The Feasibility of E-Learning Implementation in an Iranian University

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Abstract: The present research aimed to investigate the feasibility of e-learning implementation in an Iranian comprehensive university (included medical and non-medical fields) to provide appropriate solutions in this regard. To achieve this objective, seven research questions were formed. Surveying method was applied for data collection in this study. From the results, the readiness of the Iranian university to implement e-learning was moderate to low. This means that the Iranian university is not prepared for this type of learning. Accordingly, five factors were evaluated of which three factors: human, infrastructural, and cultural factors were in moderate to low level, and two factors: pedagogical and support, were at a low level. Ten basic strategies for successful implementation of e-learning were extracted at the Iranian university based on the studied five factors and they were presented according to the knowledge and research in the field of e-learning in the world and in Iran. Some of these consisted of holding training courses at the university level, considering a special place for e-learning in the university strategic plan, developing a mechanism for monitoring the activities of teaching and research in e-learning environment for students and faculty, and allocating and spending an appropriate budget.

Keywords: Feasibility, e-learning, Iranian university, strategies

1. Introduction

"Electronic learning" is the modern paradigm of the higher education (Sun, et al. 2007). This new phenomenon is an approach to design, develop, deliver, and evaluate education, which makes use of electronic facilities and learning capabilities in a better way. In general, e-learning is shaped and developed in two major approaches (one in management and the other in psychology). These approaches include the systemic approach and the constructivist approach. A number of experts in system space have paid attention to e-learning. For example, Hao and Barich (2010) provided an interesting model to evaluate e-learning courses using the systemic approach. Some experts argued that network learning i.e. learning using the Internet is the best way to build the application-oriented perspective on learning. Given the constructive approach, the educational design process lacks specific and predetermined steps. However, three stages of analysis, design, and evaluation are overlapped and they are conducted consecutively.

E-learning experience requires the discreetness and cunningness of an intelligent and fast thinker faculty member who can convert the principles and strategies in any position to make up events and their unique requirements. Many types of research have shown that lack of knowledge and attitude of faculty members in the field of information and communication technology (ICT) is one of the major limitations of using e-learning in the classroom. Lin, Huang and Chen (2014) showed in a research that the barriers related to faculty members in IT application consist of two general inner and outer parts, which includes the lack of organizational support, inadequate faculty members' preparation, the problem of time, lack of personal motivation, and technical support problems. Nedelman (2013) stated that the faculty members' barriers in the use of technology in higher education include the lack of technical knowledge, management structure, assessment shortages of the effectiveness of the technology, and organizational changes. Jariang Pcasert (2003) examined the understanding and readiness of faculty members and students of faculty of Business Administration at "Chiang Mai" University in using e-learning.

The component of the student, as well as the faculty member, is important in teaching and learning. Kint and Zhu (2016) showed that the students' characteristics and environmental features are two major factors in the design of blended learning environment. Liaw and Huang (2003) concluded that the learners' readiness in terms of characteristics such as motivation, attitude, belief, and confidence should be determined to implement and develop e-learning. Sadic (2007) concluded that three factors of attitude, experience, and competence affect the development and implementation of e-learning. Malik (2010) reached the conclusion that there is a direct relationship between the student's motivation and education continuation in e-learning. Hart (2012) concluded that a set of required behaviors, attitudes, and skills for students helps the complete success of online training courses and encourages them to continue the education in this system of learning.

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Gutierrez -Santuste, Gallego - Arrufat & Simone (2016) have shown that communication barriers with the help of computers in universities are institutional in the application of technology, faculty members' exposure problem, and students' progress barriers. Birch and Barnett (2009) declared that the institutional problems in the use of technology in higher education include the lack of strategy, lack of institutional policies, and administrative costs. Sun et al. (2007) identified the six factors including student, faculty member, curriculum, technology, and environment, affecting the learner's e-learning satisfaction.

Since 2001, some universities in Iran such as Science and Technology, Shiraz, Amir Kabir, Khajeh Nasir, Hadith Sciences, Mehr Alborz, Shahid Beheshti, and Isfahan industrial have established e-learning courses. The research findings related to the topic in Iran can be divided into two general categories. Some of them have shown that e-learning implementation is possible in the studied universities. Rahimidoost and Razavi (2013), Keshavarzi et al. (2013) and Afyuni and Forughi Abari and Yarr Mohammadian (2014) can be mentioned in this regard. Some other studies have shown that e-learning implementation is not possible in the studied universities. Sheykhian et al (2015) and Hosseini, et al (2015) can be noted in this regard.

It seems that there are a number of challenges facing the deployment of e-learning in universities including the facts that educational technology has no specific position in the strategic plan of universities. There is no defined framework and model for the use of educational technology in universities. Faculty members (and students) do not attend the required courses to design and evaluate the training programs with technology, and they are not familiar with the literature of this field. There is no necessary infrastructure for the use of new technologies in higher education. An appropriate budget is not allocated for the acquisition, deployment, and maintenance of equipment.

However, technology in higher education is strongly emphasized in Iran's higher education documents. For example in *National Master Plan for Science and Education* "National Action No. 25 of Overall Strategy 6" (Supreme Council for Cultural Revolution, 2009) "the development of e-learning system and ICT infrastructures in higher education" has been emphasized. In Article 5 of the Bylaws for associate and bachelor courses "continuous and discontinuous", universities are autonomous to provide at most ten percent of each course lesson units, with the priority of basic and public courses in electronic form (virtual) except for the Islamic sciences and public Persian, with an emphasis on the electronic content and observing the approved standards by the Ministry (Ministry of Science, Research and Technology, 2014). According to the cases, the major issue of the present research is that how much is the studied university prepared to implement e-learning and what are the necessary solutions in this context?

Based on the summary and analysis of e-learning models and the related types of research in this field, the conceptual model of the present study is formed as follows:

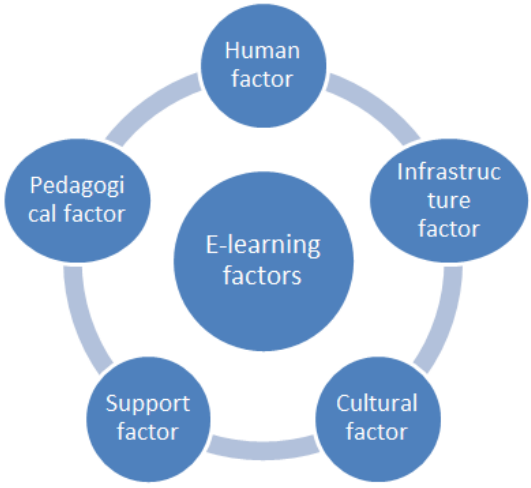

Figure 1: The research conceptual model: researcher-made

2. Methodology

2.1 Method

The present study is a descriptive research, which has been conducted through surveying method. In this research, the possibility of implementing e-learning in the studied universities, as well as the appropriate solutions in this field in terms of human, infrastructural, cultural, support, and pedagogical factors, have been described and surveyed from the view of university faculty members, managers, and educational experts. The studied university was chosen because of its comprehensiveness. In the Iran's higher education system, the universities related to the fields of engineering sciences, basic, agriculture, arts, and humanities are affiliated to the Ministry of Science, Research and Technology, which are independent of the universities related to the fields of medical, dental, nursing, and midwifery. Medical universities are affiliated with the Ministry of Health and Medicine. The studied university is one of the few universities that has the both educational fields. Therefore, it is considered as a comprehensive university. Naturally, choosing the surveying field in such universities can introduce medical and non-medical cases in the country.

2.2 Population and Sample

The statistical population of the present research consisted of the following populations:
All full-time faculty members of the studied university according to the latest statistics of its Educational Planning Office consisted of 313 people as follows:

Table 1: Statistical population

Faculty Name	The number of faculty member	Percentage
Humanities	72	23%
Basic Sciences	30	9.6%
Agricultural Sciences	24	7.7%
Engineering	44	14.1%
Art	12	3.8%
Dental	40	12.8%
Medical	77	24.6%
Nursing	14	4.5%
Total	313	100%

A random stratified sampling method was used to select a representative sample of the population. The sample size was obtained through Morgan Table (167) as follows:

Table 2: Statistical sample

Faculty Name	The number of samples	Percentage
Humanities	32	19.2%
Basic Sciences	19	11.4%
Agricultural Sciences	12	7.2%
Engineering	20	12%
Art	9	5.4%
Dental	21	12.6%
Medical	46	27.5%
Nursing	8	4.8%
Total	167	100%

Of these, 155 questionnaires were completed and returned.

- Graduate Studies and educational assistants of an Iranian University.
- Educational experts of an Iranian University.

The sample sizes of graduate studies and educational assistants (n=8) and education authorities (n=8) were all counted due to their limited number.

2.3 Data collection tools

The data collection tools in the present research include a researcher-made questionnaire and interview. These tools were developed based on the study of literature and analysis of previous research tool and initial interviews with some administrators, faculty members, and educational experts regarding the university's e-

learning. It consists of five types factors for e-learning feasibility. Questionnaires were given to faculty members, and educational assistants and officials were interviewed. The validity of tools was obtained using the opinions of 15 experts in the field of e-learning in higher education, and reliability was obtained using Cronbach's alpha result as follows:

Table 3: Cronbach's alpha results regarding the e-learning feasibility questionnaire

Name of factor	Number of questions	Alpha value
Human Factor	4	0.883
Infrastructural factor	9	0.762
Cultural factor	4	0.899
Support factor	4	0.925
Pedagogical factor	5	0.915
Total Reliability	26	0.924

Cronbach's alpha results showed that the obtained reliability for the e-learning feasibility questionnaire is desirable because the achieved reliability was 0.924 more than 0.70.

2.4 Research data analysis method

The present research's data is of two types: quantitative data (data obtained from the questionnaires) and qualitative data (data from interviews). Therefore, the analysis methods of these data include qualitative and quantitative methods, respectively. Descriptive statistical methods including frequency, percentage, average and standard deviation, and inferential statistics including t-test (with 0.05 error p-value), analysis of the variance and Friedman, were used to analyze the quantitative data in the research.

3. Results

Answer to the main question: how is the readiness of an Iranian University to implement e-learning?

Table 4: One-sample t-test results on the readiness of an Iranian University to implement e-learning

Number	Average	Standard deviation	The standard error	T value	Degrees of freedom	P- value
155	2.3092	0.52872	0.04247	54.37	154	0.0000

Reviewing the presented results in Table 4 indicate that there is a significant difference between the sample mean and the assumed mean of the population at the significant level of 0.01 (t=54.37) regarding the readiness of an Iranian University to implement e-learning. The results indicate that the readiness level of an Iranian University to implement e-learning is moderate to low.

The analysis of interview questions has shown that the readiness level of an Iranian University to implement e-learning is medium and low from the graduate studies and educational assistants view, respectively.

Table 5: The result of Friedman test regarding the readiness level of an Iranian University to implement e-learning from the educational assistants view

	No.	Mean	Percentage	Standard deviation	Standard error
Support factor	6	2.0000	40.00	1.26491	0.51640
Infrastructural factor	6	2.3333	46.67	1.03280	0.42164
Cultural factor view	6	2.5000	50.00	1.04881	0.42817
Pedagogical factor	6	2.5000	50.00	1.04881	0.42817
Human factor	6	2.8333	56.67	0.98319	0.40139
Statistical results	Df= 4	p-value = 0.656	chi-square=2.43		

Table 5 shows that the most important priority for educational assistants was the human factor and the least important was support factor, but this relationship was not statistically significant because the obtained significant level was 0.656 more than 0.05.

Table 6: The result of Friedman test regarding the readiness level of an Iranian University to implement e-learning from the educational experts view

	No.	Mean	Percentage	Standard deviation	Standard error
Infrastructural factor	8	1.7500	35.00	1.16496	0.41188
Pedagogical factor	8	2.1250	42.50	1.24642	0.44068
Human	8	2.6250	52.50	0.74402	0.26305
Cultural factor view	8	2.8750	57.50	0.64087	0.22658
Support factor	8	3.3750	67.50	1.18773	0.41993
Statistical results	Df= 4	p-value = 0.074	chi-square=8.53		

Table 6 shows that the most important priority for educational experts was the support factor and the least important was the infrastructural factor, but this relationship was not statistically significant because the obtained significant level was 0.074 more than 0.05.

The answer to secondary research questions:

Answer to the first question: how is the readiness of an Iranian University to implement e-learning from the human factor view?

Table 7: The result of t-test regarding the readiness level of an Iranian University to implement e-learning from the human factor view

No.	Mean	Standard deviation	Standard error	T value	Degrees of freedom	P- value
155	2.4351	0.05720	0.70988	42.65	154	0.0000

Evaluating the presented results in table 7 indicates that there is a significant difference between the sample mean and the assumed mean of the population at the significant level of 0.01 (t=42.65) regarding the readiness of an Iranian University to implement e-learning from the human factor view. The results indicate that the readiness level of an Iranian University to implement e-learning from the human factor view is moderate to low.

Analysis of interview questions has shown that the readiness of an Iranian University to implement e-learning from the view of educational assistants, graduate studies and educational assistants, educational experts is moderate to low in terms of the human factor. Graduate studies and educational assistants have considered e-learning courses and workshops very necessary for faculty members and university administrators regarding the human factor (n = 6). They have also emphasized using educational technology experts to implement e-learning in an Iranian university (n=1). The educational experts of the faculties have considered e-learning courses and workshops essential for university staff (n=4). They considered faculty members' preoccupation as one of the obstacles to implement e-learning in universities (n=1).

Answer to the second question: how is the readiness of an Iranian University to implement e-learning from the infrastructural factor view?

Table 8: The result of t-test regarding the readiness level of an Iranian University to implement e-learning from the infrastructural factor view

No.	Mean	Standard deviation	Standard error	T value	Degrees of freedom	P- value
155	2.5728	0.51933	0.04171	61.67	154	0.0000

Evaluating the presented results in Table 8 indicates that there is a significant difference between the sample mean and the assumed mean of the population at the significant level of 0.01 (t=61.67) regarding the readiness of an Iranian University to implement e-learning from the infrastructural factor view. The results indicate that the readiness level of an Iranian University to implement e-learning from the infrastructural factor view is moderate to low.

Analysis of the interview questions has shown that the readiness of an Iranian University to implement e-learning from the view of educational assistants, graduate studies and educational assistants, educational experts is moderate to low in terms of the infrastructural factor. Graduate studies and educational assistants

have suggested developing a comprehensive program to implement the e-learning in an Iranian University (n = 5). They have also suggested developing the necessary laws and regulations for the implementation of e-learning in an Iranian University (n=4), increasing expert labor in the Human Development Office of the University (n=3), and adopting the required security measures for the proper use of e-learning in an Iranian University (n=3).

Answer to the third question: how is the readiness of an Iranian University to implement e-learning from the cultural factor view?

Table 9: The result of t-test regarding the readiness level of an Iranian University to implement e-learning from the cultural factor view

No.	Mean	Standard deviation	Standard error	T value	Degrees of freedom	P- value
155	2.2871	.83296	.06691	34.18	154	0.0000

Evaluating the presented results in Table 9 indicates that there is a significant difference between the sample mean and the assumed mean of the population at the significant level of 0.01 (t=34.18) regarding the readiness of an Iranian University to implement e-learning from the cultural factor view. The results indicate that the readiness level of an Iranian University to implement e-learning from the cultural factor view is moderate to low.

Analysis of interview questions has shown that the readiness of an Iranian University to implement e-learning from the view of educational assistants, graduate studies and educational assistants, and educational experts is moderate to low in terms of cultural factor. The educational experts have expressed a very important and delicate point regarding the cultural factor. This point is that considering the lack of direct control and supervision of students in e-learning system, there is a concern that the students do not study their lessons well and this would result to academic failures. Therefore, the provision of the necessary mechanisms in this field is essential (n=2).

Answer to the fourth question: how is the readiness of an Iranian University to implement e-learning from the support factor view?

Table 10: The result of t-test regarding the readiness level of an Iranian University to implement e-learning from the support factor view

No.	Mean	Standard deviation	Standard error	T value	Degrees of freedom	P- value
155	2.0325	.80374	.06477	31.38	154	0.0000

Evaluating the presented results in Table 10 indicates that there is a significant difference between the sample mean and the assumed mean of the population at the significant level of 0.01 (t=31.38) regarding the readiness of an Iranian University to implement e-learning from the support factor view. The results indicate that the readiness level of an Iranian University to implement e-learning from the support factor view is moderate to low.

Analysis of interview questions has shown that the readiness of an Iranian University to implement e-learning from the view of educational assistants, graduate studies and educational assistants, and educational experts is moderate to low in terms of support factor. The graduate studies and educational assistants suggested allocating the necessary funds as one of the most important components of the implementation of e-learning in an Iranian University regarding the support factor (n=6). They have also considered the production of electronic content as one of the successful strategies of e-learning in an Iranian University (n=3). The educational assistants have considered allocating the necessary funds as one of the most important components of the implementation of e-learning in an Iranian University (n=4).

Answer to the fifth question: how is the readiness of an Iranian University to implement e-learning from the pedagogical factor view?

Table 11: The result of t-test regarding the readiness level of an Iranian University to implement e-learning from the pedagogical factor view

No.	Mean	Standard deviation	Standard error	T value	Degrees of freedom	P- value
155	2.0091	0.82203	0.06624	30.33	154	0.0000

Evaluating the presented results in Table 11 indicates that there is a significant difference between the sample mean and the assumed mean of the population at the significant level of 0.01 (t=30.33) regarding the readiness of an Iranian University to implement e-learning from the pedagogical factor view. The results indicate that the readiness level of an Iranian University to implement e-learning from the pedagogical factor view is moderate to low.

Analysis of interview questions has shown that the readiness of an Iranian University to implement e-learning from the view of educational assistants, graduate studies and educational assistants, and educational experts is moderate to low in terms of pedagogical factor. The graduate studies and educational assistants suggested that the implementation of e-learning in faculties whose discipline is based on practical work (in particular dental, medicine, and agriculture faculties) is more difficult than other faculties regarding the pedagogical factor. Therefore, it is better to implement this type of training initially in those faculties (n=2).

Answer to the sixth question: what are the appropriate solutions for e-learning's future in an Iranian University?

According to the available knowledge and research in the field of e-learning in the world and Iran and based on the research findings, ten basic solutions were extracted and introduced to implement e-learning in an Iranian University based on the five analyzed factors as follows:

Solutions related to the human factor, including holding training courses and using educational technology experts at the university level.

Solutions related to the infrastructural factor, including considering a special place for e-learning in the university strategic plan, adopting the necessary laws and regulation regarding the implementation of e-learning at the university level, strengthening and developing communication networks, and developing a digital library at the university.

Solutions related to the cultural factor, including developing a mechanism for monitoring the activities of teaching and research in e-learning environment for students and faculty.

Solutions related to the support factor, including allocating and spending an appropriate budget and producing electronic contents.

Solutions related to the pedagogical factor, including holding training courses.

4. Discussion

Studies have been conducted on the feasibility of implementing e-learning in higher education in Iran, or in the universities of the Ministry of Education or the Ministry of Health. However, there is no conducted research in Iran's higher education, which has investigated the possibility of implementing e-learning in the two classes of universities together. The present research is distinguished in this regard and its results are innovative.

Faculties of the studied university in this research include diverse fields of engineering, the humanities, the arts, and medicine. Typically, the advantages and problems of these fields in Iran are assessed separately and unrelated to each other. Therefore, this research has violated this procedure and evaluated the field together as an opportunity to examine the feasibility of a new phenomenon called e-learning in this space.

Another important issue that should be mentioned here is that the two elements of faculty members and students, and issues related to them are still the most important point of attention in e-learning in the present research, as well as the related types of research in Iran. The research results showed that the pedagogical

factor on the faculty members and students has allocated the lowest average to itself. Thus, according to the respondents, the lowest level of preparedness for the implementation of e-learning in the university and higher education in Iran are in these two critical elements. Despite the structural and financial difficulties in the studied university and Iran's university system, it is expected that this factor should have the lowest level of preparedness for the implementation of e-learning, but it is not such a thing and the respondents believe that attention should be focused on faculty members and students.

Comparing the research results related to the issue (mentioned in the introduction), it can be concluded that these studies are aligned with the present research in terms of emphasizing the role of the faculty member and student. Studies have shown that the lack of Faculty members' knowledge (and performance) and their inappropriate attitude regarding the application of technology in education can be serious obstacles to the implementation of e-learning in higher education. Lack of motivation, interest, and negative attitudes are the most serious obstacles in students. According to the results, the technology training model for faculty members and students can be as follows:

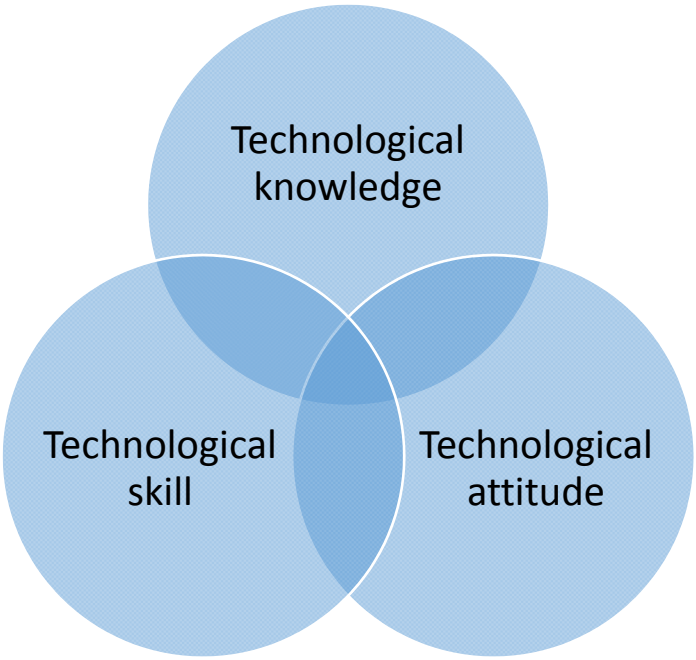

Figure 2: The technology training model for faculty members and students

5. Conclusions

E-learning in Iran's higher education is a new phenomenon, which was created in less than two decades. The experience of this type of teaching and learning included successes and failures. The results of this research have also shown that in general, the possibility of implementing e-learning in universities is relatively weak. E-learning in Iranian universities has been mainly implemented in the form of "non-physical presence of teachers and students". A sudden change in the educational model of direct and face-to-face instruction, which has a long history in Iran's higher education and civilization and religious teachings of Iranian, which was based on the impact of master's presence on the student, would not have any result except for failure. It seems that selection, customization, and implementation of "blended learning" can lead to the gradual success of e-learning in higher education in Iran. This issue can gradually replace the face to face training and inspire students towards independent learning without a sudden removal of faculty members and students' presence from the teaching and learning scene. Mironov, and Ciolan, and Borzea (2012) believe that variety of traditional and on-line learning and teaching cannot alone lead to the desired quality, but an appropriate combination of presence and online learning is a flexible approach to learning. Graham (2013) points out that a framework should be sought to conduct blended learning in the field of organization. In this regard, researchers suggest six cases including awareness/exploration, compatibility/initial application, and full application/grow, such that using them can improve the blended learning at the organizational level. Accordingly, the model of e-learning in Iran universities can be illustrated as follows:

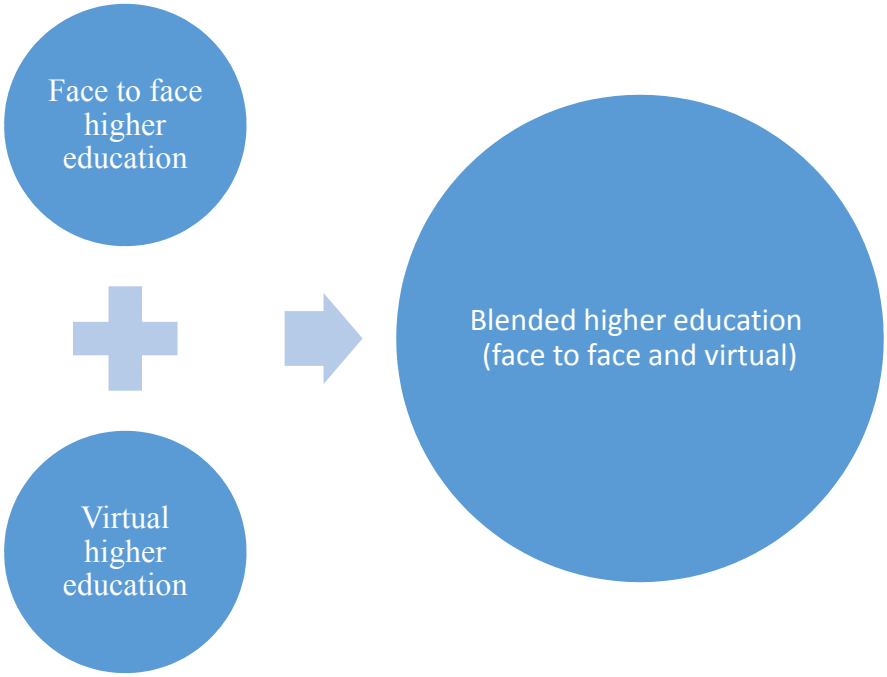

Figure 3: The model of e-learning in Iran universities

This model can be applied to the university systems in countries that are culturally and historically close to Iran and which have newly deployed e-learning, such as the developing Islamic countries.

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