

E- learning Readiness from Perspectives of Medical Students: A Case Study of University of Fallujah

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ABSTRACT

Until this time, the classical face-to-face learning with minimal e-communication is the method used in the medical school of the University of Fallujah in Iraq. The main goal of this study is to explore medical student's readiness for E-Learning in the University of Fallujah in Iraq and to build a model for assessing its predictors.

This study was conducted using descriptive statistics, Spearman's correlation, multiple regressions, and ANOVA. The results obtained indicate that students are not ready to move to E-Learning, as indicated by their technological, cultural, attitude and content readiness. The study concluded that the Information and communications technology (ICT) is not sufficient to support the use of E-Learning.

Keywords: E-Learning, Readiness, University of Fallujah, Medical Students.

INTRODUCTION

The traditional learning was with face to face interaction between teachers and learners in classrooms. However, the spread of the Internet and electronic devices over the years in the world causes a great change in the way learning at different levels of educational institutions is carried out^[1]. At first, this change started in the developed countries, but has broadened as expected, to cover the developing regions such as Arabian countries, where Iraq belongs. One of the most advantages of E-Learning is expanding learning, which allows different paces to learn however, Zhang *et al.*^[2] mentioned that there are some disadvantages like "being uncomfortable for some users". Teaching medical education and health has been proofed to be

more effective using E-Learning in the developed countries^[3-6]. At first, it was widely believed that E-Learning was the same as distant education where learning was only web-based; As time goes by this concept expanded. E-Learning is defined as a means of combining all arrangements for E-Learning, or one can say E-Learning is a means of learning and teaching using ICTs, inside the classroom and outside it.

Medical training in Iraq, lasts six years from 1st year to 6th year. At present, it is necessary that educational institutions broaden and develop their learning strategies to include E-Learning. This has been observed in medical education in developing countries^[6,7]. In order to achieve this on the ground, E-Learning readiness assessment is important because one of the basic elements in designing E-Learning programs is self-directed learning^[8] which signals that the availability of enabling E-Learning ambience and readiness of participants in E-Learning are both essential to get successful E-Learning programs. In the studied university, teaching medical students are mostly done by the traditional classroom method and by physical attendance in clinics with very little e-communication. Hence, this study was to decide the E-Learning readiness, E-Learning readiness predictors and to set a model for medical students E-Learning readiness in the studied university.

BACKGROUND

E-Learning

According to the Organization for Economic Co-operation and Development (OECD, 2005) E-learning is "the use of information and communications technology (ICT) to foster and/or support learning in university education". Rosenberg ^[9] defined E-Learning as "the use of internet technologies to deliver a broad array of solutions that enhance knowledge and performance". Negash & Wilcox^[10] classified E-Learning into six types:

1. E-Learning with physical presence or face-to-face and without e-communication
2. E-Learning without e-communication and without presence
3. (Asynchronous) E-Learning with e-communication and without presence
4. (Synchronous) E-Learning with e-communication and with virtual presence

5. (Blended/hybrid-asynchronous is a mix of asynchronous E-Learning and face-to-face E-Learning).
6. (Blended/hybrid-synchronous) which is E-Learning with e-communication and with presence.

E-Learning Readiness

E-Learning readiness was defined by Borotis & Poulymenakou as "the mental or physical preparedness of an organization for some E-Learning experience or action"^[8]. The readiness assessment enables institutions to design systems and appropriate measures to succeed. Readiness assessment of E-Learning users is becoming vital in developing countries where e-Maturity is low, because it is gaining popularity.

The assessment should consider the factors that are pivotal, and from reviewing the existing research, it could be seen that there are some common factors e.g. technical readiness, content readiness, financial readiness and human resources readiness. Furthermore, there are important factors in E-Learning which are demographic factors like education level, gender and, age^[11]. Furthermore, it is necessary to bear in mind that readiness is not a one-time phenomenon but it must be a persistent process of assessment.

CONCEPTUAL MODEL FOR E-LEARNING READINESS ASSESSMENT

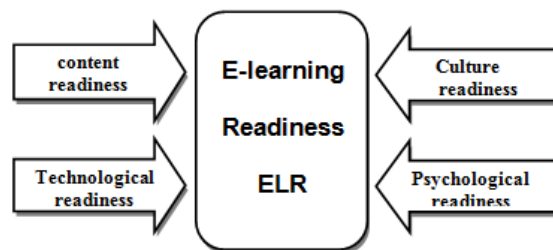
Scholars have proposed different notions to assess E-Learning readiness. A model with 3 broad component was proposed by Psycharis^[12] which were education, resources and environment in addition to 2-3 sub-components for each of the main components. A 4-broad component model was proposed by Oketch, Njihia, & Wausi^[13] for developing countries with these components: demographic factors, content readiness, culture readiness, and technological readiness.

Nevertheless, Rogers^[14] indicated that every organization can be effective in spreading innovation in its system and has its own standards. According to this perspective, it is clear that these models may not work for institutions of other countries. Recently, it was shown that higher education organizations in developing countries have made advancement in using

ICT. This leads to the fact that most of the strategies and implementation conditions that are widely used in developed world have not yet been adopted.

According to the review of E-Learning readiness models, the model shown in Figure 1. was developed to direct the study. Taking in consideration that different communities differ in their response and acceptance of learning initiatives, that's why, the conceptual scope of this study has been modified from reviewing similar literature conducted in other developing countries^[13,15]. Concentration, in this study will be on these five parameters that have been reported to affect E-Learning readiness which are; psychological readiness, technological readiness^[11,16], content readiness^[8,12,16], culture readiness^[8,15] and demographics^[11]. Technical readiness has two sub-factors which will be considered while the assessment period. The model shown in Figure1. is a result of Integrating these ideas.

Figure 1. E-Learning Readiness Assessment Model



Technological Readiness

According to Rogers^[14], one of the parameters that can be used effectively "to adapt a technological innovation in an organization is technology". It is very hard, if not impossible to use any E-Learning without appropriate equipment and easy access^[17]. Using the E-Learning system, requires that users to posses technical skills. In this study, the technological readiness has two sub-factors; technical skills, and access to resources. They will be used to assess the availability of computers and internet to the students and the students ability to use them.

Culture Readiness

If institutions are willing to have a successful E-Learning, they should be environmentally and culturally prepared^[18]. Therefore, this factor will examine the students perception in terms of two sides; perceived ease of use and perceived usefulness.

Ease of use, is essential for predicting and explaining actual aim and the way of usage, while perceived usefulness determine how an individual sees that using a particular system could influence performance of job^[19].

Content Readiness

The driving engine for any system is content. For education, content readiness measurement is used to determine E-Learning readiness. The model developed in this study will examine the availability of E-Learning content to the students and their satisfaction with the content.

For E-Learning readiness, training is necessary and it should be accounted in the implementation of E-Learning^[20]. Therefore, the model will assess if the development of E-Learning materials need more training.

Demographic Factors

The demographic factors such as, gender, age and the respondents level of education^[11] are collected in this parameter. They handle all human resources characteristics of an institution and individuals who have a higher education level and are expected to adopt an innovation more than others^[14]. Therefore this parameter will help define the effect of demographic factors on the e-Learning readiness.

Psychological readiness

Psychological readiness reflects an individual's state of mind in terms of being ready for E-Learning. A student's mental preparedness is among the most important factors that could affect the success of E-Learning. This type of readiness is regarded as being among the most significant aspects that could affect the implementation process.

RESEARCH DESIGN AND METHODS

This study is a cross-sectional descriptive study of medical students in university of Fallujah from second to sixth year. The study excluded students in first year because they have not started school at the time of data collection.

Krejcie & Morgan table^[21] was used to determine the sample size and 123 students were sampled. Participants were stratified firstly according to study level and then by proportionate sampling. For each level the proportion of students was selected by simple random sampling. A semi-structured self-administered questionnaire was used in the study. It was an adaptation developed by the researchers from the E-Learning readiness model suggested by^[13] and other literature^[8,15]. The dependant variable was personal E-Learning readiness while attitude toward E-Learning (psychological readiness), technological readiness, culture readiness, content readiness, and demographic variables were the independent variables.

The mean value of the level of readiness was considered in this study as 3.4 as was suggested by Aydain & Tasci^[11] and has been adopted by Oketch *et al.*^[13]. Analysis was done using SPSS version 19.

ANOVA and Spearman's correlation tests were conducted to determine association. In order to specify the predictors of E-Learning readiness one step multiple regression was applied, and an assessment model of E-Learning was developed from the multiple regressions result.

RESULTS

A total of 110 questionnaires were returned which gives a response rate of 89% which was quiet enough for analysis. The value of Cronbach's alpha was 0.913.

Table 1. Demographic variables of respondents

Variables		Frequency	n(%)
Gender	Male	53	48.2
	Female	57	51.8
Age	18-20	36	32.7
	21-24	74	67.3
	25and above	0	0
Age at first computer use	Below 10years	27	24.5
	10-16 years	56	50.9
	Above 16years	27	24.5
Level of study	2 nd stage	36	32.7
	3 rd stage	24	21.8
	4 th stage	15	13.6
	5 th stage	25	22.7
	6 th stage	10	9.1

Table 2. Association between demographic variables and E-learning readiness

Variables		N	Mean	Std. Deviation	F	Sig.	Correlation Coefficient
Study level	2nd stage	36	3.2937	.53881	F=1.876	0.12	
	3rd stage	24	3.3214	.61805			
	4th stage	15	3.1143	.81923			
	5th stage	25	3.5886	.44858			
	6th stage	10	3.0714	1.05032			
	Total	110	3.3221	.65091			
Age at first computer use	less than 10	27	3.1746	.70470	F=.929	0.398	
	10-16	56	3.3776	.63153			
	16 or more	27	3.3545	.63687			
	Total	110	3.3221	.65091			
Age	18-20	36	3.1905	.61374	F=2.212	0.14	
	21-24	74	3.3861	.66281			
	Total	110	3.3221	.65091			
Gender	Male	53	3.3127	.63891	F=0.021	0..885	
	Female	57	3.3308	.66742			
	Total	110	3.3221	.65091			
Total-Attitude						.0001	0.304**
Total-Attitude						0.000	0.399**
Total-Attitude						0.000	0.636**
Total-Attitude						0.000	0.608**
**Correlation is significant at the 0.01 level (2-tailed).							

**Correlation is significant at the 0.01 level (2-tailed).

Table 3. Predictors of E-learning readiness among the medical students

Variables	B	t	P(Sig.)	Model Summary
Constant	.347	1.166	.24	R=.719
TotalAttitude	.191	2.499	.014	Adj.R ² =.49
TotalContent	.125	1.570	.119	9
TotalCulture	.339	3.806	.000	R ² =.517
TotalTech	.249	2.454	.016	F=28.141
				P=0.00

The results in Table 1 show that most of participant were aged 21-24 years. Mean \pm (SD) age at first use of a computer was 12.75(\pm 3.91) years with a range of 4-20 years.

The descriptive statistics indicate that total mean of attitude toward E-Learning was lower than the mean of expected readiness level, and that the total mean of content readiness was lower than the mean of expected readiness level whereas the required basic ICT skills for E-Learning mean was lower than the mean of expected readiness level.

Also it was shown that the overall technological readiness mean was lower than the mean of expected readiness level. Furthermore, the results show that the university does not have enough professional staff for E-Learning trainings ($M=3.18$).

The results in Table 2 show that demographic variables are not significantly associated with E-Learning readiness. Students in 6th year were significantly less ready than students in other levels for E-learning. Also the results in Table 2 show that the correlations ranged from 0.304 (psychological readiness) to 0.638 (culture readiness).

In the multiple regression analysis Table 3, attitude toward E-Learning, technological readiness and culture readiness, are statistically significantly predicted E-Learning readiness $P < 0.05$ except content readiness. $F_{4,105} = 28.141$ and it is higher than its tabular value ($F_{\text{tab}4,105} = 2.46$ for $\alpha = .05$), $P = 0.000$, $R^2 = 0.517$. On the other hand all demographic variables, did not statistically significantly added to the prediction. Hence, the model explains only 51.7% of readiness in this population.

DISCUSSION

The descriptive analysis showed that the level of E-Learning readiness recorded in this work among students in a sixth stage of study was low ($M = 3.0714, \pm 1.050$), this clashes with the proposition by Roger^[14] that higher educational levels has more influence on E-Learning readiness. Chapnic have got the same findings^[16], the explanation for this might be that at sixth stage of study in medical school, students are preoccupied with clinical training than the traditional classroom approach.

The model developed in this study explained 51.7% of E-Learning readiness of the students which means that there are other parameters that affect E-Learning readiness among these medical students that were not taken into consideration in the study.

CONCLUSIONS

The medical students in this environment are not ready for E-Learning. Not ready yet to step forward beyond the traditional face-to-face method, however they believe that E-Learning is more powerful and can enhance the quality of their learning. They do not have basic ICT skills. They need further training on E-Learning content because it is necessary to attract users. They believe that their university does not have enough professionals to train students for E-Learning, nor sufficient IT infrastructure.

Indicators of E-Learning readiness in this study are attitude, technological readiness, culture readiness, and content readiness.

RECOMMENDATION

If the university is to implement E-Learning, it should condense training sessions for both faculty and student, in order to improve ability for E-Learning content. Access to ICT resources for medical students should be improved, while medical curriculum reviews should comprise, using interactions of E-Learning to enhance content and culture and enhance learning. Additional studies should include qualitative methodology for devising other factors that may affect E-Learning readiness in this community. Blended learning which describes, according to Rogers^[14], "learning activities that involve a systematic combination of co-present (face-to-face) interactions and technologically mediated interactions between students, teachers and learning resources", is advised to be applied as a first step before turning totally to E-Learning.

LIMITATIONS

This study was applied on medical students in just one university in Iraq and hence, the findings may not be generalized to all Iraqi medical students.

Ethical Clearance: Was taken from the Scientific Committee in College of Medicine University of Fallujah.

Source of Funding: Nil

Conflict of Interest: Nil

REFERENCES

1. DeNeui DL, Dodge TL. Asynchronous student networks and student outcomes: The utility of online learning components in hybrid courses. *Journal of Instructional Psychology*. 2006;33(4):256-259.
2. Zhang D, Zhao JL, Zhou L, Nunamaker JF. Can E-learning replace classroom learning? *Communications of the ACM*. 2004 May;47(5):75-9.
3. Issenberg SB, Petrusa ER, McGaghie WC, Felner JM, Waugh RA, Nash IS, et al. Effectiveness of a computer-based system to teach bedside cardiology. *Academic Medicine : Journal of the Association of American Medical Colleges*. 1999;74(10Suppl):S93-5.

4. Schor NF, Troen P, Adler S, Williams JG, Kanter SL, Mahling DE, et al. Integrated case studies and medical decision making: a novel, computer-assisted bridge from the basic sciences to the clinics. *Academic medicine. Journal of the Association of American Medical Colleges*.1995;70(9):814-7.
5. Andrews PV, Schwarz J, Helme RD. Students can learn medicine with computers. Evaluation of an interactive computer learning package in geriatric medicine. *The Medical Journal of Australia*.1992;157(10):693-5.
6. Ruiz JG, Mintzer MJ, Leipzig RM. The impact of E-learning in medical education. *Academic medicine : journal of the Association of American Medical Colleges*.2006;81(3):207-12.
7. Frehywot S, Vovides Y, Talib Z, Mikhail N, Ross H, Wohltjen H, et al. E-learning in medical education in resource constrained low- and middle-income countries. *Human Recourses for Health*.2013;11-4.
8. Borotis S, Poulymenakou A. E-Learning Readiness Components: Key Issues to consider before adopting e-learning interventions. In J. Nall&R. Robson (Eds.), *Proceedings of E-Learn 2004--World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*.2004;1622-1629. Washington, DC,USA: Association for the Advancement of Computing in Education (AACE).
9. Rosenberg MJ. *E-learning: Strategies for delivering knowledge in the digital age*. New York: McGraw-Hill;2001.
10. Negash S, Wilcox MV. E-learning classifications: Differences and similarities. In: *Handbook of Distance Learning for Real-Time and Asynchronous Information Technology Education*. London: Information Science Reference (an imprint of IGI Global).2008;1-23. [DOI: 10.4018/978-1-59904-964-9.ch001](https://doi.org/10.4018/978-1-59904-964-9.ch001)
11. Aydain CH, Tasci D. Measuring readiness for E-learning: Reflections from an emerging country. *Educational Technology & Society*.2005;8(4):244-57.
12. Psycharis S. Presumptions and actions affecting an e-learning adoption by the educational system Implementation using virtual private networks. *European Journal of Open, Distance and E-Learning*.2010.
13. Oketch HA, Njihia JM, Wausi AN. E-learning readiness assessment model in Kenyas' higher education institutions: A case study of university of Nairobi. *International Journal of Scientific Knowledge*.2014;5(6):29-41.
14. Rogers, E. M. *Diffusion of innovations*. Edition. New York. Free Press;2003.
15. Kaur K, Zoraini WA. An Assessment of E-learning Readiness at Open University Malaysia. *International Conference on Computers in Education*.2004. Available from: <http://library.oum.edu.my/repository/id/eprint/115> .
16. Chapnic S. Are you ready for e-learning?. *Learning Circuits: American society for training and development ASTD's Online Magazine All about e-learning*.2005. Retrieved from http://blog.uny.ac.id/nurhadi/files/2010/08/are_you_ready_for_elearning.pdf

17. Oliver R, Towers S. *Up time: Information Communication Technology: Literacy and Access for Tertiary Students in Australia*. Canberra: Department of Education: Training and Youth Affairs.2000.
18. Ettinger A, Holton V, Blass E. E-learner experiences: what is the future for e-learning? *Industrial and Commercial Training*.2006;38(4):208-212.
doi.org/10.1108/00197850610671991
19. Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *Management information systems MIS Quarterly* , 13(3),319-340.
20. Agboola AK. Assessing the awareness and perceptions of academic staff in using e-learning tools for instructional delivery in a post-secondary institution: A case study. *The Innovation Journal: The Public Sector Innovation Journal*.2006;11 (3):2–12.
21. Krejcie RV, Morgan DW. Determining Sample Size for Research Activities. *Educational and Psychological Measurement*.1970;30(3):607-610.
doi.org/10.1177/001316447003000308