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ȘI ȘTIINȚA INFORMĂRII**

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ȘI ȘTIINȚA INFORMĂRII**

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CULTURA INFORMAȚIEI/INFORMATION LITERACY

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Opportunities to Develop Information Literacy

Information literacy is a survival skill in the Information Age information literate people know how to find, evaluate, and use information effectively to solve a particular problem or make a decision - whether the information they select comes from a computer, a book, a film, or any number of other possible resources. Libraries, which provide a significant public access point to such information and usually at no cost, must play a key role in preparing people for the demands of today's information society. Just as libraries were once a means of education and a better life for many people. Libraries not only provide access to information, but they also remain crucial to providing people with the knowledge necessary to make meaningful use of existing resources. They remain one of the few safeguards.

Although libraries historically have provided a meaningful structure for relating information in ways that facilitate the development of knowledge, they have been all but ignored in the literature about the information society. The potential role of libraries is the need for information literacy. .

We must make sure that the issue of information literacy is an integral part of current efforts at cultural literacy, the development and of critical thinking abilities, Due to the relative newness of the information society, however, information literacy is often completely overlooked in relevant dialogues, research, and experimentations Textbooks, workbooks, and lectures must yield to a learning process based on the information resources available for learning and problem solving throughout people's lifetimes--to learning experiences that build a lifelong habit of library use. Such a learning process would actively involve students in the process of:

- knowing when they have a need for information
- identifying information needed to address a

given problem or issue

- finding needed information and evaluating the information
- organizing the information
- using the information effectively to address the problem or issue at hand.

Such a restructuring of the learning process will not only enhance the critical thinking skills of students but will also empower them for lifelong learning and the effective performance of professional and civic responsibilities.

Conclusion

This call for more attention to information literacy comes at a time when many other learning deficiencies are being expressed by educators, business leaders, and parents. There exists a need for better thinkers, problem solvers, and inquirers. There are calls for computer literacy, civic literacy, global literacy, and cultural literacy. Because we have been hit by a tidal wave of information, what used to suffice as literacy no longer suffices; what used to count as effective knowledge no longer meets our needs; what used to pass as a good education no longer is adequate.

To respond effectively to an ever-changing environment, people need more than just a knowledge base, they also need techniques for exploring it, connecting it to other knowledge bases, and making practical use of it. In other words, the landscape upon which we used to stand has been transformed, and we are being forced to establish a new foundation called information literacy. Knowledge and people who are information literate - who know how to acquire knowledge and use it - are Romania's most valuable resources.

Dr. Rodica M. Volovici

The librarian of yesterday and today: general considerations

Mircea Regneală

Introduction

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Abstract

The author offers us an analysis of the librarian profession with all its implications, both from historical and contemporary perspective. From Antiquity until Middle Age, the librarian was a scholar and enjoyed unanimous consideration from people who praised the book, but in the Modern Age things begins to change. Librarian lives a so-called process of alienation, determined by the unprecedented grows of publications and by librarian's inability to manage them.

The last decades were marked by the appearance of a new type of librarian, who is a specialist in the field, has new skills and is a cyber-librarian: he knows computer, management, Internet, databases, etc. The librarian of the post-industrial society became author's counsellor, direct intermediary between work and reader.

Keywords: *librarianship; librarians; professional skills*

Autorul analizează din perspectivă istorică, dar și contemporană profesia de bibliotecar cu toate implicațiile pe care aceasta le presupune. Dacă în Antichitate și Evul Mediu, bibliotecarul era deopotrivă savant și bibliotecar și se bucura de stima unanimă a oamenilor care prețuiau cartea, în epoca modernă lucrurile încep a se schimba. Bibliotecarul trăiește un așa-numit proces de alienare determinat de înmulțirea fără precedent a publicațiilor și de incapacitatea sa de a le stăpâni.

Ultimele decenii au marcat apariția unui nou tip de bibliotecar, specialist în domeniu și posesor de noi competențe, un cyberbibliotecar care cunoaște informatică, management, Internet, baze de date etc. Bibliotecarul din societatea postindustrială a devenit consilierul autorului, intermediarul direct între operă și cititor.

Cuvinte-cheie: *biblioteconomie; bibliotecari; abilități profesionale*

We often say about the librarian that he is the person who has in custody a collection of documents, which he organizes in such way that a document can be easily found by anyone and at any time. This is the way the librarian always did and he will probably do so in the future because the meaning of his work is oriented towards the readers and their information needs.

It has been always acknowledged that, by his noble activity the humanity's memory has been preserved, stored in books and documents, contributing to the progress of the society.

Speaking about the librarian, some wonder whether his activity is a profession or an art.

Anne Kupiec, in a rapport made for *Direction de l'information scientifique et technique et des bibliothèques. Bureau de la formation* (1) of France, referring to concepts of art and profession, in librarianship domain, writes that an art is more than a profession. In art, the one who comes first is the individual and not the structure he is part of: exercising an art implies mastery of science and recognition of an identity. It is a statement that may be taken into account when talking about the individual, science and identity. But we consider that in the present work, the notion of profession with reference to the sociology of work is what interests us and by analyzing it, we may develop other concepts. Traditionally, a profession includes theoretical and practical components. It creates bodies that define and sustain it.

A profession becomes a strong social identity if it is based on: level and value of theoretical and practical knowledge; efficiency of representation and representativeness; clear representation of service notion - issues to which we will return in the following pages.

Old Era

We can't talk about the librarian profession outside space and time. There is, without any doubt, a continuity of the profession. The meaning of the librarian's activity is unchanged for over 2000 years, but the librarian profession itself was understood in different ways over time, depending on the era's mentality, the degree of development of written production and the interests for reading.

The librarian of yesterday and today: general considerations

In antiquity, the concept of librarian was similar to the one of scholar. Aren't all the librarians, which were transmitted by the ancient era, great scholars or outstanding poets?

This is the case of Calimach, who was the best-known librarian of Alexandria, and of his other colleagues: Zenotodus, Eratostem, Aristophanes of Byzantium and Aristarch Samothrace. Beside the duty of providing publications for reading, they had two other obligations that involved understanding and culture: preparation of a comprehensive bibliography of Greek literature (surprising duty for that time) and texts copying in rolls of standard format for the enrichment of library's collection.

Manuscripts copying task remained a constant concern of librarians during the entire Middle Age until the advent of printing and, to a certain extent, even afterwards, until the end of the fifteenth century.

Education's developments in almost every European centre, starting from thirteenth century, led to an increased number of books and libraries.

Although almost every famous monastery of Western Europe used to have scriptoriums where manuscripts were copied, many of them didn't enter the libraries or monasteries, but they were sold like any other commodity, because a manuscript book was very expensive, especially if it was decorated with miniatures and initials. Ornaments consisting of combined floral and zoomorphic motifs, having fine gold foil as background, still shine today, having the entire freshness of the colours on a soft parchment. But, such very expensive books could be found only in affluent people's houses, lovers of art and who rarely hired librarians. Only princely and very wealthy families were able to afford the luxury of employing librarians. They were private librarians - the number of public librarians was quite low until the nineteenth century.

Modern Age

All experts agree that the Modern Age of books and libraries begins with Gutenberg's invention of printing with movable letters, - more precise at the middle of the fifteenth century.

This invention gave a great impetus to the

circulations of books and ideas, and determined in about 100 years more achievements in human society than in the 1000 years after the fall of Western Roman Empire. Some call this period the Gutenberg era, others, expanding the phenomenon, are talking about Gutenberg Galaxy (2).

The modern librarian, in judgment and concerns, appears with Gabriel Naudé (1600-1653), who, with his work - "Advis pour dresser une bibliothèque" (1627), lays the foundation of modern librarianship.

After him, follows a pleiad of famous librarians: Louis Jacob, Claude Clement, and Gottfried Wilhelm Leibnitz. Profession's secularisation occurs in the eighteenth century. Litterateurs, along with monks, begin to be accepted as librarians, but with a certain concern. They had to be unmarried (3). Only after the French Revolution in 1789, litterateurs are accepted as librarians, without any conditions.

In the nineteenth century, there were a few famous librarians working in France, among them Charles Nodier, Pierre Sainte Beuve and Gustave Brunet, all well-known litterateurs, who ennobled the profession by their activity. Concurrently, a focus on librarian's technical training begins to be made. Here is what Leopold Delisle, the general manager of France National Library, wrote regarding this matter: "apprentice is as necessary for library administration as it is for driving a boat, for constructing a building or for mounting, maintaining and operating with no accidents different parts of a complicated mechanism".

Another orientation of the nineteenth century is the integration of librarian's work in community's life and it is not an accident that this orientation comes from the North American continent: "No task is more important and worth more honor than the community service performed by a competent and serious librarian. There was a time when the library looked more like a museum and librarian like a bookworm [...] the time has come when library is a school and librarian is a teacher in the noblest sense of the word" wrote Melvil Dewey in 1873.

Twentieth century calls forth a new type of librarian. Scholar librarian, known from Antiquity and Middle Age, is replaced by the clerk librarian. John D. Foskett (4) speaks about a process of alienation lived by this century's librarian, process

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determined by the unprecedented number of publications, situation that leads to his inability to manage them.

As a result of the number of publications growth and, as a result of the increased amount of knowledge, in the first half of the twentieth century, occur many classification systems that tried to put in order the domain of storage and retrieval of information on one subject or another. Thus, in 1905 arise the *Universal Decimal Classification*, of Paul Otlet and H. La Fontaine, by developing the classification proposed by M. Dewey; in 1906, the *Subject Classification* by J.D. Brown; in 1933, *Colon Classification*, by S.R. Ranganathan; in 1935, the *Bibliographic Classification* by H.E. Bliss etc.

How much science and how much art implies being a librarian?

This is a question asked both by people inside and outside the profession and in order to answer it we have to see which were and still are the librarian's main responsibilities.

Mainly, traditional librarian knows how to procure the documents, how to process them and how to manage the fund of publications. But he knows only very little about his readers' reading interests.

The modern librarian is completely different from the traditional one, first of all by extending his competences. Connected to the spirit of the age, he knows additional issues: library management and marketing, informational technology, collections assessment and weeding, assessment of the services made for reader's benefit, user's reading and information requirements, library's architecture and organization etc.

The two types of librarian are in fact the product of the second phase of libraries development: *the museum phase and the instrumental and utilitarian phase* (5).

In the museum phase, which lasted until the early stages of the twentieth century, books were kept like jewels, which were allowed to be touched only with great care, and the librarian's main task is to guard them. As a result, readers had a difficult access to collections, reading was made under a strict surveillance and there was a

limited collections communication.

In the instrumental and utilitarian phase, developed from the early twentieth century, librarians were focusing on techniques related to reader's information needs. They became reader's advisors and made notable progress in familiarity with collections and user satisfaction by using with ability the entire contemporary technical instruments. For an efficient support of the user, the librarian must: establish connections; properly understand an information request; guide search to the area expected by the user; choose from the multitude of documents the ones which match best from the quality point of view the user's request.

In addition, a modern librarian must know the external documentary environment; national specialized documentary networks; global resources for reader's access to new documentary sources through interlibrary loan.

In recent years, as a result of the information systems development and databases expansion, in user's education are also considered resources offered by the Internet, which become increasingly numerous. The librarian, as a web browser, just like a ship captain, must establish correctly his ship position and coordinates in order to reach the destination in time, on the shortest way.

Advice and assistance have become attributes of today's librarians.

The new professional requirements

Modern librarian cannot remain outside the main exigency of his time; he must know them well and apply them correctly in his activity.

All these exigencies are in fact requirements. We will focus on the most important of these.

1. Management requirements:

- to know the economic problems (optimal library management);
- to know the suppliers very well (documents and technical equipment suppliers);
- to know the budget problems (the budget request - thoroughly argued and justified; budget spending - personnel, publications and utilities);
- procurement strategies - to exploit opportunities (spring and autumn fairs, with discount prices)

2. Technological requirements

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- to substantially know information technology (informatics software, applications);
 - to create professional bonds (information technology specialists, system engineers, service companies);
 - to assess the informatics equipments (management technologies like RFID);
 - technology watch.
3. Legal requirements
- good knowledge of legislation:
 - professional laws (the libraries law, the law regarding the status of teachers, etc);
 - complementary laws (the public procurement law - the conditions of contract; copyright and the connected rights law - exceptions and limitations)
4. Deontological requirements
- to respect the deontological principles of the profession;
 - to respect the principle: "the right of man to information" in relation with "the access to documents and information"
 - librarians - honest mediators between the work and the public (equal attitude, rejection of the user's pressure).

Post-industrial society and the librarian

In the post-industrial society, as we name it today, economists say that the core problem is not knowing how to organize production efficiently, but to know how to organize yourself in order to make decisions, namely to use efficiently the information you have. Mastering the information is certainly a key thing, because at some point, information is converted into a decision, so in action.

Information flow serves on personnel management and on social relations within the enterprise. A good flow of information means better communication between different levels of personnel (interdepartmental, between hierarchical levels). It helps to form a common culture, to establish, by means of information, shared beliefs and allows people to identify themselves (6).

The expression "information society" means awareness of a contemporary reality. Today in all economic structures, *along with money, goods, personnel and equipment, it is said that*

information is a key element of the current age and that it occupies much of the work time in these structures.

Information processing is the basic problem of information science that allows libraries: to describe, interpret, and automate information. It includes a long range of disciplines: linguistics and automatic indexing, cognitive psychology (which will be user's research approach?), informatics (which computer system should be implemented so that the user could be autonomous?).

Library is the place where user confronts with document's exigency. The librarian is the one who has to stay near the user and help him. In order to do this, he must have a professional culture that does not gain by itself. It is known the slowness with which this is achieved. It must be started with a good initial training. But no matter how good it was done it doesn't ensure competence and professional identity for life. Professional training has coherence only related to continuing professional development, which must be in constant attention of all legal factors regarding personnel.

REFERENCES AND NOTES

1. **KUPIEC, Anne.** *Premier recensement des métiers des bibliothèques.* Paris: Médiadix, 1995, 206 p.
2. *See McLUHAN, Marshall.* *Galaxia Gutenberg: omul și era tiparului.* Translated from English by P. Năvodaru. Foreword by Victor Ernest Mașek. Bucharest: Editura Politică 1975, 456 p.
3. Esprit Calvet, the founder of the Avignon Library, wrote: "the librarian position should be entrusted only to unmarried men of letters and they should be dismissed if they marry".
4. *See FOSKETT, D.J.* *NATIS: preliminary survey of education and training programmes at university level in information and library science.* Paris: UNESCO, 1976. 149 p.
5. The two phases can still be found in the major libraries: *national library* in archiving function and *academic library* in instrumental and utilitarian function.
6. **SIMON, Herbert A.** *Administration et processus de décision.* Paris: Economica, 2003, p. 262.

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Abstract

This paper presents several communication and information methods, including telemedicine, PDAs, media, that facilitate the process of information in contemporary medicine. Telemedicine is the use of electronic information and communications technologies to provide and support health care when distance separates the participants. The PDA has become a popular device in different fields of work especially in healthcare, clinical area and also in medical education.

Keywords: *telemedicine, personal digital assistant, communication, contemporary medicine, mass-media*

Lucrarea prezintă câteva metode de comunicare și informare, ce includ telemedicina, PDA-urile, suporturile de informații, care facilitează procesul de informare în cadrul medicinei contemporane. Telemedicina constituie utilizarea informațiilor electronice, precum și a tehnologiilor de comunicare, cu scopul de a oferi și sprijini îngrijirea sănătății atunci când participanții se află la distanță. PDA a devenit un dispozitiv frecvent utilizat în diferite domenii de activitate, în special îngrijirea sănătății, domeniul clinic și de asemenea educația medicală.

Cuvinte-cheie: *telemedicină, asistent digital personal (PDA), comunicare, medicină contemporană, mass-media*

Introduction

In Romania, the diversification of telecommunication networks and advances in communications technologies, including the Internet, has considerable potential for continuous training dedicated to the medical personnel and educational programs for patients target groups.

Romania has the potential to develop the information technologies, digital communication technologies, mobile communication technologies.

Media is a modern possibility of education, information and learning for the doctor and patient. The results of the medical act are influenced by the model used by the medical personnel and the patient in communication and behavior.

The themes we approached in this paper were:

1. Telemedicine as a modern medicine application
2. Personal Digital Assistants in modern medicine
3. Continuing medical education
4. Mass-media – a modern and important communication and information tool between doctor and patient

1. Telemedicine as a modern medicine application

Telemedicine was introduced by NASA-“Integration of medical assistance technology, information, telecommunication and human-machine interface with the aim of ensuring medical assistance for the persons going in space”. Telemedicine, the use of electronic information and communications technologies to provide and support health care when distance separates the participants, has significantly impacted the delivery of health care services.

Telemedicine is part of the expanding use of communications technology in health care being used in prevention, disease management, home health care, long-term care, emergency medicine, and other applications (1). It is a NASA initiative that had begun to impose all over the world.

There are two periods of telemedicine maximum development: 1960-1970, and after 1990 until now.

The premises of telemedicine development are:

1. Remarkable progress in software and hardware
2. The development of communication systems
3. ISP(Internet Service Provider) and Internet dynamic
4. The acceptance by the medical community and by the medical insurance companies

The barriers in telemedicine development: distance/geography, financials, technologic, cultural, linguistic, legislative.

Types of communications used in telemedicine: broad bandwidth via satellite, ISDN, protocol internet (TCP/IP), telephone/facsimile.

Clinical applications: radiology-standard DICOM (Digital Image Communications in Medicine), anatomopathology, primary care, dermatology, psychiatry, surgery, medical education and training, military.

In Romania, the diversification of telecommunication networks and advances in communications technologies, including the Internet, has considerable potential as a medium for telemedicine applications. In this context, National Communication Research Institute – INSCC develops a Romanian telemedicine project, *Multimedia platform for Complex medical teleservices implementation – TELMES*. The main propose of this project is to implement a scalable medical telecenters networks, based on new ITC technologies that are available in Romania (2).

The TELMES project proposes to develop a pilot multimedia network, with integrated teleservices for the medical area, using the most recent IT&C technologies.

These teleservices should help optimize the medical decisions to increasing of quality, with the decreasing of costs for the medical act, and also the expanding of the services range in the healthcare, by introducing medical teleservices.

The TELMES project has the following main objectives:

- To develop a scalable medical telecenters network, in order to provide the complex telemedicine services;
- To give solutions to organize, exploit and manage a regional telecenter together with the related teleservices;
- To organize a network access and network management solutions for medical

teleservices;

- To implement solutions providing the information security in the teleservices network;
- To develop a secure multimedia system for the acquisition of the medical records in order to implement the medical databases, at the county level;
- To develop specialized software applications for medical teleapplications and for continuous training dedicated to the medical personnel and educational programs for patients target groups (3).

Telmes Applications

From user point of view, TELMES project is *addressing especially to the segment of generalist medicines* in order to allow:

- Access to the qualified information, by direct cooperation with specialized medicines;
- Efficient management of the chronic ills;
- Covering the rural and remote areas.

Making of such tool available for the GP or for a doctor placed in a rural environment covering a large area, allowing him to call for a group of experts by means of a telecenter, and without need to move the patients, sometimes on hundreds of kilometers away, is a real gain for the medical practice in this field (4).

Telemonitoring Models:

- a) “The family doctor” model: enables the GPs (family doctors), to supervise a lot of chronically patients. GPs have the possibility to connect to medical regional telemonitoring data base - TmDB dedicated for telemonitoring activity, and to get access to their own patient’s related information (5).
- b) “The telemonitoring in the rural environment ”model: enables the GPs (family doctors), to supervise a lot of chronically patients in rural environment. GPs have also the possibility to connect to medical regional telemonitoring data base – TmDB.

2. Personal Digital Assistants in modern medicine

Personal digital assistants (PDAs) are generic devices commonly used in both personal and professional spheres of society, due to their affordability and portability. PDAs can be used as personal information management (PIM) systems, data entry tools and storage devices (6), and other user-defined purposes (7). Various ways for data to be entered are touch screen (using a stylus), attachable keyboard, and voice recognition. The voice recognition function helps users to enter the commands easily.

PDA PLATFORMS: PDAs utilize various types of operating system, each of which supports different types of information and synchronization protocols to a desktop computer. The three major operating systems (OS) are PalmOS, Microsoft and Symbian OS (8). Likewise, the major categories of PDAs are Palm, PocketPC and Smart phones of PDA phones (9). Smartphones that use Symbian OS are Nokia, Sony-Ericson and Motorola.

PDA s IN THE HEALTHCARE PROFESSIONS: To effectively the use PDAs in a healthcare organization, they need to be integrated into the existing organization systems and connected into the network for communication and data sharing (10). The three major advantages of incorporating PDAs into healthcare organizations, particularly in busy units, are:

1. to deliver essential clinical information to physicians and healthcare staff wherever and whenever they need,
2. physicians being able to order any medical test at their finger tips, and
3. the use of PDAs provides the opportunity for physicians to record their medical notes or create referral letters by using the voice recording function within the PDA (11). There are a few major reasons why PDAs are used in both the medical and nursing professions. Firstly, PDAs provide speed for data collection and data analysis (12). Secondly, PDAs are widely used in both medical and nursing practices. Thirdly, PDAs are becoming widely used for educational purposes (13).

Patterns of using PDAs in medical practices: It appears that the pattern of using PDAs in

medical practices depends on various factors, including age, gender, location of healthcare providers and status of users, where the users' status can be defined as students and medical residents, general practitioners and specialists. Younger physicians seem to use PDAs more than older physicians (14).

Also, younger medical students and residents are more likely to use PDAs for their medical study on a daily basis (15). Several studies further indicate that male physicians are more likely to use PDAs than female physicians (16). The needs of PDA users in the healthcare professions can be categorized into administrative tasks and direct clinical work (17). The PDA functionalities that general practitioners and specialists normally used are word processing, calculator, charge capture, patient tracking, resident hours, telephone message, general time management, personal information management (PIM), patient referrals, procurement of supplies, patient census, order entry, dictation, billing and coding (18).

The PDA has become a popular device in different fields of work especially in healthcare, clinical area and also in medical education. Most physicians use PDAs at the point of care to access drug and clinical information (19), for clinical decision support, for prescribing medication and for viewing lab results wirelessly.

The advantages of incorporating PDAs into *medical education* are to provide the alternative ways of learning, taking notes, and updating relevant information with regard to their learning, as well as reducing medical errors. Moreover, students can have other ways of communication while they are in both clinical placement and on the campus. Other advantages are cost and time savings in term of manpower and hardware-software installation.

The drawbacks include difficulties in software installation, and loss of data due to improper backup, technology compatibility, data security, scalability and data synchronization.

3. Continuing medical education

Continuing medical education (CME) refers to a specific form of continuing education (CE)

that helps those in the medical field maintain competence and learn about new and developing areas of their field. These activities may take place as live events, written publications, online programs, audio, video, or other electronic media. Content for these programs is developed, reviewed, and delivered by faculty who are experts in their individual clinical areas. There are also some types of online CME instruction: board review/self-assessment, case-based interactive, guideline-based, point of care learning, podcast, slide-audio lecture, slide-video lecture, streaming video, text and graphics, text and audio. There are also postuniversity courses and pre-congress courses.

4. Mass-media - a modern and important communication and information tool between doctor and patient

Mass-media is an important communication element in the society. Practicing medicine implies also communication with mass-media, in the end with the society. For the wellbeing of the society, education and correct information of the citizen must pull together (20).

The journalists and the doctors serve the same purpose: the citizen. Unfortunately, the journalist-doctor relationship is somehow frail, and the message that finally reaches the citizen is confuse and incomplete. The filter of the doctor-citizen relationship is mass-media. We have to use this filter efficiently by learning the rules and the communication skills. We missed the communication knowledge in the medical traditional teaching, including the communication with mass-media, and the result is the present image (predominant negative) of the doctor and medical practice in our society (21). Hence the need of general informing of the medical world about recommendations, rules, communications techniques with mass-media. Media is a modern possibility of education, information and learning particularly for the doctor. Massmedia represents a possibility of the information, education and learning for the patient. Both can influence the way that the human lives, feels and thinks; the human – patient or doctor (22).

Discussions and Conclusions

Romania has the potential to develop the information technologies, digital communication technologies, mobile communication technologies.

Telemedicine, the use of electronic information and communications technologies to provide and support health care when distance separates the participants, has significantly impacted the delivery of health care services. The regional telecenters aim to become a support for the developing of a regional medical data base, in benefit of a complex range of teleservices such as teleconsulting, telediagnosis, telemonitoring. They also should be effective networks for continuous training tasks, by tele-learning for medical staff and for the patients' informing/educating too.

The PDA has become a popular device in different fields of work especially in healthcare, clinical area and also in medical education. There are major advantages for incorporating PDAs into healthcare organizations, PDAs provide speed for data collection and data analysis, provides the opportunity for physicians to record their medical notes, to order any medical test at their finger tips, to deliver essential clinical information.

The advantages of incorporating PDAs into medical education are to provide the alternative ways of learning, taking notes, and updating relevant information with regard to their learning, as well as reducing medical errors.

Modern medicine provides integrated medical services. The results of the medical act are influenced by the model used by the medical personnel and the patient in communication and behavior

REFERENCES AND NOTES

1. **PUSCOCI, S.; SERBANESCU, F.** *Use of Mobile Communications for Telemonitoring Medicine System. The Romania's potential and perspective.* The Tromso Telemedicine and Health Conference, June 27-30, 2004, Tromso, Norway.
2. **PUSCOCI, S.; SERBANESCU, F.** *Medical Telemonitoring based on mobile communications systems.* Workshop, Medicine University Cluj-Napoca, October 28-31, 2004, Romania.
3. *Ibidem*; **PUSCOCI, S.; SERBANESCU, F.** *Use of Mobile Communications for Telemonitoring Medicine System. The Romania's potential and*

- perspective.
4. **ALMUT H.; LINDB L.** *Network solutions for home health care applications, in Technology and Health Care* 11. IOS Press, Sweden, 2003, pp. 77–87.; **MARKOPULOS, O.** New generation mobile telemedicine devices make real-time telecardiology self-monitoring possible and affordable for everyone. In: *International Conference and Workshop: Telecommunication And Mobile Computing*. Gratz University of Technology, 2001.
 5. **PUSCOCI, S.; SERBANESCU, F.** *Use of Mobile Communications for Telemonitoring Medicine System. The Romania's potential and perspective;* **PUSCOCI, S.; SERBANESCU, F.** *Medical Telemonitoring based on mobile communications systems.*
 6. **JANSEN, W.; AYERS, R.** An overview and analysis of PDA forensic tools. In: *Digital Investigation*, vol. 2, 2005, pp.120-132; **LASKIN, R.S.; DAVIS, J.** The Use of a Personal Digital Assistant in Orthopaedic Surgical Practic. In: *The Knee Service Hospital for Special Surgery*, New York, Report April 2004.
 7. **TURNER P., MILNE G., KUBITSCHECK M., PENMAN I., TURNER S.** Implementing a wireless network of PDAs in a hospital setting. In: *Personal and Ubiquitous Computing*, vol. 9, 2005, pp. 209-217
 8. **JANSEN, W.; AYERS, R.** *Op. cit.*
 9. **PUSCOCI, S.; SERBANESCU, F.** *Use of Mobile Communications for Telemonitoring Medicine System. The Romania's potential and perspective*
 10. **TURNER P., MILNE G., KUBITSCHECK M., PENMAN I., TURNER S.** *Op. cit.*
 11. **CHOI, J. J.** Teaching with a Personal Digital Assistant. In: *Journal of the American College of Radiology*, 2005, vol. 2, pp. 825-832; **JAHAN, A.; GREYTER, B.; SMITH, M.P.** The anesthesiologist's guide to personal digital assistants. In: *Regional Anesthesia and Pain Medicine*, vol. 27, 2002, pp. 193-196; **TURNER P., MILNE G., KUBITSCHECK M., PENMAN I., TURNER S.** *Op. cit.*
 12. *PDAs in Family Medicine Practice*. Vol. 2006: University of Rochester Medical Center, 2005; **JAHAN, A.; GREYTER, B.; SMITH, M.P.** *Op. cit.*
 13. **JAMES, G.** Malicious threats to Smartphones. In: *Network Security*, vol. 2, 2004, pp. 5-7; **LOPEZ, B.; KOLECKI, P.F.; LOUIS D.F.; RAVINOWITZ, C.** The use of a personal digital assistant Patient Encounter Log System to track procedures performed by students during a mandatory emergency medicine clerkship. In: *Annals of Emergency Medicine*, vol. 44, 2004, pp. 48-49; **MAYS B.E.; BOSTON B.J.** PDAs @ the library. Introducing PDAs in preclinical medical education. In: *Journal of Electronic Resources in Medical Libraries*, vol. 1, 2004, pp. 85-91
 14. **GARRITTY, C.; EMAM, K.E.** Who's Using PDAs? Estimates of PDA Use by Health Care Providers: A Systematic Review of Surveys. In: *Journal of Medical Internet Research*, vol. 8, 2006.
 15. **CRISWELL, D.F.; PARCHMAN, M.L.** Handheld Computer Use in U.S. Family Practice Residency Programs. In: *Journal of American Medical Informatics Association*, vol. 9, pp. 80-86, 2002.
 16. **GARRITTY, C.; EMAM, K.E.** *Op. cit.*
 17. **STROUD S.D.; ERKEL E.A.; SMITH C.A.** The use of personal digital assistants by nurse practitioner students and faculty. In: *Journal of the American Academy of Nurse Practitioners*, vol. 17, 2005, pp. 67-75.
 18. **GARRITTY, C.; EMAM, K.E.** *Op. cit.*
 19. **STROUD S.D.; ERKEL E.A.; SMITH C.A.** *Op. cit.*
 20. **ARGYLE, M.; HENDERSON, M.** *The Anatomy of Relationship*. London: Penguin & Books, Cox & Wymay Ltd., 1985.
 21. **BARRY, J.** *The Psychology of Human Communication*. University of London Press Ltd, 1980.
 22. **LAZARUS, R.S.; FOLKMAN, S.** *The handbook of behavioral medicine*. N.Y., Guilford, 1982.

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Abstract

This paper provides an overview of an information skills course integrated into the first year engineering curricula named „Documentation techniques". This is a problem based learning subject, which requires the students to work through and made a paper related to one engineering project. Over the past four years the program has transformed radically as a result of applying an action research framework which is primarily concerned with continual improvement and change in practice. Currently the information skills program consists of a student-led orientation tour, an integrated subject in web space integrated developed theoretical using SEARCH AND WRITE tutorial and practical using Irish tutorial of Limerik Technological Institute.

Keywords: *engineering; information literacy; information resources; search strategies; search engines; invisible web*

Articolul prezintă o privire de ansamblu asupra unui curs având ca obiectiv dezvoltarea abilităților de informare, integrat între disciplinele de studiu destinate studenților din primul an la științe inginerești, numit „Tehnici de Documentare”.

Obiectivele cursului sunt orientate spre învățarea bazată pe probleme, care îi solicită studentului să întocmească și să predea o lucrare utilizând resursele informaționale în domeniul ingineriei. În decursul ultimilor patru ani, programul a suferit modificări radicale, ca urmare a aplicării tehnicilor de cercetare activă și prin continua îmbunătățire și schimbarea aplicată în practică.

La ora actuală, programul de dezvoltare a abilităților de informare constă în orientarea în interesul studenților, în resursele informaționale oferite și integrate de spațiul web dezvoltate teoretic prin tutorialul CERCETEAZĂ ȘI SCRIE, al universității Transilvania și practic utilizând tutorialul oferit de Institutul Tehnologic din Limerik, Irlanda.

Cuvinte-cheie: *inginerie; inițiere în informare; resurse de informații; strategii de căutare; motoare de căutare; web invizibil*

1. Introduction

The current changes within society, through the passage into the Information Age and through the tendencies of penetration into the Knowledge Age, modify – for the first time in history – the hierarchy of values: information surpasses the energetic aspects within a system. The globalization tendency – currently manifested, on a very large scale – also has repercussions upon the processes on a small scale. These are the reasons why the present workshop sets out to extrapolate this „globalization” on the fundamental level of searching and using information, of a general model of instruction and teaching in the framework of the initial formation and with implications upon lifelong learning, for university specializations. The organization of the present workshop intends the concentration of a significant number of specialists from different fields with preoccupations in the applications of the information science, in view of identifying the opportunities of interdisciplinary implementation of the information science, fields identified by the new strategies for European development.

2. The concept of Information Literacy

The concept of INFORMATION SCIENCE, INFORMATION LITERACY (IL) asserted itself with the launch of the new information and communication technologies, and appeared at the beginning of the '70ies. The concept developed, asserted itself and became a basic component of the process of initial learning, research, compulsory in the individual study and lifelong learning. IL is nowadays intrinsically complied with informational practice and critical thinking within the information and communication environment. IL developed as science first within the United States of America and Australia. The National Forum in IL was set up in 1998 and there were developed two sets of standards, for pre-university education and for university education. In Australia, there was elaborated a strategic thinking with respect to IL. CAUL-Council of Australian Universities Libraries elaborated standards and integrated courses of IL in the curriculum of several universities. Since 1992 there have been held successful national

conferences in IL every 2 years in Australia and New Zealand. The concept subsequently developed in Canada, China, Japan, Mexico, Namibia, Singapore and South Africa. The references with respect to IL development in Europe are rare and sparse. The majority of the references are from England. Many initiatives were developed in Denmark, Netherlands, Finland, France, Norway, Spain, Sweden. A well-known initiative was launched by the European Commission through the projects EDUCATE and DEDICATE, projects developed in Sweden in order to elaborate doctoral theses with respect to the search for information and its use for the individual study.

During the last years, IL stands for a basic science in the education development, based on knowledge, within informational society and there has increased the number of research projects, of conferences the new standards and many teaching initiatives within many institutions on different levels, developed through websites, online tutorials. The precedent of instruction in IL was the users' instruction in using the library and short courses of orientation in the knowledge universe. Within information society, of the overcharge with digital information, there appeared a new phenomenon: "information fatigues syndromes" and, on the other hand, the new focus on lifelong learning. There is created a reconceptualization of the experts in information science, focused on lifelong learning, within the academic environment. There was always the need for finding, evaluating and using the required abilities in the environment of information and communication technologies. The members EUA, European University Association, representative organisation of the European Union, of the rectors' national conferences, with 650 members, from 45 countries, reacted:" the most important thing for those who learn within informational society consists in including the abilities to learn through the management of the rise in valuable information and through its transformation in knowledge."

Analyzing the specialized literature, IL may be reduced to three concepts:

- *The concept of information and communication*: IL refers to the skill of using the information and communication technology in order to find and disseminate the information.

- *The concept of information sources*: IL refers to the skills of finding and using the information independently or through intermediation.

- *The concept of informational process*: IL refers to the process of acknowledging the information needs, of searching, evaluating and disseminating the information in order to accumulate and disseminate knowledge. This concept includes the former ones and the other (engineers, economists, philologists, informaticians, doctors, librarians).

Individual is deemed as informational system that searches, evaluates, processes and disseminates the information in order to *take survival decisions, for personal updating and development*.

3. Research projects developed in the field of Information Literacy

Sweden: there were defended doctoral theses, based on research which investigated the information consumer's behaviour, there were analyzed 25 colleges with respect to finding, evaluating and analyzing the information. The investigation was carried out by a group of students.

Another project at the University of Linkoping searched the information necessities for the managers of the small companies in order to have access and to the raise the skills in the process of information use. There was carried out a cognitive approach and there were interviewed 23 managers.

Finland: there was developed a research project in which information and learning were studied from several perspectives. One of them would be the behaviour of the user of information and learning process.

Spain: there was developed a project based on the analysis of the quotation techniques, in connection with the level of utilization of the information sources at the University of Barcelona
Germany: The Federal Ministry of Germany, the Ministry of Science and Research and the research service of the University of Dortmund developed a project for the improvement of the conditions of effective use of the electronic informatics resources.

Czech Republic: At the Technical University of the Czech Republic, there were elaborated a few grants: The project "Concept of education information" or "Preparing the information for the users of the technical university". There was aimed at solutions for modern exploitation using the technologies of information and communication in using the informatics systems, the sources, the services and the instruction program.

IFLA, International Federation of Library Association, is one of the strongest professional associations. It developed a specialized division for developing and promoting IL. This division created also the proficiency standards in IL, the indicators IL for higher education and for pre-university education. EAHIL-European Association of Health and Information Library initiated many specializations and approaches in the field of medicine of the information science.

UNESCO developed the collaboration and the products of collaboration in the field of information science. In collaboration with IFLA there was developed a site:
<http://www.infolitglobal.info>.

There was created the Information Literacy Resources Directory where there are to be found the information in the field IL: conferences, publications, seminars, instructions for the professors, librarians and other specialists in IL. Unfortunately, Romania is not in this directory.

4. Information Literacy in Romania

In Romania, IL developed very slowly. The Romanian library science has been very receptive to the requirements imposed by the development of informational society and imposed the implementation of the initial forma of education in the university centres: Bucuresti, Timisoara, Sibiu, Brasov, Targoviste.

Likewise, the Library Association in Romania played a special part in specializing the staff within the libraries. With respect to the other professional categories, there has been little done. During the initiation of a marketing research, with respect to the existence within the curricula for other specializations and fields of knowledge, there could be noted that there were singular cases in which the students have in the curricula courses of information and documentation, that the libraries offer courses of

initiation or that there are online tutorials aiming at initiating the search and the use of the informational resources. This study enhances that the students in Romania prefer the Internet as information source accessed from home, however they are not acquainted with the rigorously scientific documentation sources, with the academic literature, with the scholar internet, with the invisible web, with the evaluation of the resources, with the ethic notions, with the plagiarism and the communication of the results in the scientific research. MECT started a praiseworthy action, of professional reconversion of the schools librarians. The action of development of a new socio-professional category: documentarist teachers and professors has implications in the development of informational society, in the quality of the population's life through obtaining the abilities of information, documentation, evaluation of the information starting from the pre-university education through developing pedagogical abilities in the documentarist teachers and professors.

Numerous researches and studies proved that youth, since young times, spend more and more time interacting with the information and documentation technologies. There is compulsorily necessary for the introduction of IL in education and schools curricula for generating the knowledge of the media role and of the information services.

IL was defined at the congress IFLA from Alexandria, Egypt in 2005: science of the humans' development in all sectors of life in order to search, use and create the effective information so as to personal, social, occupational and educational purposes. IL may be considered a strong tool for the participation in the informational society, for the encouragement of the participation in the informational society, for the encouragement of the information production and interdisciplinary creativity. The education in IL induces knowledge and critical and analytical thinking.

5. Information Literacy at "Transilvania" University

To "Transilvania" University of Brasov, Faculty of Mechanical Engineering students from first year have in curricula the course: Documentation and communication techniques.

SEARCH AND WRITE tutorial is an online teaching model, used to acquire theoretical skills. It is available on e-learning platform. For some practical examples we use Limerick Institute of Technology tutorial (Information literacy tutorial, 2009). Some web pages, considering very representative of this tutorial are presented below and every theoretical page contains practical exercises.

5.1 Structure of tutorial

- Unit 1: Information Literacy and Your Research
- Unit 2: Research Resource Discovery
- Unit 3: Evaluating Research Resource Results
- Unit 4: Tracking Down Results and Keeping up-to-date
- Unit 5: Managing Your Information
- Unit 6: Ethics in Using Information
- Unit 7: Publishing and Disseminating Your Research

Fig. 1: Structure of Information Literacy Course

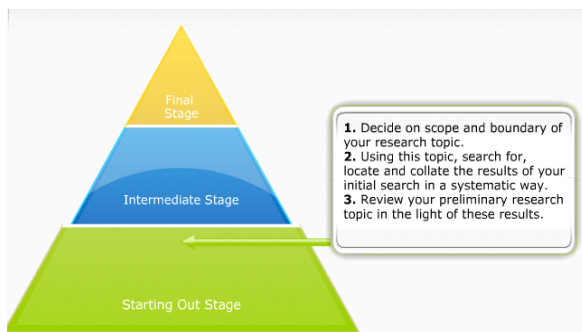


Fig. 2: Starting Out Stage

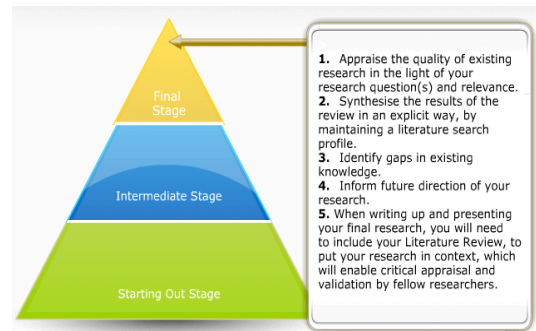


Fig.3: Intermediate Stage

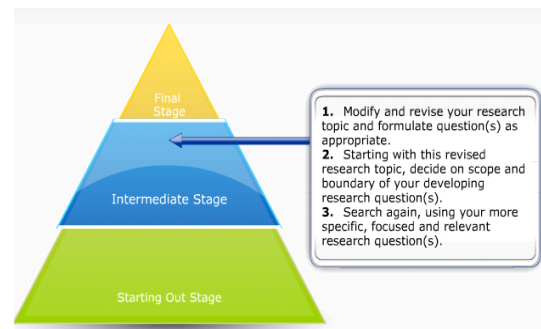


Fig. 4: Final stage

5.2 Conducting a literature review

5.3 Analyzing the information

Anything can and will be published on the Web, so critical evaluation skills are essential to determine the value of the information before you use it in your research.

There are six criteria to consider when evaluating a web site: authority, currency, accuracy, coverage, objectivity, purpose.

1. Relevance to the topic
2. Authority of the author, publisher
3. Method of production and methodology
4. Objectivity
5. Presentation
6. Currency

An analytical framework

Analysis of your research question and considerations of the types of information needed to 'answer' this question as part of your search strategy will have laid the basis for effective evaluation of the information you find.

The process of either selecting or rejecting a piece of information will be governed by critical evaluation of its 'value' to your field of research.

This section considers the use of the following criteria for evaluating information found as part of your information search strategy.

Click on each of the tabs, in turn, to examine each of the six criteria.

Fig. 5: Unit 3, Evaluating Research Resource Result

5.4 Keeping Up-to-date

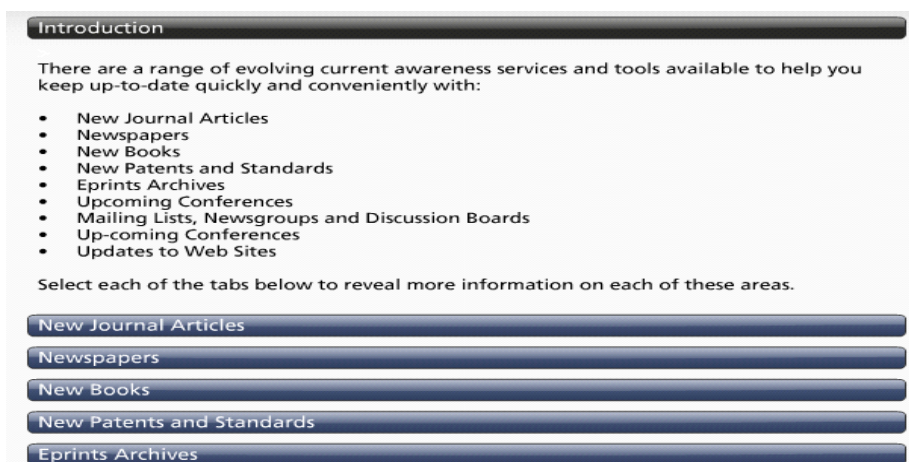


Fig. 6: Unit 4, Tracking down results

5.5 Managing your information

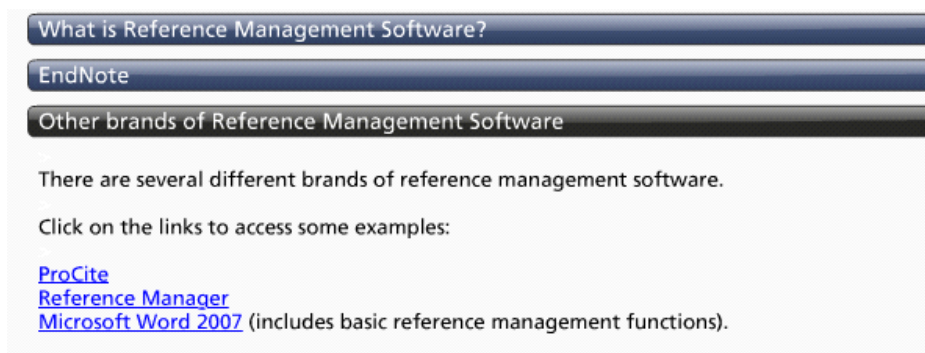


Fig. 7: Reference management software

5.6 Ethical and ethics consideration in using information

"Transilvania University defines plagiarism as the presentation of the work of another author as to provide its reader reasons to think it to be one's own. Plagiarism is a form of academic fraud. Plagiarism is considered a serious academic offence which may lead to loss of credit, suspension or expulsion from the University, or even the revocation of a degree. In its grossest form plagiarism includes the use of a paper purchased from a commercial research corporation, or prepared by any person other than

the individual claiming to be the author".

Paraphrasing, learn how to paraphrase so that you avoid copying an idea word for word. Restating the idea in your own words will help you understand the concept and avoid plagiarism at the same time. Citations are an important form of scholarly communication. They formalize the origin of ideas and concepts so that anyone can trace the development of the research on a subject.

3 Citation Styles

Most citation styles are based on either an inline or numbered style. Inline citations use a brief summary of the reference in the text (such as listing the author and date) with the full reference stated at the end of the chapter or work. Generally the full list of references will be in alphabetical order by the first author's surname.

Numbered styles give the reference an ascending number in the text and the full references are listed in that order, either at the bottom of the page (footnotes) or at the end of the work or chapter (endnotes).

For example, the following is an example of a variant of the Harvard style, which uses the author and date in its inline citation:

Ireland now has its first collaborative development of an MSc course preparing Ireland's first advanced midwife practitioners (Begley et al, 2007).

If the author or date is mentioned in the sentence most styles will state you can omit that detail from the inline citation:

Begley et al (2007) state...

Fig. 8: *Citation styles*

5.8 Publishing and disseminating your research

The Scholarly Communication Process:

Research collaboration, Research communities (virtual and non-virtual), Knowledge transfer – collaborative research, sharing of formal and informal research and Networking (virtual and non-virtual).

Your Thesis As A Research Output:

Management and submission of theses/e-theses; 'Thesis-derived publishing'.

Disseminating Your Research:

Developing your Research Profile - Research Support Systems (institutional, national & international); Research reporting and mandatory dissemination.

Deciding Where To Publish:

Criteria for selection of output e.g., publisher/journal; presenting at conferences.

How To Publish Research:

The Publishing Process; Open Access Publishing and Repositories.

Fig. 9: *Communication process*

6. Conclusions

Quality education implies the acquirement of professional skills in the shortest time and at the highest level. As for higher education, in order to achieve these desiderata, individual study and continuing education are constituents based on information literacy.

Online tutorial goals are: giving significance of Information Literacy, to locate, analyze and use information properly, to determine the quality of information, to find the resources, keep up-to-date with current resources, manage information resources, legal and ethical consideration, manage to communicate the research. The information literacy presupposes the joint efforts of the Faculty, Administration and Library.

REFERENCES

1. **KUHLTHAU, C. C.** Information skills for an information society: a review of research. In: *Information reports and bibliographies*, 19(3), 1990, p. 14-26.
2. **LANDOY, A.; REPANOVICI, A.** Knowing the needs. A system for evaluating the university library. In: *Books of abstracts, Qualitative and quantitative methods in libraries QQML 2009*, Chania, Greece, 2009, p. 44.
3. **INFORMATION** literacy tutorial (2009), Limerik Institute, Ireland, [Available at <http://www.informationliteracy.ie/>].
4. **REPANOVICI, A.; LANDOY, A.** *Information literacy applied on electronic resources-Practices from Brasov and Bergen*. Preluat pe 2, de pe IFLA Conference Durban, South Africa: http://ifla.queenslibrary.org/IV/ifla73/papers/158-Repanovici_Landoy-en.pdf. (2007, august 21).
5. **REPANOVICI, A.; BARBU, I.; CRISTEA, L.** Information literacy learning model for engineering students. In: *Proceedings of 5th WSEAS/IASME International Conference on Engineering Education (EE'08)*, Heraklion, Crete, Greece: WSEAS, 2008, pg. 73-78.
6. **VIRKUS, S.** Information literacy in Europe: a literature review. In: *Information Research*, 8(4), 2003, paper no. 159. Available at: <http://informationr.net/ir/8-4/paper159.html>.

REVISTA ROMÂNĂ DE BIBLIOTECONOMIE ȘI ȘTIINȚA INFORMĂRII - 2010

Începând cu anul următor, *Revista Română de Biblioteconomie și Știința Informării* va fi editată bilingv (în română și engleză). Traducerea articolelor din limba română în limba engleză va fi asigurată de secretariatul revistei.

Tematicile și responsabilitățile de coordonare pentru cele patru numere care vor apărea în anul 2010 sunt următoarele:

- **Nr. 1:** *Bibliotecile pe web* - coordonator: conf. univ. dr. Agnes Erich, e-mail eagnes@valahia.ro
- **Nr. 2:** *Depozite instituționale digitale* - coordonator: prof. univ. dr. ing. Angela Repanovici, e-mail repanovici7@gmail.com
- **Nr. 3:** *Patrimoniul cultural scris - repere biblioteconomice* - coordonator: conf. univ. dr. Elena Tîrziman, e-mail elena.tirziman@bibnat.ro
- **Nr. 4:** *Utilizatorii bibliotecilor din România* - coordonator: drd. Robert Coravu, e-mail coravu@bcub.ro

Autorii care doresc să contribuie cu articole la unul dintre aceste numere sunt rugați să ia legătura cu coordonatorii sus-menționați.

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Abstract

This paper aims to present a big picture of a new concept which deals with the ability of an individual, institution or a country to be easily recognize by others into the world of science. We will discover on the one hand how bibliometrics will help us to improve our scientific records and on the other hand the challenges for the “old and new” science of bibliometry. The conclusion of this paper is that although the bibliometric analyzes may be developed either by scientists or librarians, the lasts have a “competitive advantage” and a professional duty to pay more attention to this field of science and science management.

Keywords: *science visibility; bibliometrics; journals; science evaluation; citations; journals rank; scientific output*

Lucrarea de față urmărește să ne prezinte o imagine de ansamblu asupra unui nou concept care se referă la caracteristica unui individ, a unei instituții sau a unei țări de a fi ușor recunoscuți de către alții din lumea științei. Vom descoperi pe de o parte felul în care bibliometria ne va ajuta să ne îmbunătățim vizibilitatea științifică, și pe de altă parte provocările cu care se confruntă “vechea și totodată noua” știință a bibliometriei. Concluzia acestei lucrări este că, deși analizele bibliometrice pot fi dezvoltate atât de oamenii de știință, cât și de bibliotecari, cei din urmă dețin un “avantaj competițional” și au datoria profesională să acorde o mai mare atenție acestui domeniu al științei și managementului științific.

Cuvinte-cheie: *vizibilitate științifică; bibliometrie; reviste științifice; evaluare științifică; citări; clasificarea revistelor științifice; rezultate științifice*

1. The big picture of scientific visibility

By middle of May 2009 I have been invited to Brasov, Romania for an interesting workshop (*Communications in Information Literacy*) to give a presentation about how science is visible in modern days.

Although this topic is very present in Romania (as well as into other developing countries), I couldn't yet identify much relevant literature for it in international journals. Later on, during my presentation in Brasov, I have discovered that the concept (and questions behind it) is very present in other European countries (like Ireland, Norway, Italy, Greece etc), but they don't refer to it as “scientific visibility”.

I have first heard about this concept during a workshop within the National University Research Council in Romania in 2002 and despite the fact that nobody gave a definition, we all referred to the same thing. But is such a synergy enough to continue using this term and to consider we have a well established concept?

Having said this, my first slides at the Brasov presentation were designed to give a try for a definition into “scientific visibility's” account. Although we ended up into an academic debate whether “scientific visibility” should refer to the state of being visible by other researchers outside your institution or the ability to view (access) valuable scientific information throughout the world, we all agree that in order to be an active research institution, you need both. So, you need to have a good access to valuable scientific results as well as you need to have a good exposure of your research results. This is why I would not recommend taking only one side of the coin. Publishing is equally important as reading in scientific world!

2. The importance of having a good scientific recognition

But if we can easily understand why access to information is important, we should see why being visible to others is crucial. First, we should understand that in this aspect, public research is different than private (corporate) research. The relationship between “Society” and “Public Research” is a contract. Society is allocating funds

to research activities; therefore there are some public expectations in returns. What Research is returning to the Society is called scientific output. And this is the brick and mortar to progress. In opposition, private research is very often a restricted area to public eyes and comes to surface only when patents are already pending.

Quantifying scientific output is a practice without which science policy and science strategy can no longer be imagined. Despite some criticism of bibliometric analyses, this instrument provides a helpful indicator for science decisions, either used for the publication rate (quantity of publications) or for the citation rate (perception of publications).

Considerable amount of digital bibliometric data, now easily accessible, as well as the necessity of providing reliable, quantifiable information on scientific output and the frequent introduction of performance-oriented allocation of funds in science and research made the decision of the application of bibliometrics a world around topic. Nowadays, bibliometrics is experiencing a revival combination of disciplines like mathematical modeling or linguistic text analyses and theoretical principles, as an instrument of science management and international benchmarking. Bibliometrics is gradually beginning to establish itself as an accepted method in the overall evaluation of persons and institutions.

3. The dynamics of bibliometrics

There is always something new about bibliometrics. Science's role into society is permanent changing and public perception to science is evolving fast. We will always need to measure science and compare both science activities and scientists. In a competitive society, Science plays no exception. People want to know which the best scientist in his field is and funding bodies aspire to make indestructible evaluations for their projects calls. Equally important, scientists want to be sure that their articles have the best exposure and are published by most trustful journals. All these things (among others) create a very dynamic environment to bibliometrics science.

But which institutions and group of people

are highly interested in bibliometrics and science visibility and why?

- Librarians – to assist in the decision-making process with regard to journals collection development and maintenance.
- Authors - identify most frequently cited publications within various disciplines - assist with decisions on manuscript submissions.
- Bibliometricians – to track bibliometric trends; study the sociology of scholarly publication; study citation patterns within and between disciplines.
- Publishers - monitor the influence their journals, make comparisons to competing journals.
- Editors - assist in the tracking the influence of editorial policies over time.
- Funding bodies – to assist in the decision-making process of allocating grants, create further research strategies and even recruiting people.
- Technological Transfer Offices – to track considerations about the most interesting technologies and follow up opinions.

According to David Horky and Jeff Dougherty from Thomson Reuters(1) the primary users of citation data in research evaluation fall into these categories:

- External Entities (government agencies/funding organizations).
- University Management (management, including committees, provost, vice provosts).
- University Departments (institutional research, academic affairs, tech transfer, etc).
- Individuals (faculty, staff, students).

4. Challenges in analysing science visibility and bibliometrics

We should also consider major challenges of research evaluation using bibliometric techniques. Citation behavior is very different for different disciplines. Life sciences authors have many articles, highly cited which quickly tail off. Opposite, Mathematics have low citations, and authors continue to be cited for many years. How can we account for these differences?

Other differences are given by the fact that older material is cited more. So how can we account for the different ages of publications that we wish to compare? Citations only accumulate; they never go down. How can we better compare the performance of a researcher with a long publication history to a researcher with a short publication history? How can we identify rising stars in research and keep them? To all these questions we should address solutions and if we don't have them yet, we better prepare to do research in bibliometrics and citation behaviour.

On top of these bibliometric challenges, there are some other research evaluation unsolved issues. Research managers and evaluators want to relate bibliometric data to non-bibliometric data. For example: number of articles per researcher AND citation per dollar spent AND comparisons to peers research teams AND researchers international mobility. We might know the research budget, number of researchers, direct investments, and technological transfer income for our institution, but what about our peer institutions? Is there any pattern we can look for using bibliometric data sets and all these values above?

Another important aspect of scientific visibility and the use of bibliometrics analysis is that we should not depend solely on citation data when creating a visibility strategy for our institution. If we create such a strategy based on theory of creating world class journals edited by our institution or developing highly accessed institutional repositories, we should consider that citation data are not meant to replace informed peer review. Careful attention should be paid to the many conditions that can influence citation rates such as language, journal history and format, publication schedule and subject specialty.

There are other factors which can increase institution's scientific visibility:

- active participation to conferences,
- organizing general and niche conferences
- other scientific output that journal articles,
- creating alumni communities,
- creating attractive institutions' web pages,
- promoting technological transfer results when possible.

Bibliometrics have ethic limits. The question of editorial manipulation for the sake of improving impact factor exists for long times. Do

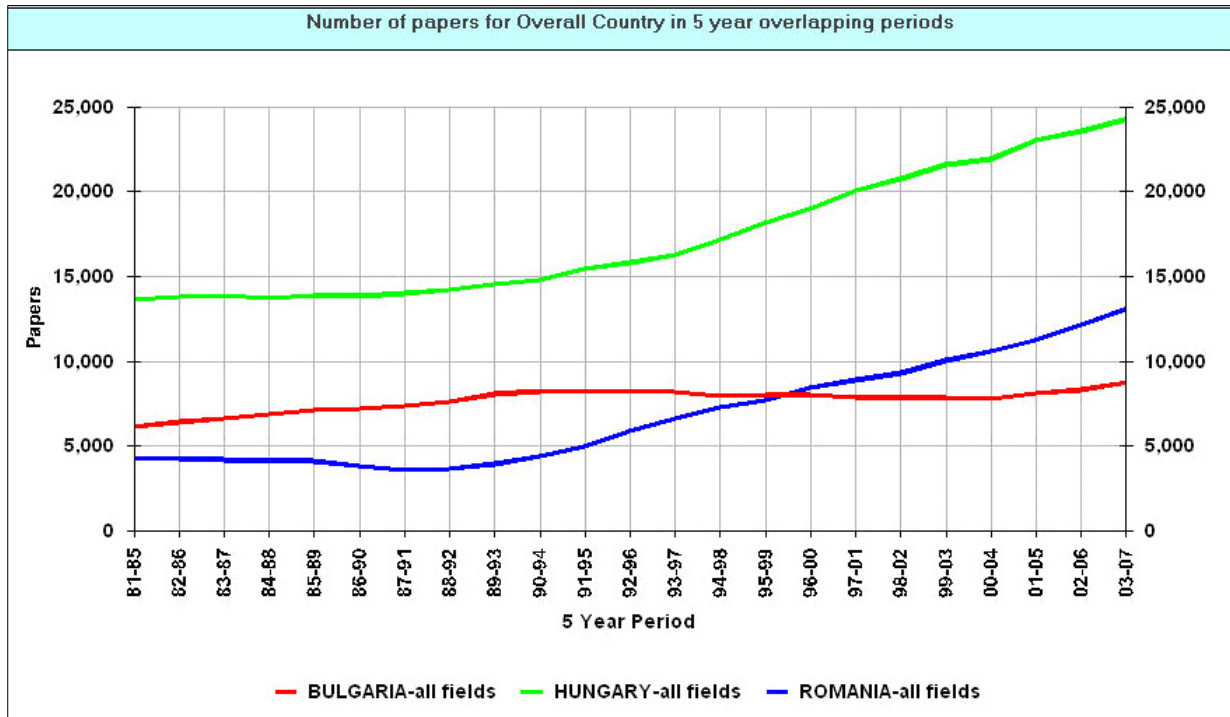
some journals make decisions to include more review papers for the sole purpose of acquiring more citations to the journal? Have some authors been asked to include additional cited references to material published in a journal to which they were submitting a paper? Is self-citation a common practice and how it influences the bibliometric analysis? According to data presented in Journal Citation Reports (JCR) Science Edition (2) 80% of all journals listed in the JCR Science Edition have self-citation rates of less than 20% and nine journals were removed from the 2007 JCR due to excessive self-citing. Indeed, excessive self-citation weakens the integrity of the journal's Impact Factor such as the integrity of the Hirsch Index. This is one good reason to use data sets when creating bibliometric analysis from trustful data providers as Thomson Reuters (for JCR, Web of Science, InCites, Essential Science Indicators) and Reed Elsevier (for Scopus, SciVal Spotlight). For example, journals with excessive self-citation are recognized by the Thomson Reuters Editorial Development Group, are carefully examined and may be removed from the JCR until the issues are resolved.

5. The end-use of bibliometrics

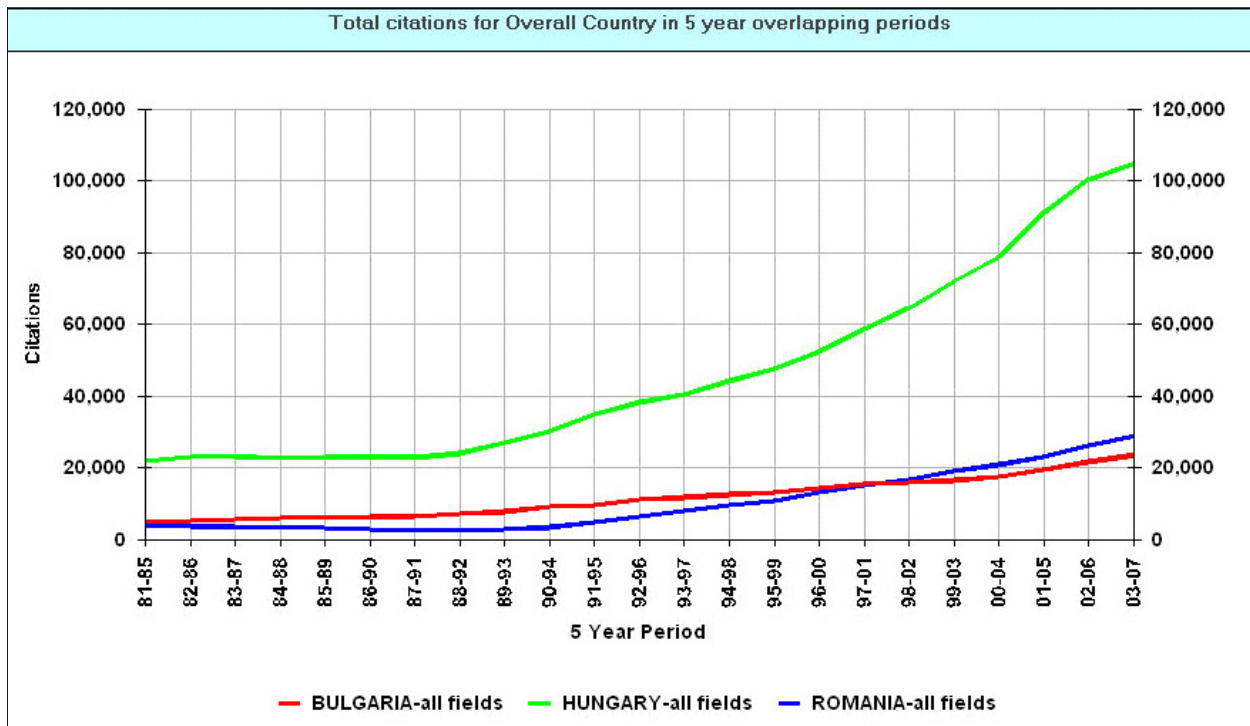
The results of bibliometric analysis should be easy to use and intuitive. This is why bibliometricians use many graphs in their reports. The university management and other beneficiaries have little time to spend when taking decisions and they like visual descriptions about everything. With a good bibliometric tool, we can produce these pictures on the spot, but we have to know very well how they work. For example, using Essential Science Indicators, tracking and making comparison over time (like number of papers included in Web of Science from 1981 for Romania, Bulgaria and Hungary) is a five-minutes task.

By doing a few clicks and making right selections, we can have a result like this:

Scientific Visibility and Bibliometrics



Looking for the number or citations for papers, for the same comparison, all we need is to spend an extra two minutes and produce another graphic like this:



Scientific Visibility and Bibliometrics

The beauty of bibliometrics is that sometimes we have open access sources of data and analytical tools. For example, SCImago Journal & Country Rank (SJR) (3) (<http://www.scimagojr.com>).

With SJR we can create journal rankings, country rankings, compare different countries and journals for number of articles and citations and generate maps for bibliometric results. Due to

different data sets, results may vary. This is why in bibliometrics is always important to choose the right source of data.

Using SJR, we can build within a minute a country rank, for the 1996-2008 period regarding the number of articles, citations, citations per article and country Hirsch Index. Having an extract of this rank, we can see how clear data we can analyze:

Rank	Country	Articles	Citable Articles	Citations	Self-Citations	Citations per Article	H index
1	USA	4.307.536	4.093.725	72.315.171	33.964.623	17,29	1.023
2	UK	1.242.464	1.149.767	17.140.454	4.282.684	14,78	619
3	Japan	1.220.415	1.197.781	11.953.831	3.783.244	10,12	480
4	China	1.217.169	1.210.267	3.969.504	2.038.379	4,61	237
5	Germany	1.132.583	1.093.560	14.435.211	3.952.207	13,46	542
6	France	822.978	793.722	9.987.207	2.409.794	12,88	497
7	Canada	628.843	603.08	8.371.847	1.721.035	14,84	483
8	Italy	608.338	581.455	6.809.577	1.656.582	12,29	432
9	Spain	448.24	424.983	4.373.765	1.166.471	11,07	338
10	Russia	405.278	402.933	1.778.817	558.282	4,42	239
12	India	391.687	375.928	1.974.974	685.821	5,77	202
19	Poland	209.076	206.022	1.250.544	359.402	6,61	208
21	Turkey	170.616	162.296	821.82	243.162	6,03	139
22	Israel	154.155	148.604	2.037.712	326.314	14,07	309
26	Greece	109.208	104.584	846.382	171.631	9,27	179
33	Ukraine	74.248	73.856	241.875	72.497	3,31	102
36	Hungary	72.08	70.33	633.534	118.928	9,37	183
38	Iran	67.766	66.359	236.448	99.79	6,24	80
41	Romania	41.793	41.408	175.079	43.139	5,00	96
46	Bulgaria	29.742	29.342	165.992	33.257	5,92	97
47	Slovenia	29.402	28.919	180.654	42.018	7,01	101
75	Serbia	4.972	4.863	4.371	1.308	2,33	18
93	Moldova	3.015	2.997	13.252	3.018	4,54	40

6. Conclusions

The use of bibliometry plays an important role in science while science management itself suffers major changes. Historically related to libraries, bibliometry asks for more specialized librarians but makes no choice between these and other scientists inclined to measure the scientific output. In such an “old and new” field of science, librarians should be prepared to accumulate new knowledge, share practice and offer new services to their users. Bibliometric analyses show a new way for libraries and will help them manipulate more usefully the electronic collections of books, journals and patents. Librarians will not only help users to access the knowledge presented in books and journals but also to interpret the data within these sources of information.

5. **DOU, Henri Jean-Marie.** Benchmarking R&D and companies through patent analysis using free databases and special software: a tool to improve innovative thinking. In: *World Patent Information*, no. 26, 2004, p. 297-309.
6. **ROCKMAN, F. Ilene.** Distinct and expanded roles for reference librarians. In: *Reference Services Review*, vol. 33, no. 3, 2005.
7. **SANDSTROM, Ulf.** *The University and the New Research Landscape A Research Programme.* Institutional Repository, Swedish Institute for Studies in Education and Research, 2001.

NOTES

1. Presentation given during a Thomson Reuters Seminar for Bibliometrics held in April 2009 in London
2. http://isiwebofknowledge.com/products_tools_analytical/jcr
3. The **SCImago Journal & Country Rank** is a portal that includes the journals and country scientific indicators developed from the information contained in the Scopus® database (Elsevier B.V.)

REFERENCES

1. **ACEDO, Francisco Jose; CASILLAS, Jose Carlos.** Current paradigms in the international management field: An author co-citation analysis. In: *International Business Review*, no. 14, p. 619-639, 2005, Elsevier.
2. **BALL, Rafael; TUNGER, Dirk.** National and International Publications Reflected in Bibliometric Databases. In: *ePublications of Information and Library Science Institute of the JU. Ed. Maria Kocójowa*, no. 4, 2007, p. 60-68.
3. **BOULTON, Geoffrey; LUCAS, Colin.** *What are universities for?* League of European Research Universities; Institutional Repository; septembrie 2008.
4. **BUEHLER, A. Marianne; BOATENG, Adwoa.** The evolving impact of institutional repositories on reference librarians. In: *Reference Services Review*, vol. 33, no. 3, 2005.

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Abstract

This paper suggests that although information literacy is a rather newly coined term, related to the abundance of information made possible with the rapid evolution of IT and -mainly- the Internet, libraries have always been dealing with collecting, organizing, storing and providing information, as well as with instructing their patrons how to use it effectively for their own benefit. As such, libraries are privileged players in the field, provided they can adapt the dynamics of new IT, tools and facilities and orient their services towards instructing their users to apprehend the possibilities of the new ways information is produced and made available in the digital era. It is argued that a prerequisite to achieve this goal is the comprehensive involvement of all agents of an academic institution, in a common, collective effort for the overall re-organization of the structures and services provided within the academic community. Within this approach we present University of Crete Library's strategies and practices to support and promote information literacy.

Keywords: *information literacy; information technology; patron; user; academic institution*

Articolul sugerează că, deși cultura informației este un concept relativ recent, legat de abundența informațională devenită posibilă odată cu evoluția rapidă a tehnologiilor informației și - în special - a Internetului, bibliotecile s-au ocupat dintotdeauna de colectarea, organizarea, stocarea și furnizarea informațiilor, precum și de instruirea utilizatorilor pentru a o utiliza eficient în propriul beneficiu. Ca atare, bibliotecile sunt actori privilegiați în acest domeniu, dovedind că se pot adapta la dinamica noilor tehnologii informaționale, instrumente și facilități și că pot să-și orienteze serviciile în direcția conștientizării utilizatorilor cu privire la posibilitățile noilor modalități în care informațiilor sunt produse și diseminate în era digitală. Se argumentează că implicarea totală a tuturor agenților unei instituții de învățământ superior într-un efort comun, colectiv de reorganizare a structurilor și serviciilor oferite în cadrul comunității academice este o condiție preliminară necesară pentru îndeplinirea acestui obiectiv. În cadrul acestei abordări, prezentăm strategiile și practicile la care a recurs Universitatea din Creta pentru a sprijini și promova cultura informației.

Cuvinte-cheie: *cultura informației; tehnologia informației; utilizatori; instituție de învățământ superior*

1. Introduction

Information literacy is a rather new term, marking only a few decades of existence. Yet, since its coinage in late seventies (1), a lot of discussion has been made and hundreds of pages have been written about its definition and delineation. Numerous papers by various experts in different fields have been devoted to clarify the notion and its implications. Although today we have come to a point of a general agreement as regards its fundamental elements, a lot of papers are still written on its various aspects, even providing new definitions, under seemingly different contexts or for individual constituencies. We will take as our point of departure the seminal description provided by the "Final Report" of the ALA Presidential Committee on Information Literacy (1989), since it lays the basis for most of the modern approaches to the field:

- **To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.**

- **Producing such a citizenry will require that schools and colleges appreciate and integrate the concept of information literacy into their learning programs and that they play a leadership role in equipping individuals and institutions to take advantage of the opportunities inherent within the information society.**

- **Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them.**

- **They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand.** (emphasis added)

This early description sets most of the main topics that are involved in Information Literacy. In fact, it has been unanimously accepted by the various IL projects all over the globe, and forms the ground for all IL implementations. Given this definitional consensus (2), what is most important to our approach is that this seminal definition puts special emphasis on the wider interconnections and implications that Information Literacy has for

both the individual and the society, a topic tending to be overlooked or fused in its practical implementation in the various web based tutorials and instruction courses. Yet, this broader scope is what distinguishes IL from related sets of abilities, such as computer literacy or information technology skills.

2. Information Literacy - Information Technology

It is thus important to point out that Information Literacy is not confined to computer literacy, since it refers to a much wider set of abilities that far transcend expertise in information technology. As exemplarily posed by ACRL (2000), #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".

"an intellectual framework"

Information Literacy is therefore better described not simply as yet another skill or personal ability, but rather as "an **intellectual framework** for understanding, finding, evaluating, and using information--activities which may be accomplished in part by fluency with information technology, in part by sound investigative methods, but most important, **through critical discernment and reasoning**. Information literacy initiates, sustains, and extends lifelong learning through abilities which may use technologies but are ultimately independent of them". (ACRL)

3. The BIG SIX/FIVE

ACRL, pursuing the need for further, more concrete and tangible elaborations, like various other similar efforts, codified those abilities in a

detailed but also comprehensive way so that they can be easily apprehended and used in various IL courses/tutorials, as well as in the curricula at all education levels. Be them "the big six", or "the big five", those competences (**Determine-Access-Evaluate-Incorporate-Use-Understand**) are generally accepted as core skills in all IL projects (3). It is notable, though, that, given the various current discussions and arguments about IL, they are the very same principles set by the "Final Report" of the Presidential Committee on Information Literacy twenty years ago.

4. Abundance and variety of information-information overload

The main concern that underlies all those definitional or elaborative efforts is the end-user's ability to adequately exploit the information he is surrounded with in the modern era, as well as society's necessary actions to properly educate its members. This concern is a very important one, as the rapid evolution of IT and -mainly- the Internet has resulted in a continuously growing overabundance of information, raising serious "questions about its authenticity, validity, and reliability", as well as about the individual's ability to make effective use of it. It becomes a worry of extreme and compelling importance - more than ever evident- in our days, when all kinds of information in fact evade everyone's life with remarkable ease and convenience through the World Wide Web:

- information increasingly comes to individuals in **unfiltered** formats, raising questions about its authenticity, validity, and reliability.

- The **uncertain quality** and **expanding quantity** of information pose large challenges for **society**. The sheer abundance of information will not in itself create a more informed **citizenry** without a complementary cluster of abilities necessary to use information effectively. (ACRL, emphasis added)

Yet the awareness on the challenges posed by the very nature of information, its "uncertain quality and expanding quantity", was considered as an imperative need as early as since the dawn of the information era, and by such diverse thinkers as the media theorist Marshall McLuhan,

the philosopher Jean-Francois Lyotard, or the journalist David Shenk. What each of them in his own way, through a stochastic reflection on emerging new ICT, tried to call to cautious attention, were in fact those exact challenges, and their implications for modern society.

Either pointing out the symbiotic relationship which the medium bares with the message it conveys, embedding itself in it and finally influencing the way the message is perceived, thus essentially affecting society ("the medium is the message" McLuhan, 1964), or describing our post-modern society as an (irreconcilable) plurality of incommensurable language games (Lyotard, 1979), or even expressly warning us against the "data smog" or "information glut" (Shenk, 1997), all emphasize the need for constant awareness and critical evaluation, in order to be able to make effective use of the abundantly provided information. The loads of information should at the same time be faced with critical alertness and evaluative vigilance, both from the side of the end user, but also from society itself, which has to provide its members with adequate education, to be able to live in a sustainable and productive way in an era largely dependent on the manipulation of information. Continuous education on the basis of learning how to learn seems to be the only viable way to follow in a constantly changing context.

5. Aristotle - education as a life-long conduct for the common end

The life-long dimension of education may again seem a very recent elaboration, as related to Information Literacy, yet we also have to note that it already formed the very essence of educational activity as approached by ancient philosopher Aristotle. In *Politics* Book 8, the Greek philosopher and scientist explicitly states that

- education must be a continuing process that has no end except further education
 - the state is a plurality that should be made into a community by education
 - states should be responsible for educating their citizens,
- while he also provides four arguments for public education:
- from constitutional requirements

- from the origins of virtue
- from a common end to be sought by all citizens
- from the inseparability of the individual and the community. (Chambliss, "Aristotle") (4)

If we look at the aim of Information Literacy as described in another one of its broadly accepted, recent definitions, we realize that there is in fact a striking correspondence with the views of the ancient philosopher:

"...to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life..." (World Summit on the Information Society)

6. Information vs. knowledge

At this point we should also refer to the well discussed distinction between information and knowledge, because it has caused a lot of disagreement in relation to Information Literacy. Although Zurkowski himself, the coiner of the new term, was cautious enough to warn that "Information is not knowledge," (Zurkowski 1974, p. 1), there have been many arguments regarding the priority of the one over the other in the Information Literacy field, that even lead Owusu-Ansah (2003) to talk about "the fallacy of the 'information versus knowledge' debate". This paper is not the adequate occasion to properly address a topic that goes as back as the beginning of philosophical thought. Yet, although we agree that "information and knowledge are intertwined by their very structure and existence", that "an interactive relationship between information and knowledge" really exists, and that "knowledge may indeed also be seen as information", we also have to point out that this is a relationship of complementarity, but not also of interchangeability, since information does not necessarily grant knowledge. Even if we do not get into the philosophical discussion, but limit ourselves to a more "pragmatic" approach, we have to admit that "hoards of information are of little value: only that information which is actively processed in the mind

of an individual through a process of reflection, enlightenment, and learning can be useful” (Alavi and Leidner, 1999). In an age in which information is provided in a cataclysmic way, it is important to emphasize that information does not guarantee knowledge. There is indeed a distinctive difference between information and knowledge, which should not be blurred. Knowledge in fact incorporates a quality element of evaluated and incorporated information and at the same time information that can be put to praxis. After all, it is in fact the production of exploitable knowledge out of information that is the very core essence of what information literacy is about. It is of course knowledge, and not information for itself, that is the ultimate goal of IL (5).

From this respect, we can describe Information Literacy (6) as the scholarly response to information overload, putting emphasis not only on availability and access, but also on critical evaluation and wise use (access-evaluate-use) for the benefit of both the individuals and the state bodies, in the modern environment of life-long learning and globalized economy.

7. Academic libraries and IL

Libraries from their very establishment/ beginning in the ancient times were never in fact simple storehouses of resources, but instead have always been dealing with all aspects of the information life-cycle (collecting, organizing, providing, instructing). Of course, when we talk about academic libraries, the emphasis is specifically put on *scholarly* information, on the quality of resources and instruction they provide for study, teaching and research. So in fact, the description of the role of the academic libraries in the Information Literacy as exemplarily provided by ACRL:

- coordinate the evaluation and selection of intellectual resources for programs and services
- organize, and maintain collections and many points of access to information
- provide instruction to students and faculty who seek information
- promote and support collaboration and staff development among faculty, librarians, and administrators

in principle does not add much, or does not

bring crucially new elements in the academic library field. From this respect, we should rather agree with S. Campbell, when he concludes that "what started as library orientation, grew to be library instruction and bibliographic instruction and finally became information literacy" (Campbell, S., 2004). This is mainly because libraries accepted the challenges and opportunities provided by the new ways of creating, storing, and disseminating information offered by ICT, Internet and World Wide Web development and adapted them as a means for their own evolution.

8. University of Crete Library Information Literacy approach - library: a lively cell

University of Crete Library has developed, with regard to Information Literacy, a comprehensive and integrated approach that includes all library facilities, tools and services, extending from library premises to electronic tools design, and employs a multifaceted strategy, that involves all UOC agents, in an effort to help users achieve information literacy, as a life-long process of turning information into knowledge. In this conception, the library is *a lively cell* in the heart of the university, which at the same time is a meeting place, a place for search and study, and a place to find help and instruction in study and research.

9. University of Crete

The University of Crete received its first students in 1977, and has evolved into a medium size institution, widely acknowledged for its innovative approach to education, its considerable research activity and dynamic character in international cooperation. It consists today of 17 departments, organized in 5 faculties, with about 12.000 students enrolled (1167 MA, 1349 PHD), 1.165 faculty members (127 temporary), and 267 administrative staff. It is situated in the two cities of Rethymno and Herakleio, and currently based at three campuses (the departments at Herakleio are gradually moving to the new campus outside town).

10. UOC Library

The Library, to better serve the needs of the academic community, is divided in the Central Library at Rethymno, and currently four branches at Herakleio (branch of Computer Science, Mathematics and Applied Mathematics departments, branch of Chemistry and Materials Science departments, branch of Biology and Physics departments, branch of the Faculty of Medicine), which are soon to be united in one central building of 1.500 m² which is about to be ready in the new campus.

The Central Library is located in the Rethymno campus, housed in a building of 5.000 m² (an Expansion of 1.500 m² is also planned to cover the increasing needs). It serves the Faculties of Letters, Education and Social Sciences. The library has 48 members of permanent staff (plus 15 temporary).

11. UOC Library core principles and strategies

Some of the basic principles that our library has followed from its very establishment for its development are

- structured as an integrated unit (same administrative agent)
- adoption of international library standards (collections - services)
- introduction of automation and IT (IT-R&D team)
- combination of traditional and modern sources of information
- networking-collaborations on a domestic and international level (European, National and District research and development programmes)
- user-centered (Subject Reference - User instruction)
- continuous staff training

All the above made it possible to develop a fully automated library, for the first time in Greece.

12. UOC Library IL perspective

As stated above, our Library has developed with regard to Information Literacy an integrated, multifaceted, user-focused approach in an effort to

help users locate and make best use of all available information. This approach presupposes a comprehensive involvement of all UOC agents:

- Library (responsible for available content and user instruction)
- Networks Center (which provides the network infrastructure and stability, required broadband and authentication mechanisms)
- Faculty (the users, both students and teaching staff, whose information needs the library is there to serve)
- Administration (which provides the funding but also the whole organizational structure that makes all possible).

13. Content: critical mass of resources

We consider that in a university environment, together with the academic quality, the critical mass of available information resources is also a crucial factor for study and research. We have tried to create comprehensive, specialized collections in the fields that are covered within the university. Specifically regarding electronic sources, we realized very early that a key factor in coping with the costs necessary to cover the increasing need for quality information sources was in networking, cooperating and sharing. This could be accomplished with the formation of a national consortium and the economy of scale it could create. UOC Library was one of the promoting and founding members of the Hellenic Academic Libraries Network (HEAL-link). Today, apart from the open access material, a big part of our subscriptions is done through consortial agreements within the frame of HEAL-link, while the rest of our users needs are covered with bilateral agreements.

14. Creation of content - Promotion and support of Open Access Initiatives

At the same time we have also directed our efforts to the support of the work produced within the university, as well as to making widely available material of the library holdings through digitization, to the extent that this is legally permissible. The library has been registered and acknowledged as the proper place to deposit,

administer, preserve and disseminate all the scientific work produced within the University of Crete, for which it operates an institutional repository from 1989. The library has also taken serious action in the field of digitization of the rare and valuable material of its Closed Collections, which it makes available online through ANEMI Digital Library of Modern Greek Studies.

To give a general overview of the (discipline focused) content we provide to our users, we should mention that as regards print material, our collections amount to 336.850 titles, or 467.665 volumes of books and monographic series, while we also have about 70.000 bound volumes of 1500 journal titles. With regard to electronic material, we have access to 18.717 e-journal titles (most of which coming from consortial agreements via HEAL-Link, or bilateral agreements of our Library, while 3.568 are open access), and 101 comprehensive or specialized databases, while 12.500 monographs and 184 series (7.000 books) are available to our users in the form of e-books. During 2008, 290.859 articles were downloaded to computers connected to UOC network (data referring only to 8 of our subscription providers). ANEMI Digital Library of Modern Greek Studies offers more than 2.000.000 digitized pages from our rare and valuable material (UOC digitized material, in-house digitization), while our E-locus institutional repository contains 1757 titles (1998 onwards).

15. Course Reading lists

From the end of 2005 onwards, we also started to catalog in our LIS (in addition to Course Reserves) the Course Reading lists provided by the faculty staff. This proved to be a very useful service to our users, since it makes available topic-specific bibliographies regarding courses, seminars and training classes which can be searched/browsed by semester, department, course title/code, teacher's name, etc. We have 1010 Course Reading lists registered to our catalog so far.

16. Access to content

As regards access to content, we have made every effort to ensure that our electronic resources will be available to our registered users from everywhere and at all time (from library premises, campus or home on a 24/7 basis). The agreements we make with our suppliers provide for IP access to all of the subscribed material. Realizing how important it is for our users to be able to have access to authorized material while working at home, we were the first in the university who actively promoted off-campus authentication, and worked in support and close cooperation with the UOC Networks and Communications Center towards this end. All members of the UOC academic community are now provided with VPN authentication while working off-campus (a rapid increase of adsl users requesting of VPN accounts was registered after library notice). Networks and Communications Center also operates a WiFi network within the premises of all library branches, to provide wireless access to the constantly increasing number users who come with their laptops (UCNET reports heavy use of WiFi network within the Library).

17. Electronic tools and facilities

In the selection -or creation- of the electronic tools that provide access to our material, we try to achieve the most possible cross-platform integration and interoperability. We make wide use of broadly accepted metadata standards (mostly MARC and DC) as well as interoperability standards (Z39.50, Open URL, OAI-PMH, SRU-SRW, etc.). We also put emphasis on the level of personalization that our tools provide, so that they are more user-friendly and adjustable to the users' individual needs and habits (allow users to create their own personal accounts in order, e.g., to be able to save their searches or received results, or customize the interface to their own preferences).

Through Library's web site, our users have access to

- Library OPAC
- E-journals catalog
- Dbs catalog
- Elocus Institutional repository

- ANEMI Digital Library of Modern Greek Studies

- Course Reserves
- E-learning platform

- Livesearch metasearch portal

Our users also have full access to

- Zephyr virtual union catalog of Greek academic libraries (a portal created, maintained and hosted by our Library)

- HEAL-Link e-resources catalog

- Collective catalog of journals in Greek_Research_Libraries (a network in whose establishment UOC Library was a founding member)

18. Library tools - integration

Our main effort is to provide to our users «one stop» WEB site pages, so that, although the various tools perfectly operate as self-sufficient points of access to the content they provide, they also integrate with the other tools. Thus the user can navigate through them and finally arrive to the resources he is interested in, without needing to start his research from the scratch again. So, a user who is looking for a certain journal issue in our OPAC, can, from the items screen, activate our integrated alphabetic e-journals online catalogue to check for available electronic versions. On the other hand, the Open URL resolver we are using also allows integration with the vast majority of our providers' sites: when a user locates an article in a database which does not provide full-text for the certain article, he can activate the offered link to be automatically transferred to our catalog and find-out if this article is provided by another vendor to which the library subscribes.

At the same time, we have also developed, using open source tools, the Livesearch meta-search portal, which enables a cumulative, federated, faceted search for all our resources. We hope that our Livesearch meta-search tool will soon evolve to a single search point through which our users will be able to locate all the material the library owns or has access to.

We consider that the continuous decrease in inter-library loan requests that is registered in our statistics is related to the continuous increase of available electronic resources and to ease of access with which they are provided to the end-

user.

19. Meetings with Faculty on a departmental or personal basis

We try to collaborate as close as possible with our faculty members, both on a departmental and on a personal basis. Our effort is to provide, apart from the multi-disciplinary ones, at least one specialized database relevant to the main discipline/ subject area taught in each department. For this we cooperate with the heads of the academic departments, and the departments' library committee. On the other hand, we also try to broaden the awareness and deepen the knowledge of the available library resources among faculty members (of course, in this case we provide information and advise about tools and material of interest, and explain options, rather than teaching professors, and also get feed-back on extra content they would like).

We also count on the cooperation and feedback we receive from faculty members that are frequent library users, while we also take under serious consideration the needs and suggestions of our graduate students, who make heavy use of the library resources for their research, projects and theses. We have also found that graduate students, due to their advanced research needs and in combination with their adaptivity to new tools, resources and services, also act as a means to (further) activate their professors.

20. Instructing users

The main user groups to which we provide formally organized training and instructions are undergraduate and graduate students, Erasmus or Socrates students, as well as kindergarten and primary school teachers who follow continuous education programs. We also have each year a lot of visiting schools from all pre-university levels, to which we provide a presentation about library resources, services, tools and regulations, as well as a tour of the Library building. In 2008 the library held 193 users' seminars, which were attended by 3.711 users (2.417 of which were freshmen), while 1.197 visitors to central library

were also provided with a library presentation and tour of the building.

With regard to participation of freshmen to library orientation, 80% attended the library courses in 2008 (percentages are calculated by enrolled, not active students; we must also note that same orientation courses are offered throughout the year, for those first year students that for any reason could not make it to attend the course at the beginning of the academic year).

The orientation course mainly focuses on the use of library and its OPAC, takes place at the beginning of each academic year, immediately after new students' enrolment, and is prerequisite to activate their loan rights. We also hold throughout the year scheduled courses on the use of library's electronic tools and information sources, and scheduled databases tutorials which are in fact training sessions for students focused on comprehensive databases. Throughout the semesters the library, in co-operation with faculty members, offers on-demand, content-focused tutorials, which usually are 1-3 hours courses within the curricula.

21. The topics of the Library orientation course

The Library orientation course is divided in two parts. The first one is mainly an introduction to the library building, the library's print material and e-resources, classification scheme (LC), authority headings (LC subjects/names), the various services (eg. Circulation, ILL) and facilities (electronic or not: computer equipment, printers, microfilm readers), and library regulations. In the second part the students are provided with a demonstration of the use of the online library catalog and also introduced to the various electronic tools (e-journals, databases, institutional repository, Digital Library of Modern Greek Studies, meta-search) through the library's web site. The orientation course ends with a Library tour.

22. IL and users seminars

The two main axes that form the underlying basis for the user instruction the library provides in its attempt to help users achieve information

literacy skills are

- to instruct them develop research strategies on tools and methods to locate really important and relevant information, as a means to improve critical thinking that can turn information to knowledge and

- to discern the added value of academic/scholarly resources.

More specifically, we try to help the students to

- Familiarize with the organization of library material

- Familiarize with library e-tools and resources

- Understand the use of library catalog (WebOpac)

- Locate material in print or electronic form

- Identify and evaluate critically the various resources they find

- Identify scientific material

- Focus their research on specific topics and locate relevant material

- Improve their communication with library staff.

23. Users seminars - Emphasis on

Some of the points on which we put special emphasis in our seminars are

- The value and consistency of specific scholarly products vs. general resources available on the Internet,

- the importance of peer-reviewed material

- Google as both a threat and challenge (a comprehensive, very effective search machine, which does not necessarily provides academic content, or can obscure the limits between subscribed and freely available resources -a point that makes branding an imperative- the value of Google Scholar)

- E-journals/databases-specific functionality: "references", "cited by", "searchable cited references", "Visual Search", etc.

24. Electronic dissemination

Apart from the announcements we publish in our web site, we also send electronic messages to faculties through their all-users lists (new tools/resources, new functionality of existing resources,

periodic reminders), as well as faculty-specific messages. To promote and encourage the use of our information resources we also send replies with specific links and suggestions for the material required by the faculty staff, while we also encourage all our users to make use of the various alert and awareness services available either through our own tools or by providers themselves.

25. Training material

We provide a wide variety of printed material (flyers, leaflets, quick reference guides) most homemade, but also those made available by the various providers. All the print instructive material we create is also available in electronic format from our web site. We also make use of training material that is available online from providers (e.g., Academic Search Complete:

http://support.epnet.com/training/lang/el/PPT_tutorials/EL_AdvSrch_Single_Tut.ppt, Arts and Humanities Citation Index: <http://scientific.thomsonreuters.com/tutorials/wos8/wos8tut2.html>, JSTOR:

http://www.jstor.org/templates/jsp/_jstor/templates/info/resources/librarians/meetingFiles/Using_the_JSTOR_Interface.ppt). At the same time we have started experimenting with providing our own online training material. We have established an e-learning platform and in this pilot phase we are creating an online version of the library orientation course, and a course on our e-resources and tools.

26. To be done

As following steps, we feel we have to work with the university administration and the faculties in order to formally establish a course on information literacy either as a separate, core course in the curricula (adapted for different faculties), or one 2-3 hours core session within each course. At the same time we have to develop subject-focused, interactive training material, which will be available through our e-learning platform.

27. What is Next? Where are we getting to?

The introduction and gradual implementation of Web 2.0 technologies, with its new functionality (blogs, wikis, mobile access, etc.) and even wider integration and transparency of electronic tools and resources provides a groundbreaking opportunity in online education and makes discernible a new e-space in education and the library horizon. In such a new library environment the various Library Information Systems & metasearch tools are going to be replaced by or transformed to Content Management Systems (LIS -> CRM), which will deal with the various resources in a more comprehensive way. In the broader academic environment, the teacher-centered education system is gradually giving its place to a collaborative, student-centered education model, which uses “online technology to enrich education and foster relationships among students, faculty, and universities” (WISE). Organized in the form of Virtual Learning Environments, this collaborative distance education model “will increase the quality, accessibility, and diversity of online education opportunities” (WISE). In the library world, Digital Learning Object Repositories will integrate with Learning Management Systems, to provide re-usable and adaptable (even versioned for different courses) learning objects, shaping a very flexible and effective education platform.

28. Way of proceeding: Reflective innovation

Libraries thus seem to still be a critical agent in the information society and the reshaped education system, crucially supporting the education process and even contributing to newly developed curricula. Their only way of proceeding in this rapidly changing information era is to reflectively accept innovation, activating their long experience in handling and providing information resources, as well as in user instruction, to facilitate implementation of new technologies into sustained educational practice.

Information Literacy strategies at the University of Crete Library

NOTES

1. The term "information literacy" was first used at 1974 by Paul Zurkowski, President of the Information Industry Association : "People trained in the application of information resources to their work can be called information literate." (Zurkowski 1974, p. 6).
2. "Indeed, nothing underscores the existence of a consensus on the meaning of information literacy more than the fact that virtually every recent writer who dealt with the definition of the concept resorted to reiterating or tacitly accepting what the ALA provided in 1989" (Owusu-Ansah, 2003).
3. On the other hand, ACRL has even been criticized, from a rather librarian guild point of view, that the "breathtaking thoroughness" of the "isolated five distinct standards with twenty-two performance indicators and eighty-seven outcomes", due to the "excessively exhaustive aspirations of the drafters" was such, that "may well have compromised the practical viability of their work", since "expressed occasionally expectations that could not be easily circumscribed" (Owusu-Ansah, 2003).
4. Aristotle of course lived in a totally different society, yet it is important that he opted for public education centuries before the French Enlightenment and in an era when private education was highly developed, since for the first time in world history he refers to legislated, life-long, common education, within the framework of which the human person becomes an active citizen.
5. It seems that in the assertion of a distinctive difference between information and knowledge librarians saw a threat for underestimation of their profession: "Inherent in that claim appears a *value judgment* that assumes the *inferiority of the information gathering process* to a more *substantive and valuable operation of knowledge creation*", which could *potentially undermine the contributions of librarians who emphasized the importance of information instead of asserting the significance of knowledge* (Owusu-Ansah 2003, emphasis added). The evolution of IL has shown that what is definitely resolved in our days is not the difference between information and knowledge, which was clear for the very first, but the supposed opposition between librarians and faculty as regards the sharing of roles in IL, where both members of the academe and librarians have their own valuable contribution.
6. "Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society." UNESCO Education Sector, *The Plurality of Literacy and its*

implications for Policies and Programs: Position Paper. Paris, 2004, p. 13.

<http://unesdoc.unesco.org/images/0013/001362/136246e.pdf>.

REFERENCES

1. **ALAVI, Maryam; LEIDNER, D. E.** 1999, "Knowledge management systems: issues, challenges, and benefits". In: *Communications of the AIS*, Volume 1, Issue 2es, February 1999.
2. **ALAVI, Maryam; LEIDNER Dorothy E.** Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. In: *MIS Quarterly*, Vol. 25, No. 1 (Mar., 2001), pp. 107-136 Stable URL: <http://www.jstor.org/stable/3250961>
3. **American Library Association Presidential Committee on Information Literacy**, *Final Report*, Washington, D.C., 1989 <http://www.lita.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cfm>
4. **Association of College and Research Libraries**, *Information Literacy Competency Standards for Higher Education*, 2000, Chicago, IL, <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm>
5. **BERSIN, Josh; HOWARD, Chris; O'LEONARD, Karen; MALLON, David.** *Learning Management Systems*, 2009. Bersin & Associates. <http://www.bersin.com/Lib/Rs/Details.aspx?docid=10339576>
6. **CAMPBELL, S.** "Defining information literacy in the 21st century". Paper presented at the World Library and Information Congress: *70th IFLA General Conference and Council*, August 22-27, 2004, Buenos Aires. Available at: www.ifla.org/IV/ifla70/papers/059e-Campbell.pdf
7. **CHAMBLISS, J. J.; ARISTOTLE B.C.** (384-322) - Education for a Common End. In: *StateUniversity.com Education Encyclopedia*, <http://education.stateuniversity.com/pages/1763/Aristotle-384-322-B-C-E.html>
8. **COATES, H; JAMES R.; BALDWIN, G.** A Critical Examination of The Effects of Learning Management Systems on University Teaching and Learning. In: *Tertiary Education and Management*, 11: 19-36, 2005 Volume 11, Number 1/March, 2005, DOI 10.1007/s11233-004-3567-9.
9. **CROW, Raym.** *The Case for Institutional Repositories: A SPARC Position Paper.* The Scholarly Publishing & Academic Resources Coalition, Washington, D.C., August 2002.
10. **EISENBERG, M.B.; BERKOWITZ, R.E.** *Information Problem-Solving: The Big Six Skills*

- Approach to Library and Information Skills Instruction*. Norwood: Ablex Publishing Corporation, NJ, 1990.
11. **ELLIS, Ryann K.** (2009), *Field Guide to Learning Management Systems*, ASTD Learning Circuits, http://www.astd.org/NR/rdonlyres/12ECDB99-3B91-403E-9B15-7E597444645D/23395/LMS_fieldguide_20091.pdf
 12. **JENKINS, M, T.; Browne and R. WALKER.** VLE Surveys: A longitudinal perspective between March 2001, March 2003 and March 2005 for higher education in the United Kingdom. UCISA. http://www.ucisa.ac.uk/groups/tlig/vle/vle_survey_2005.pdf, Retrieved August 8, 2007
 13. **KOUKOURAKIS, Manolis.** ANEMI. The Digital Library for Modern Greek Studies". In: The New Griffon, 9 [The Modern Greek Resources Project: Libraries, Collections, and Databases - edited by Maria Georgopoulou], Athens Dec 2007, pp. 76-83. papers presented at the Consortium of Hellenic Studies Librarians, Modern Greek Resources Project Meeting, which took place at the Gennadius Library in Athens, December 7-10, 2006.
 14. **LENAKI, K.; PAPAĐAKI, P.; KOSMAS, G.** Federated search and its role in the educational process: the case of Livesearch. In: "*Ist Scientific Symposium "Information Literacy and Greek Higher Education: the contribution of the EPEAEK II Academic Library Projects"*". University of Thessaly Library & Information Centre, Volos, Greece (11-12 December 2008) http://ilsym.lib.uth.gr/en/program_en.asp.
 15. **LUTHER, J.** Trumping Google? Metasearching's Promise". In: *Library Journal* [Internet], October, 2003, 128, (16), pp. 36-39.
 16. **LYOTARD, Jean-Francois.** *The Postmodern Condition: A Report on Knowledge*, 1979.
 17. **McCASKIE, L.** *What are the implications for information literacy training in higher education with the introduction of federated search tools?* Master's thesis, University of Sheffield. http://dagda.shef.ac.uk/dissertations/2003-04/External/McCaskie_Lucy_MALib.pdf
 18. **McLUHAN, Marshall.** *Understanding Media: The Extensions of Man*, 1964, Mentor, New York.
 19. **McLUHAN & Fiore.** *The Medium is the Massage: An Inventory of Effects*, 1967, New York: Bantam Books.
 20. **MOORE HOWARD, Rebecca.** *Information and Information Literacy: A bibliography for composition and rhetoric*. <http://wrt-howard.syr.edu/Bibs/Info.htm>
 21. **OWUSU-Ansah; EDWARD, K.** Debating definitions of information literacy: enough is enough! In: *Library Review*, 54.6, 2005, pp: 366-374
 22. **OWUSU-Ansah; EDWARD, K.** Information literacy and the academic library: a critical look at a concept and the controversies surrounding it. In: *The Journal of Academic Librarianship*, 29.4, July 2003, pp. 219-230 Paulsen, M. F. (2003). "Experiences with Learning Management Systems in 113 European Institutions". *Educational Technology & Society*, 6 (4), 134-148, Available at http://ifets.ieee.org/periodical/6_4/13.pdf
 23. **PAULSEN, M. F.** *Online Education and Learning Management Systems - Global Elearning in a Scandinavian Perspective*. Oslo: NKI Forlaget, 2003.
 24. **PURDUE, Jeff.** Stories, Not Information: Transforming Information Literacy. In: *Libraries and the Academy*, Vol. 3, No. 4 (2003), pp. 653-662.
 25. **SHAPIRO, J. J.; HUGHES, S. K.** Information literacy as a liberal art: Enlightenment proposals for a new curriculum. In: *Educom Review*, 31.2, 1996. <http://www.educause.edu/pub/er/review/reviewarticles/31231.html>.
 26. **SHENK, David.** *DATA SMOG: Surviving the information glut*. San Francisco, Calif.: Harper Edge, 1997.
 27. **SHENK, David.** Was I right about the dangers of the Internet in 1997? In: *Slate Magazine on the Web*, July 25, 2007. <http://www.slate.com/id/2171128/>
 28. **WISE: An Online Consortial Initiative to Build Multi-Institutional Capacity for Library & Information Science Education.** <http://www.wiseeducation.org>
 29. **World Summit on the Information Society. Plan of Action.** In: *IFLA Journal*, 30, 1, 2004, pp. 80-81. <http://www.state.gov/documents/organization/27778.doc>.
 30. **ZURKOWSKI, P.G.** *The Information Environment: Relationships and Priorities*. National Commission on Libraries and Information Science, Washington DC, 1974. http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/36/a8/87.pdf

The Advantages of Computerized Information Systems in the University Library

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Abstract

Information systems have become a vital component of all aspects of managerial work and it is hard to conceive that a modern manager should carry on his/her work without at least relying on the components of the information systems. Generally speaking, each person taken separately differs in his/her response to information from any other person and this brings it about that decisions taken by different individuals in similar situations are different.

Keywords: *engineering; information literacy; information resources; search strategies; search engines; invisible web*

Sistemele de informare au devenit o componentă vitală a tuturor aspectelor ce caracterizează activitatea managerială și este greu de conceput ca un manager modern să-și desfășoare activitatea fără a se baza pe componentele sistemelor de informare. În termeni generali, fiecare persoană luată separat diferă din punctul de vedere al reacției față de informație, iar acest fapt determină diversitatea deciziilor luate de diverși indivizi.

Cuvinte-cheie: *inginerie; inițiere în informare; resurse de informații; strategii de căutare; motoare de căutare; web invizibil*

1. Introduction

Describing such a common but equally vague term as information can be difficult, since there are many definitions, some very particular, specific to certain disciplines. However, for the present field the following definition is adequate: "Information stands for linked data, that is, data processed in such a way that we can identify each item by its link to other items" [2].

Since this paper deals with linked data and since the linking is done by a receiver the information is extremely specific to his needs:

- Information consists of data processed in a meaningful form.
- Information is attached to a representation, if new or if it continues other data.
- Information reduces the uncertainty of future decisions support.

As a rule, according to psychologists, there are two different cognitive styles:

- The analytical (or systematic) styles: those who prefer to have the information structured for them and to follow a clear path from beginning to end (for example, those who, when elaborating a project, discern minutely the steps to be taken, and in practice do not stray from the intended temporal trajectory).

- The intuitive (or heuristic) style: those who prefer an intuitive approach and rather wish to find directly (even if approximately) which is the destination of the information (those who determine only in broad lines the purpose and requirements of the project), only to deal with the problems in due course, according to the "take it as it comes" paradigm.

The differences between these cognitive styles should be reflected in the information systems, so that the latter can be adapted to the demands of every user. But this kind of customization of information systems is nearly in a prospective stage at present.

There is no managerial use of information, which is an aspect that should be integrated in the future with the information systems designed for managers' assistance. It is a fact that, although until now efforts have been made concerning the formal informational systems (financial accounts, displaying on the computer, etc.), managers still waste most of their time exchanging informal information. This, informal sources, such as one's

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own examination of events, face-to-face discussing and telephone contacts with people inside and outside the university, constitute an important aspect of managerial knowledge. This type of information consists mostly of verbal reports (with little or no quantitative descriptions) on events or persons within the organization.

Informal information systems have obvious faults precision –validity-, and reliability-wise. Often this “information gathering” is full of false or subjective elements that one characteristic of rumors. However, university managers seem to prefer these systems to the formal ones. The explanation for this situation is that informal information usually has an immediate character (referring to the here and now) and may better serve to outline actions compared to some “indigestible” balance sheet.

Therefore, at present computer based formal systems must be complementary to the informal sources used by leaders. A change of paradigm is possible in the future by using software agencies as informal sources of information.

2. The concept of informational systems of university management

The general systems theory, or system theory for short, originates in philosophy, engineering, biology, psychology and cybernetics. In the longer and informal sense of the word, we can give the following definition of the system.

A system is a collection of entities connected with one another as well as with their environment, so as to form a whole.

It is important to mention that a system can be modeled in several ways, the reason we do it in a certain way is either because it serves our purpose or because it represents the way most people “see” the system, and not because of some inherent structure of the system. A key concept resulting from the definition of the system is that, taken separately, do not express or represent the essence of the system. It is necessary to take the system as a whole in order to understand it. Therefore, the whole is bigger than the subtotal of its components, this quality is known as synergy. This is an obvious characteristic of organizational systems in general, and of informational systems in particular.

The key elements of a system are:

The frontier: it defines the margins of the system; within the frontier is the system, and outside the environment (“the” rest of the world) with which the system interacts;

- The environment: the outside world, inside which the system exists; in the case of the university informational system, the environment is the society with its multiple aspects concerning the interaction with the university;

- The interface: the contact zone between the system and the environment;

- The entrances: everything that the system takes from its environment; in the case of universities one can include: materials, energy, finances, information, students, staff;

- The exits: everything that gets out of/ emerges from the system, information and graduates being the important elements with universities.

A common error is to conceive of organizations as systems without taking the people into consideration, which would lead to completely wrong managerial decisions. Therefore, a fundamental component of any university informational system is the staff in charge of designing and functioning of the system: the informational staff.

At present, university management is in need of knowledge about information systems to help it in carrying out the following assignments [4]:

1. Communication with information systems specialists responsible for the organization and government of Computer resources;

2. Use either of a personal computer (PC) as an independent device, or of a terminal in the university network;

3. Taking decisions concerning the quality and reliability of received information. University managers need to understand how information can be selected, processed and communicated.

4. Taking decisions relying on received information which may involve the manipulation of software specially designed for decision-making.

5. Discussion of inner needs of information with specialists and participation in specifications of the flux and processing of information for the system one is responsible for;

6. The understanding of the potential of new and especially of future technologies in the

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informational field that can profoundly affect the efficiency of the organization and its future competitiveness;

7. Being aware of the importance of information as a strategic resource of the university;

8. Being aware of the social consequences of information systems that can affect people's jobs and working conditions.

3. Types of information systems involved in management

3.1 Data processing

The purpose of Data Processing (DP) is to obtain large amounts of data in a quick, cheap and accurate way. Automated Data Processing (ADP) is the first major computer application for management. Payment of salaries and certain accounting operations have been among the most popular automation systems. Certain organizations have these automation operations as easily as the 1950's by means of perforated coupons. These were substantial increase of efficiency due to the even improving performance of digital electronic computers, and this is why at present this technology is known as Electronic Data Processing (EDP).

What can be noticed is that although universities are, by way of the specialties which are being thought, in the vanguard of scientific and technological progress from a managerial point of view it comes out that there is strong resistance to the new, especially on the part of staff bureaucracy

It is striking that, after more than 50 years since the first achievements in the field, the financial accounts of the majority of university are still not computerized. This is why a major aspect of university computerization will have to be to work with the staff in order to make it cooperate and support this strategic action.

3.2 Management Information Systems

Management Information Systems (MIS) are a step forward from data processing systems, a step towards selection and centralization of

information that can assist managers in decision-making.

MIS's are systems that contain large amounts of information structured so as to assist managers in decision-making. Information is kept in databases used both by top managers and by the lower ranks for the monitoring and governing of the university. Instances of such databases are: the student's database, the teaching staff's didactic and scientific activity database etc. Management data systems are historical, in the sense that they represent actions and results from the past.

From the very start it was attempted to have management information systems (MIS) integrated on a large scale (by way of their including all databases representing an organization), but later on it came out that such integrated systems are hard to build, hard to use, and always yielding the expected benefits. Although at present these systems still have an important role, they are no longer considered to be the ultimate compression of organization's needs of information.

3.3 Decision Support Systems

These systems were created as a response to some failures of the MIS. The latter, relying on university internal data, do not assist university leaders directly in taking strategic decisions. This is why they had to be supplemented with databases concerning the needs of potential users of university-provided services (preferences of candidates, present and perspective needs of society). In addition to this a Decision Support System (DSS) includes especially designed patterns by means of which the user (the manager) can follow the consequences of his decisions. An instance of such a model is known [4] as the "what-if" facility, which is about deciding between different forms of investment, so that the system user may see the consequences of each option when the system computes the effect on profitability, using a financial model of activity. However, this type of system is suitable especially for following the financial consequences of the activity, when as for the other components of university functionary other type of information systems prove adequate.

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3.4 Intelligent Knowledge-Based Systems (IKBS)

Already 50 years ago, since the making of ENIAC (1947), the first digital computer, making the birth of the computer era, university labs have hosted research into how to build computers resembling human being as closely as possible from the point of view of their information processing capacity. Starting with the 80's these efforts were joined by those of some private expert system development companies. The discipline that deals with reproduction of human skills and abilities in computers is known as Artificial Intelligence (AI). The expert systems are information systems with 3 components:

- A knowledge base: a database in which knowledge in certain field supplied by human expert is structured;
- A reasoning mechanism dedicated to the manipulation of the knowledge base in order to provide answers to questions of the users;
- A learning method, that is, techniques by means of which new information is added to the knowledge base.

The Intelligent Knowledge-Base systems are expert systems that use AI techniques. The most recent discoveries in the AI field, with possible applications for management, are the software agents.

3.5 Decision-Making Support

A great deal of the development effect of managerial information systems has been allotted for the quality improvement of human decisions. The purpose of this development is to provide the manager with the information needed in view of making a good decision, which all the factors involved would appear.

Recent developments in Decision Support Systems (DSS) and in Executive Information Systems (EIS) have long term effects on the top managers' decision-making [1]. The crucial decisions that entail long term effects can be modeled on the computer so as on account of the previewed effects, a choice can be made out of the several alternatives.

In the future the quality of decisions is going to improve by the implementation of the latest

achievements in the implementation of the latest achievements in the field of artificial intelligence and expert systems [5].

Therefore, globally speaking, information systems will have a major effect as to survive of a university. That is why ever increasing numbers of university managers believe the information systems to be strategic resources.

4. Libraries and information science specialists

Six main groups of specialists can be discerned here [3]:

- Services managers: these are responsible with running libraries and information services. This groups includes museum, and collection and archive managers, documentary centers coordinator and databases managers.

- Technical and specialized staff: specialists in this field, such as: bibliographers, catalogue makers, audiovisual technicians, programmers, system analysts, instructors, etc.

- Contact staff: this includes all employees coming into contact with clients, especially the "Public Relations" and the "mass-media relations" staff, as well as the loaning section.

- Information consumers: this includes all those who use information among the most significant users being researchers, teaching staff, students.

- Content creators: this group includes all creators in all forms of media (literature, painting, photography, film, music, etc.) who share an interest with other such groups. From the later point of view, the most prominent are authors, journalists, editors and translators.

- Sales and distribution: this includes all those involved in publishing and distribution, editors, broad sellers, database suppliers.

From the information management point of view the following 3 groups are important: services managers, technical and specialized staff and contact staff. Information creators and consumers are important for the university top managers (4th and 5th categories), while the 6th category may be seen as external information suppliers.

Owing to the extraordinary dynamics in the

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field of information (80 % of all information have been created during the last 20 years) and in order for information specialists to satisfy the users needs, it becomes imperative that, due to the training provided by university, the librarians broaden their horizons in computer, communication and management sciences. This becomes all the more stringent as the social pressure generates even higher demands on information science specialist.

The members of this profession are known as "information scientists" and are qualified not only in information science, but in other closely related disciplines as well.

They work in the processing of information from all fields: science and technology, economic disciplines, trade, law, sociology, psychology, management. Alongside the day-to day work in information management they must perform many other tasks as well, implementing a large scope of knowledge and skills:

- They are involved in computer system development;
- They must have experience in various aspects of information technology, including the use of computer networks and communication systems;
- They perform information evolution and layout in an accessible form, according to the experience, knowledge and needs of the user;
- Sometimes they are required to prepare full state-of-the-art reviews of some subjects;
- They have to elaborate and interpret statistics;
- They have to be able to perform team work;
- They help make predictions on future trends and give advice on adequate development policies;
- They work to create specific databases;
- They elaborate and publish reports on the existing collections;
- They collaborate with specialists in all fields of knowledge.

These are the reasons why it is essential for top managers to understand the problems of the staff involved in the university information system in order to avoid disruptions between command and execution.

5. Conclusions

Computers have been used effectively at the stage of choosing, with a large scope of applicable techniques and methods. However, the user of the information system is the one to make the adequate choice of mathematical method or of management technique to match the specific context of the decision. The specific technique may involve the use of a software package; this may lead to the asking for the device of a human expert in computer science.

Another task adequate for information systems is to have the results of the implementation of decision reviewed. Many information systems for financial accounts are designed in such a way that the figures accomplished by the organization can be reviewed against the planned figures, so that notable differences if any, would alert the manager that he must intervene.

However, in order to be able to design decision support information systems, the "hand" patterns of human decision-making within university-like organizations need to be elaborated.

REFERENCES

1. Boddy, D.; McCalman, J.; Buchanan, D. A. (Eds) – "The new management challenge is for improved performance" – Croomhelm, London, 1988.
2. Grindley, K – "Systematic, a new approach to system analysis" – McGraw Hill, New York, 1975
3. Hills, P. J. – "Information management systems: implications for the human – computer interface" – series: "Ellis Horwood Books – Information Technology" – Ellis Horwood, New York
4. Martin, C. Powell, P. – "Information systems: a management perspective" – McGraw Hill, London, 1990.
5. Suppa, T. – "Structure of Scientific theories" – University of Illinois, Urbana

My IFLA Experience. The Italian Public Libraries - an Inspiring Model

I took part in the proceedings of the World Library and Information Congress - 75th IFLA Conference and General Assembly between 23rd and 26th of August, 2009. The programme was very interesting and abundant in meetings, debates and cultural events. The presentations are available via internet on IFLA site; that is why I am not going to insist on them, especially my report about IFLA Conference was published in the electronic bulletin of the Romanian National Association of the Public Libraries and Librarians, Brasov Branch, on September (see on www.bjbv.ro). I would like rather share my experience in the library visits organized by the Italian National Committee IFLA 2009 for the delegates of the Congress.

I visited two public libraries - Affori and Cassina Anna, excellent examples chosen from the entire network of 23 public libraries existing in the city of Milan. The both are located in neighbourhoods, in the middle of parks and deserve the users of their surrounding areas. The first is housed in the amazing setting of Villa Litta, built in 1687, and it was first opened in 1962, being one of the first public lending libraries in Milan. The space was completely refurbished in 2006 and divided more rational into the adults' section, children's section and reading rooms. The library's assets - approx 40,000 books, 7,000 audiovisual items and 150 titles of periodicals - are among the most eclectic of the whole public libraries system in Milan. A new initiative was the recent introduction of the "cartoon strips section", the sole collection of this genre to be found in Milan's public libraries. It covers the most celebrated comic-strip characters and illustrators worldwide, spanning from the original French approach to the Japanese Manga, and not neglecting traditional Italian comic strips either.

The library is a point of reference for the whole Affori community by its many cultural events and long-standing collaboration with local associations. The splendid entrance hall regularly hosts art and photography exhibitions as well as concerts of modern and classical music and jazz, lectures and book presentations. Encouraging reading is a focal point of the library's activity, inspiring the initiative which took shape of a Reading Group. Today, this is very dynamic by involving of its members and librarians. Lots of different authors and titles have been considered, so it supports reading of various texts, alternated novels, short-stories, poetry and play, and have already made plans for 2009-2010 meetings. The Children's/Juvenile Section has

separate rooms for pre-schoolers aged 0-6, for fiction and non-fiction for 7-13 years-olds and teens space (*Spazio Giovanni*) for 14-17 year-olds. It offers books distributed according with expectations of various age groups and on genres, distinguished by certain labels and colours. Also it has cartoons, movies, four web access points, a computer for word processing, three video terminals, an OPAC to consult the library catalogue, places where to sit, read, study, play, discuss. The library organizes special activities for youngsters, such as a workshop with a cartoonist and a Milanese wall-writer, aiming to stimulate reading and to explore forms of alternative writing and languages close to teens' interests. It was successfully and a work of graffiti art produced by them is exhibited in the *Spazio Giovanni* area.

The second library is located in the old Lombard courtyard, once belonging to the farm building, now renovated and used by several municipal departments, including educational and library ones. The local public library was opened in 1994 and refurbished in 2006, adopting a more modern approach to its traditional mission. Its key feature is the "Ecoteca", supporting ecology and environmental education, set up in 2004. The library has about 200 books on eco-compatible tourism, organic farming, parks and protected areas, sustainable development, bio-architecture, climate change, waste recycling and ecological voluntary work, as well as a complete collection of "Airone" magazine. The librarians collect the relevant information about the large park surrounding the area, Parco Nord Milano, established in 1975 as a concrete example of sustainable development for the whole city. The librarians achieve this special bibliography available to the interested users and cooperate with authorities on some major community programmes. The library offers other different reading services in its places, children's and adults' sections. The entire space provides comfortable place for all library users to spend some time, reading a book, listening music, watching a film, searching internet.

In conclusion, the public Italian libraries are impressive by their modern approach of the own activity, their collections and cultural events and especially by their adequate adaptation to local conditions and good practices promoting reading and books.

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