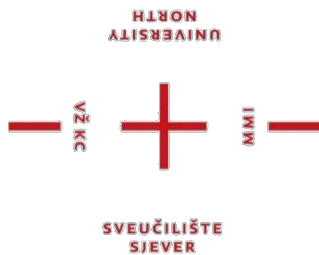**Varazdin Development and Entrepreneurship Agency**
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HOW DO ESEIGS´ FACULTY AND LIBRARIAN WORK TOGETHER IN ORDER TO PROMOTE STUDENTS' KNOWLEDGE MANAGEMENT SKILLS?

Susana Martins
Escola Superior de Estudos Industriais e de Gestão, Instituto Politécnico do Porto, Portugal
susanamartins@eseig.ipp.pt

Milena Carvalho
Escola Superior de Estudos Industriais e de Gestão, Instituto Politécnico do Porto, Portugal
milenacarvalho@eseig.ipp.pt

ABSTRACT

Information practices and learning strategies, i.e. knowledge management, are gaining acceptance in the field of Education. Knowledge management can be described as a set of practices that help to improve the use and sharing of data and information in decision-making. This paradigm shift, at a national scale, was driven by the Bologna Declaration by assuming that students play an active and central role in their training. Projects like "Tuning Educational Structures in Europe" and "Definition and Selection of Competencies" mentions information literacy skills (ILS) as a strategy for the individual to thrive in the 21st century. This requires a critical analysis on the nature of the information itself and of the informational skills that are needed as a basis for decision-making, issuing opinions and execution of duly informed and reasoned actions.

This short-paper shows the relationship between the full time faculty of the School of Management and Industrial Studies (ESEIG) of Polytechnic Institute of Porto (IPP) and ESEIG´s librarian. We assess, by a questionnaire applied to both faculty and ESEIGs´ librarian, how they face collaboration among them in order to achieve a good performance in terms of information literacy of that student community. This study shows how these actors perceive their roles within the information literacy education in this context.

We conclude that there is growing concern on the part of faculty to promote students acquisition of information literacy skills, but that collaboration with the librarian did not reach the parameters considered yet satisfactory by the information literacy movement.

Finally, action proposals are presented to that community in order to facilitate dialogue and collaboration between those actors, in order to promote the acquisition of ILS by the students. Some proposals are presented in order to enhance and improve the relationship between them, and thus improve ILS that students acquire.

Keywords: *Collaboration; Higher Education; Information Literacy skills; Information Society; Knowledge Management*

1. INTRODUCTION

In the context we live in, flexibility, adaptability, creativity, mobility and learning throughout life have assumed increasing importance. Therefore, and due to its importance, this issue must be considered also in the context of Higher Education and Training.

A considerable part of human activity and wealth creation lies in the production, handling and correct use of information, and the growth of the knowledge society, will depend on the production of new knowledge, its communication through education and information, its visibility and dissemination using ICT and its effective use. Higher education institutions and of course their libraries, are the means to achieve these ends. Information and Knowledge are different concepts, because knowing and reasoning is not only store, process and communicate data. And widespread access to large volumes of information, with the use of ICT, is no

guarantee of greater knowledge or higher education, and may also access the same have facilitated the opposite effect. If individuals are not equipped with skills to handle massive amounts of information, may err in various ways, for example when using the uncritically information or not respecting its legal use.

According to Ferguson (2009) Information Literacy (IL) is linked with Knowledge Management (KM). The author suggests that there are significant similarities between IL and KM to the extent that the development of information literate workforce can be seen as a step in the creation of innovative and adaptive learning organizations. In fact, that is one of the goals of the higher education and to achieve that the use of IL is an accepted and used tool. In fact, although IL, in this context, focuses on personal and academic development of the students, with particular emphasis on the information resources as well as on the information systems that support areas such as personal self-development, teaching and learning and, in some cases, the successful completion of learning tasks, it must be seen as part of a KM strategy, that although is taking place in a higher education institution, it is intended to have impact on the labor market, on the organizations that will absorb this students, because they will be carrying a different type of mentality and skills that will, without a doubt, be a step forward the implementation of KM policies towards the corporate knowledge.

2. INFORMATION LITERACY AND HIGHER EDUCATION

Current academic, professional and social demands require the individual to acquire a high domain in sociocultural tools that allow him to interact with knowledge. These tools are language, information, knowledge and computers. The ability to use information and knowledge in an interactive way is therefore an element considered essential, since both the growing importance of information, as well as the central role of knowledge management are key points for individuals to be able to fully develop their role as social and professional actors in the 21st century society.

In the higher education context, these skills should be regarded as essential, developed and evaluated in ascending order, following all educational levels and respecting the correspondent gradient of complexity. In fact, there are several studies that acknowledge the positive impact of such practices in students' performance, such as Dorothy Williams (2001) "Impact of School library services on achievement and learning", Mokhtar, Majid e Foo (2008) "Teaching Information Literacy through Learning Styles: Application of Gardner's Multiple Intelligences", Christine S. Bruce (2004) "Information Literacy as a Catalyst for Educational Change", Julien Heidi (2009) "How high-school students find and evaluate scientific information: A basis for information literacy skills development", Kirsty Williamson e Terryl Asla (2009) "Information behavior of people in the fourth age: Implications for the conceptualization of information literacy".

It is believed that changes in Portugal in higher education and the influences that naturally hold over any graduate and post-graduate educational process, instill the education systems with the obligation to instruct students in order to prepare them to deal with the current problems of information: excess and different forms of presentation.

The information literacy is presented as a continuum between the demand for information and its effective and ethical use for the management of knowledge in an academic environment.

In this process, the first step corresponds to the informational need that forces the user to choose specific information behavior that will lead to demand, access and use of information. There is thus a close link between information behavior and information literacy, while addressing different aspects of demand and use of information.

Within the scope of information behavior, the focus is the behavior taken by individuals when they need information. The focus is oriented to the needs, demand and use of information. It is assumed that there is an interdependence and dynamism between these different elements and

the objective is to determine the effectiveness and efficiency of the duties performed by the subject.

With regard to information literacy, what is intended to know is how the behavior assumed by the subject relates to the normative guidelines that exist. Basically, assess the quality of information behavior and each of its components in relation to set targets. Each element is considered independently and as holder of own procedures.

The approach of Information Literacy also assumes the need to master technological skills and this is, in itself, an important aspect because the attention that the use of ICT receives as an instrument of teaching and learning process is quite high and media / mediated. However only matching informational practices with the use of ICT and academic context, it is possible to promote the effective and correct use of information within this community. In fact, Bruce (2000, p. 4) refers that you only are before the teaching of Information Literacy when "It is bringing these information practices into the curriculum, and ensuring that students have the capabilities to engage in, and reflect upon such practices, that constitutes information literacy education".

The positive impact of the acquisition of information literacy was confirmed by Todd (1995), who, after a study developed, recognized that in Australian schools, students with information literacy had achieved better results in assessments and exams. Also Limberg (2000) confirmed that in Swedish schools, students who held more complex informational behavior, reached high results, notably those related to the understanding and interpretation rather than the simple reproduction of information.

Given these results, we conclude that the information literacy is a promoter element of a more deep and successful learning, capable of generating autonomous learners, that are able to learn throughout their lives, to adapt to the context and their own needs, regardless of their nature.

The information competencies arise, then, as energetic and emancipatory elements of the Information Society. Gómez Hernández (1995) assumes that it is intended for the education system to educate for the Information Society in order to avoid social misfits and to train for the proper use of technical-scientific and professional expertise available. Based on these objectives arises the concept of Information Literacy. The term Information Literacy is born by the hand of Paul G. Zurkowski in 1974, when the publication of the report "The Information Service Environment Relationships and Priorities. Related Paper No. 5" for the National Commission on Libraries and Information. The term appears in the prologue of the document which intended to designate the detention of information competencies, including the use of informational tools, as well as primary sources of information, in order to solve problems, assuming a divide between literate and non-literate individuals:

> (…) *People trained in the application of information resources to their work can be called information literates. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solutions to their problems. The individuals in the remaining portion of the population, while literate in me sense that they can read and write, do not have a measure for the value of information, do not have an ability to mold information to their needs, and realistically must be considered to be information illiterates* (Zurkowski, 1974, p. 6).

Zurkowski (. 1974, p 1) also states that the information superabundance exceeds our ability to evaluate, and points out three reasons for this to happen:

> *1. The information seeking procedures of individuals are different at different times for different purposes.*

> *2. A multiplicity of access routes and sources have arisen in response to this kaleidoscopic approach people take to fulfilling their information needs. These are poorly understood and vastly underutilized.*

> 3. *More and more of the events and artifacts of human existence have been dealt within information equivalents, requiring retraining of the whole population.*

In 1989, the American Library Association (ALA), in the "Presidential Committee on Information Literacy. Final Report ", defines Informational literacy as "the set of abilities Requiring Individuals to "Recognize When information is needed and have the ability to locate, evaluate, and use effectively the needed information". The concept of Information Literacy, currently very present in our vocabulary, is distinguished by two nuclear characteristics (Gomes, Avila, Sebastian, & Costa, 2002):

a) enable the analysis of the effective usability in everyday life of reading skills, writing and arithmetic;

b) refer to a continuum of skills that translate into literacy levels with different degrees of difficulty.

The emphasis is then placed, not on academic credentials, but in fact possessed skills. The authors call attention to the fact that literacy should not be viewed statically or be the holder of only two poles (on one end the literate and the other end the illiterate), but in a dynamic way, reflecting the evolution of the skills acquisition of the individual and with various gradations of grey between black and white.

The Organization for Economic Cooperation and Development (OECD) in the report "Literacy in the Information Age" (International Adult Literacy Survey, Organization for Economic Co-operation and Development, & Statistics Canada, 2000), concludes that high levels of literacy are associated with higher proportions of knowledge-based jobs, and that people's skills, or lack of, negatively influence the long-term unemployment probability, while a literate individual increases his career chances. We can try to point out the causes for all the attention that the IL theme is getting, in fact, Calixto (2004) advances three causes for this:

1. Very rapid growth of information.
2. Increased Prevalence of digital formats.
3. Focus directed on study skills and lifelong learning.

These are undoubtedly aspects that make information literacy is widespread concern in a super-informed world. In fact, the Association of College and Research Libraries (ACRL) (2010), argues that Information Literacy is of utmost importance today. The exponential growth of information, its increasing complexity, and the proliferation of unfiltered sources of information, require that you must have skills that allow you to make the right choices, questioning about the authenticity, validity and reliability of the information you want to use.

The concept of Information Literacy assumes that all potential users of scientific and technical information must undergo some sort of training programs to enable them to contemplate the dimensions that mediate access to knowledge: the information dimension and the technological dimension. Learning to inform themselves, learning to learn are competencies required in the information society so that all individuals must be prepared to conduct the analysis, selection and evaluation of information sources and information, while adopting a critical posture towards this. But is that what happens in academia? Is the importance of these skills recognized by faculty? And how is that, in the classroom, students acquire these skills? Through a collaborative effort between the faculty and the library of the institution?

2.1. And what about libraries?

We should probably star by changing this designation because it encompasses a pretty heavy past and some people still haven't made a reboot of the concept.

Information services in higher education, a.k.a. as libraries, do play a very important role in this scenario. They are the mediators and one of the main actors of the teaching and learning process and a central element in the use of active pedagogies.

Zanola (2012) in a recent article states that both T. W. Adorno and Lev Vigotski, although representing different theoretical schools, agree on the analysis of the potential of mediation in the transformation of contemporary, as an ideal instrument for the acquisition of consciousness, choosing it as a catalyst for a new disciplinary paradigm, according to which there is a reciprocal relationship between individuals and the possibilities of knowledge / learning. It is to seek mediation through the confrontation between what the object looks or it intends to be with what is actually through the critical eye sustained in the dialectic method of seeking truth in his denial.

Another variable is the cyberspace, indeed it has completely revolutionized communication, just as we knew it, but is especially marked in an extraordinary way the configuration of information services and professional praxis that is behind it, beyond the behavior of users of these services, in the way they complain and demand the information they hold, preserve and make accessible. The information explosion process, in the perception of the Porto School, will necessarily have to be accompanied not only by a technical and procedural update by the information services, but, fundamentally, by a mediation that contributes to the general and unlimited access to information.

According to the proposal of Armando Malheiro da Silva (2010, p. 13), it is possible to synthesize three different types of post-custodial and informational mediation: 1) Institutional Mediation: Emerging from the traditional cultural institutions such as libraries and archives, is carried out by specialized professionals - the mediators of information - and shared with computer technicians, responsible for drafting the website through which the collections in storage are available; 2) Distributed Mediation and / or shared: occurs on websites and blogs promoted by individuals or legal organizations, and the mediators exist to locate, select and provide content to the designer/company that sell or provide the application, and the ones accessing the service are invited to actively intervene with content and comments; 3) Cumulative Mediation: with the technological innovation, the role of producer and user grows enormously, developing a kind of cumulative mediation that may also include designer and programmer, and it takes effect and is conditioned by an active participation in communities that add identical or similar interacting (the user becomes producer and vice versa).

Still according to Silva (2010), the information professional is not a computer technician in fact he moves away from him when he places the focus on mediation in deep and thorough analysis of the profiles and needs of its users, that is, when he holds on the conditions under which sharing and access to information occur. Concerning to the information mediation, Kuhlthau (2004) in her analysis in the context of information services, she identifies five areas of intervention, the first of which involves the intervention of the user himself, and the remaining four different degrees of mediation: zone 2, in which the information professional acts as locator information, zone 3, in which the information professional acts as the identifer of information, that is, revealing information resources potentially more appropriate to search of the user zone 4, where the information worker assumes the role of consultant, he not only identifies the most appropriate information resources but he guides the user through them, and zone 5, in which the information professional acts as a user's counselor, i.e. guides you throughout the entire search process information, interacting in a more systematic and continuous way.

It is now easy to see that IL gains special importance in the higher education context, because they do empower students with the critical-cognitive skills of users at the time of search, allowing them to evaluate and use the information, accordingly to their scientific requirements as well as legal ones.

Thus, information professionals assume the dual role of educators and facilitators, guiding users in their research, by practicing informational mediation. This is only achievable to the maximum if they act accordingly to the context and invoking the specialties of each scientific field, both instrumental level and cognitive.

3. METHODOLOGY

Considering the above context, we conducted a descriptive investigation that targeted both the full time faculty of the School of Industrial Studies and Management (ESEIG) of the Polytechnic Institute of Porto (IPP), located in Vila do Conde – Portugal and the Librarian of ESEIG. The full time faculty make up 46 individuals. This investigation assumed two clear objectives: 1) know if faculty assumes that the students' information literacy skills are important in the context of the Higher Education; 2) assess the collaboration among the full time faculty and the librarian. We created two questionnaires in Google Forms, one directed to the faculty and the other to the librarian. Both questionnaires shared the same structure, i.e., the first section intended to collect data of the population; the second included questions related to their perception of Informational literacy in the context of teaching and learning; the third asked about the Faculty-Library Collaboration. Both shared some of the questions in the second and third sections and that allowed us to compare the answers.

All full time teachers were contacted by email several times and by telephone so that they would participate in this study. Through this strategy we tried to ensure an excellent response rate as well as a serious and conscious participation in this study but we believe that because of the majority of these teachers were participating in a major restructuring operation of IPP, the answer rate was low, of only 26%. The questionnaire was completed between the 10th and 21st of March. The ESEIG´s librarian was very pleased to cooperate with this study.

The questionnaires were both mixed but the majority of the questions were open-ended questions.

4. RESULTS

In this section we present the results obtained from our study. This section will have subsections related to the subsections of the questionnaires.

4.1. Teachers
4.1.1 characterization

The respondents of the questionnaire applied to full-time teachers of ESEIG are mostly female (92%) and in terms of age, the of majority them are between 40 and 49 years old (58,3%), followed by a group of teachers that have 50 to 59 years (33,3%) and other whose age is between 30 and 39 years old (8,3%). Of the respondents, 50% have a PhD degree and the other holds a Master's degree. The highest frequency response rate obtained was from teachers belonging to the following departments: Design; Languages and Law; Human Resources; Information Science, with 16,7% of responses for each department. The remaining departments that participated in this study (Informatics, Mathematics, Accounting, Management and Economics and Industrial Engineering and Management) presented only a response rate of 8,3%.

With regard to the professional category, 67% are Associate Professors and 33% are Assistants and 8,7% teach in Higher Education Professional Degrees (short higher education courses directed to professional qualifications), 52,2% in undergraduate programs, 13% in Postgraduate courses and 26% in Master's courses (in Portugal there is a binary system of higher education that does not allow the polytechnic institutions to assign the degree of doctor independently; to do so they have to associate with Portuguese or foreign universities).

4.1.2 Informational literacy in the context of teaching and learning

Regarding the Informational Literacy definitions provided by teachers, most assume as elements present in the definition of IL, with 88,9% of the responses, the ability to evaluate and select information in hand with the skills for information search. Then, with 55,6% of responses comes the ethical and legal use of information. With 22,2% answers some teachers mention the

ability to recognize their own information needs, and only 11,1% response: learning ability, information management, and the generation of new knowledge.

When asked to name the three IL skills that they consider to be the most important for students and that they should acquire, the ability to search for information is the competence most often indicated (33,3%), followed by the ethical and legal use of information with 30% of responses. The evaluation of information obtained 25,9% of the responses and with only 3,7% of the answers emerged: identifying their information needs; the field of information technology and knowledge of English (both as facilitators for the information search).

The teachers who responded to this questionnaire integrate in the most varied forms some of the IL skills in the teaching of their classes. In fact from the answers obtained, it is possible to say that some teach this type of content as well as promote the ethical and legal use of information. The orientation for the analysis of technical and scientific documents, and use of active methodologies are also present in the responses. Also the orientation given regarding to the information research, as well as the illustration of the excess of bad information available online and the need to write good reports as well as develop projects are the strategies that these teachers use to promote the integration of the IL skills in their classes.

4.1.3 Faculty-Library Collaboration

When asked about the way in which they believe that there may be a collaboration with the library in order to assist in the teaching and learning process, the answers showed the following tactics:

- Provide training in and out of class (catalog, databases, scientific information search, citation and referencing)
- Collaborate in the research of information on each school's scientific area
- Disseminate credible information sources
- Promote practical training (hands on) and not only theoretical- research exercises and information retrieval

In fact, in regard to this matter, most of them have already collaborated with the library, with 83% saying they´ve already did and only 17% referring they didn´t. they were then asked to state the terms in which this collaboration took place:

- Training sessions in class (search and retrieval of information, bibliometric indicators, quotes and references, access and selection of scientific journals and articles)
- Guided tours of the library (facilities, services and products available)
- Assistance in referencing scientific papers

Although not all teachers have presented a definition of IL and not all of them have asked, to date, the collaboration of the library, they all assume that the library has a very important role in the teaching and learning process in higher education. They´ve stated that the library:

- Has a very important role;
- Is an important axis in education / mediator of the education process;
- Is a credible information repository;
- Is an educator of the community;
- Should take an even more active role in training
- Should promote a better and more close contact with the community

4.2. ESEIG´s librarian

The ESEIG´s librarian is a female, aged between 40-49 years. She holds a course of postgraduate studies and is superior technician. The library promotes it´s approach to the IL based on the need for the community to hold the ability / skills to identify / select information sources, always taking into account the desired information, the search for information

knowingly using search strategies and assess the relevance of the retrieved information, know how to use ethically this information in writing academic papers and communicate it effectively. The librarian was then asked to identify the three most important IL skills: Identify / access information; evaluate the information; use / communicate information was the answer. She then referred to the importance of combining the information literacy with the digital literacy because of the vast amount of digital information available.

Responding to the question on how the library promotes these skills in the community, it was reported that, because the library is aware of its importance to the higher education context, it has outlined an information literacy program under which organizes autonomous training sessions or in the context of the classroom, discloses / recommends by various means of dissemination appropriate sources of information to the academic context, and trains users in these skills whenever requested, also in person at the library facilities.

With regard to the implementation of the collaboration with the faculty, the library says it can contribute / collaborate in the process of teaching and learning in this area of information literacy, particularly through training sessions that promotes inserted in the context of room class in the course units of degrees taught in ESEIG.

The librarian had collaborated with almost all the Master Degrees available at the time of this study (80%) but only with 50% of the Graduate Degrees.

Assuming the importance of the library's role, it was then stated that the information competencies are essential for any student and transversal to any degree and profession. The librarian said that, indeed, the library holds a very important role in ensuring the development of these skills through training sessions that makes available to students, either in collaboration with teachers in curricular context or allowing the student to develop them in an extra-curricular context, independently.

5. CONCLUSION

Academic libraries should therefore reflect on their role as disseminators and educators, as shown by Paulo & Silva (2007), supposing to be an information mediator, seen as a professional organization who interferes heavily in construction the promising conditions for more significant changes in the academic life of users.

The results show there is a good interaction between this library and the faculty, in order to promote the collaboration among these two actors and to achieve good IL skills. This is a fairly good indicator of the existence of an awareness of the need for direct mediation conducted by the librarian among users of the academic library.

One of the issues that is of the upmost importance is to assure that the information literacy competencies acquired in the context of higher education are transferable to situations in the workplace and society, once students complete their formal education. For several years, higher education libraries have been making several efforts to promote the integration of IL instruction (ILI) into the curriculum. There has been a growing body of opinion that suggests ILI should be integrated into academic programs (Stubley, 2002). As a Skov & Skærbak (2003, p. 332). put it, "information literacy is not a "library thing" and it is not concerned only with database searching and Boolean logic; information searching is a part of the learning process and should be taught as such embedded in the curriculum". In fact, Levy (2000, p. 47), drawing on a constructivist notion that "knowledge is constructed through, and builds upon, experience", suggests that "skills are most effectively learned when related to learning needs arising directly from academic work". Therefore, librarians should take a team approach, building bridges to academic staff and learning support units (Currier, 2003) because teaching, learning and information resources cannot be compartmentalised.

With this study we´ve realised that there is a consciousness of importance of the connection between operational competencies in several areas and the informational practices, both from

the faculty that participated as well as from the librarian. And this is a reality because the importance of knowledge management lies on the fact that many sectors of the economy comprehend knowledge as the main asset of the organizations, since it is presented as the main element in sustainable competitiveness. At the same time the organizations are becoming more aware of the importance and value of information and knowledge in innovation and competitiveness. this awareness, by also information services, led them to develop and offer products and adequate information services to the needs of users.

In our study we have concluded that there is the perfect notion and concern associated with the legal and ethical use of information but the importance and relation of the IL skills with the students future, mainly with their passage to the labor market, with the creation of new knowledge and with the implications in their own learning, including a collaborative approach, is very residual. That is why it is of the upmost importance to promote the importance of transferability of such skills for the labor market, to create smarter and more KM friendly organizations. We must not forget that KM brings together three core organizational resources: people, processes and technologies in order to enable the organization to use and share information more effectively.

As we said before, this does not concern only to the library but to all actors in the teaching and learning process and it is obvious that those responsible for the higher education institutions have a decisive role, assuming such importance in official documents (mission and vision of the institution; action plan), paired with the Pedagogical Council and the Scientific-Technical Council in order to guarantee that all teachers and students truly benefit from this close relation. Because, as we´ve stated earlier, there is an awareness on the part of most of the teachers who participated in this study that this type of skills and collaboration are essential and will do the difference in the performance of students and future professionals of intelligent organizations.

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