

Multimedia and Pharmacy

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In order to carry out this project, we have to look for and check various projects related with the use of multimedia programmes for the universitarian education, all of these based in Pharmacy teaching. The interest consist into observate how the new technologies are introduced in the universitarian studies, and what are the rate of introduction in which they are situated.

We finally can note that, this technology is well introduced in the universities owing to the amount of multimedia materials that they possess. Contrary to this fact, the evaluation made to observate what rate of introduction the new technologies had, reflects that is very incipient yet; because only 3 of 33 revised projects have been evaluated objectively from their teaching efficiency and their material; the rest are in phase of subjective assessment or pending to be analysed from the point of view of the student acceptance.

PROMOTER	MATERIALS	EVALUATION
Department of Botanic	Hypertext as assistant in laboratory practices (5-7) (page HTML). Communication with teachers by e-mail. Programmes developed by students on Practical Work (CD ROM, bibliographic searching, photobases, etc.).	The uses of this programme have not been evaluated yet (5). This module was evaluated from a subjective point of view (6). The evaluation of this project was subjective (7).
Department of Physiology	Practices of Cronobiology based on simulations (8).	Their assessment was subjective, only based in the student's opinion.
Department of Clinical Pharmacy and Pharmacotherapy.	Using of programmes based on drug interactions or parenteral preparations. Using Multimedia programmes developed by PCCAL(University of Bath) in practices, since 1991 (9). Using Internet resources to make seminars about Community Pharmacy practices (9, 11) since 1996. Teaching pregraduate and postgraduate courses by Internet (9,12,13)	This programme hasn't been evaluated yet (9). The evaluation of this project was very subjective, only based in the opinion offered by teachers and students (11). Not available (NA) (12). These courses made by Internet have been evaluated making reference to the number of visits that receive their page, and other subjective topics (13).
Department of History and Pharmaceutical legislation.	Interactive Database (Drug Project) (14).	The practices have been evaluated subjectively as an excellent training resource.
Department of Pharmacy and Pharmaceutical Technology.	Using of two Multimedia programmes from the University of Bath (15-20).	These programmes were evaluated objectively using a questionnaire (15). The poster hasn't been evaluated yet (16). They have had a subjective evaluation (17,18) Not available (NA) (19,20).

List 1. Materials adressed to pregraduate students of Pharmacy. (All are departments of the University of Barcelona).

There is an indicator that shows that the multimedia technology development is nowadays at the top, and this indicator is the absence of efficiency studies; not only in our town, but also in United States.

We have evaluated 33 abstracts, and only for 5 of them the authors have made an objective evaluation. Most of them were evaluated subjectively (14 of 33). Other projects hadn't been evaluated yet, but they were pending of evaluation. Finally, it's possible notice that 8 of them don't say anything about evaluation. Nevertheless, some public opinion polls are being carried out and their first outcomes are reflecting the acceptance and the suitability of these methods in the universitarian education (8, 15, 64, 65).

Our last project has been made to assess the efficiency of our multimedia material (see it at edicionsub.com) the student training, and his outcomes will be shown in another communication of this same meeting.

In conclusion, it is impossible to announce the area in which is remarkable the use of this technology. Due to the big development in the new computer technologies, all the departments in all the areas have been working in it and they have some available material on this matter, that are mainly used in the universitarian scope. For this reason, it is necessary a rigorous organization; firstly, making an available catalogue destined to the universitarian community and the private market; and secondly, promoting the commercialization of these projects. Consequently, all the information and tasks will enjoy of a good distribution and dissemination.

PROMOTER	MATERIAL	EVALUATION
Duquesne University	Development of multimedia computer applications for clinical pharmacy training (28).	Not available (NA).
University of Georgia	Developing computer-assisted instruction to teach physical examination to Doctor of Pharmacy students (29).	This project was evaluated by the students who had to answer some questionnaire. Outcomes were favorable.
Department of Pharm. And Biomedical Sci. Ohio Northern University.	Multimedia approaches to the teaching of CNS pharmacology: Parkinson's disease and antiparkinsonism drugs (30).	This module is in process of evaluation by the students.
University of Nebraska Med. Ctr.	Nebraska Drug Information on Network: educational model for community sites (31).	This project has been evaluated subjectively.
University of Southern California	Multimedia pharmacokinetic simulation programme for case study generation in a problem-solving curriculum (32).	Not available (NA).
University of Arizona	Interactive computer programme to teach clinical economics (33).	This programme must be evaluated by different institutions.
University of Cincinnati	Elective course on computer-assisted instruction modules developed by pharmacy students (34).	This programme hasn't been evaluated yet.
University of Washington	Interactive multimedia role-play simulation: building skills in pharmacist-patient communication (35).	In this programme was evaluated the simulation, but there is no mention of what kind of evaluation was.
University of Georgia	Development and evaluation of a computer-assisted instructional programme in an advanced pharmacotherapeutics course (36).	Not available (NA).
Drake University	Computer-assisted generation and grading of pharmacokinetics assignments in a problem solving (37).	Not available (NA).
University of Derby	Postgraduate programme in social and administrative pharmacy by multimedia (38).	This programme hasn't been evaluated yet.
University of Florida	Competency based, self-instructional moduls on medication history interviewing for pharmacy students: rationale, description and formative evaluation (39).	Not available (NA).

List 3. List of multimedia materials for the universitarian teaching of Pharmacy. Information obtained from two databases: Medline and IPA. (These sources were consulted in september of 2002).

PROMOTER	MATERIAL	EVALUATION
Department of Organic Chemistry and Pharmaceutical Chemistry of the University of Navarra.	Education material (module 21) prepared by teachers and available in the net. Interpretation module of the student's magnetic nuclear resonance option (22).	This programme was evaluated and subjectively by the teachers (21). This module is in process of evaluation by the student's opinion (22).
Department of Pharmacy and Pharmaceutical Technology of the University of Alcalá.	CD ROM course completed with some Internet sessions (23).	In process of evaluation (23).
Department of physics and Chemistry of the University of Salamanca.	Programme to solve problems about Physics and Chemist (24).	This programme has not been evaluated yet (24).
Department of physics and Chemistry of the University of Victoria.	Programme EAO about acid-base concepts (25). Programme EAO about thermodynamics (26).	This module was evaluated from both, subjective and objective, points of view (25). This programme is pending of evaluation (26).

List 2. Spanish multimedia programmes for universitarian use.