Original Article

COMPUTER USAGE AND ATTITUDES TOWARDS e-LEARNING AMONG FIRST-YEAR MEDICAL STUDENTS IN KARACHI, PAKISTAN

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ABSTRACT

Objective: To find out the computer and internet infrastructure available, computer skills, current trend of using e-learning modalities among undergraduate students of Dow University of Health Sciences in Karachi, Pakistan.

Methodology: During January 2012, first-year medical students of Dow University of Health Sciences responded to an online questionnaire at the end of a 6-week e-learning Research module. The questionnaire examined attitudes and experiences about different modalities of e-learning, as well as attitudes about e-learning usage in medical curriculum apart from the computer and Internet infrastructure.

Results: Out of total 700 students, 436 students completed the online questionnaire. Majority of students (n=327; 75%) owned a personal computer or laptop, while 93 (21%) of students used a family-shared computer. Most of the students used either high-speed broad-band internet (n= 123; 28%) or wireless internet (n=193; 44%). Most of them (n=380; 87%) used internet to search for information. Facebook was used by 307 (70%) of students at least several times per week. Most of them (N=31; 73%) agreed that e-learning should play an important role in learning, while 259 (59%) agreed that web-based training should be made available to supplement face to face teaching.

Conclusion: Most of the students have necessary infrastructure and positive attitudes about e-learning. Findings of this study should help in planning and organizing special e-learning courses.

Keywords: e-Learning, Medical Students, Online Learning, Computer Based Learning

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INTRODUCTION

Information technology has altered and continues to alter the way we live, learn, teach, and interact with each other.[1] Medical education is no different, with new and more modalities of teaching and learning evolving every day. From traditional blackboard and lectures,[2] education moved to the use of power-point, and now sophisticated e-learning softwares are easily available.[3]

Computer knowledge and skills have been a subject of educational research both for students and faculty members ever since personal computers were introduced to the classroom, either as teaching tool or as tool for self-study.[4] There is an increasing awareness that students are making use of their own technology as well as those officially provided for them and that they are doing this in ways that were not planned and that may not be immediately visible to their teachers.[5] Institutions need to be aware of their student's computer literacy and their attitudes towards e-learning, in order to adjust the curriculum so that students are adequately prepared and to maximize their learning experience through usage of new technologies.[1]

Educators must ensure a level of computer literacy among all of their students. To provide a curriculum that addresses this literacy, it is important to understand the student's perception of their computer literacy and e-learning. Dow University of Health Sciences in Karachi, Pakistan is working to introduce e-learning both at undergraduate and postgraduate level. One of the first pilot projects about e-learning research module was started in 2011.[6] In this module basic topics of research were covered which included research topic selection, literature search, study designs,

questionnaire making, objective writing and types of scientific papers. There are plans to introduce and make use of more sophisticated e-learning tools with the help of learning management system. In this study, we examined the level of students' computer skills, current trend of using online learning modalities, the number of students having difficulty with e-learning and number of students opposed to e-learning.

METHODOLOGY

A 6-week e-Learning module was developed on Research for the first semester of medical students and was delivered during December 2011 and January 2012.[6] During last week of the module, students were asked to complete an online questionnaire covering a wide range of relevant attitudes and experiences about current use of different modalities of e-learning and its usefulness, as well as their attitudes (on a three point scale: Agree, Disagree and Neutral) about e-learning usage in medical curriculum apart from their computer infrastructure. The questionnaire used in this study was adopted from the study of Link et al[4] after obtaining written permission from the authors. Questions about learning styles of students were excluded for this study. Final questionnaire comprises of sections about computer infrastructure, internet connection, type of computer usage, attitude about e-learning and students experience with some e-learning programs. Questionnaire was administered with an online survey tool (www.kwiksurvey.com). All responses were entered in *Microsoft Excel* worksheets and then converted and analyzed using the statistical software SPSS, version 17 (SPSS Inc., Chicago, IL).

RESULTS

A total of 436 students of first semester medical students completed the online questionnaire, including 360 (82.6%) males and 76 (17.4%) females. Out of them, 371 (85.1%) students were from Dow Medical College and 65 (14.9%) were students from Dow International Medical College.

Majority of students (n=327; 75%) owned a personal computer or laptop, while 93 (21.3%) students used a family-shared computer (Table I). Most of the student used either high speed broad-band internet (n=123, 28.2%) or wireless internet (n=193, 44.3%). Responding to the question when they used computer for the first time, 312 (71.6%) stated that they started using computer at the age of ten and by the time students reached the age of eighteen, 433 (99.5%) students started using computers.

Table II shows use of computer by first-year medical students of Dow University of Health Sciences (DUHS). Almost half of the students used computer daily for web search and social networking on Facebook. Most of the respondents (n=380; 87%) searched web at least several times per week. When asked about communication via e-mail, 196 (44.9%) students indicated using it at least several times per week. Students are less familiar with other program types and collaborative tools like discussion forums, web publishing (wikis).

Student's attitudes about e-learning are shown in Table III. There were 317 (72.7) students who agreed that e-learning should play an important role in learning, while 259 (59.4%) agreed that web-based training should be made available to supplement face-to-face teaching. However, there were 298 (68.3) students who disagreed that web-based learning program are able to replace lectures.

There were 286 (65.6%) students who have already used an online encyclopedia, 233 (53%) of students used online quiz and 178 (40.8%) students used online learning animations. However, while answering to the question which modalities they thought were most useful, the response rate was low for all options (Table-IV).

TABLE I: COMPUTER AND INTERNET CONNECTION AVAILABLE TO FIRST-YEAR MEDICAL STUDENTS OF DOW UNIVERSITY OF HEALTH SCIENCES (n=436)

Computer Infrastructure	Frequency (%)
Personal Computer / Laptop	327 (75)
Family-shared Computer / laptop	93 (21.3)
Public computer facility / University Digital Library	9 (2.1)
No Computer / Laptop	7 (1.6)
Internet Connection	
Cable/ADSL or other type of broad-band Internet access	123 (28.2)
Wireless broad-band internet access	193 (44.3)
ISDN or similar	6 (1.4)
LAN (University Digital Library)	71 (16.3)
Modem (telephone line)	38 (8.7)
No internet access	5 (1.1)

TABLE-II: TYPE OF COMPUTER USE AMONG FIRST YEAR MEDICAL STUDENTS OF DOW UNIVERSITY OF HEALTH SCIENCES (n=436)

	Daily n (%)	Several times a week n (%)	Several times a month n (%)	Less often n (%)	Never n (%)
Write text	90 (20.6)	100 (22.9)	72 (16.5)	118 (27.1)	56 (12.8)
Organizer	39 (8.9)	79 (18.1)	67 (15.4)	13 (30.5)	118 (27.1)
Spread sheet	19 (4.4)	47 (10.8)	77 (17.7)	163 (37.4)	130 (29.8)
Photo editing	49 (11.2)	105 (24.1)	109 (25.0)	105 (24.1)	68 (15.6)
Games	54 (12.4)	69 (15.8)	85 (19.5)	152 (34.9)	76 (17.4)
Emails	67 (15.4)	129 (29.6)	98 (22.5)	106 (24.3)	36 (8.3)
Chat	110 (25.2)	86 (19.7)	73 (16.7)	114 (26.1)	53 (12.2)
Discussion forum	47 (10.8)	54 (12.4)	55 (12.6)	111 (25.5)	169 (38.8)
Web search	193 (44.3)	187 (42.9)	34 (7.8)	15 (3.4)	7 (1.6)
Web publishing	32 (7.3)	41 (9.4)	31 (7.1)	99 (22.7)	233 (53.4)
Facebook	197 (45.2)	110 (25.2)	35 (8.0)	31 (7.1)	63 (14.4)
Twitter	26 (6.0)	30 (6.9)	22 (5.0)	53 (12.2)	305 (70.0)
Skype	56 (12.8)	67 (15.4)	46 (10.6)	84 (19.3)	183 (42.0)

TABLE-III: ATTITUDE ABOUT E-LEARNING AMONG FIRST YEAR MEDICAL STUDENTS OF DOW UNIVERSITY OF HEALTH SCIENCES (n=436)

What do you think about the following statements?	Agree n (%)	Neutral n (%)	Disagree n (%)
Computer or Web-based training should play a more important role.	317 (72.7)	92 (21.1)	27 (6.2)
Web-based learning programs are able to replace lectures.	113 (25.9)	112 (25.7)	211 (48.4)
In medical teaching, there is no need for the use of Web-based programs.	62 (14.2)	76 (17.4)	298 (68.3)
Web-based training should be made available to supplement lectures and tutorials	259 (59.4)	125 (28.6)	52 (11.9)
e-Learning should be nothing more than the distribution of notes over the Internet.	102 (23.4)	101 (23.1)	233 (53.4)

TABLE-IV: FREQUENCY OF STUDENTS OF DOW UNIVERSITY OF HEALTH SCIENCES (n=436) HAVING EXPERIENCES WITH CERTAIN KINDS OF OR CONSIDER THEM USEFUL

Learning Programs	Already experienced n (%)	Consider useful n (%)
Image repositories	130 (30.0)	161 (36.9)
Hypertexts	114 (26.1)	64 (14.7)
Simulations	50 (11.5)	77 (17.7)
Online Quizzes	233 (53.4)	154 (35.3)
Learning Animations	178 (40.8)	175 (40.1)
Online Encyclopedias	286 (65.6)	189 (43.3)
Online forums	116 (26.6)	154 (35.3)
Learning Management Systems (LMS)	38 (8.7)	31 (7.1)

DISCUSSION

The results of this study showed that most of the first-year medical students of Dow University of Health Sciences owned a personal computer or have access to family-owned computer with good internet connection speed. Students were familiar with the use of internet and browsed it regularly. Most of them used social media, specially Facebook. The respondents mostly expressed positive attitudes about use of e-learning in their education but their experience of Learning Management Systems (LMS) is very limited.

This is one of the first studies from Pakistan which, apart from enquiring computer use, tried to assess student's attitudes and experience of e-learning in their medical education. However, the study was limited to only one institute and only first-year medical students were included, so the results cannot be generalized to all undergraduate medical students. While searching for literature on this subject from Pakistan, we found few studies about computer use among medical students[7-9] but we were unable to find specific and detailed in-depth study about attitudes and experiences

with formal e-learning among medical students.

As Rosenberg said, it is no longer a question of whether or not we will implement e-learning in our schools, but whether we will do it well.[10] For implementation of e-learning on large scale, it is important that administration and faculty should be aware of e-learning infrastructure available to their students and one should have evidence about their current experiences as well as their attitudes about e-learning. This study is one such effort about needs-assessment in this aspect. The general trend is very favorable in term of implementing e-learning in curriculum as majority of students (73%) agreed that computer or web-based training should play an important role and 69% agreed that e-learning should supplement lectures and tutorials. Study by Link et al also reported the same trend.[4] Many students indicated that e-learning should support traditional teaching; we assume that at least during initial phases, e-learning may be more effective as a combination with traditional class-room based learning (hybrid or blending). However, there were students who were firmly opposed to e-learning – 14% of the first-year medical students in our study responded that there is no need for web/computer based program. Previous experience with computers and e-learning had the greatest effect on student's attitudes towards it. The explanation for this could be general anxiety with the technology that makes students who lack experience with computers express themselves cautiously about its use in education.[4] Another reason being the relative novelty of e-learning and students' difficulties in integrating internet and computer into their way of learning which will be different from traditional one.[11] We suppose this is the reason that our students did not found different e-learning modalities useful like simulation, discussion forums and even Learning management system, despite their proven effectiveness in literature.[12,13]

An important point highlighted in our study is routine use of social network Facebook by the students. This may have important implication in adopting campus-wide LMS implementation as well. Authors' personal experience is that students who are familiar with these social networking sites have no problem using LMS as well. They already learned the use of discussion forum, alerts, uploading and downloading files, etc. Recently, Qiyun Wang et al[14] reported the use of Facebook Group even as a Learning Management System. In author's experience as well, students and teachers are using Facebook informally as a learning tool.[15]

There is a need of such studies on students as well as faculty members, about their use of internet and their knowledge, skills and attitude of implementing and working for e-learning. Without the support and interest of faculty members it is difficult to implement online courses in all department and in whole curriculum.

E-Learning courses must be aligned with students' computer expertise so that instructions design should be helpful instead of being a source of hindrance. This study also helps us to work on designing an introductory course for students about e-learning as we believe that short courses to develop students' computer skills can improve this situation by influencing students' attitudes. Due to the variable prior experience of students with computer and internet, there is no one-size-fits all course design available. There should be different level of course available to students according to their prior expertise.

CONCLUSION

Most of the students have necessary infrastructure and positive attitudes about e-learning. However, in introducing a campus-wide LMS, one should be cautious about students who lack the necessary infrastructure, computer and internet skills to learn effectively in online courses and students with negative attitudes towards e-learning. Implementing e-learning thus poses not only technical and organizational challenges, but also calls for a promotional strategy. Such difficulties may be surpassed by organizing special e-learning courses for both students and faculty members, which will cater to their specific needs.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

MJ: Conception and design, Drafting the manuscript, Final Approval of the manuscript

KH: Acquisition of data; Analysis and interpretation of data, Critical revision, Final Approval of the manuscript

MLUZK: Acquisition of data, Critical revision, Final Approval of the manuscript

AK: Acquisition of data, Critical revision, Final Approval of the manuscript

CONFLICT OF INTEREST

Author declares no conflict of interest

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