Original Article

Are postgraduate students in distance medical education program ready for e-learning? A survey in Iran

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ABSTRACT

Introduction: Appropriate instructional design plays a crucial role in e-learning success, and analyzing learners is the cornerstone for instructional design process. Students' readiness for e-learning was assessed in the present study as an example of learner analysis for a distance course in medical education master program. **Materials and Methods:** A census sample of 23 students applied for distance master program on medical education, completed the "Students' E-Learning Readiness Scale" developed by Watkins, via email. The reliability and validity of the scale has been confirmed before. Average scores in total and 6 subscales were calculated. The score range was 1-5 and scores above 3 indicated good readiness. Data was interpreted using descriptive and non-parametric tests (Mann-Whitney U and Kruskal-Wallis). **Results:** Response rate was 100%. The students' readiness scores in total and all subscales ("technology access", "online skills and relationships", "motivation", "online audio/video", "readiness for online discussions", and "importance of e-learning to your success") were above 3. Comparing different subscales, students' mean scores in "motivation" and "internet discussion" subscales were less than others, although the difference was not significant. There were no significant gender differences in the readiness scores. Students who were academic staff had significantly higher scores than others in total and in "motivation" and "online skills and relationship" subscales. **Conclusion:** Good learners' readiness, observed in the present study, may imply that the instructional designer can rely on e-learning strategies and build the course upon them. However, according to the slightly lower scores in "motivation" and "online discussion" subscales, it is recommended to stress more on strategies that improve these two components. To generalize the results, it is needed to test students' readiness in more different degree programs.

Key words: E-learning, Instructional design, learner analysis, learner readiness

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INTRODUCTION

Today, e-learning is considered as an appropriate educational strategy for a broad range of training and educational initiatives, from general literacy programs to professional training and academic education.

In Iran, as a rapidly developing country, e-learning is considered as a good solution for rapid spreading of higher education.[1] Accordingly, few virtual universities have been established and even traditional universities have formed departments and schools for advancement of e-learning. Meanwhile, different degree programs at undergraduate and postgraduate levels are

run via e-learning. In this context, paying attention to the factors that assure the quality and success of e-courses is inevitable.

Successful e-learning requires good instructional design. As face to face communication is lost, teachers often have not the opportunity of immediate feedback to the learners. Therefore, detailed information about the learners and analyzing their readiness, preferences, and educational needs is the cornerstone for designing a relevant and useful e-learning course.[2] Although, learners' readiness is an old term and could include factors pertinent to learning in general, readiness for e-learning is a newer term that refers to aspects that related to the appropriate utilization of electronic technology in distance educational programs. If e-learning is being chosen as the educational strategy, there should be enough assurance about the learners' readiness for it.

As more learning opportunities are available online, more course providers concern about assessing students' readiness for e-learning, especially online learning. In response to this need, the construct of "student readiness for e-learning" has been evolved in the few past years and included different aspects as explained by different authors.[3,4] Personal capabilities and attitudes, access to facilities and equipments, and social context are the main three domains that are frequently explained in this construct. Accordingly, several instruments have been developed for assessing students' e-learning readiness.[5-8] Among them, the instrument developed by Ryan Watkins and colleagues is more famous and has a good bibliographic support. As well, its validity and reliability has been confirmed.[5]

Watkins' instrument was developed to measure an individual's perceived readiness to engage in e-learning. It has six subscales that assess learners' technology access, online skills and relationships, motivation, online audio/video preferences, readiness for online discussions, and the perceived importance of e-learning to their success.[5] Obviously, the issue of learners' personal attitudes and beliefs is greatly considered in this tool, as it may determine the success or failure of e-learning courses.

In Isfahan University of Medical Sciences, postgraduate master program on medical education had been started in year 2000, as an attending degree program. Recently, the program was also decided to be delivered as distance, to serve part time students from other provinces. It should be mentioned that a considerable number of applicants in medical education master programs, are full time faculty members or medical professionals who are just interested in the field, and consider this degree as an added qualification. More than 30 students enrolled in the program, and after two semesters, 23 remained. These students were eligible to enroll in a special course of "instructional design in medical education". The present study, deals with the students' readiness for e-learning, as a part of learner analysis in instructional design that was performed by the course instructor. This may provide

a good example of how to use established tools for learner analysis and to formulate recommendations for instructional design according to the results.

MATERIALS AND METHODS

This is a survey, performed as a part of "learner analysis" step in designing "Instructional Design in Medical Education" course. Participants were all postgraduate students ($n = 23$) enrolled for the distant master degree program on medical education, in Isfahan University of Medical Sciences in 2012. Self assessment questionnaire, developed and published by Watkins and colleagues was translated by researchers and the face validity of Farsi translation was confirmed. The original instrument and its scoring and interpretation guide were freely available.[9] All students received the questionnaire by email, and were told that completing it within 5 days is an essential requirement for their course. After deadline, a reminder email and a short message (SMS) were sent to those who did not complete the questionnaire in time. Filled questionnaires were not anonymous, and students were informed about the importance of true completion, by briefing about learner analysis and its implication in the successful course design. Students' demographic data was extracted from department files.

Watkins' questionnaire included 27 items with 5 point Likert scale (from completely disagree to completely agree); so each item may be scored as 1 to 5, respectively. Items are unequally categorized within 6 subscales of 'technology access", "online skills and relationships", "motivation", "online audio/video", "readiness for online discussions", and "importance of e-learning to your success". Therefore, the average of each subscale is calculated by dividing the sum of each subscale scores by the number of items included. Averages more than 3 indicate good readiness, and scores equal or less than 3 shows inappropriate readiness of the students in that subscale.[9]

Data sheets included demographic and background information of each student, average scores of the questionnaire subscales, and a note on if the student was on time or late responder.

Ethical approval of the project was made by Medical Education Research Center, at Isfahan University of Medical Sciences.

Data analysis included descriptive statistics (frequencies and averages). To compare average scores in independent groups, appropriate non parametric tests (Mann-Whitney U and Kruskal-Wallis) was used. Also to examine the relationship between two quantal factors (sex and on time responding), Chi square test was applied. All statistical operations were performed by SPSS-16.

RESULTS

After the first email, 13 people (56.5%) responded on time, and the 10 remaining students (43.5%) completed the questionnaire after reminders.

Thirteen students (56.5%) were female. There was no relationship between sex and on time responding (Chi^2 = 0.391, P = 0.532).

All of students had a full time job, 9 of them (39.1%) were university academic members, 10 were health profession practitioners (43.5%), and 4 students (17.4%) had administrative job positions.

Average readiness scores in different subscales are shown in Table 1. As it is shown in the table, all average scores are above 3, and the observed difference between the total score and subscales of "online skills" and "motivation" in academic staff and the two other job groups is statistically significant.

To examine the statistical relationship between "on time responding" and "readiness scores, Mann-Withney U test was performed, which showed no statistically significant relationship with the scores (total and 6 subscales).

According to Mann-Withney U test, no significant relationship was found between students' readiness scores and their sex ($P > 0.05$).

DISCUSSION

In this survey, we examined students' readiness for e-learning in a postgraduate degree program. Although, considerable number of papers has been published on this issue, the influence of contextual factors such as culture, discipline, and prior academic qualifications could be questioned. This may justify the repetition of studies on students' readiness, in order to saturate the data and help meta-analysis for inferring general rules.

In the present study, a census sample was surveyed by a 100% response rate. Since all participants were enrolled in a distant master degree program, they are expected to be prepared for email contacts and be ready for quick reply. High response rate and acceptable rate of timely responses to the survey is in accordance with this expectation.

Students' scores in all subscales were above 3, implying that all students had good readiness in different aspects for e-learning. Comparing different subscales, students' mean scores in "motivation" and "internet discussion" subscales were less than others, although the difference is not significant. This finding may indicate that the course designer should pay more attention to improve students' motivation and maintain it during the course implementation. Some efforts that may motivate students include: Relating course objectives to the students' daily life and work, visualizing students' success, establishing a good communication with students, supporting active participatory learning, and supporting students' healthy habits during semester.[9] On the other hand, less readiness in "internet discussion" subscale may be due to less experience in internet discussions. Therefore, adding preparatory activities to the course, including techniques for establishing and managing internet discussions is recommended.[9] Also, using complementary instructional strategies as blended learning may compensate the shortcomings in internet discussions, at least at the beginning of the course. Many studies have reported that most Iranian students prefer blended learning over pure distant e-learning.[10-14]

Some authors[15] have reported that female students are more satisfied with e-subjects, compared to the male group; and have related this finding to differences in their learning skills. Our results do not support any gender differences in students' readiness for e-learning, therefore, we may just conclude that probable gender differences in students' satisfaction is unlikely to be related to their readiness at the beginning. Of course, we did not measure their satisfaction with e-learning,

Scale	Total mean±SD	Scores in subgroups with different job positions			Kruskal-Wallis results
		Academic staff: *n*=9	Practitioners: *n*=10	Administrative staff: *n*=4	
Technology access	4.7±0.5	4.9±0.2	4.6±0.7	4.8±0.3	χ^2=0.544 P=0.762
Online skills and relationship	4.4±0.4	4.6±0.3*	4.1±0.4	4.4±0.5	χ^2=7.978 P=0.019
Motivation	3.9±0.8	4.4±0.7*	3.5±0.7	3.8±0.4	χ^2=6.852 P=0.033
Online video/audio	4.1±0.5	4.4±0.7	3.9±0.4	4.1±0.4	χ^2=4.655 P=0.098
Internet discussion	3.8±0.5	4.0±0.6	3.6±0.4	3.8±0.4	χ^2=4.058 P=0.131
Importance to your success	4.5±0.6	4.5±0.6	4.6±0.6	4.5±0.6	χ^2=1.656 P=0.437
Mean of all scores	4.2±0.4	4.5±0.4*	4.0±0.3	4.2±0.2	χ^2=7.802 P=0.020

Table 1: E-learning readiness scores of master students and its averages in subgroups with different job positions

*= Significantly different from other job positions at $\alpha < 0.05$

so conclusion about any relationship between students' readiness and satisfaction is not possible here.

As shown in Table 1, students who are academic staff (faculty members and instructors in the university), had significantly higher mean scores of readiness than others, in total score and subscales of "motivation" and "online skills and relationship". Academic staffs have to use internet and e-technology for their daily teaching and research activities, so they are expected to feel more comfort working with e-learning. Also, more motivation score may be related to their hands-on activities in teaching, and their curiosity about e-learning, to use it in their own teaching.

The present work, included a special sample of postgraduate students, and its results could not be easily generalized, as not many MSc programs include faculty members as students. Also, in the present work all students, with different educational background and qualifications, had applied for the same program. To generalize the results, it is needed to test students' readiness in different degree programs.

At last, but not the least, it is important to pay attention to the teachers and organizational readiness for e-learning in parallel to the students' readiness.[1-3,13,14,16,17]

CONCLUSION

In this study, students' readiness for e-learning was surveyed among applicants in master degree program on medical education, as a step in learner analysis. All students have shown a good readiness in all components of the scale: 'technology access", "online skills and relationships", "motivation", "online audio/video", "readiness for online discussions", and "importance of e-learning to your success". According to the slightly lower scores in "motivation" and "online discussion" subscales, it is recommended to stress more on strategies that improve these two components.

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