Research Article

Assessment of the Level of Readiness at Neyshabur University of Medical Sciences for Virtual Training Development

Sara Ghodousi Moghadam[1] and Aida Abusalehi[1, *]

[1]Department of Public Health, Neyshabur University of Medical Sciences, Neyshabur, Iran

[*] *Corresponding author*: Department of Public Health, Neyshabur University of Medical Sciences, Neyshabur, Iran. Email: aida_abusalehi@yahoo.com

Abstract

Objective: The aim of this study was to assess the readiness level of Neyshabur University of Medical Sciences for virtual training development.

Methods: This is a census-based descriptive cross-sectional study conducted in 2017 on 23 employees of Neyshabor University of Medical Sciences who were in the field of e-learning and/or had a virtual learning experience. The research tools included one questionnaire of demographic information and assessment of the readiness of virtual training questionnaire that consist of 18 questions in four areas evaluating the infrastructure, assessment of college resources, assessment of students, assessment of faculty members' readiness, and a question about attitude towards virtual learning. Validity of this questionnaire was confirmed by Najimi and the reliability was confirmed by Cronbach's alpha (0.92). This questionnaire was scored based on a 10-point Likert scale from totally inappropriate to totally appropriate. The data were analyzed with descriptive analytical tests using SPSS 22 software.

Results: The average total score of the readiness assessment for the development of virtual education on the job position was statistically significant (P = 0.04) while there was no significant difference with other demographic variables such as age, sex, work experience, employment and educational status, and academic degree (P > 0.05). In addition, the average score of the readiness assessment for the development of virtual education was 4.82 ± 1.47 for the participants, which indicates an almost inadequate situation.

Conclusions: Due to the approximate readiness of the faculty members and the almost good attitude that exists between the participants in the study, there must be a series of joint planning for achieving short and long term goals for improving the status of university infrastructure and resources, as well as student's readiness for improving.

Keywords: Virtual Learning, Need Assessment, Distance Learning, Education, Medical Sciences

1. Background

In view of the importance of developing the country of Iran, it is essential, in order to achieve the goals of the educational system, to apply modern educational methods, distance education (1). E-learning is a kind of individual education which, given the low costs of this training, has been suggested for use in university education in Iran (2) as well as increasingly used in medical science education (3).

Ellaway & Masters define e-learning as a flexible, engaging, and learner-centered approach that fosters peer-to-peer, peer-to-student, as well as student-student relationships; collaboration and communication often happen inconsistently (4, 5). Significant progress has been made in the field of e-learning in Iran (6, 7).

Research evidence confirms that e-learning can bring results similar to the results of face-to-face and traditional education (8). Adding elements in the current curriculum is difficult with other current training methods, to compensate for the lack or lack of educational resources or libraries, the possibility of displaying physiological or biochemical processes with sequences of images or sequences and etc. are some of the benefits of e-learning to traditional education. In addition, for faculty members, e-learning reduces the frequency of repetitive speeches to multiple groups of learners, makes lectures more efficient, and improves the quality of contact time with learners (9). In addition, while it is said that the main aspects of education are better represented by teacher-learner interaction, valid studies show that e-learning is the most effective way to deliver knowledge content (10, 11). Furthermore, in order to guarantee and increase the quality of health care, healthcare personnel (like nurses) should increase their knowledge and skills through continuing education. Compared

to traditional learning, e-learning is a more flexible learning environment and plays a key role in providing continuing education (12). Other benefits of e-learning include increasing the capacity for teaching and learning and also the relevance of e-learning for problem-based learning (13). It has also been proven that e-learning is an effective way to share some of the elements of the health education curricula (14, 15).

The increasing spread of medical knowledge in recent years has changed the status of medical education so that the development of new educational methods, their improvement, and development is one of the goals of organizations involved with education (16-20).

The desire for qualitative and international development of the teaching process, as well as the uninterrupted communication between the faculty and the students in a moment that causes the time and place removed from the system and the complete dynamism of the educational environment, requires the presence of a site called virtual learning, which at any moment takes more time to grow and with special capabilities has given a special effect to the concept of education in all countries of the world. Currently, many pioneer countries are in the creation and development of universities and virtual classes and the development of their educational system (21).

On the other hand, computer-assisted learning has its own limitations, including the fact that it may not be a suitable alternative for human-emotional interactions in the classroom (22).

In consonant with the plan of the evolution of medical education, one of its main packages is the development of virtual learning in medical sciences with the aim of institutionalizing a responsive education approach in the health system, the spread of justice in higher education, participation in regional education and globalization, and networking in the higher education system, the use of modern technologies in higher education (23). In addition, all medical universities in this direction should go; we decided to assess the readiness of the university to implement the package.

In addition, several studies have shown that nurses and nursing students have a positive view of e-learning (24-26). In addition to having the basic knowledge of working with computers and using the Internet, and the positive attitude of students and faculty members towards providing e-learning (27, 28). An assessment of e-learning infrastructure in universities is considered as essential to the learning system. Accordingly, the present study was conducted as part of a Neyshabur University of Medical Sciences readiness assessment program aimed at developing virtual learning.

2. Methods

This study was a census-based descriptive cross-sectional study conducted in 2017 on all employees of Neyshabur University of Medical Sciences who were in the field of e-learning and or had a virtual learning experience. The criteria for participation in the study was at least one-year employment in the job position. The exclusion criteria included lack of willingness to participate in the study. Finally, regarding to size of study population and inclusion criteria, 23 employees were entered the study.

The research tools included one questionnaire of demographic information (age, sex, job position, work experience, employment and educational status and academic degree) and assessment of the readiness of virtual training questionnaire. This questionnaire consisted of 18 questions in four areas of evaluation of infrastructure (4 questions), assessment of college resources (2 questions), assessment of students (5 questions), assessment of faculty members' readiness (6 questions) and a question about attitude towards virtual learning. It should be noted that in order to increase the accuracy and precision of the information, the researcher checked the questionnaires after completion and, if necessary, returned to the person to be re-completed.

The scoring of the questionnaire was based on the Likert scale of 10 options, based on the fact that respondents chose from a completely inappropriate to a completely appropriate numerical range of 1 to 10 respondents. Due to the different number of questions in each domain, the average score of each domain as well as the mean of total score are calculated and reported. Meanwhile, all averages on the basis of the statistical norm in six completely inappropriate categories (average scores of 1 to 2.5), inappropriate (average scores of 2.5 to 4), some who inappropriate (mean scores of 4 to 5.5), some who appropriate (average scores of 5.5 up to 7), appropriate (mean scores 7 to 8.5), and completely appropriate (mean scores 8.5 to 10). Validity and reliability of this questionnaire was confirmed by Najimi et al. (29) in the same study with subject of assessment of the level of readiness at faculties of Isfahan University of Medical Sciences. Accordingly, the questionnaire was provided to four relevant experts and their views on using appropriate and understandable words, facilitating responses, and appropriateness of sections with the objectives of the study were investigated and applied in the tool. Instrument reliability was also examined through internal consistency as well as using Cronbach's alpha; 73% was confirmed in the Najimi et al. study. In addition, we also verified reliability of this questionnaire by Cronbach's alpha test (0.92).

It should be noted that this study was carried out after

obtaining written permission from the Educational and Research Deputy of Neyshabur University of Medical Sciences.

In addition, in order to observe ethics in the research, after an explanation of the goals and nature of the study for each participant, informed consent was obtained from them and regarding confidentiality of information, trustworthiness and honesty in reviewing texts and analyzing information was assured. The data were analyzed with descriptive analytical tests using SPSS 22 software (descriptive indicators, one-way ANOVA & independent sample *t*-test).

3. Results

Table 1 shows the demographic characteristics of the subjects. Accordingly, the mean age of the subjects was 38.26 ± 6.94 and mean of work experience was 7.17 ± 6.44 years.

A total of 47.8% of participants were women and most of the subjects were executives (39.1%). In addition, the majority of participants had a master's degree (65.2%), a contractual employment status (65.5%), and a job record of less than 10 years (74%) (Table 1).

In addition, the results showed that the average total score for the virtual learning readiness assessment on the job position was statistically significant (P = 0.04). While, there was no significant difference between mean score of evaluation with other demographic characteristics (P > 0.05).

Assessing the readiness of the development of virtual learning in the university based on six levels showed that a total of 65.2% of the participants had an inadequate assessment of the faculty's readiness for virtual education. Regarding the preparation of financial resources, they mentioned 87% of improper readiness. However, 39.1% of the respondents assessed the readiness of the faculty members (Table 2).

The average score of readiness assessment for the development of virtual education was 4.82 ± 1.47, according to the participants' viewpoints.

Among the studied areas, the faculty members' readiness was 5.59 ± 0.80 and the lowest average was obtained from the participants with the lowest average of 4.02 ± 1.87.

The mean score of attitude was 6.83 ± 1.83, which indicates the average level of attitude of the participants regarding the development of virtual education in the faculty.

Table 1. Demographic Variables of the Studied Participants[a]

Variable	No. (%)	Mean (SD)	P Value
Sex			0.78
Female	11 (47.8)	4.91 (1.76)	
Male	12 (52.2)	4.74 (1.22)	
Job position			0.04
President of university	1 (4.3)	6.64 (-)	
Vice presidents	1 (4.3)	3.13 (-)	
Head of an educational group	6 (26.1)	5.02 (1.18)	
Educational managers	9 (39.1)	4.06 (1.29)	
Information technology officer	3 (13)	6.72 (0.82)	
Teachers	3 (13)	4.75 (1.32)	
Work experience			0.79
1 - 3 years	6 (26.1)	4.32 (1.02)	
4 - 9 years	11 (47.8)	5.09 (1.71)	
10 - 15 years	3 (13)	4.68 (1.94)	
More than 15 years	3 (13)	4.99 (1.29)	
Employment status			0.69
Permanent	6 (26.1)	4.48 (1.36)	
Contractual	13 (56.5)	4.74 (1.46)	
Conventional	3 (13)	5.71 (2.14)	
Human resource planning	1 (4.3)	5.28 (-)	
Educational status			0.82
Ph.D.	8 (34.8)	4.72 (1.56)	
M.Sc.	15 (65.2)	4.87 (1.47)	
Academic degree			0.9
Assistant professor	8 (34.8)	4.72 (1.56)	
Instructor	8 (34.8)	4.91 (1.21)	
Expert	7 (30.4)	4.83 (1.84)	

[a] *One-way ANOVA; **independent sample *t*-test.

4. Discussion

The results of this study showed that in spite of the positive, appropriate, and above average of the participants studied to the development of virtual learning at the university, these people assessed the university's readiness for financial resources, students' readiness, and infrastructures, inadequate. This is despite the fact that the faculty's infrastructure is more suitable than other areas. In addition, the readiness of faculty members to implement and develop virtual learning has been higher than other areas.

The results of a similar study conducted by Najimi et al. in Isfahan University of Medical Sciences (29) showed that in the dimensions of attitude, preparedness for finan-

Table 2. Frequency Distribution of Readiness Condition in the Development of Virtual Learning in Neyshabur University of Medical Sciences[a]

Variable	Totally Inappropriate	Inappropriate	Somewhat Inappropriate	Somewhat Appropriate	Appropriate	Totally Appropriate
Total readiness assessment	-	8 (34.8)	7 (30.4)	6 (26.1)	2 (8.7)	-
Preparing for infrastructure	2 (8.7)	5 (21.7)	10 (43.5)	4 (17.4)	2 (8.7)	-
Preparation of financial resources	8 (34.8)	4 (17.4)	8 (34.8)	2 (8.7)	1 (4.3)	-
Student readiness	-	10 (43.5)	6 (26.1)	5 (21.7)	1 (4.3)	1 (4.3)
Faculty member readiness	-	6 (26.1)	8 (34.8)	4 (17.4)	4 (17.4)	1 (4.3)
Attitude	-	5 (21.7)	4 (17.4)	8 (34.8)	5 (21.7)	1 (4.3)

[a]Values are expressed as No. (%).

cial resources and infrastructure, there are similar results with the evaluation of virtual learning of Neyshabur University of Medical Sciences. However, there were different results in the faculty members and student's readiness, which seems to be due to the fact that the faculty members of the Neyshabur University of Medical Sciences are mostly young and, as a result of their willingness to accept and more enthusiasm for virtual learning, have a higher degree of readiness than faculty members. On the other hand, higher readiness of students at Isfahan University can be attributed to the familiarity and readiness of post graduates of this university, while the University of Neyshabur has no access to postgraduate students.

Miladi and Malek Mohammadi, in a study entitled feasibility study of the application of e-learning in higher education through factor analysis, the lack of attention to the infrastructure factor, i.e. the lack of equipment, the lack of reliability or reliability of technology, the lack of access to the desirable Internet network, and proper planning of the courses and low technical skills of the teacher will challenge the effectiveness of the courses. Therefore, the provision of suitable platforms, including infrastructure, is one of the top priorities. If there is still some doubt regarding the elaboration and efficiency of one of the dimensions mentioned above, seriously, the introduction of this area and innovation in education through e-learning courses should be avoided (30).

Vafaee Najar et al., also concludes in a research on the attitude and practice of faculty members regarding the implementation of a virtual learning system in Mashhad University of Medical Sciences, where according to the positive attitude and faculty members' performance regarding the virtual learning system, it is necessary to design and move towards the implementation of the virtual learning system in the formal education of the University of Medical Sciences (31). However, in our research, due to the in-

adequate evaluation of the infrastructure and funding of virtual learning, we first must make an appropriate effort to enter the field of virtual learning and its benefits, and to remove the weaknesses of planning.

The usefulness of any need assessment program is to circumvent that guards, guess and interpret existing information regarding the needs and makes the changes needed transparent. The consideration of the needed assessment is an important component in many areas, including virtual learning, which is involved with planning and preparation in advance to achieve goals and objectives (10). Studies such as the present study, with the evaluation of various factors can identify the needs and gaps in this field.

The present study was based on the inappropriateness of allocating resources similar to Darabiamin et al. research, which was carried out under the title of infrastructure and faculty's readiness to implement e-learning (32). This indicates the lack of awareness of decision makers regarding the importance of implementing virtual learning. However, from the point of view of human resources (faculty members), the present study has obtained a different and better result than that, which indicates the high potential of Neyshabur University of Medical Sciences in terms of human resources. Therefore, it is imperative that the authorities consider appropriate planning for allocating funds for the development of virtual learning in order to utilize the potential of the human resources available to improve the quality of education.

One of the issues presented in this study was unsatisfactory preparation and somewhat inappropriate. There were a total of 60.9% faculty members and 69.6% of students in their adaptation with virtual education and teaching methods in this area. Virtual learning is an independent system for providing electronic services and utilizing modern information and communication technolo-

gies (33). It seems that the lack of observation of the pattern of teaching virtual learning during the study period, in addition to the concern about the use of new technologies, is one of the most important problems faced by students and professors in this field and requires special attention to planning for the empowerment of professors and students. In the meantime, trainers and clinical professors have a profound responsibility for the transfer of medicine and medical science. Furthermore, the training of healthcare professionals for education is considered necessary to increase the effectiveness of academic courses and teaching (34, 35).

Baral et al. also emphasizes the effective teaching of the goals of all educational institutions, in order to achieve this, each system requires planning and capacity building for instructors (36); this will provide a platform for student readiness.

This study was accompanied by limitations such as the lack of cooperation of some participants and the limited number of tool questions regarding the target group.

It is recommended that the university consider the development of virtual learning in Neyshabur University of Medical Sciences in order to use the best and the most of existing potential. To develop the necessary infrastructure for virtual learning, the university should consider the necessary measures.

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Footnotes

Authors' Contribution: All authors contributed towards the data analysis, drafting, and critical review of the paper and agreed to be accountable for all aspects of the work.

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