BMB on Line: An Information System for Paleographic and Didactic Research

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ABSTRACT

After a survey of the most relevant applications of new technologies in education the paper reports the results of some recent experiences strongly based on cognitive apprenticeship strategies. Soon after the main traits of today paleographic research are presented and the structure and function of BMB on line are reported. The main traits of the Faculty Center for on line teaching are then presented and some experiences involving the didactic work in the Faculty of Humanities and especially the School for Archivists and Librarians are reported. At last the way the BMB on line integrates itself with the other didactic initiatives for the improvement of the efficiency and efficacy of teaching is shown.

INTRODUCTION

It is well known that computers and the Internet influenced to a great extent both research and teaching. In the first case they naturally entered into everyday life for their making easier and easier various operations like calculus, simulation of phenomena, data management and last but not least communication. Their use in education conversely occurred under the influence of psychological and pedagogical theories like behaviorism, cognitivism and constructivism and guided the research towards the explanation both of the student-computer interaction and of the more general knowledge-learning process in mankind. As a result the metaphors of Taylor (1980) for the computer use in education: tutor, tool and tutee, were extended with the time to include the results of new didactic research (Galliani and others, 1999). The term tutor was used, for example, to describe the well known CAI and CAL software, but included also the ICAI and ITS systems, strongly based on the use of Artificial Intelligence results. The tool metaphor, in a very similar way, described the use that students made of general purpose software in educational environments, but extended to the analysis of more complex tools they could use to create multimedia documents or hypertexts. The tutee metaphor forcing the students to have computer programming skills has been analyzed in a greater detail by S. Papert (1993); he invented the LOGO, a graphical programming language helping the students to instruct computers in solving simple problems, and defined the main traits of a pedagogical theory strongly centered on computer use that he called constructionism. Its main features are: 1) computer has to be a learning partner, 2) computers must induce an epistemic inversion in teaching and transform it from "learning to use" into "using to learn", 3) teaching has to base itself on problem finding and problem solving and students have to use trial and error strategies in their learning etc.

More recently many experiences strongly influenced from metacognitive and constructivist hypotheses looked at the students' learning as a cognitive apprenticeship, i.e. a learning strategy retrieving the well known apprenticeship experience marked by modeling, coaching, scaffolding, fading that has to be integrated with new cognitive strategies (articulation, reflection and exploration). Some interesting results have been obtained in this field from the CSILE (Computer Supported Intentional Learning Environments) research group of M.

Scardamalia and C. Bereiter at the Ontario Institute for Studies in Education and from the M. C. Linn team interested in the use of the computer as a learning partner (Varisco, 2002): in both cases the use of computers for the simulation of complex environments and situations and the adoption of cognitive apprenticeship strategies led the students to a meaningful learning (as defined by Jonassen, 1995) and revealed themselves more useful and fruitful than traditional teaching strategies.

In the authors' opinion the Internet can contribute in the strengthening of the above teaching/learning strategies because: a) it is an essential element of a new social and cultural system with a great learning potential (Bruckman, 2002), b) it is an instrument leading to meaningful and efficient learning by means of virtual classes and learning networks of students and scholars (Hiltz and Turoff, 2002). Furthermore they are persuaded that the Internet can affect the individual cognitive processes for the cancellation of the time occurring from the publication of the results of a research to its translation into a common cultural legacy (i.e. its teaching). Before the Internet in fact the research precincts could be separated from the teaching ones because didactics had to transmit well-established and structured knowledge (when new paradigms emerged they were made available only after they were analyzed and filtered from the scientific community); today the above separation isn't so clean because the information sources are no more and not only the academic ones and all new information are immediately available as they are on the Net. If the analysis of the bad influence that the use of new technologies can have on knowledge and learning is beyond the aims of the present paper (Cartelli 2003, Tudjman and Mikelic 2003) the definition of new roles and functions for school, university and cultural institutions imposes to prevent the presence of misconceptions and wrong ideas in students' minds.

The above remarks persuaded the authors that real and present research situations carried out in an academic environment has to be used, together with a careful modular teaching programming and the Internet communication services, to obtain the same good results of the Scardamalia-Bereiter and Mc Linn groups (who used sophisticated and complex simulation environments and modular teaching programming with their students); the authors firmly believe in fact that if the students are made part of a scientific community sharing research methods, techniques and results they can develop a meaningful learning and good skills, at least in the analysis, cataloguing and preservation of ancient manuscripts.

BMB ON LINE AS A RESEARCH INSTRUMENT

The Internet entered into paleographic research and manuscript studies at different extents and many experiences were carried out to give new research instruments to Middle Age scholars and paleographers. For the importance it has in further discussion the *BMB* Web site and its evolution will be analyzed here in a greater detail.

The BMB experience started in 1991 to collect the quotations of Beneventan manuscripts in the literature (it has to be noted that

Beneventan manuscripts are medieval books written in the South Italy national script) and the people involved in this project were helped in the writing of their bibliographical cards from a MS-DOS program called BIBMAN.

The BMB Web site was firstly developed in 1997 and was hosted in the Web site of the Faculty of Humanities at the University of Cassino with the main aim of: a) making faster and easier for scholars the downloading of new bibliographic data about Beneventan manuscripts (nearly monthly), b) encouraging the creation of a virtual community that could find in the site services new opportunities for improving their studies (Cartelli, Miglio and Palma, 2001).

Before the site was carried out the spreading of information was only entrusted to the printed volumes published once a year because every attempt of using floppy disks, or other computer media, to disseminate information with a different periodicity had no result (it has to be said that in the first BMB volume it was already encouraged the floppy shipping, with no charge for the people interested in the study of manuscripts).

With the time new elements were added to the site and just before the carrying out of the BMB on line Information System the following sections could be accessed from the home page of the Web site: a) the bibliographical data, b) an alphabetically ordered inventory of the shelfmarks of Beneventan manuscripts, c) the news concerning newly found Beneventan items, d) a selected list of links to the sites of libraries, institutions, research centers and portals involved in the study of Beneventan manuscripts. It has to be noted that the bibliographies reported in the Web page of the site were obtained from the card files periodically produced by the software BIBMAN as text files in ASCII code and that they were made available on the Web in two different ways: a) a former one directly readable, obtained by the inclusion in the HTML tags <PRE> ... </PRE> of the ASCII code produced by the software BIBMAN; b) a latter one made by a file that could be downloaded by simply clicking on a special button (it was the same file obtained by BIBMAN and could be used from every reader owning that program to create his own database).

In 2001 the problem of the individuation of a new software to be used for the collection of the quotations was posed and the authors thought that the Web could help them in finding the right solution for it.

It has to be noted first of all that the different ways the Internet can be used for a better sharing of manuscripts' information were deeply analyzed in the international scientific debate and that many solutions have been proposed. Nevertheless most part of the scholars and researchers involved in manuscripts' studies look at the Internet and at the Web as an extension of printed publishing or at most as a compromise with this ancient and well settled communication medium: it is more economic and effective in reaching a greater audience than printed matter, but it is always and only a medium to be used for the spreading of materials that came to their ultimate stage and final structure (in other words: that were ready to be printed).

In the authors' opinion the time has come for a revolution in the use of the Web as an instrument for manuscripts' studies. The Internet with its communication services gives in fact to all researchers new and more powerful instruments while allowing the creation of virtual communities; in other words the Internet is the ideal medium for learning and practice communities and for cooperative research and learning (Calvani and Rotta, 1999).

From all the above remarks was born the authors' idea of the *BMB on line Web site*, an Information System that people could differently be allowed to store the quotations of Beneventan manuscripts and that could be freely queried from general users to obtain the information stored in it. The system will be continuously changing for the supply of new information coming out locally or, in a more flexible way, from the Net.

Persons entrusted with the task of collecting the quotations of Beneventan manuscripts are grouped in three categories: 1) the contributors who can access a special Web area (by means of their ID and password) where they can see the materials the administrator/s assigned them, and then write, modify and delete the bibliographic cards and the corresponding quotations of manuscripts etc. 2) the scientific administrator/s who can manage all the data in the data base and write, modify and certify the bibliographic cards, this last operation being done only once because when a card is verified it can no more be accessed, 3) the system administrator who can do all operations including the modification or the deletion of certified cards.

When the system starts the first time the data base is empty and the system administrator has to input the data for at least a scientific administrator; once a scientific administrator enters into the data base he/she can input the data for the contributors and allow them to access the system, he/she can also input the bibliographical materials to be chosen from contributors or compile by him/herself the bibliographical cards. When the contributor/s access the system they can choose the materials to work on and compile the bibliographical cards. At last the cards are analyzed and revised from the administrator/s; after that they can be read from the general user of the system.

To access the bibliographic cards there are five different query pages: a) the first one asks for the author's name and gives back him/her quotations, b) the second and third ones ask for a manuscript (by means of its ID code or shelfmark) and give back all the quotations in the data base for that manuscript, b) the fourth one lets the user select one among the different contributors and gives back all the quotations made by that contributor, c) the fifth and last one lets the user input one or more words or part of them concerning the title, the location, the collection etc. of a given publication and shows all the bibliographic records matching the query constraints and the corresponding quotations of Beneventan manuscripts.

It has to be noted that the system includes also a closed communication subsystem made by an electronic blackboard granting an easy exchange of messages among contributors involved in the collection of bibliographic materials.

BMB ON LINE AND THE FACULTY CENTER FOR ON LINE EDUCATION

If *BMB on line* candidates itself as a useful instrument for paleographic research, in the authors' opinion it can also be a very important tool for teaching innovation and didactic research.

It has to be noted in fact that many attempts of introducing new technologies in everyday teaching were recently performed at the Faculty of Humanities of the University of Cassino and in 2003 the creation of a center for on-line teaching was authorized from the Faculty Council (one of the authors of this paper was also entrusted with the administration of the Center).

Main aim of the center is to facilitate teachers in the development of didactic materials that can help students to overcome their difficulties and reach a meaningful learning (as stated in the first section of this paper) and to multiply the communication channels that can make easier for students to establish relations with professors and among themselves.

The activity until now carried out in the faculty center, that differs from analogous experiences for the attention devoted to the planning and developing of special teaching materials to support the didactic work, suggests four operating levels for it:

a)   the writing of an HTML reference page with the links (open and free or protected by identification codes) to the materials the professors transmitted to the center and the creation of suitable communication channels like electronic blackboards or chat;

b)   the planning and building of a Web site for a given discipline and its didactic materials (suitably translated in HTML static or dynamic pages) together with the communication channels already reported in the first point;

c)   the carrying out of a special site continuously monitoring the students' access to the didactic resources of a given discipline together with what has been reported in the above points (Cartelli 2003);

d)   the development of an Information System (and consequently the management of a database) suitable for both research and

teaching.

Many disciplines have already used the services of the Center but it's important to remember here what has been done in Paleography to see how BMB online was included among the other initiatives.

First of all a site for Paleographic didactic materials was created and two kinds of documents were made available within it: a) the plates reproducing some pages of ancient manuscripts in different scripts adopted in the Middle Ages (for sake of completeness we report here the ones each Internet user can access so far on the site: Beneventan, Caroline and Gothic, i.e. three of the most important and widely used scripts between the eighth and the fifteenth century), b) texts freely extracted and translated from printed or electronic documents and collected in the following sections: Book Archeology, Beneventan script, Caroline script, Cataloguing, Preservation, Written Culture, Gothic script, Mercantesca script, History of Paleography and Humanistic script.

The Web site of the Martyrology of Arpino as a special version of the Open Catalogue of Manuscripts was then created (Cartelli and Palma 2003). In its complete definition it is an Information System devoted to the management of documentary information and it is based on the use of the Internet and especially of the Web (Cartelli and Palma, 2002). It is made of five sections that have to be intended in a flexible manner, i.e. they will depend on the available resources and on the different solutions that will be adopted: a) the first section is devoted to the documents illustrating the library history and that of its manuscripts; b) the manuscripts' bibliography ordered by shelfmark and, eventually, alphabetically and chronologically, is housed in the second section; c) in the third section are the descriptions of the manuscripts, i.e. the previous printed catalogues or the ancient handwritten catalogues (suitably digitized) and the new descriptions (according to nationally defined standards); d) the fourth section is devoted to the images of the highest possible number of manuscripts in the library; e) the fifth and last section is made by a communication subsystem including electronic blackboards, chats, forums and particular Web solutions granting the easier acquisition, writing and editing of texts. The Martyrology of Arpino as a single manuscript kept in the church devoted to Our Lady in Arpino (a little town in Central Italy) had the suitable features for the creation of an *Open Catalogue* and was used in teaching work as follows:

- some make up courses centered on the Martyrology were designed for the students evidencing History and Latin gaps in their basic knowledge because the manuscript was used as a chronicle from XIV to XVII century and the historical events reported there had a counterpart in relevant events of that period;
- the students were directly involved in the carrying out of the Web pages of the Martyrology (with the acquisition and editing of texts and images);
- they were also involved in the manuscript's description;
- at last the students had to transcribe the text (i.e. to make readable the text containing many abbreviations and special symbols).

The BMB online site, like the Martyrology of Arpino, was planned to answer to specific research needs but was also included among the instruments to be used for the courses. During the new academic year in fact the students (especially the ones of the School for Archivists and Librarians) after attending the basic courses concerning paleography and cataloguing may become contributors of the *BMB on line* and be asked to compile the bibliographic cards. The discussions that the students will have with the administrator/s, with the professors and among themselves, the use of the electronic blackboard and of the e-mail services for the exchange of messages and the chance to make little groups of persons working on the same problems and analyzing the solutions to adopt will make actual in the paleographic field the cognitive apprenticeship strategies reported in the first section of the paper.

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