CHALLENGES OF DEVELOPING ONLINE LEARNING IN HIGHER EDUCATION IN IRAN

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ABSTRACT

Online learning has now become an accepted and popular method of education for large numbers of universities in Iran, and now many higher education institutions are offering online courses to their students. The present study was carried out with the aim of investigating challenges to developing online learning in higher education. The study was based on survey research method and a questionnaire was developed to gather the data. The study population was postgraduate students (M.Sc. and Ph.D.) of different faculties in Tehran University who were selected by applying purposive sampling technique. The sample size for students was 152 persons. Data were analyzed by using SPSS/WIN software and descriptive and inferential methods were used for the data analysis. The results of the research indicated that three major factors explained 74.4% of variances of challenges to developing online learning. These factors were cultural/educational, technical, and financial challenges.

Keywords: **Online Learning, Student, Higher Education, Challenge.**

INTRODUCTION

With the rapid development of technology, educational processes have undergone many of changes during the last century. From print learning materials mailed to students' homes, to educational radio broadcasts, to educational television programming, to recent forays in interactive Web-based e-learning, ongoing technological changes have been reflected in the evolving role of teachers and students in the learning equation. Technological changes – particularly Web-based e-learning technologies–have resulted in new curriculum design and teaching strategies, new and emerging organizational structures, and it has even transformed learning itself (Jamlan, 2004).

Online learning is becoming a commonplace practice for delivering coursework to students enrolled in higher education programs of study. As technology advances and student enrollments increase, many universities are exploring the use of on-line instruction to meet the demands of students who prefer or find it necessary to take classes at a distance (Bangert, 2004). New communication technologies, particularly the Internet, appear to offer exciting possibilities for overcoming geographical access and cost barriers to learning.

Online learning is the use of Internet and digital technologies to create experiences that educate fellow human beings (Horton, 2001).

Online learning was born during the dot-com frenzy, and the term "online learning" was not well known until a few years ago. But now the term is common, especially in the University community (Bose, 2003). There are several cogent reasons for adopting and implementing online learning into educational systems:

- **The growth of information technology: online learning has become an ideal delivery vehicle for education and learning.**
- **It is information rich: online learning offers both teachers and learners access to any where, any time "information rich" resources.**
- **Alternative learning strategy: online learning can reach those previously denied access (e.g., students with physical disabilities).**
- **Blended learning: online learning can augment traditional classroom offerings, thereby freeing up valuable resources and expanding the offering to greater numbers of campus-based students (Spender, 2001).**

Online learning in Iran is in its maturity stages and large numbers of universities are offering online courses to their students. Students in University of Tehran use internet and online learning tools very frequently for doing their daily tasks. For example they communicate with their teachers and other students and complete their assignments and homework. They should also select their courses electronically by using university enrolment system. In addition, some courses are being offered fully online.

In spite of ever-developing online learning in educational systems, there had been challenges in this regard. What makes a learner successful in an online environment? What creates barriers or challenges? Answers to these questions, among others, gain increasing importance as Internet technologies become more readily available and accessible, in formal and informal contexts(Hofmann, 2002). Many researchers have tried to describe challenges of developing online learning according to their experiences and point of views. In Petrides' study (2002), some participants reported they felt a lack of immediacy in responses in the online context in comparison to what could typically occur in a structured face-to-face class discussion.

This appears to be especially obvious in asynchronous online discussions when students have to wait for others to read and respond back to their bulletin board posting or e-mail messages. Woods (2002) stated that online learners reported feeling isolated from faculty as well as other learners in the online courses they had taken. Many participants in Lyian Song et al (2004) research said that lack of community, difficulty understanding instructional goals, and technical problems were challenges in their online experiences. Abdon et al. (2007) cited that relative and absolute higher cost of Internet access, most often as a result of misguided telecommunications regulations; discourage the development of Internet-access service in developing countries. Ng (2004) stated that the handling of participants' communication anxiety is a very significant issue. Real-time interaction requires immediate responses, which may make students anxious; and anxiety can also be caused by delays in replying to messages.

In-depth clarification of academic issues also seems difficult in real-time interaction. Moreover, spontaneous responses can be problematic for some students as the opportunity to participate may be lost if the pace of the discussion moves too quickly.

Marino (2000) discovered that some students experienced difficulty adjusting to the structure of online courses, managing their time in such environments, and maintaining self-motivation. Hara and Kling (2001), conducting a study of online courses, found that feelings of isolation were an important stress factor for online students. Students reported confusion, anxiety, and frustration due to the perceived lack of prompt or clear feedback from the instructor and from ambiguous instructions on the course website and in e-mail messages from the instructor. Hillesheim (1998) reported that students not having the time, experience, and ability to learn the appropriate technological functions, or access to the necessary equipment are barriers for developing online learning. Betts (1998) concluded that among the reasons that faculty members were not involved in distance education were technological issues. Logan et al. (2002) investigated college students' experiences in an online course of electronic information sources and found technical difficulties were frequent barriers to student learning. The authors classified online communications into four categories of content, logistical, technical, and evaluative comments. About 22% of the students' questions were requests for solutions to technical problems. Ng (2007) said that the technical challenges of using new learning tools in synchronous online learning should not be overlooked.

The above efforts on challenges of online learning were just a few ones cited often. However, there have been more efforts in the literature (Anstead et al., 2004; Shea et al., 2005; Nordheim & Conners, 1997; Zhang et al., 2002; Wilson & Moore, 2004; Murphrey & Dooley, 2000; Grant, 2004; Petrides, 2002; Vonderwell, 2003; Lieblein, 2000; Jung, 2001; Alston et al., 2003; Miller & Miller, 1998; Miller, 1997).

The primary goal of conducting this research was to examine challenges of developing online learning in higher education in order to gain better understanding of online learning problems in educational systems.

METHODOLOGY

This study was based on survey research method. Participants of the current study were postgraduate students (M.Sc. and Ph.D.) of different faculties in Tehran University who were selected by applying purposive sampling technique. In this technique, sample elements are selected because they are believed to be representatives of the population of interest and are expected to serve the research purpose of the study (Churchill, 1991).

We chose the students who were using Tehran University database and email regularly and also had utilized university enrolment system at least twice from the beginning of their education in the target departments. So, 152 students (M.Sc. and Ph.D.) were selected as a sample of this research.

The questionnaire used for data collection consisted of 2 parts:

- **personal and demographic characteristics of students and**
- **a scale to measure challenges of developing online learning.**

The scale included 22 items. For each of the items, students were asked to provide a response based on a 1 to 10 scoring scale.

The content validity of the survey instrument was assessed by the experts of the higher education and online learning regarding the relevance of the items and the unambiguity of their formulation. Cronbach's alpha was calculated for the scale used in the study to ensure internal consistency among the items. The reliability of the scale was 0.92, which is considered to be an acceptable index for field research.

To analyze the data, the factor analysis procedure of SPSS/WIN software was utilized. Factor analysis attempts to identify underlying variables, or factors, that explain the pattern of correlations within a set of observed variables.

Factor analysis is often used in data reduction to identify a small number of factors that explain most of the variance observed in a much larger number of manifest variables. The interpretability of factors can be improved through rotation. Rotation maximizes the loading of each variable on one of the extracted factors whilst minimizing the loading on all other factors. In this research Varimax method was used for rotation and all factors with eigenvalues greater than 1 were selected.

FINDINGS

From the total respondents, 40.5% were females and 59.5% were males. Approximately 53.1% of the students were less than 25 years, 40.6% were between 25 and 30 years, and 6.3% were above 30 years old. The majority of students reported that they were fairly proficient in the use of computers and the Internet.

Table: 1 summarizes descriptive statistics for the financial challenges of developing online learning used in the analysis, including mean, standard deviation and rank of the challenge from students' point of views. The finding revealed that the financial challenges, with mean scores of above average, were important issue for developing online learning. When analyzing the financial challenges of online learning in the questionnaire, it was found that 'lack of funding and financial resources' was rated somewhat higher than the other challenges such as the high cost of updating content of the courses. The finding were related to those observed by Abdon et. al. (2007).

Table: 1
Descriptive Statistics for Financial Challenges of Developing Online Learning

challenge	Mean	S.D.[6]	Rank
Lack of funding and financial resources	7.87	1.88	1
High cost of online learning tools	7.46	1.94	2
High cost of updating content of courses	7.22	2.16	3

Standard Deviation

Students were asked to rate technical challenges of online learning they considered barriers to applying online learning. Table: 2: lists the top five technical challenges that students considered as hindrance for developing online learning in higher education system.

They agreed that 'keeping up with technology' was important problem in this regard. Also, it was found that 'lack of consistent access to internet' and 'special problems of telecommunication infrastructures" were rated somewhat higher than the other

challenges such as lack of administrative and technical support for maintaining online learning equipments and lack of good plan for network security. The finding are in line with the results obtained by Lyian Song et al (2004); Abdon et al. (2007); Betts (1998) and Logan et. al (2002).

Table: 2
Descriptive Statistics for Technical Challenges of Developing Online Learning

challenge	Mean	S.D.	Rank
Keeping up with technology	7.59	1.81	1
Lack of consistent access to internet	7.51	2.39	2
Special problems of telecommunication infrastructures in Iran	7.50	2.28	3
Lack of administrative and technical support for maintaining online learning equipments	7.18	2.08	4
Lack of good plan for network security	6.99	2.42	5

Table: 3 summarize descriptive statistics for cultural and educational challenges of developing online learning in higher education. The finding revealed that all of the cultural and educational challenges had mean scores above average meaning that those challenges are serious barriers for online learning application. There were several cultural and educational challenges that respondents identified as hindrance for developing online learning.

The main issue was the lack of faculty members' adequate technical skills in online learning technologies. Also, it was found that 'lack of good management in higher education systems' and 'impossibility of conducting field courses with online learning' were rated somewhat higher than the other challenges.

Similar findings were reported by Lyian Song et al. (2004); Woods (2002); Ng (2004); Marino (2000); Hillesheim (1998); Logan et al (2002) and Hara & Kling (2001).

The standard deviation also revealed the spread of the score distribution to be small for most of the items, indicated that students tend to hold similar opinions towards the statements about challenges.

The data collected also indicated the extent to which survey respondents provided similar responses or ratings in answering the questions.

When respondents provided the same or highly similar responses, the standard deviation of their responses was small, as is shown in the tables. In sum, the data collected revealed that the students generally held positive opinions towards challenges of online learning.

Table: 3
Descriptive Statistics for Cultural and Educational Challenges of Developing Online Learning

challenge	Mean	S.D.	Rank
Lack of faculty members adequate technical skills in online learning technologies	7.75	2.13	1
Lack of good management	7.46	1.94	2
Impossibility of conducting field courses with online learning	7.25	2.17	3
Lack of training in educational technologies	7.24	2.10	4
Lack of incentives for taking electronic courses by students	7.21	2.13	5
On the side of faculty members to invest time for learning technologies	7.20	2.42	6
The resistance of faculty members for teaching online and their anxiety from new technologies	7.08	2.72	7
Lack of a sense of community and/or feeling of isolation by students	7.03	2.04	8
The opposition of higher education' beneficiaries with online learning methods	7.02	2.44	9
Low experience of students in online learning and their anxiety for taking electronic courses	6.97	2.19	10
Lack of effective communication with faculty members	6.75	2.40	11
The use of computers as luxurious tool	6.60	2.30	12
Lack of interest in students for taking electronic courses	6.53	2.80	13
High dependency of students with online learning technologies and their negligence from educational activities	5.56	2.52	14

Table: 4: shows the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity. The KMO static varies between 0 and 1. A value of 0 indicates that the sum of partial correlations is large relative to the sum of correlations, indicating diffusion in the pattern of correlations (hence, factor analysis is likely to be inappropriate). A value close to 1 indicates that patterns of correlations are relatively compact and so factor analysis should yield distinct and reliable factors.

For this data the value was 0.807, which showed that factor analysis was appropriate for these data. Bartlett's measure tests the null hypothesis that the original correlation matrix is an identity matrix. For factor analysis to work we need some relationships between variables and if the R-matrix were an identity matrix, then all correlation coefficients would be zero. Therefore, we want this test to be significant (i.e. have a significance value less than 0.05).

A significant test tells us that the R-matrix is not an identity matrix; therefore, there are some relationships between the variables we hope to include in the analysis. For these data, Bartlett's test was highly significant (Þ<0.01), and therefore factor analysis was appropriate.

Table: 4
KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy		**0.807**
Bartlett's test of sphericity	**Approx. Chi-Square**	**2022.45**
	df	**542**
	Sig	**.000**

Table: 5: shows the result of the factor analysis. The challenges that load highly on factor 1 seem to all relate to educational and cultural challenges. So, the first factor can be interpreted as the cultural and educational challenges, that is, the obstacle to develop and apply online learning effectively and competently. The loadings on the lack of interest in students for taking electronic courses, the resistance of faculty members for teaching online and their anxiety from new technologies, and the lack of a sense of community and/or feeling of isolation by students translate into strong educational challenges.

The high dependency of students with online learning technologies and their negligence from educational activities is also significant to this factor. Other loadings include the lack of faculty members' adequate technical skills in online learning technologies, the lack of training in educational technologies for students, the use of computers as luxurious tool, the lack of effective communication with faculty members, the lack of incentives for taking electronic courses by students, the impossibility of conducting field courses with online learning and the opposition of higher education' beneficiaries with online learning methods.

Low experience of students in online learning and their anxiety for taking electronic courses which also have lower loadings can be especially important for developing online learning. This factor has high proportion of challenges and explained 27.59% of variances of challenges of developing online learning in higher education. The second factor includes many of the technical challenges that limit application of online learning in the faculties. The most important variable here is the lack of administrative and technical support for maintaining online learning equipments. The next variable indicates the lack of good plan for network security. Other important technical challenges to the respondent are special problems of telecommunication infrastructures and keeping up with technology.

This factor explained 24.94% of variances of challenges of developing online learning in higher education. The final factor, financial challenges, has the fewest number of significantly loading variables. The most important variable here is the high cost of updating content of courses.

The next variable indicates the lack of funding and financial resources for developing online learning. Other important financial challenge to the respondent is the high cost of online learning tools. This factor has low proportion of challenges and explained 21.87% of variances of challenges of developing online learning in higher education. The above three factors have explained 74.4% of variances of challenges of online learning in higher education and 25.6% of variances had been related to variables that have not identified in this research.

Table: 5
Factor Analysis

Factor	Item	Score
Cultural/educational challenges	Lack of interest in students for taking electronic courses	0.775
	The resistance of faculty members for teaching online and their anxiety from new technologies	0.760
	Lack of a sense of community and/or feeling of isolation by students	0.727
	High dependency of students with online learning technologies and their negligence from educational activities	0.718
	Lack of faculty members adequate technical skills in online learning technologies	0.709
	Lack of training in educational technologies	0.684
	The use of computers as luxurious tool	0.652
	Lack of effective communication with faculty members	0.563
	Lack of incentives for taking electronic courses by students	0.550
	Impossibility of conducting field courses with online learning	0.541
	The opposition of higher education' beneficiaries with online learning methods	0.537
	Low experience of students in online learning and their anxiety for taking electronic courses	0.522
Technical challenges	Lack of administrative and technical support for maintaining online learning equipments	0.760
	Lack of good plan for network security	0.613
	Special problems of telecommunication infrastructures in Iran	0.550
	Keeping up with technology	0.547
Financial challenges	High cost of updating content of courses	0.835
	Lack of funding and financial resources	0.653
	High cost of online learning tools	0.618

CONCLUSION

It is widely agreed that online learning has immense potential for educational purpose in both developed and developing countries. In recent years, educational provision is changing significantly in the world and all educational institutions need to adopt online learning to survive. To fulfill this mission successfully, we must understand what creates barriers or challenges for the application of online learning in higher education. The objective of this research was to examine the challenges of developing online learning in higher education and to gain better understanding of online learning problems in higher education systems.

Therefore, the paper has identified significant challenges that higher education institutions face when attempting to use internet technologies for offering courses to students. This paper classified challenges of developing online learning into three categories of cultural/educational, technical, and financial challenges. The finding of this research was in line with the results of many researches that have been cited in the literature.

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REFERENCES

Abdon, B. R., Ninomiya, S. and Raab, R. T. (2007). E-Learning in Higher Education Makes It's Debut in Cambodia: The Provincial Business Education Project, International Review of Research in Open and Distance Learning, Volume 8, Number 1.

Alston, A. J., Miller, W. W. and Williams, D.L. (2003). The future role of instructional technology in agricultural education in North Carolina and Virginia, *Journal of agricultural education*, Vol. 44(2).

Anstead, T. K., Ginzburg., K. III Mike, and Belloli, R. (2004). *Using technology to further the Dine College Mission*. University of Michigan Business School.

Bangert, A. W. (2004). The Seven Principles of Good Practice: A framework for evaluating on-line teaching. *Internet and Higher Education*, 7, 217–232.

Betts, K. S. (1998). An institutional overview: Factors influencing faculty participation in distance education in the United States: An institutional study. *Online Journal of Distance Learning Administration,* 1(3).

Bose, K. (2003). An E-Learning Experience: A written analysis based on my experience with primary school teachers in an e-Learning pilot project. *International Review of Research in Open and Distance Learning*, Volume 4, Number 2.

Churchill, G. A. (1991). Marketing Research: Methodological foundations. Forth worth, TX: Dryden Press.

Grant, M. (2004). Five key barriers facing organizations in elearning, elearn campus, available at: www.elearncampus.com

Hara, N., and Kling, R. (2001). Student distress in web-based distance education. *Educause Quarterly*, 3, 68 – 69.

Hillesheim, G. (1998). Distance Learning: Barriers and Strategies for Students and Faculty, the *Internet and Higher Education*, 1(1): 31-44.

Hofmann, D.W. (2002). Internet-based distance learning in higher education. *Tech Directions* (62) 1, pp. 28–32.

Horton, W. (2001). Leading e-Learning. American Society for Training and Development. Retrieved from: http://www.elearninggurus.com/articles.html

Jamlan, M. (2004). Faculty Opinions towards Introducing e-Learning at the University of Bahrain, *International Review of Research in Open and Distance Learning*, Volume 5, Number 2.

Jung, I. (2001). Issues and Challenges of Providing Online In-service Teacher Training: Korea's Experience*, International Review of Research in Open and Distance Learning*, Volume 2, Number 1.

Lieblein, E. (2000). "Critical factors for successful delivery of online programs", Internet and Higher Education, V.3, P.p.161-174.

Liyan Song, E., Janette, S., Singleton, R. and Hill, M. H. K. (2004). Improving online learning: student perceptions of useful and challenging characteristics, *internet and Higher Education*, 7, 59- 70.

Logan, E., Augustyniak, R., & Alison, R. (2002). Distance education as different education: A student-centered investigation of distance learning experience. *Journal of Educational for Library and Information Science*, 43, 32–42.

Marino, T. A. (2000). Learning Online: A view from both sides. *The National Teaching & Learning Forum*, 9(4), 4 – 6.

Miller, G. & Miller, W. (1998). A telecommunications network for distance learning: if it's built, will agriculture teachers us it? *Journal of Agricultural Education*, Vol. 4(1).

Miller, G. (1997). Agricultural education at a distance: attitudes and perception of secondary teachers. *Journal of Agricultural Education*, 32(1), 54-60.

Murphy, T. P. & Dooley, K. E. (2000). Perceived strengths, weakness, opportunities and threats impacting the diffusion of distance education technologies in a college of agriculture and soil sciences, *journal of Agricultural Education*, Vol. 41(4).

Ng, K. C. (2004). Challenges in implementing chat room activities in a distance education course. Paper presented at the 21st ICDE World Conference, February 14-18. Hong Kong, PRC.

Ng, K. C. (2007). Replacing face-to-face tutorials by synchronous online technologies: challenges and pedagogical implications, *International Review of Research in Open and Distance Learning*, Volume 8, Number 1.

Nordhein, G. J. & Connars, J.J. (1997). The perceptions and attitudes of northwest agricultural instructors toward the use of computers in agricultural education programs. Proceedings of the 24th annual national agricultural education research meeting, Las Vegas, NV, 24, 320-329.

Petrides, L.A. (2002). Web-based technologies for distributed (or distance) learning: creating learning-centered educational experiences in the higher education classroom. *International Journal of Instructional Media*, 29(1), 69-77.

Shea, P., Pickett, A. & Sauli, C. (2005). Increasing access to higher education: A study of the diffusion of online teaching among 913 college faculty*, International Review Of Research In Open And Distance Learning*.

Spender, D. (2001). E-Learning: are Universities Prepared? In Online Learning in a Borderless Market. Conference proceedings at a conference held at Griffiths University Gold Coast Campus (p. 59-63). Canberra: Department of Education, Training and Youth Affairs.

Vonderwell, S. (2003). An examination of asynchronous communication experiences and perspectives of students in an online course: A case study. *Internet and higher education*, 6, P.p. 77-90.

Wilson, E. & Moore, G. (2004). Factors related to the intent of professionals in agricultural and extension education to enroll in an online master's degree program, *Journal Of Agricultural Education*, Vol. 45(4).

Woods, R.H. (2002). How much communication is enough in online courses? Exploring the relationship between frequency of instructor-initiated personal email and learners' perceptions of and participation in online learning. *International journal of instructional media*, 29(4), 377-394.

Zhang, W. J. N., and Jiang, G. (2002). Web-based education at conventional universities in China: A case study*; International Review Of Research In Open And Distance Learning*, Vol.2(2).