

A Program For Electronic Medical Education In Colombia, Educacion Electronica Estructurada (E3†): A Successful Experience

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a tool, but a goal"*

ABSTRACT

Medical education in Colombia remains, almost completely, with the physical presence of the lecturer in the classroom. In recent years, new alternatives in higher education have been explored, on a balanced basis. Our faculty traditionally remains teaching with conservative methods; therefore, strategies for incorporating informatics, virtual education and in general, electronics are vital in our academic environment. Our electronic medical education group, E3, is constituted by faculty, undergraduate and graduate students.

E3 was designed to provide the urgent need to develop an appropriate scenario for a group of faculty and students who will provide the school with clear cut policies and strategies, to establish a permanent and dynamic program of ICT locally, institutionally and regionally. The project, enveloped in the objectives of E3 includes: Electronic Academic Contents (EAC), Virtual Education Project (VEP) and Electronic Clinical Record (ECR).

We will improve and increase, by the end of 2003, electronic medical education at our School and radiate to the University and the academic community.

Key Words: E3, ICT, Electronic Academic Contents, Virtual Education Project, Electronic Clinical Record

1. INTRODUCTION

The increasing use of information technology (ICT) in common life has led recent generations of students and teachers to realize that informatics are vital in the construction of the medical doctor [1]. In the aim of providing politics, tools, and planning of ICT facilities in our Medical School and profiting from the current efforts on this issue, (EAC) led by one of the authors (AI) E3 was created.

There have been sporadic efforts [2] in our country to approach the use of ICT in higher education. Unfortunately the general trend [3] is still in germinal status.

To date, the most common informatics tools currently in use are virtual libraries, general Medical websites, Medical School websites and multimedia resources. In general, our students do not have an effective approach to electronic facilities *in situ* or at home, in contrast with most of American and European medical programs [4].

We believe that ICT in medical education is not only a tool, but a goal, in order to construct a better individual, a better doctor, aware of the current need to have access to better and more information via electronic way.

Our University will be 350 years old this year. It is known at the cradle of the Republic since at Rosario University is were independence of the country started. Our motto, "*nova et vetera*" or "the new and the old" impulses awareness of the advances in academics be them formative or in research.

ICT embraces both universes, having always as common denominator tutorial and mentorial education.

Currently our School has a number of informatic tools that have progressively been used by students and teachers. Our main objective is to boost the use of electronic tools initially in undergraduate and then in graduate medical programs radiated to the University and then to the academic community locally and regionally To date we have a versatile website (www.urosario.edu.co) link to <http://medicina.urosario.edu.co> which contains the Medical School's general information.

Our medical library offers access to electronic journals through three supplying companies. Access is privileged to our students, faculty and alumni who have individual passwords.

E3 was designed to provide the urgent need to develop an appropriate scenario for a group of faculty and students who will provide the school with clear cut policies and strategies to establish a permanent and dynamic program of ICT.

New projects in E3 are in progress and their objective is to develop strategies that will help medical students and physicians to handle current biomedical information in the benefit of patients, themselves and the community via ICT. This project enveloped in the objectives of E3 includes:

- Electronic Academic Contents (EAC)
- Virtual Education Project (VEP)
- Electronic Clinical Record (ECR)

Electronic medical contents (EAC) was designed by one of the authors (AI) in the Department of Surgery, to encourage written electronic material from MS; it has grown as an electronic medical education tool, amenable to permanent and sequential modification. MS will write the narrative of academic sessions which will be then reviewed and edited by the teacher. The document is then posted in our website, available to privilege academic community (students, faculty and alumni).

Since MD's have a one year obligatory rural service, Virtual Education Project (VEP) will provide valid information via virtual lectures in two areas in 2003: Toxicology and Forensic Sciences. It will also serve as a permanent channel for consultation from the rural MD's to the medical school based and affiliated institutions.

Additionally, (VEP) will develop seminars on "Virtual Classrooms" in current medical subjects aiming to provide continued medical education for our general practitioners Electronic Clinical Record (ECR) project is designed to provide medical institutions with an interactive electronic frame to develop data to fill out the individual clinical record. It will serve not only for academic purposes but for financial savings in budget, planning and projection of the general health services in affiliated and non affiliated institutions.

E3 is consistent with the University's Mission, Vision and planning programs. ICT as we know it is planned on a medium term basis due to the rapid advances in electronics. In coherence, we plan with 1 year ahead. Our compromise is to be the number one school in electronic medical education in Colombia.

2. PROGRAM OVERVIEW

EAC project shares five academic scenarios for MS and teachers namely:

Step 1: Topic assignation.

All Students will be assigned individual topics in the academic program to develop step 4.

Step 2: e-guides

Pre-session (e-guides) in which the teacher will provide the following information:

- 1-Title
- 2- Objectives
- 3- Questions to be answered by the student
- 4- Bibliography
- 5- Teacher's e-mail and name.
- 6- Review Date.

The e-guide is then posted, on the website in the specific academic electronic contents link of each department for the students to prepare for the upcoming lecture.

Step 3. The academic session

The lecture will then be an interactive participative and conclusive experience based on auto-education from the MS part and guidance of the session by the teacher. The assigned student to write the "narrative" will take notes during class.

Step 4. The "narrative"

The assigned student will write the narrative based on three sources; first, information derived from the search objectives and bibliography suggested in the e-guide, second the development of evidence-based information and valid remarks, and third, a second systematic bibliographical search, derived from the academic session.

"Narrative" structure in clinical sciences is:

Introduction
 Etiology
 Physiopathology
 Epidemiology
 Signs and symptoms
 Physical Examination
 Differential Diagnosis
 Diagnostic Confirmation (Imagenology and Labs)
 Current therapeutic approaches
 Bibliography

Step 5. Review, editing and definitive posting.

The teacher will review the material contained in the "narrative" and will validate it with biographical and self-experience information to produce the definitive document that will be posted in the website. This narrative will serve as the basic tool to be reviewed by the assigned student in the next semester.

VEP will work on two scenarios:

1. Virtual education aimed at rural doctors during 2003 on two topics:
 - A- Toxicology
 - B- Forensic Sciences.

These two topics will be developed in three sessions:

- Pre-chat session: one month prior to the information the participant will receive pertinent literature on the topic to be reviewed.
- Chat session: The coordinating teacher will moderate a 2 hour chat- session in an introduction, Questions and answers and conclusions
- Post-chat session: two weeks after the chat session a definitive document will be distributed to the participants with an evaluation form. And electronic certificate will be provided.

2. "Virtual Classrooms". The medical school will work collaboratively with ILADIBA (Instituto Latinoamericano de Investigaciones Biologicas) in various medical topics to be formally reviewed up to the state-of-the-art. The first one to be launched electronically in a seminar format will be on Epilepsy. Aimed to general practitioners (GP's), the seminars will be subdivided in modules and planned to last 3 months. Pertinent academic material will provided in advance to be reviewed by the GP's. Two weeks later, lectures will be given via live videoconference. Review modules will be then evaluated using electronic formats. Graduation certificates will be provides for a approving GP's.

ECR is designed to provide third year MS with a disciplined module of structured electronic clinical record that will be radiated all through clinical semesters for continuous evaluation and peerage in clinical and surgical departments to design a final product that will have practical application in affiliated and non-affiliated institutions. It will be developed in the following steps:

- Structured proposal (E3)
- Socialization to three teachers in each of the clinical and surgical departments who will make remarks on the document and return it for E3
- Final evaluation of the model by the Epidemiology Department which will be returned to E3
- ECR will be reviewed and directives in the different affiliated hospitals who will work with it on a 1-year trial
- A final evaluation will be carried out by E3, the Epidemiology Department and one delegate of each of the affiliated institutions
- Qualification of the document
- Commercialization to non-affiliated institutions and Government.

3. PROGRAM RESULTS

So far the only evaluable data comes from EAC.

In January 2002, 4th year (8th semester) medical students started to create and use the "narratives" as a part of a new educational program. Narratives were only partial due to the fact that it was an initial pilot program in the surgery and specialties semester. In the next two semesters it became an official pilot program in the department of surgery with the following results:

40 (76%) "narratives" had been made out of 78 academic subjects in the General Surgery area.

By specialties figures are shown in table 1.

All the students (100%) developed their assigned "narrative". Satisfaction level reported by students was 75%.

The use of "narratives" as a research and study tool was observed by a raise (62,5%) in the number of visits of this particular link in the School's website. Monthly we found an average of 1364 visits during a 5 month period, compared with 853 visits six months earlier.

Although it implies extra work for teachers and MS, reading, editing and posting of "narratives" has been done promptly. Level of

acceptance among teachers from Surgical Department has reached 63%.

Average grades given to students for their “narrative” was 4.3 on a maximum 5.0 scale.

4. DISCUSSION

E3 group at Universidad del Rosario School of Medicine is a novel experience in Colombian medical education. Its creation was the result of an urgent academic need in the

School. It was presented as a project to school and University authorities who promptly approved it and provided academic and financial disposition for its development. The group is constituted by the Chairman of the Department of Surgery (RER), two members of the Research Office (AI and FL) the coordinator of the Medical Informatics Unit (AE) and two third semester MS (SP and RY).

Table 1
Total Narratives Posted In 2002

SURGERY AND SPECIALTIES	NARRATIVES POSTED	TOPICS	PERCENTAGE OF COMPLETION (%)
GENERAL TOPICS	1	3	33
ANESTHESIA	2	9	22
GENERAL SURGERY	18	28	64
PEDIATRIC SURGERY	3	4	75
OPHTHALMOLOGY	3	8	38
ORL	4	12	33
ORTHOPAEDIC SURGERY	7	12	58
PLASTIC SURGERY	2	2	100
TOTAL	40	78	76

Department directors and faculty in general had shown intermediate enthusiasm to cooperate with the project. No strategic maneuvers are being designed by the group to attract attention and enthusiasm to E3. Socialization of the program in the undergraduate and graduate population is underway.

As we can see, of the three subprojects, valid data of EAC are quite positive so far. Cooperative meetings with Chair persons of the Clinical and Surgical Departments are in progress with positive results. The other two subprojects (VEP and ECR) have been embraced positively by School authorities and a new paper will show preliminary results.

5. CONCLUSIONS

E3 has been a happy and successful experience.

Faculty and MS enrollment in teamwork, in search of generalization of the use of ICT in our medical School, is a challenging scenario in the germinal state but initial results are demanding, and propose formidable work to be carried out by the group and conditional to directive compromise in the persons of Universities and Medical School’s authorities, chair persons and administrative personnel. Follow up papers will be published to share this experience with the informatics and academic communities.

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