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Original Article

Internet and medical student in Marrakech

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Abstract

Background: The implementation of ICT in the academic curriculum is a part of the e-reform of the undergraduate education currently ongoing at the Moroccan medical school. In order to evaluate the efficiency of such reform, the authors have conducted a survey at the Marrakech school of medicine including 200 students.
Materials and Methods: A comparison between the third year medical students and sixth year medical students was performed in our university Hospital.
Results: The majority of the students have a personal computer and internet access. Our study shows no significant differences between third year medical students and sixth year medical students. In both students' groups the level of internet and computer access, the internet skills, the opinions on internet use and ICT implementation and the difficulties encountered when using internet for medical purpose were similar. This can be explained by the lack of no implementation of ICT in our university.
Conclusion: The learning process is still based on traditional methods. Educational authorities have to train students to improve their internet skills.

Keywords: ICT, e-reform, medical school, internet access

Résumé

Arrière-plan: La mise en oeuvre des TIC dans le cursus universitaire est une partie de la e-réforme de l'éducation prédoctorale actuellement en cours à la faculté de médecine marocaine. Afin d'évaluer l'efficacité de cette réforme, les auteurs ont mené une enquête à l'école de Marrakech, de la médecine, y compris les 200 étudiants.
Matériel et méthodes: Une comparaison entre la troisième année les étudiants en médecine et de la sixième année les étudiants en médecine a été effectuée dans notre université Hospital.
Résultats: La majorité des étudiants ont un ordinateur personnel et l'internet accès. Notre étude ne montre aucune différence significative entre la troisième année les étudiants en médecine et sixième année les étudiants en médecine. Dans les deux étudiants groupes au niveau de l'accès internet et l'ordinateur, des compétences de l'internet, les avis sur l'utilisation d'internet et de la mise en oeuvre des TIC et les difficultés rencontrées lors de l'utilisation d'internet à des fins médicales. Cela peut s'expliquer par l'absence d'aucune mise en œuvre des TIC dans notre université.
Conclusion: Le processus d'apprentissage est toujours basées sur des méthodes traditionnelles. Les autorités éducatives ont former les élèves à améliorer leurs compétences internet.

Mots-clés: TIC, e-réforme; école de médecine, accès internet

Introduction

Information Technology has gone a long way, making it possible to have a more reliable and a faster internet technology that was incorporated in teaching methods.

The introduction of ICT is new in African medical schools. To our best knowledge, many experiences are conducted in the medical schools in Africa. Otherwise, these experiences are still recent and there is a few literature about that.

The implementation of ICT in the academic curriculum is a part of the reform of the undergraduate education currently ongoing at the Marrakech School of Medicine. This reform aimed to make the students more comfortable with computer technologies and internet utilization.

However, the success of such reform depends on accessibility and uses of the internet and the competencies of the medical student in the computer technology. Certainly, having access to a computer and internet, and knowing how to use them properly are the basic preliminaries to any kind of informatics reform. The sixth year medical students should have a better grasp of uses of the internet since they are using it on a daily basis to do their medical research either for a learning process or their theses.

Therefore, we conduct this study to determine the level of access and competencies of internet use by medical students and to probe their opinion on introducing these technologies to the academic curriculum. In other hand, we want also to find out the eventual differences between the third year medical students as compared to sixth year medical students at Marrakech School of Medicine.

Materials and Methods

A survey was performed in June 2008 and a self-administered questionnaire in French was used for data collection. The questionnaire used by Tavolacci *et al*.[1] was adapted to our context.

The questionnaire included 30 items. Three items to assess demographic status (age, gender and school level), 8 questions for informatics equipment, 6 for internet use, 4 for internet skills and 9 to probe students' opinion.

The questionnaires were distributed to the third and sixth year medical students during their clinical training at the University Hospital, and they were asked to fill it on the spot and anonymously. After about 10 to 15 min, the questionnaires were collected. Free and clear consent was obtained from the students before participating in the study.

The results were studied using the Statistical Package for the Social Sciences (SPSS 10.0.5). The results were considered as statistically significant if the *P* value is less than 0.05.

Results

Two hundred thirteen students were solicited to fill the questionnaire, including 92% (143 students) of the third year medical students and 53% (71 students) of the sixth year students. All the questionnaires distributed were filled out and collected. Of all participating students, 61.3% were female. The demographic comparison between third and sixth year medical students is summarized in Table 1.

A total of 71.4% of all students (76.8% of males; 68.4% of females; $P = 0.188$) indicated they had access to a personal computer at home, 24.9% declared having a laptop and 98.5% have an access to a computer (faculty, parent, public or friend computers). Female student use their parents' PC more than male students (46.15 vs. 29.2%, $P = 0.014$). Ninety two percent of the students have an email address for an average time of 5.19 years (from few days to 12 years), 94.4% use internet, 63.7% have a personal access to internet and 20.8% use a wireless device to access internet (Table 2 resumes the differences between third and sixth for all this items). There were no statistically significant differences between women and men for these items.

For measuring the students' skills in using internet, a score of 4 skills were calculated. These questions were: do you know how to use a search engine? Do you know how to use the internet bookmarks? Do you know how to send an attached file by email? Do you know how to send a hyperlink by email? The global score was 2.71/4 points (2.61 for the third year students and 2.82 for the sixth year students). Male student had obtained 3 in the global score as compared to 2 obtained by women ($P = 0.02$). Ninety three per cent of male

Table 1: Demographic comparison between third and sixth years medical students

	Third year students	Sixth year students
Sex ratio (% of women)	53.9%*	76.1%*
Average age (years)	21.72	23.62

*$P = 0.002$

Table 2: Differences between third and sixth year students in access to internet and computer technologies

	Third year students (%)	Sixth year students (%)
Have a personal computer	71.1	71.8
Have a laptop	21.8	30.9
Have a email address	92.9	90.1
Use internet	95.7	91.5
Have a personal internet access	59.5	71.8
Have wireless device	17	28.5
Duration of internet connection per week	13.6 h	13.9 h

student declared to know how to use a search, while 80% of female student declared that ($P = 0.005$). Approximately 54.8% of male student use the internet bookmarks, while 41.5% of female students use them ($P = 0.025$). Table 3 resumes the different aptitude of the students in each question.

About 98.6% of student think that the internet is very useful or useful for medical study, while 1.4% think that internet is not at all or poorly useful for medical study.

For the question 'what are the reasons for no or less utilization of internet for your medical study?', the first reason is the lack of information about useful medical websites, mentioned by 63.8% of the students, the second reason is the overcharged students' schedule expressed by 55.9% of the students, and the last two reasons are the lack of knowledge of internet use and the difficulties to find the appropriate information, both evocated by 40% of the students. Fourteen per cent of the students (30 students) declare having no reasons to no or less internet utilization for medical study.

Twenty one per cent of the third year students use English as a language for their internet medical searches, while 54% of the sixth year students use it ($P = 0.027$).

Eighty six per cent of the students declare using internet for mailing, 96% for medical search and 87% for leisure activities. Table 4 summarizes the frequencies of each internet utilization.

Nine propositions were given to the students and for each one they had to express their degree of approval. Figure 1 resumes the students' answers. There was a significant difference between male and female for two propositions. More male students approve that there is a gap between the course given by professors and the documents found on internet (60% male students versus 44% female students, $P = 0.028$). No male student express a lack of training in the use of internet while 31% of female student declare that ($P = 0.007$).

Table 3: Evaluation of competences of students on using internet

Knowledge	Third year students (%)	Sixth year students (%)	*P* value
Use a search engine	84.5	87.3	0.583
Use an internet bookmarks	46.4	42.3	0.698
Send an attached file by email	71.8	83	0.071
Send an hyperlink by email	59.1	64.7	0.427

Discussion

The limits of this study are those of questionnaire-based surveys. We were not able to include the entire sixth year students because many of them are temporarily affected in primary care center not belonging to the university hospital.

The majority of our students (71%) have a PC and no significant difference between male and female students was noted as compared to many European studies that showed a gap between male and female PC ownership.[2,3] Even if our rate of PC ownership approaches the rate found in European literature (74% of students have a PC in Belgian study[4] and 71% in a Danish study[5]), we have to improve it for better introduction of the ICT. A Tanzanian study showed that only 26% of students have a PC.[6] This difference is explained by the north to south gap. Both female and male students have poor skills on specific internet competencies but female students were less able to fill all internet and computer skills

Table 4: Frequencies of different kind of internet utilization

Knowledge	Third year students	Sixth year students	*P* value
Use internet for mailing	85.8%	88.5%	0.578
Average number of hours per week for mail use	3.58 h	3.83 h	0.670
Use internet for medical search	97.1%	95.7%	0.593
Average number of hours per week for medical search	7.64 h	6.82 h	0.042
Use internet for leisure activities	88.6%	84%	0.350
Average number of hours per week for leisure activities	12.02 h	13.4 h	0.023

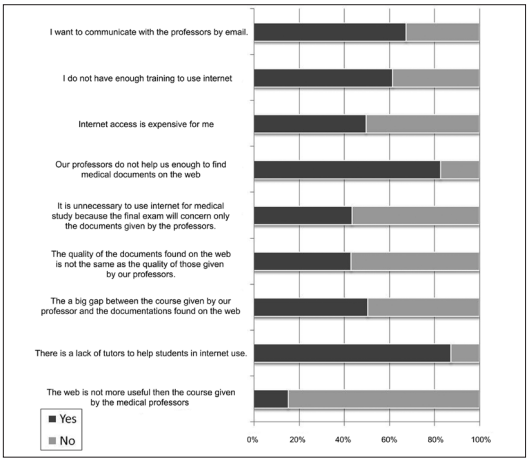

Figure 1: The opinion of the medical students on internet use.

than male students. This may be due to Moroccan culture, females are asked to do more house holding activities and therefore they have less time for internet connection and computer utilization. However, even in European studies there was a significant difference between the two sexes on internet using skills.[5]

Most of the students have access to internet. However, 36.3% of the students do not have internet in their home. And while ICT are based on internet access, these students will have difficulties to use e-learning. The students spend more time on leisure and chat than on searching for medical documents and information. The sixth year student spend more time on leisure than third year medical student because they have more free time (they stop having courses in the faculty) and they do not have to pass a final exam in their sixth year. Ninety two percent of the students have an email address. This high rate of Internet and email uses amongst medical students is also similar to other countries, such as Denmark,[5] Finland,[7] India,[8] Malaysia[9] and the United Kingdom.[2] However, at present, the university does not use email as a mandatory route of communication with or among medical students. The students have largely expressed their wish to communicate with their medical teachers using email. Several universities around the world have successfully started using email as a mandatory communication too, and the Internet as a mandatory information and communication channel. Although a small number of students and teachers may experience going from paper-based to e-communication as a drastic step, this study shows that it will not be a problem for the vast majority, and that the minority will meet only temporary difficulties.[5,10]

Our study shows no significant differences between third year medical students and sixth year medical students. In both students' groups the level of internet and computer access, the internet skills, the opinions on internet use and ICT implementation and the difficulties encountered when using internet for medical purpose were similar. The only significant difference was the proportion of using internet for leisure; sixth year medical student spend more time on leisure than on medical internet fields. This issue is amazing because the sixth year medical students are normally supposed to have more competences in medical internet and to spend more time on that. The majority of them have chosen a subject for their MD thesis, and they are asked to make more internet search to find out their references and to learn about their MD thesis subject. Having a sixth year students as competent on medical internet as third year student suggests that they have not earned any more competences on internet during the three years of study. This can be explained by the lack of no implementation of ICT in our university. The learning process is still based on traditional methods and each student has to make a self effort to learn how to use medical internet. The less use of internet for medical purpose in sixth year student as compared to the third year student suggests they are less interested in medical internet while they are supposed to take the opposite attitude.

The difficulties encountered by medical student could be solved by providing more internet training and by making information about trusted medical websites available for students.[11]

Students' opinion showed that they trust the content of the course given by their professor. However, they need more information on internet usage and more tutoring. Still we have to mention that not everybody who has a computer have access to internet because of the financial commitment[4] and having a PC does not mean being ready to use ICT.

Conclusion

Implementing ICT into medical curriculum should make a huge impact on the way we learn and the way we teach if we work first on providing the appropriate training to the student and of course making internet accessible for everybody because e-learning proved to be beneficial, and cost effective. Educational authorities have to train students to improve their internet skills, and should play more attention for female medical students. Medical teachers should aid students to get trusted medical information from the internet and have to communicate more with their students using email, forum and other new technologies.

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