Feasibility of Medical Education through Email: Darsnameh e-Learning System as a National Pattern

Hamed-Basir Ghafouri[1], Shahzad Saravani[2], Farhad Shokraneh[3]*

[1]*Emergency Department, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran*

[2]*Center for Educational Research in Medical Sciences, Tehran University of Medical Sciences, Tehran Iran*

[3]*Kerman University of Medical Sciences, Kerman, Iran*

ARTICLE INFO

ABSTRACT

Introduction: while internet and web could bridge over time and place barriers of education, some websites developed educational programs in different fields. The nation-wide Darsnameh e-Learning System is one of the accepted and popular services basically for ICT education and other miscellaneous topics. Here, we try to collect the characteristics of this system to assess the feasibility of its adaptation for medical education. *Methods:* we considered five aspects (infrastructure, registration, content, timing, and user) and two criteria (user-friendliness and reliability) to assess the adaptation of Darsnameh model for medical education. Assessment team consisted of a software engineer, a medical librarian, and a medical education expert each of them voluntarily and optionally registered in one of the Darsnameh courses and finished it. Passing each course took 43 days on average. Three two-hour meetings were held to assess the system in group discussions. All discussions were recorded and their contents were analyzed to form the assessment concepts and categories. To determine adoptability of the system for medical education, scores of 0-7 was considered. *Results:* in Categories of infrastructure, registration, content, timing, and users were scored 6, 2, 6, 4, and 4 respectively. Also, user-friendliness and reliability criteria were scored 6 and 1. Except reliability criteria, other characteristics were considered as adoptable for medical education. But reliability of the registration information, content, exam results, course certification, and affiliation of developers remained unreliable. *Conclusion:* implementation of e-learning for medical education through email could be considered as a new developmental approach, however because of limitations of current study, it should be evaluated for a large number of subjects such as general practitioners.

Introduction

Virtual education via internet and web resolved most of time and place barriers for education.[1] Traditional education system spends costs on education place, equipments, educators, and bureaucratic process while focusing on quantities (certain number of hours and classes in the certain dates). On-time attendance in the classes, road traffic in the cities, overlap of work and education time schedules, and attendance of participants with different learning styles were some of the problems led to the popularity of virtual education. Such kinds of education bridging the gaps of traditional education became popular in many institutions. In addition, they facilitated continuing education and life-long learning as the UNESCO goals.[2] Considering different methods of e-learning, every interested institution developed its own

courses and made participants to visit their websites frequently. In this method, so-called 'Pull', users had to visit website or pull the information while in 'Push' way, information is sent to the users after their registration and there is no need to search and browse websites because the information are pushed towards users. Although push method was already applied by many websites and journals to send new information to the users' email accounts,[3] its application in medical education was not considered as a serious solution yet. In Iran, we just identified one website that applies this technology. 'Darsnameh e-Learning System' is a new established system,[4] but was attended by most users interested in ICT education only via checking their email accounts. Since evidence-based medical information plays a main role in physicians' clinical decision makings on etiology,

***Corresponding authors:** Farhad Shokraneh, Email: shokranehf@tbzmed.ac.ir*

diagnosis, therapy, and prognosis,[5] such type of education could be beneficial for following reasons:

- Most physicians start working immediately after their academic graduation and rarely find enough time to update their information considering variability of medical education. In several national researches, physicians have declared lack of time as the main barrier of not utilizing information recources.[6-10]
- Most traditional physicians who start their career before ICT wave are not familiar with new and emerging technologies and information resources.[11]
- New information technologies and internet applications are prerequisites of evidence-based medicine as a growing approach in medicine.[12]
- Physicians who work in far from educational centers suffer too time and place limitations to update their information.[13,14]
- Main purposes of physicians' attendance in continuing medical education are not learning or updating but acquiring course certificates for promotion.[15]
- Internet is accessible and checking emails was turned into unavoidable daily activity.[16]

Although these reasons could not lead in certainty for using medical education through email, they are pieces of the puzzle to resolve physicians' problems. Studies are needed to assess its feasibility and applicability in first step, and then development of pilot systems and their effectiveness evaluation will be considerable.

Regarding Darsnameh as the only available Persian example utilized in education through email, we aimed to gather its characteristics to assess its adoptability for medical education.

Methods

We had to assess different aspects of Darsnameh e-Learning System. Collecting its characteristics was difficult since our search expert could not retrieve similar studies via the strategic searching of variations of 'email' and 'medical education' in the title and abstract fields of Medline via Ovid SP, EMBASE via Ovid SP, and ERIC, as well as Google Scholar as a scientific search engine. So we developed an applicable method for the study.

We developed a team to assess the system. Assessment team consisted of a software engineer, a medical librarian, and a medical education expert each of them voluntarily and optionally registered in one of the various courses of Darsnameh and finished it. To avoid conflict of interests, none of the team members was in relation with the system developers. Most of Darsnameh courses are focused on ICT basic education. Team was asked to note any valuable information down from registration to the accomplishment of course that may help in the assessment of system.

All of team members terminated their selected course successfully whereas passing each course took 43 days on average. Members were asked not to use the system for a week and just organize their comments for meetings. Three two-hour meetings were held with a three-day halt among the meetings. Each of members managed one of the meetings to prevent biases related to an individual. All comments were organized at that same meeting and send to the members along with the recorded file during the meeting till they could study and add new comments to present in the next meeting.

All the meetings were held in a same calm place (meeting room) in a certain time (9-11 AM). A 10-minute break was considered in the middle of each meeting. Meetings were based on free group discussions to let the members state their comments without limitation[17] but guided by the meeting manager. In the first meeting, any default conceptualization or categorization was avoided to provide enough information for the presentation of structured categories in the second meeting. All of discussions were recorded by a voice recorder and noted down by meeting manager. After each meeting, meeting manager undertook the content analysis of discussions to send them to the members within 10 hours after meeting.

At the middle of third meeting, presented information got to be repeated (saturation) so the fourth meeting was not necessary.

After third meeting, content of all meetings were analyzed, organized and sent to the members to add any missing information. Their feedback verified the saturation of comments because there was no remarkable new comment. Finally, the last meeting was held for agreement on results and members were asked to score each item according to its adoptability with medical education in a range of 0-7.

Results

Content analysis of discussions revealed five aspects (infrastructure, registration, content, timing, and user) and two criteria (user-friendliness and reliability) for adaptation.

Infrastructure

The system uses simple structure including a host server and a mnemonic URL ends in .com while the service is free. Although visiting the website is not necessary during courses, the system is appropriate, user-friendly, and attractive for first time visitors. It develops interactive ways to take feedback but it does not present enough information in about audiences, purposes, developers, and the system mechanism (Table 1).

Table 1. Infrastructure of the system (Adaptation score = 6/7)

Component	Advantages	Disadvantages
Host	Low cost Implementable	Stability matter
Domain	Mnemonic name	.com extension
Website	Enough facilities User-friendly Oriented on users' needs	Short 'about' part Stability matter
Administration	Regular updating Supporting the users	Anonymous developers Not adopted to all email services

Table 2. Registration of the system (Adaptation score = 2/7)

Component	Advantages	Disadvantages
Empty email	User-friendly	Fake user registration Little info about user Prerequisites for some courses
Reply to registration email	User-friendly A 48-hour expiration time	Not necessary No application

Registration

Registration is free, easy, and needs no information except an email address. So abusing fake certifications is possible. Also, the system presents a registration code for the user which is not applicable for users (Table 2).

Content

Content is the most important aspect of the system. Although the system uses most simple model for e-learning, its simplicity raises problems about reliability of content, exam results, and certificate (Table 3).

Table 3. Content of the system (Adaptation score = 6/7)

Component	Advantages	Disadvantages
Format: text and image	Better understanding	No motion item
Introduction of course	Familiarity with mechanism	not clear and precise objectives
Syllabuses	General timing schedule	NA
Frequently Asked Questions	Declaration of main questions	NA
Short lessons in each email	Time-saving Suitable for busy people	Lack of comprehensive information
multiple-choice tsets	Time-saving Participation within email account/web	Unreliability of exam results Possible Misconduct during the exams Focus on memory not analytical skills
Feedback form of the course	Feasibility of improvement for the system	Mandatory
Certification from	User-written information	Certificate for fake names Inability in discrimination of same names Possible errors in filling the form
Certification	Encouragement Presented in English and Persian	Unreliable

Table 4. Timing of the system (Adaptation score = 4/7)

Component	Advantages	Disadvantages
Registration	Fast User-friendly	Lack of enough timing info at registration
Study of each lesson	Takes 15 minutes Suitable for busy people	unable to present comprehensive info
Exams	Takes 3 minutes Suitable for busy people	Unable to specify stability of learned lessons
Course duration	Takes not more than 2 months Suitable for busy people	NA

Timing

Suitable timing of the system led in absorbing every interesting person even busy ones. This shows that the system cares about users' needs (Table 4).

Users

The system focuses on user uptake with different backgrounds as many as possible. It results in the presentation of same lessons for the users with different educational and information literacy backgrounds. Also, it could be a limitation for the presentation of specialized courses by the system in accordance with users' educational context and background (Table 5).

User-friendliness

Main characteristic of the system is user-friendliness. Users rarely encounter any problem while checking their emails as daily activity and study their emails as lessons

of a course which are manageable in their account (Table 6).

Reliability

Major limitation of using the system is its reliability in most of aspects including the content, developers, exam results, and certificate (Table 7).

Adaptability to medical education

Infrastructure, registration, and timing aspects along with user-friendliness criteria make Darsnameh suitable for the implementation of medical education, whereas the main considerations in medical education are reliability of content, its selection, exams, certification, and incharge bodies. Such developments need the comments of evidence-based medicine researchers. Specialization of Darsnameh for medical education requires studies on the information seeking behavior of Iranian physicians.

Table 5. Users of the system (Adaptation score = 4/7)

Component	Advantages	Disadvantages
General users	Popularity	Inability in presentation of specialized courses
Volunteer users		

Table 6. User-friendliness of the system (Adaptation score = 6/7)

Component	Advantages	Disadvantages
Freeness	Popularity Applicable for all	NA
Ease of use	Popularity Suitable for people with low ICT literacy	NA
Oriented on user needs	Popularity usable for all occupations	unable to present specialized info
Electronic entity	Popularity Appropriate for busy people Suitable for distance learning	Need for internet connection
Simple-language content	Suitable for self-learning Suitable for users with different context	unable to present specialized info
Timing	Time-saving	Determined deadline No delay for exams is acceptable Inactivity for a month is failure
Re-attendance in exams	Encouraging the users	Determined deadline No delay for exams is acceptable Inactivity for a month is failure
Savable content	Suitable for future usage No need to internet access	Possible misconduct in exams
No teacher	Suitable for self-learning	No mechanism for proposed possible questions
Final certificate	Encouraging the users English and Persian Certificate	No syllabuses No score Unreliable No discrimination for same user names
Course duration	Suitable for busy people	NA
difficulty level in lessons	Suitable for busy people	NA
Educational situation follow-up	Planning for next lessons	NA
Termination of course	User-oriented	NA
Feedback	Chance for system to improve	NA

Table 7. Reliability of the system (Adaptation score = 1/7)

Component	Advantages	Disadvantages
Developers	NA	Anonymous developers
		Anonymous affiliation
		Unclear policies of stability
Content	NA	No references presented
Exam results	NA	Validity and reliability of questions
		Possible misconduct
		No keys presented for right answers
Certificate	NA	No access to authorities
Content selection	NA	Unclear content selection policies
Updating	Updating was mentioned	Unclear updating process
Confidentiality	NA	Unclear confidentiality policies

Discussion

General practitioners need reliable and evidence-based medical information for their daily practice and decision makings. Most of their information supports their academic education while variability and obsolescence of medical information[18,19] necessitate continuing medical education[20] in anywhere at any time.

ICT developments in the recent decade provided various e-learning methods which are mostly based on the websites. There is a stereotype thinking that e-learning courses should be presented on websites designed by certain software programs and users must visit the websites regularly to utilize the contents. But a report showed that email services are most frequently used internet facility and approximately all of the users check their inbox daily or at least weekly.[16] So, an on purpose education should focus on users' information gates instead of their adaptation with a website.

It seems that Darsnameh has been developed based on such idea and its feasibility for medical education could be assessed during pilot studies. In the past two years, Research Deputy of Ministry of Health and Medical Education could develop suitable websites for research purposes and it is a hope for Education Deputy of the ministry to plan for e-learning systems such as Darsnameh as email-based medical education. Since this type of education is presented for the first time in medical education arenas, its acceptability needs information literacy skills[21] to live in internet age. Evidence-based practice and reliability assessment of medical information is part of literacy skills for physicians. The ministry as the main responsible body for medical education could organize systems based on reliable information not only for physicians but also for people and patients. The ministry's support, as the only accreditation organization for health in Iran, could play a main role in acceptance and development of such systems and resolve the unreliability problem which was detected in Darsnameh.

Provision of evidence-based content for this system requires participation of a team of information experts such as medical education experts, evidence-based medicine researchers, and medical and clinical librarians beside physicians. Such system will need updating guidelines and the team could afford it. Also, infrastructures like Darsnameh for medical education could be a foundation for clinical librarianship projects based on the presentation of on time evidence-based answers to clinical questions asked by physicians. Two similar projects were successfully accomplished in Iran and Kerman universities of medical sciences.[22,23]

Also, volume of content for each course and timing of the courses needs educational and psychological assessment. This may result in the encouragement of users and quarantine the long life of system. Darsnameh experience could be a successful case for adaptation for medical education.

In brief, the implementation of medical education e-learning through email is testable considering its ease of accessibility and use. Finally, we suggest development of an e-learning system through email for medical education.

References

1. Zarif-Sanaee N. Assessing the criteria for the quality and effectiveness of e-Learning in higher education. Media Journal 2011; 3: 24-32 [Persian]
2. UNESCO Institute for Lifelong Learning. [cited Jan. 24, 2012]; Available at: http://www.uil.unesco.org/
3. Abdolrasulnia M, Collins BC, Casebeer L, Wall T, Spettell C, Ray MN, et al. Using email reminders to engage physicians in an Internet-based CME intervention. BMC Medical Education 2004, 4: 17; doi:10.1186/1472-6920-4-17
4. Darsnameh E-Learning System. [cited Jan. 24, 2012]; Available at: URL: http://www.darsnameh.com/ [Persian]
5. Glasziou P, Del-Mar C, Salisbury J. Evidence-based practice workbook: bridging the gap between health care research and practice. Massachusetts: BMJ; 2007
6. McGowan JJ, Richwine M. Electronic information access in support of clinical decision making: a comparative study of the impact on rural health care outcomes. AMIA 2000: 565-9

7. Lappa E. Undertaking an information-needs analysis of the emergency-care physician to inform the role of a clinical librarian: a Greek perspective. Health Info Libr J 2005; 22: 124–32.

8. Ghanizadeh A, Imaniyeh MH, Kadivar MR. Knowledge and attitude of medical students and lecturers toward evidence-based medicine: evidence from Shiraz. Journal of Medical Education 2006; 9 (2): 65-9.

9. Asadi-Shali A, Bagheri M. Feasibility of Clinical librarian Services in the Hospital libraries of Tabriz University of Medical Sciences. Journal of Librarianship 2008; 42 (47): 113-38. [Persian]

10. Grefsheim SF, Whitmore SC, Rapp BA, Rankin JA, Robison RR, Canto CC. The informationist: building evidence for an emerging health profession. J Med Libr Assoc 2010; 98 (2): 147-56. DOI: 10.3163/1536-5050.98.2.007

11. Habibi H, Farzi J, Lotfollahzadeh R. GPs' Information Seeking Behavior in Ardabil and Their Approach towards Electronic Sources. Journal of Ardabil University of Medical Sciences 2088; 8(2): 136-41. [Persian]

12. Zarea V. Evidence based medical approach among clinical faculty members. Medical Journal of Tabriz University of Medical Sciences and Health Sciences 2006; 28 (1): 61-66. [Persian]

13. Jalali R, Abdul-Maleki P, Kahrizi M. Continuous Nursing Education from Nurses' Point of View. Behbood 2006; 10(1): 67-75. [Persian]

14. Shakoor M, Zeighami-Mohammadi Sh. Nurse's Attitude to Ward Deterring Factors of Participation in Continuing Nursing. Scientific Journal of Hamadan Nursing & Midwifery Faculty 2010; 18(1): 23-30. [Persian]

15. Vahidshahi K, Mahmoudi M, Shahbaznezhad L, Ghafari-Saravi V. The Viewpoints of General Physicians toward Continuing Medical Education Programs' Implementation Status and the Participants' Motivation. Iranian Journal of Medical Education 2007; 7(1): 161-7. [Persian]

16. Abdollahi L. Methods and tools used by health sciences faculty members for personal information management [Master Thesis]. Tehran, IR: Tehran University of Medical Sciences: School of Management and Medical Information Sciences; 2011. [Persian]

17. Corbin J, Strauss A. Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. Thousand Oaks, USA: Sage Publications, Inc; 2007.

18. Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. Evidence-Based Medicine: How to Practice and Teach EBM. 2nd ed. London: Churchill Livingstone; 2000.

19. Hunt DL, Haynes RB, Hanna SE, Smith K. Effects of computer-based clinical decision support systems on physician performance and patients outcome: a systematic review. JAMA 1998; 280: 1339-46.

20. Safa AH, Kheirandish M, Zare S, Asghari N, Safa H. Viewpoints of Bandar Abbas general practitioners on continuing medical education (CME) programs. Hormozgan Medical Journal 2006; 10(2): 173-7. [Persian]

21. Webber S, Johnston B. Conceptions of information literacy: new perspectives and implications. Journal of Information Science 2000; 26(6): 381-97.

22. Shokraneh F. The clinical librarian's answering steps to emergency medicine faculties and residents' clinical questions in 7th Tir martyrs hospital, Tehran, Iran [Master Thesis]. Tehran: Iran University of Medical Sciences, School of Management and Medical Information Science; 2010. [Persian]

23. Aletaha A. Investigating the role of medical librarian and informationist to improve the provision of health care in undeserved and rural areas proposing an innovative tele-clinical librarian and informationist role model [Master Thesis]. Kerman, Iran: Kerman Medical University; 2012. [Persian]