New teaching models for the medical school of medicine: comparison between oral an online classes. The experience of the Genoa school of medicine

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Abstract

The authors have created and tested a tool for performing online classes (AulaWeb, online e-learning of the Genoa school of Medicine). Described here are the results obtained from the pilot project that was performed.
Two groups of 50 students each were created among the students who voluntarily signed up for the ADE on the theme of laparoscopic surgery. Each group was further divided into 2 smaller groups of 25 students, which followed respectively classic oral classes
or on line classes. The experiment was divided into 2 parts.
While the oral classes were the same for the 2 parts of the experiment, the online classes were characterized by the delivering of videos in the 1st part and videos and interactive web teaching in the 2nd part. Standardized questionnaires were distributed to the students, at the beginning and at the end to evaluate the efficacy of the system used to deliver the information.
Both groups of students greatly improved their scores answering the questionnaires, but the on line groups expressed greater satisfaction in particular because of the fruition of free didactic contents.
In conclusion we can confirm that, when used properly, the web is a fantastic

learning tool for students because, not only it delivers information in a stronger way, but it also provides a faster and more enthusiastic way of learning.

1 Background

E-learning is a new way of teaching that uses the web to deliver information.

One of the tools used in e-learning is the Learning Management System, this is a web platform that allows us to deliver information in an intuitive way using specific software for the interaction of the users. E-learning can be considered a valid alternative to the classic system with the teacher sitting in front of the students and talking about a topic.

The University of Genoa started in 2005 a new system of online teaching called "Aulaweb", where a web based system of e-learning based on the open source platform "Moodle" is used. This system is used by both students and teachers for the exchange of information about topics that are uploaded on the system using forums, chats and emails. At the year 2009, 21 online classes have been activated, with 37 teachers and 1183 students registered and using this online platform.

The didactic organization of the Genoa School of Medicine, (Corso di Laurea in Medicina e Chirurgia, CLSMC) is made of 51 teaching courses, organized in oral classes, practice activities and optional curricula activities.

The learning process of the student is evaluated using the University Didactic Credits (Crediti Formativi Universitari, CFU). One CFU can be obtained after 25 hours of didactic activities.

Every student must acquire 360 CFUs during the six years of medical school in order to obtain the degree.

An additional way to obtain CFUs is to attend the ADE (Attività Didattica Elettiva).

ADEs are optional classes complementary to the standard didactic activities.

Every ADE is restricted to a limited number of students.

A combined team of teachers from the Department of Surgery and Department of Pedagogy has recently been built up to realize a web-based optional curricula activity that, added to the already existing web tools, can further develop and improve the e-learning system at the Medical school of the University of Genoa.

The aim of our project is to compare the oral classes with both the online classes with and without web tools and interactivity (Adorni et al. 2007; Alvino et al., 2008; Antoniou & van Harmelen, 2008; Berners Lee, 2001).

2 Methods

This is a prospective pilot study performed at the Medical School of the University of Genoa in two academic years: 2007-08 and 2008-09. Two groups, Group 1 and Group 2, of 50 students each, were chosen among the students belonging to the III-IV-V and VI year of Medical School who voluntarily signed in for the ADE on "Laparoscopic Surgery".

The maximum number of students allowed for each ADE was fixed at 26 people. Each group was further divided into 2 more smaller groups of 25 students, Group 1.1/1.2 and Group 2.1/2.2. The experiment was divided into 2 parts.

In the 1st part of the experiment, the sub-groups 1.1 attended a standard oral class. Classes were performed by 4 teachers for a total of 30 hours of lessons. The classes were organized in form of teaching and live discussion on the issue as so far always done when delivering classes.

The 2nd sub-group 1.2 attended a web based on line class. Text lessons, slides and videos were uploaded on the Medical School website regularly every week and the students were able to read the lessons and slides and watch the videos instead of attending the oral classes.

In the 2nd part of the experiment while group 2.1 attended the same oral classes as group 1.1, group 2.2 attended interactive online based classes. During the on line classes students as well as having the opportunity to watch the uploaded videos could also utilize web tools like forums of discussion and interaction with other students and teachers using specific chats and emails and clinical case discussions.

Standardized questionnaires were distributed to the students, at the beginning and at the end of the classes to evaluate the efficacy of system used to deliver information. Attach questionnaire. The questionnaires were made of two parts: one part consisted of multiple choices questions where one or more than one answer could be correct. The other part of the questionnaire was organized in spaces given to the students to describe their expectations.

The questionnaires were evaluated by an Associate professor of Surgery with expertise in laparoscopic surgery. Each correct answer was given 6 points, a correct but not complete answer was given 3 points and a wrong one 0 points.

3 Results

A total of 104 students were evaluated, divided in 4 groups, three of 26 students and one of 25. Students belonged to the III-IV-V and VI year of Medical School, all students were between 20 and 25 years of age. The demographics

of the groups were distributed as shown in table 1.

The results were divided and analyzed in two ways. As a first step we compared the results from the multiple choices part of the questionnaire obtained from each group and then the answers given by each student regarding the quality of the classes and the use of the e-learning tools.

Each group of students greatly improved the score obtained answering to the multiple choices questions. The best results were obtained from the Group 2.2 with an increase in average of 10.03 points between the first and the second questionnaire, compared to the other groups as is shown in table 2. When the results of the questionnaires from the post class were compared, a statistically significant difference was found between the groups 1.1 and 2.2, these results are listed in table 3.

The second part of the results, the one concerning the satisfaction of the students about the web-lass, showed that the students did non appreciate the oral class because of its less efficacious way of delivering information, because it was more difficult to follow that the online one and because it took more time than the online one.

Positive comments were obtained for what concerns the interactive part of the study.

The possibility of asking questions using chats or forums or just emailing the teacher at any time of day and night was considered the best part of the experiment. Feeling ashamed of asking questions during classes, some students expressed their satisfaction on having the chance to interact with the teacher without being recognized and identified.

Discussion and Conclusions

This project has to be seen as a pilot study considering the small number of students involved in the study.

E-learning is a new tool that schools and Universities are starting to use in order to give the students more information and interaction with the teachers despite the limited number of in class lessons. Even if the discussion that is created between the teacher and the student during the classes is an important part of the learning process, the high number of students and the limited time available to cover the topics reduces the interactive part of the class. E-learning expands this discussion by using web tools such as emails, forums and live chats between the students and the teachers at any time of the day (Antoniou & van Harmelen, 2008; Berners Lee, 2001).

In our study we confirm and strengthen what has been already said by more important studies. We found that web-classes helped the students to retain information better than classic oral classes (DCMI, 2006; EUN, 2007; IEEE,

2002; Piave, 2008).

We have found analyzing the results obtained from the groups that the degree of satisfaction of the students attending the e-classes was higher and that the students made very positive comments about e-learning. We believe that this depends on the flexibility that the e-classes have in terms of time and schedule. The students could review the topics over and over with the same emphasis of the first time and at any time of the day.

The students considered the online class without interaction less effective than the oral classes but considered the interaction created by chats, forums and email a valid alternative to the class discussion with the teacher present.

An obstacle that we had to solve was to train the teachers to use the web-class and all its tools properly. The teachers underwent an appropriate training that took some time to be accomplished. This could represent a problem for the development of the web-classes in the University. Our University has a unique electronic system to promote e-learning called Web Enhanced Learning (WEL). This as well as creating the University Network (UniNet), promotes and teaches the students and the teachers how to use and take advantage of the net tools. The WEL was created by the Institute of Didactic Technology of the University of Genoa. Unfortunately we have found that, even if the WEL has been active since 2005, only a small number of teachers took part to the seminars and only a part of this small number admitted to use the Web to teach the students. This could be due to the fact that the seminars are not mandatory and to the fact that the teachers are busy with their own activities and prefer therefore to use the standard method of oral class teaching (Biocca & Lelli, 2007; John, 2008; Immersion, 2009).

In conclusion, even if further work must be done to overcome the doubts of the teachers in using the web, we can confirm that, when used properly, the web is a fantastic learning tool for students because it not only delivers information in a stronger way but it also provides a faster and more enthusiastic way of learning.

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