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Title

Are the librarians of the Polytechnic
trained enough to train user?

Year

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Declaration

This dissertation is the sole work of the author, and is developed from a research proposal submitted by the author as part of the Master in librarianship and information science.

Abstract

Are the librarians of the Polytechnic trained enough to train user?

The experience of the electronic resources course

by M. Cristina Garanzini

Until now the librarians of the Polytechnic have taught the users the contents of the devices (catalogues and bibliographies). Now librarians have to give the users the skills to use, to find and to show autonomously the information. Librarians will have to learn the new search methods and the skills to utilize the technology. The education of the user implies a new professional development and obliges to new relationships with other professionals.

Users will frequently need highly specialized assistance to fully utilize the systems that librarians provide for them.

Staff must be adequately trained if they are to provide this assistance.

This research project asks the question - are the library staff of the Polytechnic trained enough to train user? This study provides information about the skills and training needs of the librarians and the information needs of the students. It should promote training and staff development programmes and the development of new courses for the students' information needs with the involvement of the academic staff.

A questionnaire for the students formed the main data collection tool to establish the students' information needs, within an essentially quantitative approach. The structured interviews and a questionnaire for librarians provided the qualitative element of the study.

The research findings conclude that the librarians have the necessary skills to become an information professional and instructor but have a lack of knowledge about the learning styles and the teaching methods. However, the librarians have demonstrated to know clearly how the studies of their users are organized and their characteristics. The study recommends continuing training for librarians and a new course for the students.

Abbreviations

CD-ROM	Compact disc read-only memory
ESF	European Social Fund
IT	Information technology
OPAC	On-line Public Access Catalogue
SIB	Librarian Information System
WWW	World Wide Web

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One: Introduction

The electronic revolution of the last decade has made a permanent impact upon the very nature of information itself. Static print resources have in many instances given way to evolving, digitised data that can be retrieved and manipulated according to the information user's needs. In turn, librarians have faced a similar evolution, from mediators of resources to facilitators of information into knowledge.

Change, however, is often accompanied by increased anxiety and self-awareness of the knowledge gaps we must face. This anxiety can be present not only for college students, but also for the very faculty and staff who need to be more cognizant of the appropriate electronic information resources and skills for their disciplines.

The technological information advances of the academic library provide an avenue for alleviating this apprehension. Academic librarians can turn anxiety into confidence by teaching professional development courses and workshops that focus on both basic and advanced techniques of electronic information retrieval. As Carol Tenopir¹ (1995) has observed, "instruction with electronic resources is not so much a *problem*, but an opportunity. An opportunity to reach more students, faculty, and other users than ever before, an opportunity to try new methods, an opportunity to get yourself out of any instructional ruts you may have found yourselves in."

1.1 Context

The libraries of the Polytechnic² have widened the subscription for scientific databases and electronic journals in consortium and they are precious for searches of full-text articles or abstract.

Users will have to be able to use the digital contents and services. Librarian will have to guarantee the usability of the collection.

The new Web page of the SIB³ contains besides the OPAC, links to MetaOpac, to collective catalogues and it gives access to the databases in subscription.

Users will frequently need highly specialized assistance to fully utilize the systems that librarians provide for them.

Staff must be adequately trained if they are to provide this assistance. Thus, libraries concerned with improving the quality of the services they offer will have to devote significant attention to enhancing and upgrading the skills and abilities of their staff. Librarians need to reorient themselves to view their principle mission as facilitating

access, and need to reorient themselves as individuals who are simultaneously teachers and students who are members of learning organizations.

Librarians themselves must feel at ease with technology, either as skilled users, or prepared to work alongside others who are.

The online databases with Web interfaces are indispensable devices for the retrieval of the scientific information, in a direct and speedy way.

Until now librarians have taught the users the contents of the devices (catalogues and bibliographies). Now the task is harder: librarians have to give the users the skills to use, to find and to show autonomously the information. Librarians will have to learn the new search methods and the skills to utilize technology. The education of the user implies a new professional development and obliges to new relationships with other professionals.

1.2 The course

In the 2002 the senior librarians of the libraries of the Polytechnic through a questionnaires to the students and the use of statistical methods realized that the students of architecture and engineering faculty didn't utilize the electronic resources present in the libraries. So they proposed to their senior manager a course for the students of the two faculties about the electronic resources. The project of the course was presented to the Regione Lombardia⁴ to obtain funds and in February 2003 the project is approved with a financial support of the European Community⁵.

The first action (base) lasts of 35 hours and it is common for the two faculties; the second (more deepened) has a duration of 30 hours and it is divided for engineering and architecture students.

The granted financial support allows that every action can be repeated 4 times. Every "edition" has a tutor and a classroom with 15 students at least. The course has to finish by June 2003.

The two coordinators of the course (the senior librarians of the Central Libraries) think that the issues of the two actions are:

- Research and access to the information online
- Research in the libraries catalogues and in the collective catalogues (Opac and Metaopac)
- Document Delivery

- Virtual reference desks
- Online archives
- Use of the electronic journals of the Faculty
- Bibliography processing
- Bibliography of online resources

The aim of the project will be to provide the methodologies for a correct reference of electronic information devices to the undergraduate students of engineering and architecture faculties attending the first and second year.

1.2.1 Phase 1

In this first phase the coordinators contact the librarians who, in their opinion, have much experience to train users. Someone refuses for lack of contents knowledge. Four librarians accept the assignment, two of them are cataloguers with teaching experiences and two work in the SIB (Informative librarian system) and know the electronic journals very well and the databases present in the libraries of the two faculties. There was not a true choice of the teachers by the coordinators because the time was extremely short to allow an evaluation of the preparation of the teachers (on the contents and methodologies).

The four teachers in this phase prepare the structure of the course with the contents.

1.2.2 Phase 2

The two coordinators are very satisfied to have obtained these funds, but they point out that there are many organizational constraints and extremely close expiry. They think that the academic staff and librarians have to work together to construct the course. It's necessary that the information to the students and the invitation to participate come through the academic staff firstly because they are able to motivate them and to exploit the acquired new knowledge and competencies of the students. For this reason the senior manager wrote a letter to the academic staff for inviting them to inform the students. Nobody answered.

Problems grow to find classrooms and to establish dates and hours of the courses. The students attending the first and second years have a very busy day, full of lessons and laboratories. There is the fear that no students will enrol in the course.

1.2.3 Phase 3

The coordinators contact personally some university teachers. Two teachers having too many hours for their academic course decide to give some hours to develop the electronic resources course. In this way the organizational problems are overcome and the course has students and teachers.

Researchers of the Faculty are interested in the course but there is a constraint: the course has to be organized for the students attending the first and second year, otherwise the European funds are lost. For this reason the course will have base contents to reaching the information needs of the students.

The coordinators decide that after this experience a more specific course for students attending the last years will be programmed.

1.2.4 Phase 4

Evaluation of the contents. An introduction about the services of the libraries of the Polytechnic is decided and the course will focus on the resources present in the libraries. The students need this base knowledge of the services and resources (see the Appendix 6). The teachers according to the needs of the engineering and architecture students will decide the contents of the second course.

1.3 Statement of the project

In the 2002 the Polytechnic of Milan has supported a project of the European Social Fund for the propagation of the information technologies and communication. A course for undergraduate students will be prepared about the techniques and the strategies of Information Retrieval and about the electronic resources present in the libraries of the Polytechnic.

Librarians will have a teacher role, but are they getting ready for this new role? How to prepare them?

The purpose of this study is to investigate the skills of the teaching staff and their competencies to train users. Is there a gap between the information needs of undergraduate students and librarians skills? Are the teaching staff of engineering and architecture libraries of the Polytechnic trained enough to provide instruction to students who seek information?

The research focus is the pre-delivery course: its structure, contents and the training phase of the teachers.

1.4 Aims and objectives

1.4.1 Aims

1. To establish if the teaching staff is prepared to conduct a training program for students;
2. To understand staff perception of their preparation in the context of the educational role of the information professional;
3. To determine the information needs of undergraduate students.

1.4.2 Objectives

1. To investigate the skills of the teachers as information professionals and instructors;
2. To discover the training needs of the teachers of the course;
3. To study the information needs of the students;
4. To determine how the staff have been trained at the time of study;
5. To evaluate structure, contents and methodology of the course.

References

¹ **Tenopir, Carol** (1995). Impacts of electronic reference on instruction and reference. In: L. Shirato (ed.), The impact of technology on library instruction. 21st National LOEX Conference. Ann Arbor, MI: Pierian Press.

² **Polytechnic**. URL: <http://www.polimi.it> (Site visited 10 July 2003)

³ **SIB**. URL: <http://www.biblio.polimi.it> (Site visited 15 July 2003)

⁴ **Regione Lombardia**. URL: <http://www.regionelombardia.it> (Site visited 10 June 2003)

⁵ **European social funds**. URL: <http://europa.int/comm/employment-social/esf2000/index.htm> (Site visited 29 August 2003)

TWO: Literature review

2.1 What is information literacy?

The emphasis on literacy and on strategies necessary for creating literate communities permeates the research literature related to all types of libraries (Lingren, 1981)¹. In fact, “information literacy” has become the buzzword for the ‘90s; and it is the library’s acceptance of this “fundamental responsibility” to provide “the largest possible number of individuals access to and delivery of the largest possible amount of information” (Ghikas, 1989)² that drives user education initiatives in public, academic, and school libraries. In a very real sense, these initiatives represent an instructional continuum that, ideally, begins before children enter school, is reinforced through their years of formal education, and continues throughout their adult lives. Liesener (1985)³ underscores the importance of providing instruction in critical thinking and problem solving “throughout the learner’s school experience”, because “the cumulative effect of many of these kinds of experiences is what leads to the development of a self-direct learner able and motivated for life-long learning”.

Of interest in this regard is a study by Nofsinger (1989)⁴, which found that one-third of the academic libraries that participated in her survey provided “user education” for high school juniors and seniors.

In the literature of librarianship and education, information literacy has been variously defined. Zurkowski (1974), for example, defined information literacy as:

“the ability to use techniques and skills for the wide range of information tools as well as primary sources in molding information-solution to ... problems” (quoted in Eisenberg and Spitzer, 1991)⁵.

According to the American Library Association’s (ALA)⁶ Presidential Committee on Information Literacy, a literate person is one who can:

“recognize when information is needed”, has “the ability to locate, evaluate, and use [it] effectively”, and has “learned how to learn” (Breivik and Senn, 1998)⁷.

The National Commission on Excellence in Education (NCEE) explains literacy as “the skills required for new careers and citizenship”, and “life-long learning”. Drawing on a model created by Christina Doyle (1994)⁸, the California Media and Library Educator’s Association (CMLEA) recently characterized information literacy as

“the ability to access, evaluate, and use information from a variety of sources”,

while Breivik and Senn (1998)⁹ discuss information literacy as the **“ability to acquire and evaluate whatever information is needed at any given moment”**.

Recently Rader (2002)¹⁰ have described information literacy in terms of six skill areas:

- The ability to determine the nature and extent of the information needed;
- The ability to assess needed information effectively and efficiently;
- The ability to evaluate information and its sources critically and to incorporate selected information into one’s knowledge base;
- The ability to use information effectively to accomplish a specific purpose;
- The ability to understand many of the economic, legal, and social issues surrounding the use of information;
- The ability to access and use information ethically and legally.

Together these definitions suggest that information-literate individuals are capable of finding and accessing relevant information in appropriate formats and quantities, of reviewing alternatives critically, and of using the information selectively to meet the challenges of contemporary life.

2.2 Information Technology

Information literacy is related to information technology skills, but has broader implications for the individual, the educational system, and for society.

“Information technology skills enable an individual to use computers, software applications, databases, and other technologies to achieve a wide variety of academic, work-related, and personal goals. Information literate individuals necessarily develop some technology skills.”

(ALA, 2000)¹¹.

Research interest related to technological issues in library and information studies (LIS) has been high, for there is still much to be learned that will help designers create more user-friendly retrieval systems for the “new society”. Basic to research in the area of technology and information skills instruction is the assumption that a contemporary definition of information literacy must include the ability to locate, retrieve, and use *electronic* as well as print-based resources. Because, as McDonald (1988)¹² has noted, the inaccessibility of information is compounded in electronic environments, the role of

the library in providing access, instruction, and guidance in information use is crucial. Indeed, **“there is no longer any question that knowing how to seek information electronically will be an essential skill for all individuals”** (Aversa and Mancall, 1989, quoted in Chen, 1993)¹³.

“Many of the search and retrieval skills are equally applicable to electronic, printed, and audiovisual resources” (Irving, 1990)¹⁴.

2.3 The role of the Library

Libraries have centrally positioned themselves in defining and implementing information literacy programs. There are very good reasons for this: for one thing, libraries are intimately concerned with information, however that may be defined. They acquire, describe and make available information in a variety of formats, including print, video, audio, and electronic. Libraries have also traditionally provided a place for quiet contemplation and scholarly pursuits as well as instruction in research methods. Generally, the library is a university's primary access point to information.

Librarians led the way in the early 1970s in conceptualising the idea of information literacy and its relationship to lifelong learning. Early development of the concept of information literacy frequently focused on the future role of libraries and librarians in helping with the use and application of information (Behrens 1994)¹⁵.

The library's changing role from repository to gateway came with the advent of computers in the late 1970's and early 1980's. Computers liberated libraries and librarians. Repetitive tasks were assigned to computers, enabling librarians to pursue other improvements, such as the automated library catalogue and the creation of information databases. By the late 1980's, it was apparent that information technology would become an integral part of all libraries, providing greater efficiencies for both librarians and users. The university curriculum was also affected by computer technology in the 1970's and 1980's. Arthur Luehrmann coined the term "computer literacy" in the 1960's, which as he defined it simply meant knowing how to use a computer.

By the late 1980's, however, it was obvious that the concept of computer literacy was not enough. As computers began to assume a more central role in academic life it was natural that the library would play an integral role in shaping this new model, since libraries had been grappling with these far-reaching changes for some time. One of the earliest and fullest treatments of the information literacy model is Information Literacy:

Revolution in the Library, published in 1989. The authors, Breivik and Gee¹⁶, recognized that the computer literacy model espoused by various educational reform reports was not enough. Instead, they argued that "information management skills are essential to literacy":

"In the midst of the information explosion, the ability to access, retrieve, and evaluate information should constitute a significant part of today's definition of literacy. In an era when today's 'truths' become tomorrow's outdated concepts, individuals who are unable to gather pertinent information are almost as helpless as those who are unable to read or write. The college-educated person can no longer rely on previous knowledge, textbooks, and faculty to provide the information necessary to make informed judgements; no single person or group of individuals is capable of assimilating all the available information or of keeping abreast of new information as it is generated. The ability to independently and appropriately gather information-not the ability to program a computer-will be a key element in an updated concept of literacy."

Where Breivik and Gee say that one "can no longer rely on previous knowledge, etc.," we would argue that one never could and be called truly educated. That is why it is important to reiterate that information literacy does not so much describe something new as it does emphasize certain elements in our traditional concept of education. The necessity of evaluating information has always been with us; it is because of the changes associated with computer databases and the Internet that this seems an even more important goal now.

The information literacy model necessitates positive change in the instructional mission of the library. Rather than just providing traditional library orientations and tours, often taught out-of-context of an assignment, the library's expanded instructional role emphasizes information-seeking behaviour within the context of an information need. The emphasis is on enabling students to become independent researchers and thereby encouraging lifelong learning.

2.4 The training needs of the librarians in the context of the educational role of the information professional

Libraries and information systems have traditionally provided the tools as well as the skills needed by users to interact with the information they contain (Dillon and Jul, 1996)¹⁷.

Although users in the developed world access EISs from their home and offices these days, libraries are still involved in a major way in the provision and management of EISs in such activities as selecting and subscribing to commercially available databases.

Library personnel need to seriously consider incorporating in instructional sessions information about how to get a variety of resources, including some that may not be quality-filtered and may not be provided by libraries.

Still Seamans says that librarians need to be aware of the changes taking place in first-year student's processes for learning and for finding information to support their learning.

But what we can do? She gives us a solution saying that library personnel must try to change this by using any opportunity available to provide students with information about resources and access, and must encourage students to view libraries as a part of their information-support network. Besides "a combination of training for librarians as well as collaborative work with faculty members on how to best assist students" must be. Library personnel need to acknowledge the searching strategies and tools that students are using and provide services that will assist them in developing more sophisticated and effective methods of retrieval. But how do we do it?

A review of the literature indicates that librarians learn to teach by attending workshops and conferences, reading the literature, and communicating with colleagues. Few librarians learn to teach by formal coursework. The current trend in the library profession is to help create an information literate society. This is evidenced by the work of several library organizations and committees. In "Guidelines for Instruction Programs in Academic Libraries," ALA¹⁸ provides a document to "best assist academic and research librarians in the preparation and delivery of effective instructional programs." The guidelines recommended the selection of content for instructional programs from the document "Model Statement of Objectives for Bibliographic Instruction" (1987). The model statement defines the role of bibliographic instruction as preparing students to make effective lifelong use of information, information sources,

and information systems and to this end attempts to outline the appropriate methods individuals use when gathering information. In order to do so, librarians need to

- Know what constitutes information literacy and critical thinking skills;
- Understand learning and motivation theories;
- Know about and use different instruction techniques. (Kilcullen, M. 1998)¹⁹

Morgan (1996)²⁰ has identified some of the core skills, which are essential for the academic librarian of today and the foreseeable future. The skills and qualities are grouped under the following headings:

- Credibility with academic staff;
- Teaching and training;
- IT-related skills;
- Management skills.

For Morgan is essential for the librarian to gain credibility in an educational role and this represents the key to effective integration. Increasingly, academic librarians are recognizing the importance of their educational role by gaining teaching qualifications.

The librarian's educational role forms the central plank on which his or her other duties and responsibilities are built. This approach is recognized by the Fielden Report²¹:

Subject librarians will have to understand teaching/learning skills if they begin to fulfil para-academic functions.

Ensuring that students become self-reliant information users will remain the key focus of the academic librarian for the foreseeable future.

In addition to the core skills required for providing effective user education, it is apparent that the librarian needs to become more adaptable and flexible in the teaching and learning environment (Morgan, 1996)²². So, what elements does the librarian have to take into account? The librarian needs to:

- Understand how students organize their studies and how they go about learning. In this way library programmes may be tailored to majority needs and styles of learning;
- Become familiar with a wide variety of teaching and learning methods including coaching, facilitation, workbooks, joint or group teaching and the opportunities provided by the electronic classroom;
- Has an advisory role in guiding students and staff through the diverse range of electronic sources and formats;

Trainee librarians of today have to know how to use the machine, and how to interrogate the system through the machine, but the important thing is which information is useful to the individual being helped. (Hodges, 1995)²³

Ian Johnson (2003)²⁴ believes that “part of the problem is that librarians ... still do not understand the fundamental role and potential power of information professionals as educator. ... Is it our role to facilitate the transformation of information seekers into independent, self-directed, life-long learners? If so, how do we do it?”

2.5 The information needs of the undergraduate students

One of the mayor developments in libraries and information systems in the past 15 years is the advent and spread of electronic information sources (EISs), services and networks mainly as a result of developments in information and communication technologies. The change is basically of physical form where information content is increasingly being captured, processed, stored and disseminated in electronic form. The commonly available EISs, namely, CD-ROMs, online databases, OPACs, and the Internet and other networked information sources, are competing, and in some instances replacing, the print-based information sources which have been in place for centuries as the primary media for the storage and communication of recorded information content (Cornish, 1997)²⁵. The amount and variety of information content in electronic form is growing (Hurd, 2000)²⁶ and, at the rate it is expanding, some believe that all information will eventually be electronically accessed (Cornish, 1997)²⁷. As the literature of library and information science (LIS) further shows, the changes from print and other forms to electronic forms have already brought about significant changes in the nature of information available to users. These developments in the physical form in which information content is being made available for user access and use are resulting in changes in users’ needs, as has also been argued by Liebscher²⁸ et al. (1997) and Buttenfield²⁹ (cited in Bawden and Rowlands, 1999).

According to Sullivan and Seiden³⁰ (1985, cited in Chen, 1993), problems that beset student searchers in online environments appear to involve three important information needs:

- Knowledge of the library and its role as an online information centre;
- Knowledge of information systems, databases, and their organization;
- Background knowledge of their research topics.

However, Irving³¹ (1990), Neuman³² (1995), Solomon³³ (1992, 1993, 1994) and others have also suggested lack of information-seeking skills, lack of basic language and

literacy skills, and lack of time for searching as potential stumbling blocks for students in online search environments. Finally,

Studies by Oberman³⁴ (1995), Irving³⁵ (1990), and Neuman³⁶ (1995) suggest that there is frequently a mismatch between the cognitive demands of information available online and the developmental levels of many student searchers.

In relation to personal capabilities that are required to exploit EISs, Stolt³⁷ (1996) points out that utilization of electronic resources will require continuous training programs for both librarians and end-users.

McCreadie and Rice³⁸ (1999) comment that when using a more interactive information delivery system, such as an online database, the user must have access to knowledge of resources, select a database that matches both the content and the comprehension level of his or her search, be able to navigate the interface or the command language of the system and understand the nature of the results.

First-year students are the focus of much library instruction at colleges and universities, either through “one-shot sessions” tied to core courses, or through credit classes that introduce students to research and study skills. But what do we know about these students? Although librarians were teaching many first-year students, there is limited evidence in the library literature that librarians are reaching out to these students, or are adjusting library instructional services to better serve them.

Seamans³⁹ (2002) states that “students often do not see libraries and library personnel as part of their information-support network.... . Librarians in public-service positions frequently encounter students who are having trouble focusing a topic to something manageable”. The “cereal syndrome” discussed by Oberman⁴⁰ (1995) supports the idea that vast amounts of information (like the extensive variety in choices of cereals) leave students floundering in their quest for information. She talks about the critical-thinking skills that students need to develop.

In relation to personal capabilities that are required to exploit EISs, Stolt⁴¹ (1996) points out that utilization of electronic resources will require continuous training programs for both librarians and end-users.

McCreadie and Rice⁴² (1999) comment that when using a more interactive information delivery system, such as an online database, the user must have access to knowledge of resources, select a database that matches both the content and the comprehension level of his or her search, be able to navigate the interface or the command language of the system and understand the nature of the results. Probs *et al.*⁴³ (2000) also observe that

even where data and information are perfectly managed, this is of little value if employees lack the skills to use the information which is made available to them.

Even in a library that offers large amounts of information in electronic form, users themselves need to do a lot of work, and this requires a level of library and information literacy. For example, Lapp⁴⁴ (1996) states that users may need to be able to:

Search for literature in the OPAC, often in more than one catalogue (e.g. card catalogue);

Search in CD-ROM databases, the structure and retrieval of which can differ very much; and some users do not know what kind of information they can find in particular CD-ROM databases, or why there are no journals articles in the OPAC: they do not see how information in the CD-ROM databases complements the information in the OPAC.

Reactions by students to the increased availability of information are varied. As Fjallbrant⁴⁵ (2000) said, some find the use of the technology itself off-putting. Others, usually the inexperienced, think that surfing at random on the Internet will somehow provide them with reliable information for their student essay or project. Many undergraduate and postgraduates choose their favourite specialized source and refuse to use anything else. Access to an increasing number of electronic journals provided by a range of suppliers can be regarded as a real nuisance if a number of different systems have to be searched to gain access. Also, the user-friendly web interfaces do not always give the user a clear perception of the underlying search process and possible weakness, for example, total period of coverage and depth of detail. Does any of this matter? Yes it does. The current trend in education is to try and facilitate learning, rather than to teach a certain set of material. Students at all levels have a need to be able to find reliable, accurate and relevant information, in order to build up knowledge which can be used in a variety of ways, such as constructing models or concepts and problem solving (Fjallbrant, 2000)⁴⁶.

2.6 The effectiveness of different presentation formats for courses on introductory library skills

The importance of electronic databases for academic research has significantly increased the demand for bibliographic instruction (Vander Meer & Rike, 1996)⁴⁷. As a result, the literature comparing the cost and effectiveness of alternative presentation formats is accumulating at a rapid pace. The researcher decided, for her survey, to compare the literature about two formats: lecture and hands-on-instruction.

The lecture format consists of a scripted lecture delivered by an instructor. Recent innovations in computer presentation software have increased the repertoire of presentation techniques for use in the lecture formats. MacDonald⁴⁸ (1998) and Rupp-Serrano and Buchanan⁴⁹ (1992) report that simulating an online search through edited screen captures has several advantages over a “real” time online search. The method “eliminates the worriers of telecommunication difficulties, system downtime, or software snags”, it can be used when internet access is unavailable or has heavy traffic, and can be used asynchronously as an online tutorial without a narrator present (Rupp-Serrano & Buchanan, 1992)⁵⁰. MacDonald makes the point that interspersing slides with visual metaphors and descriptive text, deleting the inconsequential links inherent in real time searches among several databases, and editing screen captures to highlight main points are effective methods to make a presentation seamless and shift the focus from mechanics to concepts. A variation of the lecture format is to substitute the simulated search with a “real-time” demonstration of an online search (Bostian & Robbins⁵¹, 1990; Bren, Hillenamm, & Topp,⁵² 1998; Cherry & Clinton⁵³, 1991; Wiggins⁵⁴, 1994). The disadvantages of the lecture model include its passive learning format, and the staffing cost of providing librarians to teach the classes.

The guided hands-on format is characterized by its emphasis on active learning and user participation. In this format the instructor leads students through a carefully scripted set of web site and databases. The presentation is entirely in “real-time” and the students follow the instructor by executing identical mouse clicks at their own workstation, or students are given a road map of web sites and follow the map at their workstations at their own pace.

Tomaiuolo⁵⁵ (1998) recommends this “hands-on” style as appropriate for single session instruction in procedural topics such as how to access the library electronic catalogue, or how to enter a simple search in an electronic database. He also recommends the “hand-on” drill method as a supplement to a lecture style presentation on conceptual topics such as search strategy. Which presentation style is more effective? The guided hand-on methods have a large active learning component, and the lecture format is almost exclusively comprised of passive learning. This suggests that an eclectic format combining lecture and hand-on drill might be more effective than a method relying exclusively on either format. Tomaiuolo⁵⁶ (1998) and several authors, note that the lecture format led to higher retention of concepts and guided hand-on formats led to higher retention of mechanical skills.

2. 7 Conclusions

Teaching has become a fundamental responsibility for librarians. However, few librarians have had any formal coursework in teaching. Librarians are self-taught and teach other librarians to teach. Instruction librarians learn how to teach library instructional sessions by trial and error, by reading the literature, by communicating with colleagues, and by attending conferences and workshops on teaching. Many are still limited to one-shot tool-based instruction but librarians are investigating developing course-integrated instruction and believe in their responsibility to create an information literate society. They understand the importance of communicating with and working with classroom faculty. They are constantly teaching and learning how to teach.

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THREE: Research methods

3.1 Introduction

The general approach will be to use qualitative methods, although the utilization of quantitative methods will be apply to gain some background information and to understand the information needs of the students.

The key assumption made by qualitative researchers is that “the meaning of events, occurrences and interactions can be understood only through the eyes of actual participants in specific situations” (Gorman and Clayton, 1997)¹. Qualitative methods involve the researcher and it is essentially human-centred and inductive, that is theories are not imposed but developed during the study.

I choose this method because the subject of the research is not measurable or it cannot have numerical interpretations.

3.2 The study

I decided to use the “case study approach” to investigate the subject of my research. Case study allows understanding a complex issue or object and, for the most part, is limited to a single setting.

A key strength of this method is using multiple sources and techniques in the data gathering process. The researcher decides in advance what evidence to collect and what analysis technique to use to answer the research questions. Data gathering is normally largely qualitative, but it may also be quantitative. This is another strength point in using the case study approach.

A disadvantage of the case study method is that the study of a small case doesn't offer grounds for establishing reliability or generality of findings, but the researcher thinks, “a single-site case study is not synonymous with superficiality” (Gorman and Clayton, 1997)².

For this research the librarians of the engineering and architecture faculties of the Polytechnic were chosen as case study. The researcher chose the Polytechnic because she knows the organizational culture of the Polytechnic very well as she works in it and the librarians are cooperative and open.

3.3 Triangulation and interactivity

In order to aim at reliability a methodological triangulation will be include:

- Pilot discussion to understand the most important issues
- Semi-structured interviews to the coordinators of the course
- Questionnaire to the staff to provide a contextual overview
- Structured interviews to the teaching staff
- Questionnaire to the students to identify their information needs
- Feedback with teaching staff and the coordinators of the course

Using both questionnaires and individual interviews allowed the researcher to exploit the merits of both methods, thereby producing a richer source of data than either might have provided alone.

The table below relates the research methods to the study objectives.

Objectives	Literature review	Questionnaires	Interviews	Course programs
To investigate the skills of the teachers as information professionals and instructors				
To discover the training needs of teachers of the course				
To study the information needs of the students				
To determine how the staff have been trained at the time of study				
To evaluate structure, contents and methodology of the course				

3.4 Resources and constraints

3.4.1 Funds

Necessary funds to carry out a research are specifiable as necessary fund to conduct every phase of the research, from the pre-research, pilot research and pre-test, to the design of the instruments (for example, the print of the questionnaires) to the coding and analysis of data collected. The researcher, having financials constraints to conduct the study, has decided:

- to use a restricted sample;
- to utilize the mail questionnaire for librarians and the questionnaire distributed directly to the students;

- the structured interview for the librarians.

The engineering library will cover the costs to print the questionnaires.

The questionnaires for the librarians will be sent by electronic mail without costs.

3.4.2 Time

The researcher has decided to use research methods time consuming. Designing the research instruments (the questionnaires with open-ended questions) and analysing the collected data, will require much time, too. The construction of the research instruments is very important to obtain valid data. This inevitably puts practical limitations on the sample size.

A relative inexperience of the researcher is another constraints and the subjectivity of the analysis and the small population sample may not favour the derivation of substantive theory from this study.

3.5 The research process

3.5.1 Literature review

The literature was initially identified through the database ERIC. The key terms used were: *Information literacy*, *Information technology*, *librarian* skills*, *teacher librarian**, *Information need**. The use of the electronic resources of the UNN libraries was fundamental to find relevant journals articles. Then the bibliographies of these articles suggested further avenues for research.

3.6 Questionnaires survey

3.6.1 Students:

3.6.1.1 Population

The population of the survey is the number of students attending the first and second year of the three faculties of the Polytechnic of Milan, Engineering, Architecture and Industrial Design. They have to frequent the libraries of the faculties because the questionnaire is administrated in a “collective administration” (the book-loan services of the libraries). The students are dispersed in the three campus of the Polytechnic. The freshmen in the 2002/2003 are 7.000 as indicated in the statistics of the Faculties. But how many freshmen frequent the libraries? It’s impossible for the researcher to establish the real number of these students because the book-loan services of the libraries do not use software that allows the extraction of these data.

3.6.1.2 Sampling

The researcher knows that the best method to evaluate a group and to provide a statistical basis for saying that the sample is representative is the probability sampling. However the researcher has restricted time and resources and she opted for non-probability sampling that does not follow the theory of probability in the choice of elements from the sampling population. Besides Non-probability sampling designs are used when the number of elements in a population is either unknown or cannot be individually identified.

In such situation the selection of the elements is dependent upon other considerations (Kumar, R. 1996)³. There are five non-random designs, each based on a different consideration,

- Purposive
- Quote
- Snowball
- Self selection

After having considered the four designs, the researcher opted for the purposive sampling.

The primary consideration in purposive sampling is the judgement of the researcher as to who can provide the best information to achieve the objectives of the study (Kumar, R. 1996)⁴.

The researcher already knows something about the specific people and deliberately selects particular individuals as they are likely to produce the most valuable data, that is students attending the first and second year of engineering and architecture faculty that frequent the libraries.

3.6.1.3 Sample size

100 students attending the first and second year of engineering and architecture faculty have been chosen to respond to the questionnaire. The students had to frequent often the libraries, because the aim of the questionnaire is to discover the needs of students that have a basis of knowledge about the services of the libraries and confidence with the librarians. Besides, the questionnaire was administrated in a “collective administration”. To select the sample the help of the colleagues of the book-loan service and reference service was extremely precious. The researcher, in this way, has contacted only the students that, in her opinion, could bring some illumination to the research.

The number of the students involved was not large enough to come to any major deductions or theories, but they are a snapshot of the opinions of some students.

3.6.1.4 Survey instruments

Students attend three different faculties in different buildings and for this reason I have decided that the best research method is the questionnaire. “A questionnaire is a written list of questions, the answers to which are recorded by respondents. In a questionnaire respondents read the questions, interpret what is expected and then write down the answers” (Kumar, R. 1999)⁵. The book-loan service of the libraries gave me the opportunity of administering the questionnaire in a “collective administration”. This opportunity convinced me to use this instrument. In this way the librarians that will help me in the distribution of the questionnaires will clarify any questions that respondents may have and through the student number they will give them only to the students attending the first and second year.

A questionnaire has several advantages:

- It is less expensive
- It offers greater anonymity

The disadvantage is that the responses cannot be supplemented with other information.

3.6.1.5 Questionnaire for undergraduate students

The total number of questions is 11. The questions are closed-ended with multiple choice or yes/no variety with tick boxes.

The questionnaire includes one Likert scale question (question 11). (See the Appendix 1).

Topics of the questionnaire:

Question number	Topics
1-2	Personal data
3-6	Use of the electronic resources
7	Confidence in the librarian
8-10	Attended or wanted courses on the ER
11(Likert scale)	Opinion about the ER/Internet and to reassert the utility or not of a course on the ER

The questionnaire has been distributed to the students through the book-loan service of the libraries during January and February 2003.

3.6.2 Librarians

3.6.2.1 Population and Sampling

The teaching librarians who organized the course constitute the population of the survey. The sampling is a census sampling, because the questionnaire has been sent to all the teaching librarians. There was not a selection of subjects.

3.6.2.2 Sample size

Four librarians constitute the sample size, the teaching librarians of the course about ER.

3.6.2.3 Survey instruments

The teaching librarians work in different libraries and to obtain some background knowledge of the respondents before the interviews the researcher chose the questionnaire method. The questionnaire for the librarians has been sent by mail, so the researcher doesn't waste time.

3.6.2.4 Questionnaire for librarians

The questionnaire is constructed by closed-ended questions, included classification questions, to see if there are any links between these classifications and further responses.

It is divided in three parts: Personal data, Training experiences and Teaching experiences (see the Appendix 2).

How the questions relate to the study's objectives

Question number	Research objectives
B4 / C1	To investigate the skills of the teachers as information professionals and instructors
B5	To discover the training needs of teachers of the course
B1-3	To determine how the staff have been trained at the time of study

3.7 The pilot study for the two questionnaires

There will be a pilot study also for the questionnaires with a very selected sample of students and librarians to improve them. A pre-test has to be used to know if the time of compilation is correct; if there are ambiguous questions, if students understand the questions well; if the order of the questions is confused or not, etc.

Four students (two of engineering and two of architecture faculty) with a good knowledge of the libraries of the Polytechnic have been chosen for the pre-test.

In the first questions Industrial design has been inserted, a new faculty of the Polytechnic that was ignored by the researcher. In the third question the OPAC was taken off and it was inserted the tick

box: None. The question number 8: “Do you attend lessons or courses about the use of the electronic resources?” was introduced.

The researcher had estimated that completing the questionnaire would take 5-10 minutes.

For the pilot study of the staff questionnaire, two librarians have answered the questionnaire. The questions B4 were introduced to investigate the skills of the teachers. The researcher had estimated that completing the questionnaire would take 10-15 minutes.

3.8 Data analysis

To code the quantitative data collected with the questionnaires I will use spreadsheet specifying variable names.

A piece of information obtained from a respondent will enter a specific column. The coding of open-ended questions is more difficult. Coding of open-ended questions requires the response categories to be developed first through the “content analysis” process.

Answers are transformed in “n” categories for the “n” variables analysed, categories that are identified by numerical values. The researcher for answers’ registration will tabulate the values, that is to construct a data matrix where the “n” lines connect the “n” subjects, and the “n” columns to the measures of the “n” variables (C. Guala, 2000)⁶.

3.9 Structured interviews

Interviewing is a commonly used method of collecting information from people.

Interviews are classified according to the degree of flexibility as:

- unstructured; and
- structured.

Interviewing librarians in individual sessions has advantages. First, each librarian can describe his or her experiences fully, without interruption, resulting in more abundant

and richer data. In contrast, group responses are necessarily shorter and perhaps influenced by what others in the group emphasize.

Also, individual interviews are easier to control and channel than focus group. For instance, the need for follow-up questions is easier to detect. Finally, it is easier to schedule individual interviews than to schedule group meetings.

The researcher used the structured interview for collecting data, a method in which “the investigator asks a pre-determined set of questions, using the same wording and order of questions as specified in the interview schedule” (Kumar R., 1999)⁷. A relative inexperience of the researcher in carrying out an interview brought the choice of this method. In fact, Kumar writes that one of the main advantages of the structured interview is that it provides uniform information, which assures the comparability of data. Structured interviewing requires fewer interviewing skills than unstructured interviewing does.

Some limitations of interviews may be:

- Costly
- Uncritical
- Too personal
- Especially open to bias.

As Gorman and Clayton⁸ suggest, the interview, as any other research method, is only one of a number of approaches to data collections. The technique of triangulation, adopted for the research, is one of the best ways of addressing weakness in any single research method.

3.9.1 Selection of interview subject

There wasn't a selection of the subjects because the teaching librarians of the course were four people and four interviews were carried out by the researcher. The sampling is a census sampling.

3.9.2 Selection of topics

Key findings from the discussion with the two coordinators of the course formed the topics for the interviews. These lists of questions is included in Appendix 4.

How the questions relate to the study's objectives

Question number	Research objectives
1-3;8-9	To investigate the skills of the teachers as information professionals and instructors
10	To discover the training needs of teachers of the course

3.10 Pilot discussion and key informants

In order to conduct the interview with no doubts about the approach, I have to make a decision to undertake a pilot discussion with a group of librarians. The group was composed by the two coordinators of the course (the key informants of the research) and with a colleague of the Central Engineering Library. This was possible because there was sufficient time and I think that it was essential to build up my own self-confidence. The questions are similar to those for the teachers librarians, but after the discussion the question number 9 was inserted and in the first question the word “instructor” was changed with “educator”.

3.11 Data collection

An interview schedule was prepared to be used by the interviewer, in a face-to-face interaction.

Each interview lasted approximately 30-40 minutes and took place in the office of the interviewee.

Each interview is recorded via audiotape and the researcher sought permission from each interviewee to record the answers.

3.12 Data analysis

The answers collected have to be “recorded” and analysed in order to draw conclusions about the object of the research.

Audiotapes of the interviews will be transcribed to provide a record of the discussion. Transcribing is time consuming but it’s fundamental to analyse data. The researcher wants to use the “grounded theory” to code incidents in the data and to identify analytical categories as they “emerge from” the data. “This process involves identifying a theme and attempting to verify, confirm and qualify it by searching through the data. Once all data that match that theme have been located, the researcher repeats the process to identify further themes or categories”(Pope and Mays, 1999)⁹.

The process of indexing the data creates a large number of “fuzzy categories” or units, and then these categories are further refined and reduced in number by grouping them together. The use of spreadsheets will facilitate this process of identifying themes. Word processors can be enormously helpful in searching large amounts of text for specific

terms, the simple frequency with which particular words or phrases appear in a piece of text can be illuminating.

The gap analysis will be used to identify training needs of librarians in order to develop new courses for the students.

3.13 Feedbacks with the teacher librarians

In order to gain reliability to the interviews a feedback with the interviewees was adopted. The transcription of the answers was read by the librarians and discussed. No answer was contested.

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- ⁷ **Kumar, Ranjit**, op. cit.
- ⁸ **Gorman, G.E. and Clayton, P.**, op. cit.
- ⁹ **Pope and Mays** (1999) Qualitative research in health care. 2nd ed. BMJ Publishing Group.

FOUR: The teachers librarians: Interview Findings

4.1 Introduction

The aim of the four interviews with teachers librarians was:

1. To investigate the skills of the teachers as information professionals and instructors;
2. to understand staff perception of their preparation in the context of the educational role of the information professional;
3. to discover the training needs of teachers of the course;
4. to evaluate structure, contents and methodology of the course.

4.2 Analysis

4.2.1

Q1. The role of the librarian as “educator”

All the librarians recognize as fundamental the role of the librarian as “educator”. All them have point out that to teach the use of the electronic resources (Opac, Cd-rom, electronic journals) is fundamental with the development of the information technologies. *But often the classical faculties mind the courses for the students more than the scientific faculties, where the academic staff take for granted that students are able to utilize these instruments autonomously.*

Besides a librarian said that *the librarian as “educator” has especially to help during the first years of the university, when the students have to understand how to consult the resources present in the library.*

Only one interviewee has considered the reality where she works:

In the Polytechnic there is not a refusal of this role but we tend to put it on extremely secondary plan respect to the other traditional activities. There is a difficulty to think about the librarian in a so interactive way with the users and this is the biggest problem. The user doesn't recognize an interlocutor for his formative problems, in the same way, the attitude of many librarians is a detachment from the user.

4.2.2

Q2. The aims of the course

It's interesting to note how the two cataloguers answered in a very homogeneous way to this answer just as the two workers of the SIB. The cataloguers have dwelled considerably on the point to render visible the library with its services that is to do a real training on the use of the resources.

One cataloguer answered that *the ambition is that at the end of the course these students have more confidence in their skills to use an instrument and understand that the librarian teaches to move through the resources.*

For another cataloguer- teacher is *to make students independent in the searches in Opac and to teach them to better evaluate the information finding in Internet.*

Instead the other teachers working in the SIB with more familiarity with the electronic resources have as final goal *to make clear to the student what there is online, because the electronic resources weigh very much on the budget of the Polytechnic and students don't use them as they should.*

4.2.3

Q3. The critical points of the course

All librarians have complained about organizational problems. In particular the students involvement has been problematic: *students of the first years (above all of the new regulations) don't need to use the library a lot, it is absolutely necessary to point the attention to the students of the last years or to the academic staff to organize courses on databases and electronic journals.*

The involvement of the academic staff is another common point that has emerged by the interviews: *for some university teachers the course is a loss of time, they have to be involved to be aware of the importance of these courses.*

A teacher librarian has pointed out that a critic point *is to make students clearly understand the language used by the librarians, it is to explain without using a technical terminology.*

4.2.4

Q4. The relationship between librarians and the academic staff for preparing the course

There isn't any collaboration between librarians and academic staff. A letter had been sent to the academic staff but nobody answered. Only the coordinator of the doctorates asked if his students could take the course. For one interviewee this fact *is singular because it is a symptom of a critic situation, that is today in our universities a student can have a degree without knowing where to find information.*

When they had given up all hope to involve them, a teacher they had kept in touch with gave some hours of her course for the FSE (but she had some problems to "fill up" the hours of her course).

In their opinion the involvement of the academic staff is fundamental:

The collaboration with the academic staff is fundamental to give visibility to the courses, without academic credit too.

4.2.5

Q5. The feedback

This question has created some difficulties for two teachers of the course for the architecture students. They asked me the meaning of feedback. One teacher thinks that *they will see the feedback in the following months. They decided not to use the feedback because they don't want to make a course "ex-cathedra"*.

Instead the teachers for the engineering students decided to make it.

It could be a questionnaire at the end of the course or in the middle to modify something about the contents or the methodology. However the feedback is a quality element that has to be tried.

4.2.6

Q6. Structure and content of the course

For the course for the engineering students the subjects have been chosen *on the basis of the specific equipment of the electronic resources present in the faculties and on the basis of the libraries structures. This was the priority, the important criterion for the choice of the items. Then it was determining the work through the web pages of the other librarian systems (Firenze, Trento) and a comparison between the courses organized by the other universities. We have divided the course between theory and practical part (50% every part). At the end of the course we will ask students if they want more practice or something new.*

The other teacher of the engineering course has pointed out how before examining the subjects, *they have divided hours and established who makes what.*

The architecture librarians have divided the subjects *on the basis of their experiences.* Hours have been divided between theory and practice but *they have given more time for the practical part for making real searches.*

The part about the laws has been inserted on request of the academic staff (the only expressed requirement); instead we wanted a more general speech. The course will begin with real subjects, what a university library is, the Opac, the electronic resources.

Q7. The methodology

This question has created some difficulties to two teachers of the course for the architecture students. They asked me the meaning of methodology.

For the architecture course, the teachers have thought to make some slides and to use the blackboard for the lessons on the Opac and on the libraries services. The teacher who will organize the part about databases said:

I choose to use more Internet; I will use slides to focus the items. The lessons will be interactive and I will give time for questions.

The methodology of the engineering course is clearer; slides will be used to introduce every subjects of the course (services, Opac, journals, databases).

We will give lecture notes making a selection of the most important slides, moreover we have planned to make the Power Point presentation available online or to make an html page in the future.

Q8. How did you prepare yourself?

Every librarian answered in a different way to this question. The catalogue librarians have pointed to their experiences with the user. Moreover the realization of the new Opac has involved some librarians and one teacher of the course too.

In the last months, I was involved in the realization of the new (searches, export). I will make the introductory part of the course on the Opac with some slides. I have decided to make the slides because the final objective is to give students some lecture notes at the end of the course and to put them online, on the web page of the central architecture library.

The other librarian who has organized another course for the engineering students, has noticed that *the use of the online catalogue by the students is minimum, they always ask the librarian. Now he is able to assume the student's point of view and he has chosen the subject of the course from his experience.*

Instead the two documentalists of the SIB besides to point out their experience in the field of the electronic resources, have relied on the librarians of the central libraries for the choice of databases, cd-rom and electronic journals.

I have some difficulties on the contents of databases but I have prepared some searches with the help of the librarian that will support me during the course.

Only one teacher has indicated the professional literature as source for the course preparation and she gave concrete indications on how and where she has prepared herself: *The professional literature helps you, in particular I read the book “Biblioteche in rete: istruzioni per l’uso” of Metitieri-Ridi. For particular databases I have consulted the publisher web page or I have looked for online reviews.*

4.2.9

Q9. The difference between the students of engineering and architecture

For this question the different work experiences have made some differences, too.

The librarians have considered it absolutely:

We have so considered it that we have chosen to organize the course only for the architecture students, on the use of the services of the central architecture library, that is we have pointed to the practicability. The engineer needs reference about journals and handbooks, the architect needs above all imagines, and the type of search in Internet is different, too.

The architecture student needs to be encouraged for understanding the difference among informative resources. The experience shows that the architecture students are absolutely ingenuous about the searches.

The librarian of the engineering library has pointed out that *in the beginning of the studies as freshmen and users of a library neither the engineering students nor the architecture students know and use the resources present in the libraries and for this reason there isn’t a significant difference. But the architects use the library much more than the engineers that don’t need to use databases during the first years. They need specific Internet searches on commercial web pages, for example on a lathe’s site; they carry out more practical searches.*

Instead the two documentalists gave more generic answers:

I have relied on the librarians for the choice of databases and electronic journals or I have divided only databases and journals between engineering and architecture subjects.

Q10. More training?

Everyone answered to this question positively, but the choice of the training subjects was various.

I think that we librarians should have the greatest spur to follow the reference contents, not the techniques easy to learn.

In my case, I lack training on communication. I am always updated on databases.

I would have more training about databases and electronic journals, about their use.

I would like to attend courses on the reference, on the interaction techniques with the user. For my job it would be important to know very well the concept of copyright for the electronic resources.

FIVE: The teaching librarians: Questionnaire findings

5.1 Introduction

The aim of the questionnaire with teachers librarians was:

1. To investigate the skills of the teachers as information professionals and instructors;
2. to discover the training needs of teachers of the course;

5.2 Results

5.2.1 Section A

Questions in this section sought background information about the respondent.

5.2.1.1 Q1. Age

Age	Librarians
25 or less	Nobody
26-35	One
36-45	Two
more than 46	One

5.2.1.2 Q2. Which is your role in the structure where you work?

Role	Librarians
Cataloguers	Two
In charge of the electronic resources service	One
In charge of the Opac	One

5.2.2 Section B

Questions in this section required information about the training experiences of the respondent.

5.2.2.1 Q1. Which courses about the electronic resources did you attend during your profession?

The two cataloguers have attended courses on:

Internet for the libraries (two days)and,

Reference (two days).

The librarian in charge of the electronic resources service has attended courses on:

Internet (2 day)

Copyright about the electronic resources (1 day)

Reference (2 days)

Authority control (1 day)

The last librarian has attended courses on:

Cataloguing of electronic resources (2 days)

Indexing of Internet (2 days)

Electronic journals (1 day)

Information technology in the libraries (four hours in a week for six months)

Techniques for bibliographic databases (four hours in a week for six months)

5.2.2.2 Q2. Which courses about teaching methods and learning styles did you attend during your profession?

Nobody has attended courses about teaching methods and learning styles.

5.2.2.2 Q3. Do you attend them in the Polytechnic?

Only the two cataloguers have attended the courses in the Polytechnic during their profession.

The other librarians have attended them during the university studies or in other organizations.

5.2.2.4 Q4. Your knowledge of these fields is:

	insufficient	sufficient	good	very good
Internet			three librarians	one librarian
Databases	one librarian		two librarians	one librarian
Electronic journals		one librarian	three librarians	
Opac			three librarians	one librarian
Teaching methods		four librarians		
Learning styles	three librarians	one librarian		

5.2.2.5 Q5. You think you need more training on:

Subject	Librarians
Internet	No one
Databases	one
Electronic journals	two
Opac	No one
Teaching methods	three
Learning styles	four

Other subjects	Reference,
suggest by one librarian	Copyright

5.2.3 Section C

Question in this section required information about the teaching experiences of the respondent.

5.2.3.1 Q1 Have you ever taught students (individually or in group) the use of the electronic resources of your library?

Three librarians have experiences in this field.

5.3 Discussion

5.3.1 Skills and training

The data indicate that librarians, that is who has matured a long work experience has more skills to understand what the informative needs of the students are and the analysis demonstrates that the two documentalists relied completely on their experiences for the choice of the course subjects.

Their role as “educator” isn’t debated, the analysis about the work reality at the Polytechnic is clear. There isn’t any relationship between librarians and academic staff but the teachers think that it is fundamental for the courses success.

The self-training and the comparison with the other universities and colleagues have created the necessary skills to become an information professional and instructor more than the courses attended at the Polytechnic.

The courses attended at the Polytechnic were sufficient for the preparation about the contents; only a librarian complains of an insufficient knowledge of databases. The teaching methods and the learning styles are almost unknown to the teachers librarians. It’s singular that nobody during the interview has indicated as informative need these arguments, while in the questionnaire all of them have inserted the teaching methods and the learning styles as informative need.

Those who, during the interview, have had more difficulties to answer the questions about the methodology, have answered that they consider their knowledge about the teaching methods and the learning styles sufficient.

Only a person has referred to the literature for the teaching methods, which has less work experience but more theory knowledge.

The younger librarians have attended courses provided by other institutions, too. Instead the cataloguers have attended courses only at the Polytechnic.

5.3.2 The course

To evaluate the course structure and the methodology the researcher has used a checklist of questions provided by Bramley¹ (1996) (see the Appendix 5)

The aims of the course, even if they have not been made explicit in the course program, are clear to the librarians. They want the students to become autonomous in the searches

and understand the librarian role. Moreover another aim is to render the electronic resources present in the Polytechnic visible.

The course structure was constructed on the basis of the librarians work experience or comparing the courses of other universities. No undertaking was taken to evaluate which are the students' information needs of architecture and engineering faculty.

The librarians don't know the learning principles and the teaching methods and their choices are established by experience.

The balance between theory and practice is good but the course is too long (65 hours). This problem had been pointed out by the coordinators of the course but length had not been chosen by the librarians but by the Regione Lombardia² during the project. The length of the courses organized by other universities (for example, the University of Firenze³, Parma⁴ and Trento⁵) is about 4 to 16 hours. In the base course and in the advanced course there are common subjects that should have to be faced only once, to repeat them can make these parts boring and unsuccessful for the students.

Teachers have a good knowledge of the contents but not of the methods, there isn't awareness about the methodological choices.

The eclectic format combining lecture and hand-on is the best as demonstrated by the professional literature.

They know what constitutes information literacy and the different instruction techniques.

Moreover the two librarians have demonstrated to have clear how the studies of their users are organized and their characteristics.

It wasn't possible to evaluate the handouts or the other material because the teachers don't know if to give students some lecture notes or to put them online.

There was a bit of confusion about the meaning of feedback, only the teachers of the engineering course have thought to insert it at the end or in the middle of the course. It is considered a quality element by the two librarians. The feedback in the middle of the course can be used to change something in the contents or in the methodology.

References

¹ Bramley, Peter (1996) Evaluating Training, IPM House

² Regione Lombardia, URL: <http://www.regionelombardia.it> (Site visited 15 July 2003)

³ Università degli Studi di Firenze

URL: <http://www.unifi.it/biblio/scienzetecnologiche/corsi/corsi/html> (Site visited 10 June 2003)

⁴ Mamoli, F and Gorreri, M. (2003) Dalla formazione dei bibliotecari alla formazione degli studenti. Biblioteche oggi, vol. 5., pp. 21-28.

⁵ Università degli Studi di Trento

URL: <http://www.biblio.unitn.it/servizi/formazione.as> (Site visited 10 June 2003)

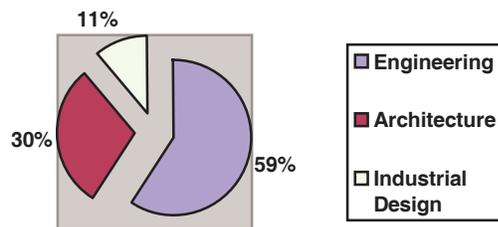
SIX: The students: Questionnaire findings

6.1 Results

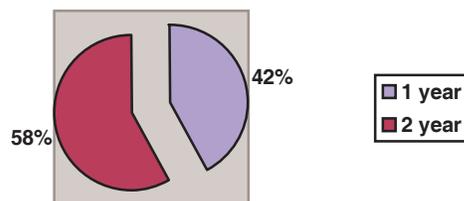
100 questionnaires were distributed and collected by the librarians of the different structures.

The first and second questions are made to select only the students attending the first and second year and to discover if there is a change of behaviour or opinion in the students frequenting the engineering or architecture faculty.

6.1.1 You are a student of



6.1.2 What is your year of study?



6.1.3 Which of the electronic resources of the libraries of the Polytechnic do you use?

<i>Resources</i>	<i>Total</i>	<i>Percentage</i>
Electronic journals	19	16%
Databases	43	36%
Multimedia Cd-rom	24	20%
None	34	28%

6.1.4 Do lecturers encourage you to use electronic resources of the libraries? If yes, how?

	<i>Percentage</i>
Yes	11%
No	89%

Only students of the architecture faculty have answered positively. Lectures encourage them to use electronic resources during the lessons and to carry out researches for their studies.

6.1.5 How often do you use the electronic resources of the libraries of the Polytechnic?

	<i>Percentage</i>
Daily	5%
Weekly	22%
Monthly	29%
Infrequently	21%
Never	23%

6.1.6 Why don't use them or do you seldom use them?

	<i>Percentage</i>
My study does not request them	9%
Do not know how to access	8%
Unaware of what's available	7%
Prefer print version	14%
There are not the full-texts of articles	4%
Other	7%
No answers	26%

Other= not many cd-roms (for the architects)

They didn't know them (for the engineers)

6.1.7 Where do you ask for help in using electronic resources if you need it?

	<i>Percentage</i>
Library web pages	32%
Other students	21%
Library staff	34%
Other	2%
No answers	12%

Other= They don't need it

6.1.8 Did you attend lessons or courses about the use of the electronic resources?

	<i>Percentage</i>
Yes	5%
No	91%
No answers	4%

6.1.9 If yes, where?

	<i>Percentage</i>
Polytechnic	40%
Secondary school	60%
Other	0%

6.1.10 Would you attend a course about the use of the electronic resources of the libraries of your faculty?

	<i>Percentage</i>
Yes	45%
No	50%
No answers	5%

6.1.11

11a. I view the Internet as a valuable source to find specific information for my study programme.

	<i>Percentage</i>
1 completely disagree	1%
2	10%
3	46%
4 completely agree	39%
No answers	4%

11b. I consider that databases present in the library provide essentially academic information.

	<i>Percentage</i>
1 completely disagree	13%
2	30%
3	34%
4 completely agree	11%
No answers	12%

11c. If in doubt I prefer using the Internet rather than databases present in the Library for researches for my study programme.

	<i>Percentage</i>
1 completely disagree	7%
2	27%
3	32%
4 completely agree	26%
No answers	8%

11d. It would be useful a specific training (courses, lessons,..) to use the electronic resources more effectively.

	<i>Percentage</i>
1 completely disagree	23%
2	39%
3	22%
4 completely agree	8%
No answers	8%

11e. I consider that using electronic resources is a time saving strategy and more effective compared with using paper based sources.

	<i>Percentage</i>
1 completely disagree	6%
2	32%
3	40%
4 completely agree	14%
No answers	8%

6.2 Discussion

6.2.1 Use of the electronic resources

The greatest part of the students usually uses databases (36%) but a great number doesn't use any electronic resources present in the libraries (28%). However those who use them make it in a very discontinuous way (monthly). Adding the values Monthly and Infrequently the percentage grows up to 50%. Why don't students use these resources? They aren't acquainted with them and they don't know what the contents of the resources are.

Many of them state to prefer the print version. The 9% said that their studies don't request the use of the electronic resources. This answer is meaningful if analysed with the question number 4 (Do lectures encourage you to use electronic resources of the libraries? If yes, how?), in fact any engineering lectures seem to encourage the use and only some architecture lectures request students to carry out searches in the libraries. This is a sign of the detachment between academic staff and librarians in promoting the use of the electronic resources present in the libraries and a symptom of no recognition of the library as informative and communicative space by the academic staff.

6.2.2 Confidence in the librarian

The 34% of the students has demonstrated to have confidence in the librarian professionalism or anyway in the Library web pages. The 21% of the students go to other students for help in using electronic resources. So the librarian has a positive attitude towards users that choose him when they need help. Only the 2% answers that they don't need help to use electronic resources.

6.2.3 About the courses on the ER

Only five students have attended courses about ER at the Polytechnic or during the secondary studies. As concerns attending a course about the use of the electronic resources of the libraries of their faculty, the 50% stated that they aren't interested in the course while the 45% would make it. If we confront this result with the question 11d "It would be useful a specific training (courses, lessons,..) to use the electronic resources more effectively", the result is much more negative, that is the 62% don't agree with this statement.

6.2.4 Opinion about the ER/Internet

The greatest part of the students considers Internet a valuable source to find specific information for their study programme and they think that databases present in the library provide essentially academic information. They prefer using Internet rather than databases for researches for their study programme. Otherwise the 54% of the students consider that using electronic resources is a time saving strategy and more effective compared with using paper based sources.

Seven: Conclusions

Conclusions drawn from the findings are discussed in relation to the five objectives identified in Section 1.4. For the evaluation of the course see the section 5.3.

7.1 Skills and training needs of librarians

A review of the literature indicates that librarians learn to teach by attending workshops and conferences, reading the literature, and communicating with colleagues. Few librarians learn to teach by formal coursework. For Kilcullen¹ to prepare students to make effective lifelong use of information, librarians need to know what constitutes information literacy and critical thinking skills, to understand learning and motivation theories and to know about and use different instruction techniques. Moreover for Morgan² the credibility with academic staff and IT-related skills are other qualities which are essential for the academic librarian of today and the foreseeable future.

The four teaching librarians of the Polytechnique have demonstrated to have good IT-related skills and have understood how students organize their studies. They know how important the credibility with the academic staff is for encouraging students to view libraries as a part of their information-support network; for this reason they have looked for a collaboration with the academic staff to organize the course but without significant results.

Unfortunately before starting the course they haven't considered to carry out a survey to understand the real needs of the first-year students. They know the contents of the electronic resources and the searching strategies but there is a lack of knowledge about the teaching methods and learning styles. The meaning of feedback is not clear.

They recognize as fundamental the educational role of the librarian, important point to facilitate the transformation of information seekers into independent learners as pointed out by Johnson³. The courses attended at the Polytechnic were important for the contents but not for the teaching methods, as pointed out by the literature. The experience with the user and the communication with other colleagues are fundamental to learn and to gain more credibility.

7.2 The information needs of the undergraduate students

The literature review suggested that the inexperienced students think that Internet provides them with reliable information for their studies and this research has arrived to this result too (Fjallbrant⁴). In effect, as Lapp⁵ stated, the first year students haven't knowledge of the library and its role as an online information centre and lack

knowledge of information systems, databases, and their organization. Also the first year students of the Polytechnic have this type of lack of knowledge. Some students do not know what kind of information they can find in particular databases, or why there are no journals articles in the OPAC.

They don't think that a specific training would be useful to use the electronic resources more effectively.

They haven't awareness of their informative needs and the academic staff don't help them in this process. Otherwise they are confident in the librarian even if they do not see library personnel as part of their information-support network.

7.3 Bridging the gap

Librarians have the necessary skills to train users and students have confidence in the librarian. The contents of the course are good for the informative needs of the students: search for literature in the OPAC and in more than one catalogue; search in different databases, the structure and retrieval of which can differ very much; the services and the organization of the academic libraries (architecture and engineering libraries). These are also the items emerged from the literature. As pointed out before, librarians have a lack of methodology.

To stimulate students to participate to the courses in the future, the relationship with the academic staff is essential.

In the academic library profession we are living exciting times. It is not just the speed of change which provides the excitement, but the recognition that we can make a significant contribution to the progress of the academic community. We must continue to develop our organizational, interpersonal (in the broadest sense) and IT-based skills and apply them to the people/information interface. We need to embrace innovation, eschew modesty and display what Bean describes as "constructive arrogance". Our approach to meeting the information needs of the twenty-first century requires us to be positive, proactive, participatory and professional. The main purpose of this dissertation has been to offer a practical contribution to making it possible.

References

¹Kilcullen, M. op. cit.

²Morgan, S. op. cit.

³Johnson, I. op. cit.

⁴Fjallbrant, N. op. cit.

⁵Lapp, E. op. cit.

⁶Bean, E.S.(1987). Polish up your image, Catholic Library World, Vol. 58 No. 5, 1987, pp. 232-6.

Eight: Recommendations

The recommendations in this chapter are divided into two sections and aimed at specific audience.

8.1 The training staff of the Polytechnic

Should support and develop training and staff development programmes about:

1. Learning styles;
2. Instruction techniques;
3. Teaching methods.

8.2 The librarians

Should:

1. understand the students' information needs;
2. develop new courses for the students' information needs;
3. understand librarian's vision of their role;
4. draw up the project to provide the methodologies for a correct reference of electronic information devices to the students of the engineering and architecture faculties;
5. involve the academic staff .

8.3 Recommendations for further research

1. to monitor and evaluate future courses for the students;
2. to examine different methods of training;
3. to assess how the role of library staff is changing and how to develop academic library skills for the future;
4. to monitor ER usage in the libraries services;
5. to assess the quality of the electronic resources used.

Nine: Reflective Review

9.1 Literature review

The articles and the references inserted in the literature review have been found in the English and American professional literature. The use of the UNN electronic resources was fundamental for the research process and it has oriented the review to the Anglo-American literature. In fact, no references have been found in the Italian literature. Probably only in the recent years the Italian libraries have directed their attention to the librarians to understand staff perception of their preparation in the context of the educational role of the information professional. A deeper study of the Italian professional literature could be important to verify if the conclusions were the same. The lack of time forced the researcher to delimitate the search.

9.2 Interviews

At the beginning of the research process the intention of the researcher was to investigate the information and training needs of the librarians and their role vision by organising a focus group. This particular focus group consisted of 6 librarians of the biggest libraries of the Polytechnic that could be involved as teachers in the project of the European Social Funds.

The focus group method is one of the various techniques used in qualitative research. The objective of the method was to encourage participants to talk openly and freely about a topic: in this context the information and training needs. Then the researcher couldn't use this technique because it was impossible to establish a common data for the six librarians. For this reason the interview was considered the best method to focus the objectives of this research, in this way the researcher went directly to the office of every librarian to interview him.

Probably the use of the unstructured interview can give the research new topics and a deeper knowledge of the librarians' opinions but the relative inexperience of the researcher in carrying out an interview brought to the choice of the structured interview. This choice was good because it allowed the researcher to explore opinions and information in a structured way; the analysis of the data was clear and simple because some categories have been identified before the interviews.

Transcribing the interviews was time consuming but the use of spreadsheets has facilitated this process of identifying themes.

9.3 Student Questionnaire

Having more time and resources more questionnaires could be distributed to the students to obtain more valid data. Questions were clear, as verified with the pilot study, and helped the researcher to obtain a coding frame for data analysis. Question 10 and the fourth of the Likert scale (question 11) are similar, it was a choice of the researcher to verify the real opinion of the students about an electronic resources course. However, the questionnaire was an effective data collecting tool.

Appendix 1

Questionnaire for undergraduate students

1) You are a student of

- Engineering
- Architecture
- Industrial Design

2) What is your year of study?

- 1st
- 2nd
- 3rd
- 4th
- 5th
- Postgraduate

3) Which of the electronic resources of the libraries of the Polytechnic do you use?

(Please tick all that apply)

- Electronic journals
- Databases
- Multimedia Cd-rom
- None

4) Do lecturers encourage you to use electronic resources of the libraries? If yes, how?

- Yes
- No

5) How often do you use the electronic resources of the libraries of the Polytechnic?

- Daily
- Weekly
- Monthly
- Infrequently
- Never

6) Why don't use them or do you seldom use them?

(Please tick all that apply)

- My study does not request them
- Do not know how to access
- Unaware of what's available
- Prefer print version
- There are not the full-texts of articles
- Other (please explain).....

7) Where do you ask for help in using electronic resources if you need it?

(Please tick all that apply)

- Library web pages
- Other students
- Library staff
- Other (please explain).....

8) Did you attend lessons or courses about the use of the electronic resources?

- Yes
- No

9) If yes, where?

- Polytechnic
- Secondary school

- Other (please explain).....

10) Would you attend a course about the use of the electronic resources of the libraries?
of your faculty?

- Yes
- No

11) Please rate the following statements using the scale provided

completely agree

completely
disagree

	1	2	3	4
I view the Internet as a valuable source to find specific information for my study programme.				
I consider that databases present in the library provide essentially academic information.				
If in doubt I prefer using the Internet rather than databases present in the Library for researches for my study programme.				
It would be useful a specific training (courses, lessons,..) to use the electronic resources more effectively.				
I consider that using electronic resources is a time saving strategy and more effective compared with using paper based sources.				

Many thanks for your help

Appendix 2

Questionnaire for the teaching staff

A Personal data

1. Age: 25 or less 26-35 36-45 more than 46
2. Which is your role in the structure where you work?

B Training experiences

1. Which courses about the electronic resources did you attend during your profession? (*Specify the subject and the length*)
2. Which courses about teaching methods and learning styles did you attend during your profession? (*Specify the subject and the length*)
3. Do you attend them in the Polytechnic?
4. Your knowledge of these fields is (please rate using the scale provided):

	Insufficient	sufficient	good	very good
Internet				
Databases				
Electronic				

journals				
Opac				
Teaching methods				
Learning styles				

5. You think you need more training on:

- Internet
- Databases
- Electronic journals
- Opac
- Teaching methods
- Learning styles
- Other (please explain).....

C Teaching experiences

1. Have you ever taught students (individually or in group) the use of the electronic resources of your library?

Questions for the structured interviews to the two coordinators of the course

- 1) Could you tell me something about the preparing process of the course?
- 2) Which are the aims of the course?
- 3) How have the teachers been chosen?
- 4) Which are the critical points of the course?
- 5) Is there a relationship between librarians and the academic staff for preparing the course?
- 6) Have you planned any kind of feedback?

Questions for the structured interviews to the teaching staff

- 1) What's your opinion on the role of the librarian as "educator"?
- 2) Which are the aims of the course?
- 3) Which are the critical points of the course?
- 4) Is there a relationship between librarians and the academic staff for preparing the course?
- 5) Have you planned any kind of feedback?
- 6) On which basis did you build the structure and the content?
- 7) How did you choose the methodology?
- 8) How did you prepare yourself?
- 9) Did you consider any difference between the students of engineering and architecture?
- 10) Do you think you need more training? On which subjects in particular?

Checklist of questions for the researcher to evaluate the process for a particular training programme

Objectives

- 1) What changes are expected to result from the programme in terms of individual performance levels?
- 2) Are the objectives clear and unambiguous?
- 3) Do the trainers know the students individual learning objectives? How are they taking these into account?

Course structure

- 1) On what learning principles is the course structured?
- 2) Is there a satisfactory balance between practice, reflection and theoretical input?
- 3) Is the programme the right length?
- 4) Does the balance of the course reflect the different degrees of importance attached to the objectives?

Methods and media

- 1) On what basis have the methods been chosen?
- 2) Are the characteristics of the learners considered?
- 3) Do the methods and media provide variety and encourage learning?
- 4) What are the quality and reliability of handouts or of other material?

Evaluative feedback

- 1) How is progress being assessed during the programme?
- 2) How is feedback given to the students?
- 3) How do the trainers use feedback?

Appendix 6

Base Course: 35 hours

	Contents		Length	Building
1	Course introduction Description of the Library System of the Polytechnic	1 unit	3 hours	SIB
2	<ol style="list-style-type: none"> 1. What does the OPAC contain and what is it for? 2. Bibliographic searches in the OPAC 3. Searches in national and international collective catalogues 	2 units	10 hours - exercises	Informatics classroom
3	Searches in Internet <ol style="list-style-type: none"> 1. Search engines 2. Portals 3. Association web-sites 	1 unit	4 hours - exercises	Informatics classroom
4	Bibliographic searches <ol style="list-style-type: none"> 1. Electronic journals of the Polytechnic 2. Search techniques in the electronic journals 	1 unit	8 hours - exercises	Informatics classroom
5	Bibliographic searches <ol style="list-style-type: none"> 1. Bibliographic databases of the Polytechnic 2. Search techniques in the databases 	2 units	10 hours - exercises	Informatics classroom

Course for engineering students : 30 hours

	Contents		Length	Building
1	Description of the Library System of the Polytechnic <ol style="list-style-type: none"> 1. Web page of the libraries 2. OPAC: characteristics and search techniques 	1 unit	3 hours	Informatics classroom
2	From the subject to the bibliography <ol style="list-style-type: none"> 1. Bibliographic searches in the OPAC 2. Searches in national and international collective catalogues and retrieval of the paper texts 	1 unit	3 hours - exercises	Informatics classroom
3	From the bibliography to the text <ol style="list-style-type: none"> 1. Search of articles in the electronic journals of the Faculty 2. Request of articles 3. Italian journal catalogue (ACNP) 4. Document delivery and document supply 	1 unit	3 hours - exercises	Informatics classroom
4	The libraries of the Engineering Faculty: guided tour <ol style="list-style-type: none"> 1. Arrangement of the books 2. Book-loan 3. Interlibrary-loan 4. Multimedia devices 	1 unit	3 hours	Library
5	Databases of the Faculty <ol style="list-style-type: none"> 1. Bibliographic databases 2. Complex search through personalized query 3. Search in: <ol style="list-style-type: none"> a) Inside b) Iel-online 	1 unit	4 hours - exercises	Informatics classroom
6	Databases of the Faculty Searches in: <ol style="list-style-type: none"> 1. Compendex 2. CSA 3. ScienceDirect 	2 units	6 hours (3+3) - exercises	Informatics classroom
7	Searches of grey literature and full-text databases online <ol style="list-style-type: none"> 1. Laws 2. Norms 3. Projects 4. Technical reports 	1 unit	4 hours - exercises	Informatics classroom
8	Evaluation of the sources	1 unit	4 hours	Informatics classroom

	<ol style="list-style-type: none">1. Search engines2. Portals3. Association web-sites4. Copyright5. Choice of documents in internet6. Open Archives			
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Course for architecture students: 30 hours

	Contents		Length	Building
1	<ol style="list-style-type: none"> 1. Introduction to the Central architecture library: characteristics of materials, services and users 2. Others libraries of the Polytechnic: search in the OPAC and in the paper catalogue 3. Others regional libraries (materials, search tools and online catalogues) 4. MetaOPAC 	1 unit	3 hours	Classroom
2	Bibliographic instruments <ol style="list-style-type: none"> 1. Web sites 2. Publishers 3. Bibliographies Reference (exercises in the library)	1 unit	4 hours	Library
3	Bibliographic searches in OPAC <ol style="list-style-type: none"> 1. What the OPAC contains – search in the paper catalogues 2. What is it for? 3. How to search: type of search, limits, search results (how to read and use them) 4. From the search to the document 	2 units	8 hours - exercises	First unit in informatics classroom, the second in the library
4	Online reference <ol style="list-style-type: none"> 1. Databases and CD-ROM, electronic journals 2. Searches in others Italian and international OPACs 3. Search engines 	3 units	12 hours - exercises	First unit in informatics classroom, the second and the third in the library
5	<ol style="list-style-type: none"> 1. Copyright 2. Document delivery 	1 unit	3 hours - exercises	Classroom

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