2.56 ± 1.13  | -5.85             | 236 | < 0.001 |
|  | There are electronic resources at the required level  | 237                 | 2.26 ± 1.09  | -10.1             | 236 | < 0.001 |
|  | There are home computer systems suitable for use.   | 237                 | 3.56 ± 0.888 | 11.1              | 236 | < 0.001 |
|  | Necessary software equipment is available.  | 237                 | 3.67 ± 0.866 | 11.6              | 236 | < 0.001 |
|  | Necessary hardware equipment is available.  | 237                 | 3.52 ± 0.990 | 7.95              | 236 | < 0.001 |
|  | Total score (IT infrastructure)   | 237                 | 2.91 ± 0.507 | -2.41             | 236 | 0.033   |
| Dimension of cognitive                             | I am aware of virtual education needs.  | 237                 | 2.17 ± 0.962 | -13.0             | 236 | < 0.001 |
|  | I have sufficient knowledge to the system environment of virtual education.                         | 237                 | 2.22 ± 0.938 | -12.4             | 236 | < 0.001 |
|  | I have enough experience in the field of e-learning.  | 237                 | 2.04 ± 0.946 | -15.2             | 236 | < 0.001 |
|  | Total score (cognitive)   | 237                 | 2.47 ± 0.663 | -11.9             | 236 | < 0.001 |
| Dimension of motivation                            | I would like to do group work in the system environment of virtual education.                       | 237                 | 3.37 ± 0.992 | 5.73              | 236 | < 0.001 |
|  | I'd like to use a virtual environment for communication with education officials                    | 237                 | 3.63 ± 0.986 | 9.66              | 236 | < 0.001 |
|  | I'd like to participate in the cultural auxiliary program through the virtual learning environment. | 237                 | 3.44 ± 1.03  | 6.51              | 236 | < 0.001 |
|  | Total score (motivation)  | 237                 | 3.48 ± 0.745 | 9.82              | 236 | < 0.001 |
| Dimension of skill                                 | I have the necessary skill to work in virtual educational space.                                    | 237                 | 3.57 ± 0.983 | 8.81              | 236 | < 0.001 |
|  | I'm necessarily mastered in English to use of virtual space.  | 237                 | 3.46 ± 0.949 | 7.39              | 236 | < 0.001 |
|  | I have the ability to communicate multilaterally in the virtual environment                         | 237                 | 3.32 ± 0.956 | 5.05              | 236 | < 0.001 |
|  | I have the ability to create a multimedia education.  | 237                 | 3.04 ± 1.14  | 0.577             | 236 | 0.565   |
|  | I have the ability to participate in group work in the virtual classroom.                           | 237                 | 3.24 ± 1.00  | 3.62              | 236 | < 0.001 |
|  | Total Score (skill)   | 237                 | 3.32 ± 0.619 | 8.02              | 236 | 0.001   |
| Dimension of Financial                             | There are sufficient budgets to use high speed internet.  | 237                 | 2.18 ± 0.950 | -12.8             | 236 | < 0.001 |
|  | There are necessary funds to participate in the virtual education.                                  | 237                 | 2.30 ± 1.01  | -10.2             | 236 | < 0.001 |
|  | There is appropriate financial support to participate in virtual education.                         | 237                 | 2.30 ± 0.963 | -15.1             | 236 | < 0.001 |
|  | Total score (financial)   | 237                 | 2.17 ± 0.892 | -13.9             | 236 | < 0.001 |
| Dimension of legal                                 | There is personal ownership about initiatives and innovations in virtual education, system there.   | 237                 | 2.90 ± 1.00  | -13.9             | 236 | 0.166   |
|  | There is effective security in personal information.  | 237                 | 3.10 ± 0.877 | 1.73              | 236 | 0.84    |
|  | The value of the academic degree of the virtual education is clear in society.                      | 237                 | 2.39 ± 1.07  | -8.46             | 236 | < 0.001 |
|  | There are policies and laws in support of the academic degree of the virtual education.             | 237                 | 2.55 ± 0.976 | -6.85             | 236 | < 0.001 |
|  | Total score (Legal)   | 237                 | 2.74 ± 0.624 | -6.27             | 236 | < 0.001 |
| <b>Total</b>                                       | Implementation of curriculum  | 237                 | 2.83 ± 0.344 | -7.36             | 236 | < 0.001 |

of faculty members and students, the implementation of e-learning curriculum faces legal challenges that are consistent with the research findings of Sabouri, and Qureshi (14, 17).

Faculty members in comparison with students believe more in cultural, infrastructure of communications and technology, and legal challenges of e-learning curriculum implementation and that this part of the finding is inconsistent with Sabouri's findings (14). Also the Financial dimension from the perspective of students has the most challenge that this research finding is inconsistent with

Sabouri's finding (14).

Regarding the cognitive challenges, one-sample T-test results reveal that it is not considered as the challenge of the implementation of e-learning curriculum by faculty members, but from the perspective of students, it is one of the challenges of the e-learning curriculum implementation. In this case, the students' perspective about the research findings is related to the motivational and skill challenges and also results of one-sample t-test reveal that it is not considered as the implementation challenge of e-learning curriculum by all the groups. Independent

**Table 5.** Results of One-Sample T-Test and Independent T-Test in Relation to Implementation Component of E-Learning Curriculum Based on the Perspectives of Faculty Members and Students

| The Dimensions of the Implementation of e-Learning Curriculum |                 | Statistical Indexes |                               |              |                    |               |         |
|---|-----------------|---------------------|-------------------------------|--------------|--------------------|---------------|---------|
|   |                 | Descriptive         |                               | One-Sample T |                    | Independent T |         |
|   |                 | N                   | Mean $\pm$ Standard Deviation | T            | Significance Level | T             | Level   |
| Dimension of cultural   | Faculty members | 42                  | 2.0789 $\pm$ 0.51075          | -11.1        | < 0.001            | -6.77         | < 0.001 |
|   | Students        | 237                 | 2.6988 $\pm$ 0.52443          | -8.67        | < 0.001            |               |         |
| Dimension Of Information Technology Infrastructure            | Faculty members | 42                  | 2.3684 $\pm$ 0.46846          | -8.31        | < 0.001            | -7.33         | < 0.001 |
|   | Students        | 237                 | 2.91 $\pm$ 0.49582            | 0.022        | < 0.001            |               |         |
| Dimension of cognitive  | Faculty members | 38                  | 3.5789 $\pm$ 0.91594          | 3.89         | < 0.001            | 9.45          | < 0.001 |
|   | Students        | 237                 | 2.47 $\pm$ 0.85522            | -11.9        | < 0.001            |               |         |
| Dimension of motivation                                       | Faculty members | 42                  | 3.5263 $\pm$ 0.58321          | 5.56         | < 0.001            | 0.322         | 0.748   |
|   | Students        | 237                 | 3.4854 $\pm$ 0.74587          | 9.82         | < 0.001            |               |         |
| Dimension of skill  | Faculty members | 42                  | 3.4947 $\pm$ 0.62513          | 4.87         | < 0.001            | 1.52          | 0.128   |
|   | Students        | 237                 | 3.3289 $\pm$ 0.61925          | 8.02         | < 0.001            |               |         |
| Dimension of Financial  | Faculty members | 42                  | 2.65 $\pm$ 0.65277            | -3.01        | 0.005              | 3.36          | 0.001   |
|   | Students        | 237                 | 2.1754 $\pm$ 0.89291          | -13.9        | < 0.001            |               |         |
| Dimension of legal  | Faculty members | 42                  | 2.4408 $\pm$ 0.49126          | -7.01        | < 0.001            | -2.81         | 0.005   |
|   | Students        | 237                 | 2.7401 $\pm$ 0.62498          | -6.27        | < 0.001            |               |         |
| Implementation of curriculum (total score)                    | Faculty members | 42                  | 2.87 $\pm$ 0.31372            | -2.32        | < 0.001            | 1.36          | 0.174   |
|   | Students        | 237                 | 2.83 $\pm$ 0.36202            | -7.36        | < 0.001            |               |         |

samples t-test results also indicate that from this respect, there is no significant difference between their perspectives. Managers and other relevant factors by the use of this study results and with sufficient recognition and knowledge can take action to resolve issues and problems in the e-learning of Shahid Beheshti University.

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