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A distributed support system for medical and nursing students

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Abstract. The Internet provides resources for physicians, but there isn't yet a comprehensive support system for medical and nursing students. Moreover the knowledge of English language is often scarce in young Italian students, so most of the available resources are not really useful. This project aims at the establishment of a distributed framework of interactive courses and mentoring facilities among a group of Italian Medical and Nursing Schools.

1. Research objective

The spreading of Internet connections at home among University students makes now possible to develop a set of distance learning tools in order to complement classroom teaching [1]. Our goal is to create a common framework for supporting students of Medical and Nursing University Schools in Italy. The achievements of this research will be used to enlarge the project to European Medical Schools and to eventually join existing projects [2] [3].

The system is useful at two different levels: an internal one, that is accessing it from the computers in the Campus; and an external one, consulting it from home, especially for those students who live far from the Faculty (58% of them do not come from Rome) of Medicine of the Libero Istituto Universitario Campus Bio-Medico (LIUCBM), a four years old Free University in Rome.

2. Presentation of methods

The first step was a survey on the knowledge and availability of Internet among Medical and Nursing Science students in the LIUCBM. Through a questionnaire to be compiled directly on a computer in the multimedia laboratory, we recorded data about the availability of PC, modem and Internet connections at home and we asked the students to express their wishes about distance services.

These data were a good starting point to develop an experimental Internet site where some information on the Faculty of Medicine was stored. To be able to browse the

WWW pages, all people accessing the home page were compelled to fill a questionnaire with some personal data, such as sex, age, place of origin, medical or nursing year. They could also add their personal comments.

They had to provide a personal code (freely chosen), and they were asked to use always the same for future connections.

The information provided on the site were the students' guide of the Faculty (with comprehensive administrative news), an electronic copy of the bulletin board (that is the same content of the announces published on the board in the Faculty lounge), the list of the students who passed the written admission test to the first year, the list of admitted students, some useful links to other sites (MEDLINE free resources, announcements and abstracts of Medical Informatics congresses and sites, etc.)

The next step was to establish a permanent site of the LIUCBM, first on an Intranet base and later on the Internet. Interactive tests on physics, biochemistry, statistics and informatics were first implemented.

The library catalogue can be searched via WWW forms.

Some Italian Faculties of Medicine have been contacted in order to have them cooperate in writing interactive tests and to spread the news about the establishment of this service. The system is supposed to be distributed among the different Universities. That is, there will not be a unique site in which all the resources are contained. The user will connect to a starting point and then choose in a menu what to browse, without even realizing he/she is jumping from one site to another. The interface in all the sites will be user friendly and consistent with a general framework, in order to get the students easily accustomed, avoiding problems found in the past years in similar experiences [4].

A mentoring system is going to be established, initially on an e-mail base. Students will post their questions to the mentor/tutor and will get the answers on their mailbox as well as on a database, which will allow to be searched by everyone. The database will therefore grow and will be structured in order to provide a complement to printed books. Future development can implement a more sophisticated interface with automatic response to natural language queries.

3. Results and discussion

The result of July 96 survey showed that 30% of the 210 LIUCBM students have a PC at home. Around 9% of the total population know how to use the Internet, while nearly 6% can access it from their house.

After two months of use of the experimental site we recorded a total sum of 600 contacts to the homepage. Only 170 users filled the questionnaire to start browsing. The reason is due to the fact that we didn't want to be too strict in establishing the connection rules. Even though it was not possible to proceed to the home page without filling the form, anyone could access directly to any page of the site, by typing the complete URL. A common way of accessing a site is nowadays through *search engines* like Altavista or Yahoo: we found that many people arrived directly to a particular page instead of passing through the initial filter.

Of the recorded users, 84% were male, 16% female. From Rome 45% of the accesses were recorded, while 18% from Centre Italy, 17% from South and Islands, 12% from North and 8% from abroad. Ten LIUCBM students of Medicine browsed the site.

while only one Nursing Science student: the total of 11 is coherent with the availability of Internet from home for all the students.

A mean value of 1.8 connection per user was calculated, with a standard deviation of 2.4. Trimming the values (eliminating two users who connected themselves 19 and 11 times respectively) we come to a mean of 1.5 and a standard deviation of 1.3.

The bulletin board of the Faculty was read 57 times. The list of admitted students was browsed 56 times. The guide to all the University resources was accessed 35 times. The calendar of deadline dates was utilised 31 times. All the other pages were accessed less than 30 times each one. The total number of accesses summed up to 1,500.

Based on the testing of the system so far achieved, we may conclude that the number of students accessing the Internet from home is still low, with respect to other countries, but it is increasing at a fast pace. Moreover, the availability of useful services will be an incentive to acquire connections and hardware for the Internet.

To properly evaluate the efficacy of the system, especially regarding the interactive tests and the teaching support, we are aware that the connections must be signed by the student accessing the web server. That is, anonymous *logins* are not useful for a full evaluation. We are therefore studying different forms of incentives for a correct registration: for example, sending valuable information only to registered students, giving them the chance to be personally advised by a professor (via e-mail), and so on.

We have not yet enough data to evaluate [5] the effectiveness of the interactive questionnaires and other teaching tools on the Internet. However, since most of them are a conversion of existing University network programs, we can suppose that the outcome of their external use will be at least as positive as the one achieved in these years using the internal software. In effect we could record a positive influence on the examination scores in those students who had been practising themselves on the self-evaluating tests. By the way, it is to be mentioned that some students avoided these tests (even though they were anonymous) because they were afraid of the consequences of a possible failure. We believe that this is only a psychological obstacle that can be easily overcome by means of a proper explanation of the aims of the system.

We are now extending the range of possible tests to other subjects, so in the future the evaluation will be done on a wider base.

4. References

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