

MONOGRAPH

Information and Digital Competencies in Higher Education

Manuel Area Moreira (coord.)

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Monograph “Information and Digital Competencies in Higher Education”

INTRODUCTION

Why Offer Information and Digital Competency Training in Higher Education?

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Information and technology go hand in hand. Information is the content while digital technology is the container. Information is everywhere because, among other reasons, technology is everywhere. Digital technology becomes meaningful, significant and socially useful as it offers us valuable information-related experiences. In turn, information needs technology so that it can be stored, organised, copied, distributed, transformed and accessed.

Together, information and technology create a media ecosystem in which our existence is played out: we listen to the radio, we read the press, we watch TV, we work with files stored on our computers, we talk on mobile phones, we communicate by e-mail or text message, we watch films or listen to music on electronic devices like MP3 players or iPods, we find our way using GPS, we check our PDAs to manage our time, we browse the Internet, we upload photos and share opinions and data on social networks, and so on. More and more often, and to a much greater extent, as individuals we are subjects who need to be connected to some type of technological object providing us with information. Without it, we turn into autistic beings or social orphans; it would be impossible for us to carry out all of the activities that form part of our daily lives, such as work, consumption, education or entertainment.

Furthermore, information today is the raw material for a large part of the “new economy” (financial and stock-market systems, leisure, entertainment and culture industries, and software, telecommunications and service companies are just some examples worth thinking about). The activities and operations of all of these economic sectors are based on information that is generated, stored and distributed via digital technologies. In contrast to the production processes of the second industrial revolution, which were based on transforming raw materials obtained from nature (such as coal, oil, iron, wood, etc.) in factories, the products of the third economic revolution – the one taking place in the 21st century – are based on transforming and reworking information in myriad forms so that it can be bought and consumed.

Consequently, the current model of 21st-century society needs human resources or, if you will, citizens who are properly trained to make use of the whole information and technology ecosystem that exists, enabling them to take part in the economic, social, and cultural processes of the third industrial revolution. The traits of our times are mass consumption, social participation and the shaping of exchange networks for material and cultural products alike. Without subjects, without individuals who are trained to face up intelligently to the

challenges of using digital technologies and information that our contemporary society generates, that society will not be able to develop and grow economically; there will not be any democratic participation, social equilibrium or production and consumption of culture in any of its forms, be they audiovisual, literary, artistic or any other.

Today, citizens need more and better quality education, since the challenges that we need to confront and the contexts in which we need to develop and co-exist are very varied and complex. We need to be more competent than we were in previous decades in order to use and take ownership of information and digital technology. This training or, if you will, literacy of individuals in the multiple languages and codes (textual, iconic, hypertextual, audiovisual, multimedia, etc.) that information employs, should be a recurring, continuing goal throughout the education system as a whole, from primary education to higher education.

So what are the most notable arguments and reasons that lead those of us in higher education to talk about literacy/training in information and digital competencies? We could briefly summarise them thus:

1. In recent decades, knowledge production in all knowledge areas – scientific, technical, humanistic, artistic and social – has grown exponentially and is practically beyond reach. Consequently, the task demanded of today's university students is twofold: on the one hand, they need to assimilate the concepts, theories and basic knowledge of a discipline and, on the other, they need to have at their disposal all the necessary criteria and intellectual strategies to find new information that is valid for their area or field of study, research or work.
2. There are ever bigger and more numerous sources that store, organise and distribute information in the form of digital libraries, databases, web portals, blogs, social networks, etc. Consequently, it is important for university students to have the knowledge and skills to be able to use these tools, which allow them to search for specialised information in bibliographic databases and websites relevant to a particular field of study.
3. Educational and learning theories point out that knowledge must be constructed by each student as an experiential process, in interaction with other subjects and through action. This type of teaching-learning methodology based on socio-constructivism, which, theoretically, is the one that should be implicit in the development of European credits or the European Credit Transfer System (ECTS), will only be possible if students are offered the necessary resources and guidance to be able to work independently to resolve problems, to develop projects, to study cases, to write essays, etc. However, for this type of methodology to be successful, an essential prior condition must be met: students must be trained in information and digital competencies. Without these competencies, it is unlikely that they will be able to search for and select information, or to construct and disseminate knowledge that they themselves have produced.
4. Ways of expressing and communicating ideas, feelings, opinions and knowledge take myriad forms and use multiple languages, which appear in written texts, audiovisual documents or multimedia files. Consequently, knowing how to express oneself and being able to construct discourses in this range of languages should be an essential competency for both students and university teaching staff. This expressive capacity should be cultivated as part of any degree in order to train students as subjects who are qualified to communicate and disseminate their ideas and knowledge via any means of expression or technological medium.
5. Over the last 10 years, virtual spaces have taken on a greater degree of protagonism in higher education and form part of educational approaches known as e-learning, e-teaching, blended learning and the like. The incorporation of information and communication technologies (ICTs) into university teaching means that both students and teaching staff need to have a good mastery of – and competencies in handling – Learning Management System (LMS) tools, as well as other resources that go to make up “Web 2.0”.

These, among other reasons, are the impetus behind the organisation of this monographic issue of RUSC, devoted to the topic of “Information and Digital Competencies in Higher Education”. In this respect, it is worth pointing out that research, analysis and reflection on the conceptualisation and teaching of competencies like these is an area of common ground, or a multidisciplinary area, approached from the field of social sciences (e.g., education and psychology) and the field of humanities (e.g., library science and documentation). Such research, analysis and reflection have been carried out for over a decade. Consequently, experts from these academic fields were invited to take part in this monograph. The reader will therefore find different yet complementary perspectives on what should be taught

to develop these competencies in university students and teaching staff, and, of course, how it should be taught.

In short, why offer information and digital competency training in higher education? The answer is simple: because universities should offer citizens a higher education

that, among other goals, trains them to become competent individuals to face up to the complex challenges of culture, knowledge, science, economics and social relations in the 21st century.

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Monograph “Information and Digital Competencies in Higher Education”

ARTICLE

Higher Education and the Knowledge Society. Information and Digital Competencies

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Abstract

This article contains a series of concepts connected with the new challenges and commitments for higher education institutions in the knowledge society. These challenges not only imply significant changes to teaching models, but also the incorporation of information and communication technologies (ICTs). In today's world, where the need for lifelong learning has been accepted and new technologies have taken on a significant role, higher education has no option but to reconsider its objectives in the light of growing societal demands and new sociocultural trends. The changes demanded for higher education are based on a social need to make it scientifically and economically beneficial. In this context, the incorporation of new formats like the one involving the concept of competency, for example, has taken a firm hold. On the basis of references contributed by the DeSeCo project, this article defines the concept of competency as a referential element for certain changes that are taking place in higher education. It takes an in-depth look into the idea of training in information competencies, the meaning of which is analysed in this article. These are considered to be an advance on IT competencies (instrumental), since they are linked to knowledge construction processes of greater complexity.

Keywords

higher education, knowledge society, digital competencies, information competencies, information and communication technologies (ICTs)

*Universidad y sociedad del conocimiento.
Las competencias informacionales y digitales***Resumen**

Este artículo incorpora una serie de conceptos relacionados con los nuevos retos y compromisos que afrontan las instituciones universitarias ante la denominada sociedad del conocimiento. Estos retos implican cambios significativos en los modelos de enseñanza y la incorporación de las tecnologías de la información y la comunicación. En el mundo actual, donde se ha asumido

la necesidad de la formación a lo largo de la vida y las tecnologías han pasado a tener un papel relevante, la universidad está abocada a replantearse sus objetivos ante las demandas crecientes de las sociedades y las nuevas pautas socioculturales. Los cambios exigidos en torno a la educación superior vienen apoyados en la necesidad social de establecer su rentabilidad científica y económica. En este contexto, la incorporación de nuevos formatos como el que implica la incorporación del concepto de competencia ha tomado mucha fuerza. En este texto, a partir de las referencias aportadas por el Proyecto DeSeCo se define el concepto de competencia, como elemento referencial de algunos de los cambios que se están produciendo en la educación superior. Se profundiza en la idea de formación en competencias informacionales, cuyo sentido se analiza en esta aportación. Estas se plantean como un avance respecto a las competencias informáticas (instrumentales), quedando vinculadas a procesos más complejos, ligados a la construcción de conocimiento.

Palabras clave

enseñanza superior, sociedad del conocimiento, competencias digitales, competencias informacionales, tecnologías de la información y la comunicación

Institutions in the Knowledge Society

Due to the characteristics and rapid global spread of information and communication technologies (ICTs), significant changes are taking place in many areas in general and in institutions in particular. Authors like Tedesco (2000) and Castells (2009) suggest that the ability of States to control and manage the flow of information has become weaker because the new opportunities opened up by digital technologies have eradicated political and social borders constraining communication and information.

Complex interrelationships and dependencies in a multitude of areas are characteristic features of the world we live in today, especially as they develop and become established on a global scale. We speak of an “interconnected world”, where anything and everything can be found, shown, exchanged, transferred, received, sold and bought in real time anywhere in the world. One of the most far-reaching consequences of this reality is that users need to evolve and adapt to these new technologies very quickly and at all levels.

One of the characteristic features of the new society being shaped by ICTs is the central role that knowledge plays. When discussing ways of creating knowledge, Raffaele Simone (2001) underscores three periods or cultural milestones: the written word, the printing press and electronic communication. From this evolutionary angle, the author considers that literacy has led to very productive skills for exchanging and retrieving of knowledge. In addition, he points out that the third phase may give rise to a questioning of cognitive habits or, at the very least, that it may be necessary to reflect on the changes in our mental structures that this evolution is producing.

Simone’s perspective suggests that it is necessary to identify several fundamental components: a) technical: technology as a tool for knowledge and, therefore, for intelligence and culture; b) mental: evolution from the spoken word to the written word, from reading to non-alphabetic vision and listening; c) ways our minds work with information: reception, production and transformation, and their consequences on knowledge formation.

The social and cultural changes taking place in today’s society, which are often closely linked to the presence of new information technologies, have a significant impact not only on the production of goods and services, but also on social interrelationships as a whole. The accumulation of information, the speed of its transmission, the breakdown of limitations or spatial barriers, the simultaneous use of media (image, sound, text, code, etc.) are, to name but a few, some of the elements that go to explain the enormous capacity for change that these technologies have. Their use forces us to modify the value of basic concepts like space and time. The very notion of reality is now beginning to be reconsidered, given the potential for virtual realities to be built, posing new problems and raising new questions of an epistemological nature.

For Professor Tedesco (2000), the evolution of technologies responds to the requirements of social relationships. This hypothesis contrasts sharply with the extreme technocratic view, which maintains that technologies themselves are responsible for bringing about changes in social relationships. A dynamic relationship clearly exists between both components, but the active role in these processes is played by social relationships and human beings, and not by their products. It was not the printing press that led to the democratisation of reading; rather, it was the social need to democratise culture that

led to the invention and spread of the printing press. It is important to acknowledge that socialising the technique is the problem, not technifying society (Wolton, 1997).

Now more than ever, the democratisation of access to knowledge and of its development is crucial for social cohesion. However, an education with these characteristics is substantially different from a traditional education, especially from the point of view of management, methodologies and content. Consequently, the transformation of education is a palpable reality in most countries (Tedesco, 2000, p. 56).

Access to knowledge is a universally recognised right. National education systems work to provide that access and invest more and more resources in doing so. Social practices and models are examined and reformed in the light of new information. Hence, we find a reality shaped by reflexively applied knowledge, though we can never be sure that a given element of that knowledge will remain unchanged. Under modern-day circumstances, no piece of knowledge is definitive in the traditional sense, in which “knowledge” implies certainty; this applies equally to scientific knowledge as a whole (Giddens, 1997).

Higher Education and the Need for Change

In the field of higher education, and consistent with the previous reflection, the creation of knowledge is the most important challenge that universities face, which, because of its nature, is also a collaborative endeavour. Regarding factors that promote change, it is worth pointing out that the impact of technologies on traditional universities has not been revolutionary because the usual structures have not disappeared. However, there have been significant changes based on analyses of new social and educational demands. Driven by technologies, these changes have been constant in recent years. For universities, these changes have impacted on their objectives and management models, and on teaching and research priorities.

Education is a social construction based on a theoretical model, shaped by several educational stages. In today’s world, students find a society that is becoming more and more technologised. An overly simplistic focus when dealing with the relationship between new technologies and education involves bringing it down to instrumental aspects only. This implies that new technologies are considered as yet another medium in the teaching staff’s resources portfolio, without really taking on board the

most far-reaching dimensions of change. Therefore, we must bear in mind that it may be necessary to redefine our priorities as educators.

Neil Postman suggests an important distinction between a technology and a medium. According to his distinction, a technology becomes a medium when it secures a place in a specific social context. Consequently, a technology is simply a tool or a machine, while a medium is a social and cultural creation (Postman, 2006, p. 145). This view implies that the use of a technology by a specific culture is not necessarily the only way it can be used. Hence, it is possible to use a technology in ways that lead to social, economic and political consequences that vary greatly from one culture to another. Therefore, this “transformation” of a technology into a useful, applicable medium is a process that needs to be implemented at various levels – social, institutional and personal – in order to seek and find the “real usefulness” that technology can bring in terms of added value.

From an educational viewpoint, it is possible to talk about different models or views in such a way that the role technologies play in each of them is different. Thus, from the perspective of “educational engineering”, learning is conceived as a closed, manipulable and evaluable process. In this model, the teaching staff have all the authority and responsibility for education. In contrast, from a different educational culture like, for example, the one represented by a constructivist view of learning, education is considered to be a process of knowledge construction in which initiative and authority are shared by teaching staff and students. The two models referred to above are clearly incompatible in practice and, consequently, they are two cultural references that demand distinct and differentiated uses of technologies. Along the same lines, the culture of educational organisations is also affected by the management models applied to it. These, in turn, determine the types of uses to which technologies are put.

Faced with this reality, higher education institutions have no option but to take a new, deep-seated approach to what they do (Casas, 2005), which involves analysing what they offer society. In this respect, Tünnermann refers to their academic structures as being too rigid, not very diversified and lacking in appropriate communication channels between their various disciplines and the world of production and work. In many cases, the uniformity of their programmes does not allow them to attend to the wide range of interests and motivations of a student population that is ever broader and more diverse; excessive compartmentalisation runs against the essential interdisciplinary nature of modern knowledge;

their attachment to formal systems prevents them from effectively serving the purposes of lifelong learning (2000, pp. 100-101).

Higher education institutions have realised that e-learning technologies form part of the solution, since they allow students to be prepared for a connected world. In fact, technologies are becoming agents of transformation – and not just evolution – (Pittinsky, 2006, p. 7) in both academic education and vocational training. Higher education must become the “wired tower”, a concept that supersedes the “ivory tower”. The book containing the proceedings of the conference held in April 2001 in Washington DC to discuss the impact of the Internet on higher education, on the basis of contributions made by leading experts in the field, has a famous original title that alludes to the “ivory tower” (Pittinsky, 2003).

Competencies as a Reference for Education

International interest in reforming education systems, in searching for new ways to design curricula and to understand teaching and learning processes, has taken shape through a number of different projects backed by UNESCO and the OECD. One of them, called DeSeCo (Definition and Selection of Competencies), issued its initial results in 2001 in a report entitled *Defining and Selecting Key Competencies*. Two years later, in 2003, and coinciding with the final project, a second report was issued: *Key Competencies for a Successful Life and Well-Functioning Society*. Both reports were compiled by Dominique Simona Rychen and Laura Hersh Salganik; the former as the project director and a member of the Swiss Federal Statistical Office, and the latter as the director of the Education Statistics Services Institute in Washington. On the basis of these reports, most OECD countries, including Spain, began to reformulate the school curriculum in line with the controversial, complex and powerful concept of competencies (Pérez Gómez, 2007).

Initially, at some point in the 1960s, competencies as a reference for education were formulated in the area of vocational or occupational training, closely linked to the processes of in-company training and technological training in educational institutions. However, over the years, most the traits of competencies have been incorporated into institutions that train professionals; this is much more inclusive, and not limited to the technical area. From this holistic, integral perspective, it was considered that training

provided by educational institutions (higher education, in this instance) should not simply be designed with a view to incorporating an individual into productive life through employment. Besides promoting the development of certain attributes (skills, knowledge, attitudes, aptitudes and values), it was felt that the design of training should consider the need to intervene within the context and culture of the workplace. At the same time, it should allow for training in specific contexts to be generalisable (Gonczi, 1996).

In accordance with the DeSeCo project, a competency is defined as “the ability to meet individual or social demands successfully, or to carry out an activity or task. [...] Each competence is built on a combination of interrelated cognitive and practical skills, knowledge (including tacit knowledge), motivation, value orientation, attitudes, emotions, and other social and behavioural components that together can be mobilised for effective action” (2004). Along the same lines, it points out the following consideration, taken from a document on key competencies for lifelong learning produced with the backing of the Directorate General for Education and Culture of the European Commission (2004): “Competence’ is considered to refer to a combination of skills, knowledge, aptitudes and attitudes, and to include the disposition to learn in addition to know-how. [...] Key competences represent a transferable, multifunctional package of knowledge, skills and attitudes that all individuals need for personal fulfilment and development, inclusion and employment”. These definitions clearly reflect the main nuances of the concept of competency. The first refers to the mobilisation of knowledge (Perrenoud, 1998). From this angle, being competent in an area of activity or practice means being capable of activating and using relevant knowledge to cope with certain situations and problems connected with that area. A second specification refers to reflexiveness and the use of metacognitive skills as prerequisites for any key competency, since a competency requires more than the ability to apply something that has been learned to an original situation. Reflexiveness refers to the internal structure of a key competency; it is an important cross-disciplinary characteristic, relevant to the conceptualisation of key competencies (Rychen & Salganik, 2006, p. 106).

When identifying and defining curricular learning in competency terms, we are placing emphasis on the articulated and interrelated mobilisation of different types of knowledge, and not on the characteristics of disciplines, with everything that this implies. Equally, reference to the context in which competencies are acquired is important, as is reference to the context in which they will subsequently

be applied. Competencies cannot be separated from the practical contexts in which they are acquired and applied. An approach based on the acquisition and development of general competencies will probably highlight the need to teach students to transfer what they have learned in a specific situation to other situations. Approaches based on competencies – or on situated skills, that is to say, on skills that include, in their specification, a reference to knowledge and specific situations – will stress the need to work on competencies in order to apply what has been learned to different contexts.

The DeSeCo project’s final competency categories and key competencies are shown in the following figure:

Following an extensive study in which the interdisciplinary perspective and cross-disciplinarity were always present, the conclusion drawn was that the three most important dimensions for competency development were: socialisation, personal autonomy and the ability to use technology interactively.

Competency-based learning also implied the ability to carry on learning throughout life, allowing metacognitive skills to be developed, which make independent and self-directed learning possible. Competent learners that are aware of and can regulate their own learning processes from both cognitive and emotional viewpoints can make a strategic use of their knowledge, adapting it to the demands of the content or learning task and the characteristics of the situation (Bruer, 1995).

According to Bolívar (2009), the concept of competency is linked to the principle of “learning to learn”; to some extent, this idea is at the root of all key competencies. Likewise, the very idea of competency

is clearly linked to the concept of lifelong learning, as a complementary prerequisite of the former. In the DeSeCo project (2006), metacognitive strategies for “learning to learn” are, rather than a specific competency, a prerequisite for all of them. Within the context of the Lisbon Strategy, the European Union’s recognition of the need to support lifelong learning to shape the knowledge society implies giving citizens the necessary tools to allow them to “learn to learn” independently.

As indicated previously, competencies need to be recognised in practice through the fulfilment of clearly established performance criteria. These criteria, understood as being the results of learning (evidence), set the conditions for being able to assess performance; both elements (criteria and evidence) form the basis for evaluating and ascertaining whether or not mastery of a competency has been attained. Likewise, evaluation criteria are closely connected with the characteristics of established competencies.

The concept of competency suggests a meaning of unity, and implies that elements of knowledge have meaning only as part of a whole. Indeed, even though a competency can be broken down into component parts, separately these do not constitute a competency: being competent means having a mastery of all the elements and not just one (or some) of them.

The integrated professional competency model establishes three levels of competency: basic, general and specific. Basic competencies are the indispensable intellectual abilities for learning a profession; they include cognitive, technical and methodological competencies, many of which are acquired at prior levels of learning (for example, the use of oral, written and mathematical languages). General professional competencies are either shared by the profession as a whole or refer to specific work situations that require complex responses. Finally, specific competencies apply to a job, and are linked to specific requirements for doing it. Understood thus, basing educational models on professional competencies implies reviewing the procedures of educational object design, of educational perceptions that guide teaching-centred practice (and with that, educational practice itself), and of criteria and procedures for their evaluation.

Anyone with the necessary knowledge, skills and aptitudes to do a job possesses professional competency. Consequently, they are able to solve work-related problems autonomously and flexibly, and are able to collaborate in order to improve the working environment and the organisation of the posts that they hold. Going further into the definition given, we could consider professional competencies to be the underlying characteristics of a

Figure 1. DeSeCo project competency categories and key competencies (Rychen, 2006)

Competency categories and key competencies (DeSeCo)
Interacting in heterogeneous groups
The ability to relate well to others The ability to cooperate The ability to manage and resolve conflicts
Acting autonomously
The ability to act within the big picture The ability to form and conduct life plans and personal projects The ability to assert rights, interests, limits and needs
Using tools interactively
The ability to use language, symbols and text interactively The ability to use knowledge and information interactively The ability to use technology interactively

person, which are connected with the proper performance of a job, which may be based on motivation, character traits, self-worth, attitudes and values; all in all, a variety of knowledge or cognoscitive or behavioural capacities. In short, it is a matter of any individual characteristics that can be measured reliably and whose relationship with the performance of a job can be demonstrated.

The final report of the Tuning project (González & Wagenaar, 2003), aimed at identifying competencies that needed to be developed in the higher education setting, underscores the importance of considering (university) degrees in terms of the results of learning and, in particular, in terms of competencies: general (instrumental, interpersonal, systemic) and specific to each subject area (including knowledge and skills particular to the disciplinary fields and degrees). This consultative study was done on graduates, employees and academics in several European countries, and the thirty most highly valued general competencies were identified.

The information society and the knowledge society are placing demands on education that differ from traditional ones, and they are clearly connected with the development, in all citizens, of the ability to learn throughout their lives. In other words, the problem does not lie in the quantity of information that children and teenagers receive, but rather in the quality of it: the ability to understand it, process it, select it, organise it and transform it into knowledge, as well as the ability to apply it to different situations and contexts depending on the values and intentions of their own personal or social projects. In today's democracies, education systems are facing major challenges that are very closely connected: first, consolidating a comprehensive schooling that allows everyone to develop their abilities as much as possible, while respecting diversity, guaranteeing equality of access to education and redressing inequalities; second, fostering the education of autonomous individuals, who are capable of taking informed decisions about their own lives, and of participating in working and social life in a relatively autonomous way.

Information and Digital Competencies

The European Union's European Higher Education Area (EHEA) initiative aims to gradually build a "Europe of Knowledge" in order to foster greater economic growth and social cohesion, based, according to its aims, on action in the areas of citizen education and training. Therefore, we

are talking about an educational reform of a transnational nature that pursues a minimum of two fundamental objectives: establishing a quality education system that considers the mobility of students and teachers and, consequently, the creation of a new European reference in the international context, with an increase in competitive capacity in all social and economic sectors.

This joint reform of higher education studies in European Union (EU) Member States is based on several essential concepts that can be summarised in the following principles:

- a) Education is planned, preferentially, as a process of lifelong learning.
- b) The structure and design of degrees is reformulated to take account of the professional profiles that society requires.
- c) Reflection is required on the objectives, competencies and knowledge to be attained.
- d) It is considered essential to demand coherent teaching methodologies.
- e) New administrative and management actions are generated.

The current European work context is characterised by the emergence of new forms of labour relations, new forms of work, new areas of work and new workers (Castells, 2000). It is a matter of a new reality that contemplates new approaches, such as self-employment, outsourcing, part-time work, temporary work, flexible work, etc. Given this situation, universities taking on the responsibility for educating new generations of professionals are confronted with a new reality. The idea of educating someone for a single, permanent job needs to be revised. The demand for new skills and competencies that allow people to cope with significant changes in their working lives is a feature of the new labour market. In addition, new demands seem to be linked to new academic scenarios, in which the amount of time spent on education is shorter than in more conventional contexts.

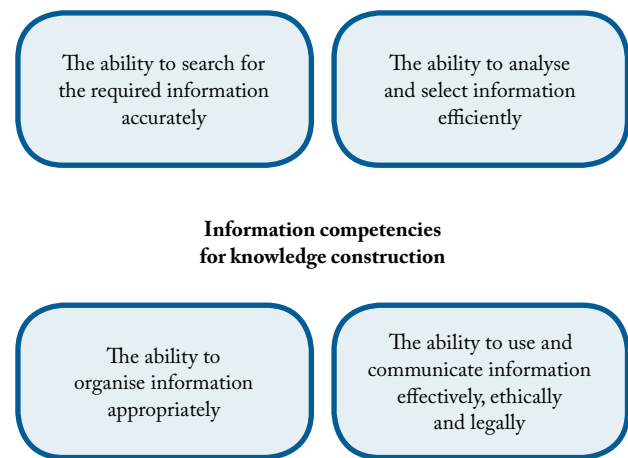
Consequently, higher education institutions are being called upon to respond to more flexible and better adapted educational demands, and to the need to incorporate new education systems, which, to a large extent, should be linked to the use of new ICTs, which are now everywhere to be found in society. This task should be carried out in a reflexive, coherent manner, and not by a conditioned response resulting from external market-driven demand. Universities should provide answers to real problems, and not only to those of an economic nature.

New technologies can play a fundamental role in the innovation of the teaching function (and also in new approaches to research). They should allow the knowledge access processes to be “tailored”. Alternatives like blended learning, combining face-to-face work and distance learning, minimise the space and time constraints of conventional education. It is a matter of making learning processes more flexible by making the most of digital technology resources, such as the Internet. Today, factors determining time and space can be relativised. So it is also a matter of gaining experience and of daring to change models, routines and ways of working based on concepts and procedures that are centuries-old in some cases, and therefore linked to models that are now out of date (De Pablos, 2005).

The educational potential of digital networks means that a number of things need to be seriously reconsidered, such as the individual and collective dimension of teaching-learning processes, the pace or timing of learning, new ways of organising information for knowledge construction, the tasks and competencies of students and teaching staff, etc. However, we should remember that technology is not an educational offering in its own right. Rather, its educational validity lies in the use that education stakeholders and educational communities make of it. Hence, ICT training for teaching staff becomes one of the key factors involved in the use and utilisation of technology in systems of regulated and non-regulated education alike. That implies the construction of a new approach to education, based on new resources that allow local and global aspects to be drawn on and incorporated. The new approach should also make education in schools compatible with the creation of specialised digital networks that construct and reconstruct disciplinary knowledge and know-how. This potential needs to be channelled through the creation of new models and forms of educational management, which allow the interactive potential of virtual space to be exploited.

The virtual model may become a useful way of cutting costs and reaching the highest number of people. This is something that has been emphasised in a way that may not be impartial. However, in reality, it is more about optimising new opportunities for communication and education: providing a service that is better tailored to students, offering tutorials, reducing the number of students in each class, getting rid of most of the lectures from higher education, incorporating other information access procedures, and so on. All of these are viable alternatives. Regarding costs, it is not a matter of making higher education processes cheaper, but rather of significantly improving educational processes. In fact, that reduction in costs is not real, unless we lower the quality of education.

Figure 2. Abilities connected with information competencies



The term “new literacies” refers to the need to go a step further than instrumental or technological literacies connected with the use and integration of ICTs. It is in this context where the information literacy proposal is situated (Area, 2008, p. 6). This proposal means that, after going through an initial phase of instrumental or digital literacy, a second enabling stage needs to be covered, which involves the acquisition of competencies connected with searching for, analysing, selecting and communicating data and information, so that students are in a position to be able to transform information into knowledge. In any event, as Bawden (2002) points out, the concept of information literacy has been around since the end of the 1980s, in the field of literacy conceptualisation that has basically been developed over the last decade (Snively & Cooper, 1997; Bruce, 1999).

The working group that produced the document entitled “Competencias informáticas e informacionales en los estudios de grado” (“Digital and Information Competencies for Undergraduate Studies”) established a number of qualifying differences between IT competencies and information competencies. Digital competencies are defined as a set of knowledge elements, abilities, dispositions and conducts that enable individuals to know how ICTs work, what they are for and how they can be used to attain specific objectives (2009, p. 13). Information competencies, which are more ambitious in terms of the scope that the working group gave them, are defined as a set of knowledge elements, abilities, dispositions and conducts that enable individuals to recognise when information is necessary, where to find it, how to evaluate its suitability and how to use it appropriately in accordance with the problem posed (2009, p. 14).

This second competency level is considered to be cross-disciplinary in nature, since it follows the specifications

established by the Association of College & Research Libraries, which defines information competency as “common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning” (Information Literacy Competency Standards for Higher Education). Information competency should enable students to acquire the following abilities: to search for the required information accurately, to analyse and select information efficiently, to organise information appropriately, and to use and communicate information effectively, ethically and legally, with the aim of constructing knowledge.

Conclusion

The strong presence of ICTs in advanced societies, the incorporation of a cultural vision of education and the application of psychology theories based mainly on constructivist perspectives make it possible to consider education from new angles and approaches. Likewise, ICTs provide new educational formats and options, since they break down the barriers constraining curricular disciplines by allowing students to learn in an interdisciplinary, open way. They also make it possible to learn from multiculturalism, and extend and multiply educational points of reference. These new educational contexts require changes in the competencies and roles of lecturers (De Pablos, 2001). Lecturers are no longer the only source of knowledge, since they “share” these competencies with documents, specialists, experts, colleagues, people from other cultures, documentary databases, etc.

This new context shaped by the knowledge society places new demands on education systems and, therefore, on higher education, since education is being called upon more and more often to offer a higher quality response to social needs. Educational institutions must change to the same extent as the societies in which they are located. Returning to Professor Tedesco’s reflection referred to in this article, social demands are the ones that drive change, and not the other way round.

As proposed in this article, information competencies are considered to be an advance on IT competencies (instrumental), since they are ultimately linked to knowledge construction processes of greater complexity.

ICTs represent an opportunity for change with respect to forms and procedures for social interaction and access to information. Teaching lies at the root of these practices, since its aim is the socialisation of knowledge.

Changes in communication interactivity brought about by new technologies point towards a “teaching culture revolution”. The authority of lecturers no longer stems from having a monopoly over knowledge, but rather from the capacity to teach how to produce information and how to learn. We are talking, therefore, about a revision of teaching strategies used thus far. The logic of knowledge management processes is reconsidered, and this implies changing education policy and certain functions of the stakeholders involved in these processes (teaching staff, students, librarians and managers).

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Monograph “Information and Digital Competencies in Higher Education”

ARTICLE

Multiliteracy and Social Networks in Higher Education

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Abstract

Higher education as an institution should respond to the philosophy underlying the predominance of all things digital and of the Social Web in society, both today and tomorrow. In doing so, it should take an integral approach, because every higher education unit and service has the potential to be enhanced by a well-founded application of 2.0 (and above) methodologies. In particular, the areas on which this is likely to have a greater impact are the teaching/learning process and the production, validation and dissemination of knowledge. Consequently, students, lecturers and staff included within the concept of multiliteracy (especially reading and writing literacy, ICT literacy and information literacy) will inevitably require an appropriate level of literacy and competency training and refresher training.

Keywords

Social Web, multiliteracy, reading and writing literacy, ICT literacy, information literacy, multimodality, design, discourses

Multialfabetización y redes sociales en la universidad

Resumen

La universidad como institución debe responder a la filosofía que subyace al predominio de lo digital y la web social en la sociedad actual y la del futuro con planteamientos integrales, puesto que todas sus unidades y servicios son susceptibles de mejora gracias a la aplicación bien fundamentada de las metodologías 2.0 y posteriores. En concreto, las esferas donde mayor impacto se puede esperar son la del proceso de enseñanza/aprendizaje y la de la producción, validación y difusión de conocimientos, para los que una formación y actualización al nivel adecuado de las alfabetizaciones o competencias de alumnos, profesores y personal que se engloban dentro del concepto de multialfabetización (sobre todo alfabetización en lectoescritura, en TIC e informacional) resulta insoslayable.

Palabras clave

web social, multialfabetización, alfabetización en lectoescritura, alfabetización en TIC, alfabetización informacional, multimodalidad, diseño, discursos

1. Web 2.0 and Higher Education

Cope & Kalantzis (2008) describe the current era of higher education as a period of change. This not only applies to traditional higher education based on the predominance of printed documents as a means of learning and academic communication, but also to higher education in which all things digital are increasingly becoming the main means of access to knowledge for academics and the predominant medium for offering educational content to students. For these authors, the new situation – in which the predominance of all things digital is ever greater – has the following distinguishing traits that directly impact on the type of institutional response that higher education needs to give:

- The ability to publish and provide access to a huge amount of content allows for the emergence of new areas of knowledge, new cultural perspectives, and better focused and located applications of knowledge.
- The intrinsic multimodality of new modes and means of communication will end up having an impact on many disciplines as a consequence of new forms of textual representation.
- The Social Web, equivalent to Web 2.0, fosters a change in balance between the designer-producer and the recipient of texts as a consequence of the multiple options for collective production, annotation, shared tagging, remixing and collaborative development of all kinds of texts. This blurs the boundaries between creator and reader, and is a reflection of the new social order in which a consumer becomes a creator and vice versa. In this context of the predominance of all things digital and of the Social Web, higher education needs to reconsider its role and status in these new ways of creating and disseminating knowledge beyond its traditional boundaries, since the dialogical and distributed nature of the Social Web may allow for faster, more participatory processes of exchanging knowledge between experts, professional groups and interested parties. In turn, this gives rise to new ways of validating and distributing knowledge, which may act as an alternative to peer review, for example.
- Anyone can learn anywhere, anytime. How does a teaching/learning process – for which higher education still has to be ultimately responsible – sit

with learners who are more capable of constructing their own knowledge on the basis of a combination of sources, resources, prior experience, interaction with their peers, collaborative work, etc.?

As can be seen, these traits affect many of the most fundamental aspects of university life, and that is the reason why there is now talk of University 2.0, Science 2.0, etc. Indeed, there are very few aspects of life to which the “2.0” adjective is not applied. The recent *Higher Education in a Web 2.0 World* report (Committee of Inquiry, 2009) for the JISC (Joint Information Systems Committee) in the United Kingdom adds further traits to those listed above. The report analyses the key problems and offers recommendations for the institutional approach that higher education should take with regard to the participatory philosophy underlying the Social Web:¹

- Learner skills: it is essential for higher education to be aware of the levels and prior experience of their students on admission (which will never be uniform) in order to act on basic shortcomings; attempts should be made to provide equality of access to technological resources and to training for effective use; information literacy programmes are essential, as is fostering participation in Social Web-based activities.
- Staff skills: it is crucial to foster ongoing research into teaching practices; to extend and facilitate lecturers’ use of technology; to raise awareness and encourage the spread of the concept and of information literacy applications for lecturers; to foster research into 2.0 (and above) applications; to promote the incorporation of the 2.0 (and above) mindset and applications into curricula and specific subjects in a planned way.
- Infrastructure and organisation: it is essential to extend the 2.0 mindset to as many higher education services and units as possible, since the Social Web has obvious applications in higher education management in the widest of senses, including accounting to society and social impact.
- Inter-sectoral relationships: the expansion and consolidation of the 2.0 mindset requires a coordinated effort between higher education and other sectors and educational areas.

1. For an analysis of the differences between 1.0 and 2.0 mindsets, see Lankshear & Knobel (2008b, pp. 43-72). For an exhaustive list of 2.0 elements applicable to educational environments in the categories in the cognitive domain of Bloom’s Taxonomy, see Churches (2008).

- The digital divide: this is – and will continue to be – real in a variety of social segments, even in the most technologically advanced societies. Narrowing it, or getting rid of it altogether, requires a clear policy approach in higher education: access and skills levels will continue to be very uneven between different social groups. It is also essential to deal with the digital divide between students and tutors through intelligent policies, taking advantage of the levels of technological mastery that different groups of students have.
- An information literacy approach for the whole institution and not just for students.

It appears to be clear, therefore, that the pervasive presence of all things digital and the Social Web requires higher education to have a more critical understanding of, and engagement in, the ultimate philosophy underlying these developments, over and beyond the specific mechanisms and tools available at any given moment in time. Therefore, they need general institutional frameworks to serve as a guide for the various academic and management units – and for all aspects of university life – in terms of adopting any valid 2.0 (and above) methodologies that gradually emerge.

The above-mentioned documents particularly underscore the importance of 2.0 and the Social Web for teaching/learning processes on the one hand, and for new multimodal ways of producing educational and academic texts on the other. Both aspects lead to the core topic of this article and of this monograph: the concept of multiliteracy, and higher education policies on literacy and competency training for students, lecturers and staff included within that concept, to which the Social Web appears to be inextricably linked.

2. Multiliteracy and the Social Web as an Integral Part

For several years now, the absolute priority of establishing a framework and map of all literacies has been underscored in library and educational environments. It does not matter whether these literacies are old or new. What does matter is that they are considered indispensable to our functioning as citizens in today's society. In the higher education environment, a framework and map clearly established by means of consensus between all education stakeholders would serve as a coordination and co-responsibility tool

for all the agencies and professionals involved in the task of training and helping to train university students in such literacies, thus enabling them to carry on learning throughout their lives. From the point of view of the effective use, accountability and inalienable social benefit associated with resources allocated to training in key competencies, which enable people to cope with complexities of today's society, it is shocking to find – and all the more so in times of crisis like the present one – that inefficiency and ineffectiveness as a consequence of disordinated resource use still predominate.

Public, school, university or specialised libraries owe their very existence to the mission and objectives of their mother institutions. For many years now, a great deal of emphasis has been placed on ultimately justifying their existence. Therefore, the reason why they should be held accountable for an effective use of resources placed at their disposal is to compare and demonstrate the contribution they make to all levels of education (in the widest of senses) of the population they serve. For university libraries, this refers to students' academic results. However, managing to attain these levels of education and academic results is, needless to say, not the sole responsibility of libraries. Therefore, it is necessary to mark out the playing field very clearly and to define intra-institutional, inter-institutional and inter-professional responsibilities in this respect, not only to be able to plan training activities in libraries properly, but also to incorporate and integrate such activities in the most appropriate educational way into curricula and into applied practice through various subjects and programmes. As learning support resource units, university libraries become a space and an environment full of multi-purpose resources that offer students the chance to become the active subjects of their own literacy acts and practices in order to meet the demands of the curriculum. This contribution must be subject to the same principle of educational effectiveness as other learning facilitation processes in the higher education setting.

In our search for potential theoretical and practical bases for this framework and map of literacies necessary for the 21st century (Pasadas Ureña, 2008), and after realising that terminological chaos was a predominant feature, we reached the conclusion that the theory of communication and, to be precise, the theory of multimodality, was a crucial premise and starting point. Furthermore, it provides the best practical structure in which to set all of the literacies cited in the academic, technical-professional and political-administrative literature available. Indeed, the theory of multimodality

in communication postulates that the creation/design/production of meaning/texts/representations and their distribution in any society and era are carried out thanks to the very diverse modes/languages of communication available, which Cope & Kalantzis (2009b) systematise as follows:

- **Written:** writing (representing meaning to another) and reading (representing meaning to oneself); handwriting, the printed page, the screen.
- **Oral:** live or recorded speech (representing meaning to another) and listening (representing meaning to oneself).
- **Visual:** still or moving image, sculpture, craft (representing meaning to another); view, vista, scene, perspective (representing meaning to oneself).
- **Audio:** music, ambient sounds, noises, alerts (representing meaning to another); hearing, listening (representing meaning to oneself).
- **Tactile:** touch, smell and taste (representing bodily feelings and sensations to oneself, or to another when there is physical contact). These include kinaesthesia, physical contact, skin sensations (hot/cold, texture, pressure), grasp, manipulable objects, artefacts, cooking and eating, aromas.
- **Gestural:** movements of the hands and arms, expressions of the face, eye movements and gaze, demeanours of the body, gait, clothing and fashion, hair style, dance, action sequences, timing, frequency, ceremony and ritual. Gestural representation is understood in a broad and metaphoric sense as the physical act of making signs, and not in more restrictive literal sense of moving the hands and arms.
- **Representation for oneself** may take the form of feelings and sensations, or the rehearsal of action sequences in one's mind.
- **Spatial:** proximity, spacing, layout, interpersonal distance, territoriality, architecture/building, streetscape, cityscape, landscape.

For the theory of communication, all meanings/representations produced by any of these modes constitute information that is inevitably produced, consolidated, preserved and distributed through very diverse media, channels and supports that technological development at a given time in history permits. It is this technological development, which now gives priority to images over the written word. Quite paradoxically, it has ended up attaching value and preference to the traditional modes

of orality and gestuality over the centuries-old prevalence of the written word on the printed page. Consequently, training citizens to understand and manage all of these modes of creation/design of meaning/text, and to use the most appropriate media, channels and supports for the type of meaning/text that they distribute, requires a well-articulated approach to multiliteracy across all of these educational levels throughout their lives. Here, it should be noted that training refers to the level of proficiency that citizens attain in each of the literacies particular to each mode and medium. Furthermore, multiliteracy is understood to be the acquisition and mastery of skills centred on a personal, social and cultural use of multiple tools and languages of representation as a social practice, and not only the instrumental skills to use different technologies (Area, Gros & Marzal, 2008, p. 74).

Area (2010, p. 3) defines a multiliterate person as someone who:

- has skills to access information and to use any technological resource, whether printed, audiovisual or digital.
- possesses cognitive capacities to transform information into knowledge.
- is capable of using languages and forms of expression to relate to others, to distribute information via any medium and to communicate with others.
- has interiorised criteria and values for an ethical and democratic use of information and knowledge.

However, from the perspective of the need for a framework and a map, as postulated earlier, it does not appear that enough progress has been made to overcome the conceptual and terminological chaos that continues to predominate. This is still the case, despite the fact that the theory and practice of multiliteracy (as it has been developed and completed by the members of the New London Group (Cope & Kalantzis, 2009b)) has consolidated its position as being one of the most interesting contributions to the field in terms of the changes required in the approaches taken to multiliteracy training in every educational area and environment, and in daily life. An example of that can be seen in the concept of digital literacy, or digital competency as it appears in the title of this monograph. This appears to be the most widespread concept, probably because of the importance of all things digital in certain geographical areas and segments of today's society. Authors who share the idea that digital literacy is an inclusive part of most other literacies are still unable to find a consistent articulation

between all literacies for all societies and their constituent groups. However, this is precisely what would need to be demanded of a paradigmatic, integral formula.

Along these lines, Bawden (2008, p. 19) asserts that Gilster's digital literacy has nothing to do with any specific technology, or even with technology itself, which is rather paradoxical when taking the term into account. It has more to do with mindsets, in which skills and competencies operate, and with information and information resources in any format. The term itself is wholly reasonable in this context, given that information nowadays is digital, has been digital and could be digital.

Further on, Bawden (*ibid.*, p. 29) recognises that an important part of digital literacy involves when to use a non-digital source. When he sets out the four components of digital literacy, which he claims are generally agreed, he accepts the idea that digital literacy is a framework for integrating some literacies and groups of skills, though not necessarily all of them. Here are the basic components (*ibid.*, pp. 29-30):

- a) Underpinnings: literacy per se; Computer / ICT literacy.
- b) Background knowledge: the world of information; nature of information resources.
- c) Central competencies: reading and understanding digital and non-digital formats; creating and communicating digital information; evaluation of information; knowledge assembly; information literacy; media literacy.
- d) Attitudes and perspectives: independent learning; moral / social literacy.

Faced with Bawden's chaotic heterogeneity, and in the same collective work, Martin (2008) – aware of this integral framework's articulation difficulties – puts an interesting slant on the discourse of talking about digital literacies (computer / ICT literacy, technology literacy, information literacy, media literacy, visual literacy, communication literacy). Indeed, he concludes by postulating that digital literacy is “the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesise digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process” (p. 167).

Although this definition of digital literacy seems rather more adapted to the nature of all things digital as being

a technological support and no more, three well-founded objections can always be made: in reality, it is a matter of convergence between information literacy (that is to say, access to and use, understanding and production of content/texts on digital supports only) and ICT literacy (the mastery of the digitalised production of multimodal texts). For that reason, it cannot become a valid universal framework for all literacies stemming from the modes/languages of communications systematised by Cope & Kalantzis above. Finally, Martin's digital literacy would only be applicable in highly developed technological environments, which would once again go against the condition of universality. Otherwise, placing such an acute emphasis on the importance of all things digital to the detriment of all things printed means falling into the exact same trap of technological determinism that, for so many centuries, favoured all things printed to the detriment of other modes/means of communication.

Therefore, we firmly maintain that it is the theory of communication and multimodality that can offer us a framework in which all literacies necessary for today's society can be set. Together with the constellation of skills concept, it would allow us to determine – for each situation or specific problem anywhere in the world, or for any social segment and at any level of complexity – what constellations of literacies are the most essential and effective in order to deal with that situation or problem.

The term “multiliteracy” is thus understood as having become a necessary term to encompass various literacies. At the same time, emphasis is placed on an application in constellations and on a need for an integral approach when it comes to training citizens in such literacies. Its usefulness for educational practice and library service planning, for example, is unquestionable. Thus, to conclude this section, Area, Gros & Marzal (2008, pp. 73-75) offer us a concept of multiliteracy consisting of printed-page culture and reading and writing literacy, audiovisual culture and language literacy, digital culture and technology literacy, and information literacy. All of these literacies need to be developed across all levels of the education system, for children, teenagers and adults alike, and this should be done simultaneously in the instrumental, cognitive, attitudinal and axiological dimensions.

The reference above allows us to state that multiliteracy approaches have started to become more visible in our environment thanks to works like the one by Area, Gros & Marzal (2008) and the one by Coll & Monereo (2008), where Coll himself and Rodríguez Illera (2008) offer us a fairly balanced overview of the problem of literacy, new literacies and digital literacy, or the various

contributions made by Daniel Cassany (2009),² to give but a few of the most noteworthy examples. That said, these reflections do not seem to be fully incorporated into the approaches to higher education competencies in our environment, as demonstrated in works like those by Villa Sánchez & Poblete Ruiz (2008), Rué (2009) and Pozo & Pérez Echevarría (2009). For these authors, literacies/competencies appear not to have a significant presence in higher education, or if they do, they are very blurred. It is almost as if no-one either knows how to integrate training in such competencies into the curricula or into curricular development, or which planning mechanisms to implement for overall qualification objectives/results that cannot be attained through a straightforward, unconnected accumulation of practices for various subjects across the curriculum without an indispensable collaborative/coordinated approach.

To conclude this section, it should be underscored that the Social Web can clearly be taken as a constituent part of the concept of multiliteracy, irrespective of the differences in the way it may be defined or of its components, etc., as seen above. Indeed, the incorporation of 2.0 into the paradigm of information literacy takes place in the phase of reading and understanding texts created in any mode of communication, distributed via any medium and retrieved thanks to relevant search strategies. However, it particularly takes place in the phase of designing and producing new meanings/texts in accordance with the mode and medium chosen, depending on the context and goals pursued in that design. Likewise, the incorporation of 2.0 into the paradigm of digital literacy, according to Martin, takes place in the phase of reading/understanding digital texts, and in the phase of designing/creating meaning on a digital support. Therefore, when talking about multiliteracy, we are talking about the 2.0 philosophy as an indivisible part of it, because, at one and the same time, we are talking about the three literacies that present themselves in constellation: reading and writing literacy, information literacy and digital or ICT literacy, in this instance, at their various entry, intermediate and exit stages in higher education; and 2.0 implies, at the very least, a certain level of ICT mastery.

3. Multiliteracy in Higher Education

Area (2010, p.5) postulates that the concept of multiliteracy may represent an authentic revolution for the school environment, since it implies a whole new approach to at least the following aspects of educational practice:

- Simultaneous literacy, not only in reading and writing, but also in audiovisual, digital and information competencies, in order to use and contribute to the range of information and knowledge resources available in the educational environment and elsewhere, in an intelligent, critical and ethical way.
- Systematic and critical questioning of all sources of data, information and knowledge, irrespective of the technological medium used in their production, consolidation, preservation and distribution.
- A teaching methodology that fosters constructivist learning processes through project-based methods, in which pupils themselves put together study plans and take the necessary technological actions to construct and obtain satisfactory responses to relevant, meaningful problems.
- Educational activities that require pupils to express themselves and communicate with each other through technological resources and a variety of hypertext, multimedia and audiovisual formats.
- Using 2.0 (and above) tools and technology to generate processes of collaborative learning.
- The teacher as an organiser and supervisor of learning activities that pupils undertake using technologies, rather than the conveyor of ready-made information.
- Literacy is multimodal; in other words, the literacy process should develop skills in many language and media competencies, and should be based on cultural experiences that pupils bring from earlier educational phases and extramural settings.
- Literacy activities are integrated, cross-disciplinary tasks across the curriculum, and do not constitute separate actions that stand outside content and curricular objectives.

Area's reflections are automatically transferrable to the higher education environment. Discourse on

2. Cassany translates the concept of literacy/ies into Spanish using the neologism *literacidad/es* and appears to ignore the concept of multiliteracy/ies, despite the fact that his considerations mostly coincide with the theory and practice of new literacies and multiliteracy developed by the New London Group since the early 1990s (Cope & Kalantzis, 2009b).

the educational implications of the European Higher Education Area (EHEA) shares that view practically in its entirety. Therefore, it can be asserted that multiliteracy training at any educational stage would present the same or similar challenges. Let's take a look at some of the most important ones in the higher education environment.

At this moment in time, the first one involves academic authorities and teaching staff being aware of and understanding that multiliteracy is nothing more than a key constellation of competencies for today and tomorrow, whose structured training at the respective levels throughout students' degrees should be considered as an overall qualification result and, therefore, something requiring inevitable planning by the bodies responsible for the effectiveness of curriculum implementation, over and beyond the unconnected and accidental approaches taken to each individual subject of the curriculum and the vagaries of what each lecturer/tutor individually considers appropriate.

Indeed, it is assumed that university degree holders will have to demonstrate, in one way or another (for example, by producing final projects that are compulsory in the EHEA, or by qualifications in, or the certification of a personal portfolio of, all the training/activity/experience gained throughout their degrees in this respect), a certain level of reading/understanding and writing/production of multimodal texts adapted to the complexity of the disciplinary and professional discourses of their degrees, as well as critical approaches to information in today's society. Determining the exit levels necessarily demands that entry and intermediate levels be set, which undoubtedly requires proper, effective educational planning of content, pathways, stages, remedial actions, etc. across the curriculum. The assessment criteria for information competency at four levels developed by Bulaong, Hoch & Matthews for the Middle States Commission on Higher Education (2003) may be useful in this respect.

Barring error or omission, it seems that this has not been the cause for the slightest concern in the recent process of reforming curricula in Spanish higher education. This is so, despite the fact that, for many years now, there has been accumulated experience and a sufficient body of information or ICT literacy training studies and practices that could serve as the basis for an integral planning of

multiliteracy training.³ In addition, instruments exist to evaluate and measure an academic situation in terms of the lesser or greater degree of implication in and commitment to an appropriate planning of training in such competencies (Webber & Johnston, 2006; COFHE, 2009). However, it seems clear that, in practice, Spanish higher education still maintains that competencies of this type are learnt in an unconnected way, without any planning, simply by immersing students in the same old university environment. Changing this generalised perception demands that a decisive approach be taken by accreditation agencies and academic authorities to include these competencies in their evaluations and in their educational training and refresher training plans for teaching staff and other staff with learning support functions.

The second key challenge consists in developing the appropriate mechanisms for higher education to be able to establish the level of knowledge and experience that students bring with them when joining higher education. This will allow an appropriate planning of remedial actions required in order to try and put all students on a more or less even playing field, so that they can take advantage, as quickly as possible, of the resources that the institution puts at their disposal. Unless this happens, it effectively means blindly maintaining the determinism favouring those social classes that reach higher education with acceptable levels in terms of mastering ICTs and handling information available in today's society. Consequently the challenge in this respect is the necessary coordination and cooperation between the various educational areas when it comes to establishing integral frameworks for an approach to multiliteracy or any of its components throughout the educational cycles.⁴

The third challenge, in this instance regarding information literacy or competency, consists in producing and applying true information literacy plans that contemplate, in a well-articulated way, the different areas of responsibility and action of the various facilitators of this training, in accordance with the entry, intermediate and exit levels established and agreed for overall qualification results. That way, it would be possible to go beyond the current phase characterised by the concentration of information literacy activities in libraries (only for students in their first few years) and by the absence of certain

3. See, for example, the report on REBIUN (Spanish Network of University Libraries) and information literacies presented by Carme Santos in January 2009 at Vilanova i la Geltrú, Spain, at the 2nd Seminar on Libraries, Learning and Citizenship. Accessed: 07/01/10].

<<http://www.slideshare.net/gdurban/presentacion-rebiun-seminario-alfin-en-vilanova-presentation>>

4. See an excellent model for a lifelong information literacy framework in Scotland. [Accessed: 07/01/10].<<http://caledonianblogs.net/nilfs/>>

considerations for each degree and/or discipline. These considerations include, for example, the most appropriate educational formula to use and the best moment to start offering explanations and practical experience of specific registers of textual expression and of communication in each discipline and/or profession. There is also a lack of necessary reflection and action on when and how to introduce students to the specific techniques of research for each discipline, in line, for example, with the learning methodology based on investigation and research (Bruce, 2008; Healey & Jenkins, 2009; Hepworth & Walton, 2009). Facing up to this challenge is essential for another controversial point associated with it: the evaluation and measurement of students' individual achievements in these competencies with a view to their potential/recommended certification as a European Diploma Supplement.

An equally problematic fourth challenge is the planning of ICT literacy or competency training for university students (or, if you will, that part of ICT training that digital literacy involves), since it seems to be accepted, without any kind of critical reflection on the matter, that students new to higher education will belong, in their entirety, to the digital natives⁵ generation, transformed into Homo Sapiens Digital (Prensky, 2009). It is assumed that they will have attained, as if by magic, both universally and forever, the highest possible level of digital sapience and competency in handling computers and social networks, meaning that there is no point in planning levels of ICT proficiency for them, which Martin (2008) took the trouble to enumerate (competency, use/application, innovation/creation), or training them to attain them. It also means that there is no point in planning or training them gradually to use the various 2.0 (and above) tools on the basis of clear learning objectives, or much less so to adopt the critical social theory that Whitworth (2009) applies to the teaching of computer competency or literacy in order to go beyond the instrumental domain of a successful suite of office automation software.

To finish off, it should be said that multiliteracy training would not make much sense if it did not find its ultimate, natural setting in the fifth and essential challenge that we shall underscore as a conclusion. This challenge refers to how, and under whose responsibility, the gradual and systematic fostering of a reflexive attitude and critical thought among students can be planned, in order to fulfil

one of the traditional functions of higher education. This is becoming a pressing priority need because of the supercomplexity and uncertainty inherent to today's society. Even though multiliteracy provides tools to be able to deal with such supercomplexity and uncertainty, the fundamental instrument will never cease to be the desire to learn with a critical spirit (Barnett, 2007) throughout one's life. However, how do we incorporate training and the consolidation of that critical spirit into new curricula, and what disciplines and subjects should we associate with it?

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5. See Henry Jenkins critical review of "digital native" in the 5 December 2007 entry in his blog called Confessions of an Aca-Fan. [Accessed: 07/01/10].

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ARTICLE

Evaluation of Information Literacy Programmes in Higher Education: Strategies and Tools

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Abstract

On the basis of transformations occurring in the educational model as a consequence of the shift from “producing” to “generating” knowledge, the impact of the digital divide threat, and the rise in “corporate social responsibility” and information literacy, this article analyses European Union policy actions aimed at fostering social inclusion. In the light of the digital divide, social inclusion is seen as a process that places primacy on information competencies. In the context of this competency phenomenon, evaluation has become an extremely important topic, both socially and educationally. Consequently, the article also analyses the concept, approach, design, types and tools of evaluation that can be effectively applied to information literacy programmes. Finally, a proposal is made for the incorporation of evaluation and its tools into an information literacy programme.

Keywords

information literacy, information literacy evaluation, information literacy indicators, information literacy training programmes

La evaluación de los programas de alfabetización en información en la educación superior: estrategias e instrumentos

Resumen

A partir de las transformaciones en el modelo educativo, por el cambio desde «producir» a «generar» conocimiento, así como por el impacto de la amenaza de la brecha digital, el auge de la «responsabilidad social corporativa» y la alfabetización en información, se analizan las acciones políticas de la Unión Europea para fomentar la inclusión social frente a la brecha digital, como proceso que otorga una función primordial a las competencias en información. Este fenómeno competencial provoca que la evaluación adquiera una relevancia social y educativa de primera magnitud, por lo que se analiza su concepto, modalidad, diseño, tipificación e instrumentos, como forma de realizar una aplicación eficaz en programas de alfabetización

en información. Se presenta, finalmente, una propuesta de integración de la evaluación y sus instrumentos en un programa de alfabetización en información.

Palabras clave

alfabetización en información, evaluación de alfabetización en información, indicadores de alfabetización en información, programas formativos de alfabetización en información

1. Introduction

For observers, analysts and scientists, it is clear to see how the evolution of the information society towards the knowledge society has brought about a significant change in the educational model, at every stage and level, and this is particularly demonstrated by the European experience of the European Higher Education Area (EHEA). There is an extensive body of literature analysing the reasons, factors, elements and impact of an educational model that has become competency based. Such an educational model integrates information and communication technologies (ICTs) into learning management systems (LMSs) for effective and significant learning, tries to incorporate the potential benefits of Web 2.0 and even social networks in order to turn cyberspace into an educational space, and explores teaching methods that go beyond e-learning.

Perhaps the most important aspect of the educational model, for the purposes of this article at least, is the decisive transformation that has occurred in relation to the educational outcomes that students are expected to achieve. This comes as a consequence of the new inferential process in which information leads to know-how: the aim is not to “produce” knowledge (the acquisition of watertight know-how, ready to be copied), but to “generate” knowledge. This refers to a student’s constant capacity to “be innovative” with knowledge already acquired and possibly expressed in a document that can be constantly updated. This is a reflection of lifelong learning (it allows progress to be assimilated and applied, turning knowledge into know-how) and of collaborative learning. Editing and publishing hypertext, which is transformed into a hyperdocument, allows content to be constantly re-edited and re-published, thus reflecting innovative know-how.

The criteria selected here to illustrate the resolute transformation of the educational model conform to the convergence of three important factors:

- The real and tangible threat for all societies represented by the widening of the digital divide; various States have initiated information policies to foster social inclusion and, very significantly, the European Union has made 2010 the European Year for Combating Poverty and Social Exclusion (*Official Journal of the European Union*, 2008). Education, with an effective and efficient integration of ICTs as a means of social cohesion, becomes part of the agenda for policy actions.
- The scope reached by what is commonly known as “corporate social responsibility” (CSR), described by the International Labour Organisation (ILO) as an approach taken by enterprises based on a comprehensive group of policies, practices and programmes guided by the respect to ethics, individuals, communities and the environment. The result has been the emergence of a culture of evaluation to encourage a system of sustainable socioeconomic progress and development through high-quality governance.
- The growing need to apply information literacy because of its essential programme-related requirements: information literacy for citizenship, information literacy for economic growth, and information literacy for employability (Johnston & Webber, 2007, p. 499) Reading, writing and learning via the Internet has become a tangible phenomenon of economic and social development.

2. The Challenge of Social Inclusion and Evaluation

The three factors enumerated above illustrate how the relevant political and academic authorities ought to approach education and its models from a different angle and consider them as tools for social inclusion. Information

literacy undeniably provides an appropriate viewpoint in this respect.

As far as the European Union is concerned, the relationships between information education and the digital divide have followed a very significant course since the Lisbon Strategy was defined in 2000. When the European Union became convinced of the fact that education of this type was a prerequisite for the development of an information society for all, the first development plan – the eEurope 2002 Action Plan – identified the digital divide risk for the infrastructure aspect of physical access to ICTs. The realisation that access alone was no guarantee of development led to the eEurope 2005 Action Plan, which focused on exploiting content and e-services. This objective made the need for an intelligent and effective use of digital content more pressing, particularly as such content could grow exponentially and lead to “infoxication” or content overload. This concern, together with an interest in designing qualitative indicators on the one hand, and a potentially destabilising impact of ICTs on social fabric on the other, led to the publication of the i2010 strategy, which began to pay attention to issues such as e-health, digital literacy, learning and potential divides.

The Lisbon Strategy and its subsequent plans have been very clear about the risks of a divide that information competencies, or a lack of them, could cause. The innovative application of ICTs to education causes the same divide that the application of any technology has caused throughout history (Albarelo, 2008). The European Commission became aware of this and subsequently published the 2006 Riga Declaration. This declaration pointed out the inherent risks of ICT development and outlined the meta groups in which the gaps were most significant (and therefore a causal factor of the digital divide): the elderly, people with disabilities, women, lower education groups, the unemployed and “less-developed” regions, whose shortcomings had gradually been identified (Raya, 2007).

On the basis of these identified meta groups, the European Union began to approach the divide from a variety of programme-related angles. The aim of this was to ensure that each action would have an impact on more than one meta group as a way of optimising effort: guaranteeing universal, affordable access to the Internet by promoting the profitability of coverage for service providers, thus benefitting “less-developed” areas (rural areas), the unemployed and the elderly; implementing and strictly observing web accessibility standards in order to foster use by people with disabilities and the elderly; e-skills training to enable people to use the tools, involving extensive basic training for people with disabilities, the

elderly and lower education groups; digital competency for a comprehensive, knowledge-generating use of Internet resources, which is a relevant educational action for all meta groups. Regarding women, the European Parliament had already received and approved the *Report on Women in the New Information Society* (European Parliament, 2003), which dealt with specific actions. These had a generic bias and did not focus solely on an analysis by gender.

Through Eurostat (2009), the European Commission has since developed tools to monitor this divide, and has promoted indicator models and benchmarking systems to measure the development of the information society. In terms of the digital divide and social cohesion, there is now another important “front”, which is immigration and the ensuing multicultural nature of society. In this respect, very important intercultural actions are being carried out by public libraries.

The i2010 strategy and its actions have begun to be analysed by the i2010 High Level Group (i2010 High Level Group, 2009). The Group found that some progress had been made, though it highlighted the fact that a second digital and social divide was emerging: having searched for, retrieved and accessed Internet resources, people subsequently need to acquire valid information, knowledge and know-how depending on the purpose and extent to which Internet resources are used. Competencies had thus become visible, not only in formal education (EHEA), but also in non-formal and informal education. This meant that digital competencies first, and information competencies second, had also become visible, objectivisable and applicable as an ideal way to get know-how from information. There was an interesting academic and technical debate on the concept and application of competencies, both professionally and scientifically, which had an inevitable impact on the design of digital and information competencies.

Thus, progressively, skills and abilities (which draw on and take the form of aptitudes, attitudes and capacities) for information education were arranged in such a way as to arrive at competencies. These competencies are understood as being the assimilation of pieces of knowledge gained from using skills (integrated by the application of abilities capable of generating aptitudes and capacities in various fields) that are then put into action to resolve a specific problem in a specific context or situation in order to arrive at the most effective decision or action. Consequently, all of these together are evidence of know-how.

Digital competencies, therefore, refer to the effective use of ICTs for knowledge and know-how on the Internet. From a more cognitive aspect, the complement to these

are information competencies, which refer to an effective use of standards stemming from skills and abilities in the field of information and documentation. When these competencies are structured into standards, plans and programmes, they start to become known as “information literacy” (Marzal, 2009). This term, which is not widely accepted in all spheres, makes specific reference to the need for digital reading and writing in order to become an effective part of the Semantic Web or the Knowledge Web.

Evaluation is implicit in this new reading and writing competency for a number of reasons: The new reading and writing competency means that a student is competent at selecting and organising Internet content through a robust capacity to evaluate this content. When an information literacy programme is set up, it is crucial to establish an evaluation system, for which evaluation particular to knowledge areas is of no use because information literacy is a generic or competency-based subject. In this context, a qualification – albeit evaluative – means very little, because only a 100% attainment is valid (the competency has been attained). If an institution develops and applies an information literacy programme, it must possess the means to measure the impact and monitor the successful rollout of the programme, which is not warranted by the fact that it is part of the curricular design of a science or discipline. Political, academic and administrative authorities require evaluation tools for decision-making processes, to promote and maintain information literacy policies, and to provide evidence of their social-inclusion effectiveness (Marzal, 2008).

This clear tendency towards evaluation is becoming widely accepted socially. In the 2009 report of PISA (Programme for International Student Assessment) dedicated to reading, the questionnaire included questions to measure digital competencies. Moreover, governmental authorities and bodies have assumed the need to establish models to evaluate ICT and information competency policies. There is a whole range of bodies whose aim is to develop the information society and whose mission is to evaluate progress with appropriate tools in order to issue annual monitoring reports for progress and penetration among the population, paying special attention to pockets of digital divide. Due to their quality and topicality, the most important international documents issued in 2009 were the *Guide to Measuring the Information Society* (OECD, 2009), *Measuring the Information Society* (ITU, 2009) and the *Lisbon Manual* (RICYT, 2009). A number of Spanish reports stemming from these were produced by ONTSI (Spanish Observatory for Telecommunications and the Information Society), Red.es and Plan Avanza

(Information Society Strategy for Spain). In addition, the Fundación Orange produced a report entitled *España 2009* (Fundación Orange, 2009) and Telefónica issued its annual reports. There is, therefore, an evident interest in measuring and evaluating the information society’s progress, but what type of evaluation should be applied?

3. Evaluation and Tools for Competency Programmes

Evaluation as a process of improvement and betterment must be linked to quality. It must also have the necessary tools to measure the process of qualification. These tools need to be effective, objective, and useful for statistical processing purposes, enabling results to be effectively interpreted for decision-making processes. The problem arises when evaluation has to be transferred to an object like information literacy, which is generic and competency-based, and does not refer to a knowledge area. Further complication is caused by a number of other issues, such as not defining whether certification or accreditation is required for the attainment of competencies, and not clearly affiliating them to a department for curricular design (affiliated to the library, without any impact on the academic curriculum). As a consequence of the latter, there is no preparatory instruction or progression function in a student’s degree curriculum, despite the imperative need for integrated cooperation between the subjects and educational goals of the organisation in which information literacy is offered.

However, more and more organisations should incorporate information literacy programmes. There is, therefore, a need to develop evaluation methods and tools to assess their positive impact. In Spain, this need is becoming peremptory in libraries in educational settings, such as university, school and public libraries. It is also becoming patently clear in recommendations and documents issued by international bodies like the IFLA (International Federation of Library Associations and Institutions) and UNESCO, as well as in the activities of other countries’ associations like the IIL (Institute for Information Literacy) and the NFIL (National Forum on Information Literacy) in the United States, the ILCOPUS (Information Literacy Community of Practice at Staffordshire), the SCONUL (Society of College, National and University Libraries) and the JISC (Joint Information Systems Committee) in the United Kingdom, NordINFOLIT in Scandinavia and ANZIIL (Australian

and New Zealand Information Literacy). Many of these organisations have proposed evaluation models allowing questionnaires and surveys to be developed, which have been applied to information literacy actions in various areas and institutions. This is a logical trend, since evaluation is a constituent, essential part of information literacy (Warner, 2008, p. 13). Nevertheless, these initiatives fluctuate between proposals based on models and methods, and their immediate application in the form of questionnaires and surveys. However, this raises two questions: How can students on a literacy programme be evaluated? And how can the institution they are studying at be evaluated?

As has been pointed out, the referential element of evaluation is quality. This element is covered in ISO 9000:2000 and is identified by the degree to which goods and services offered to customers meet their expectations, in accordance with the appropriateness and conformity of such goods and services to stipulated standards. From this point of view (replacing customers with students), quality is not a new phenomenon in education. What is new is the fact that educational and training institutions are now interested in obtaining ISO certification and, in particular, ISO 9001 or ISO 9002 certification (standards grouped under ISO 9000). Although this has caused some controversy, many of them consider that these indicators can have a very positive impact on academic outcomes and bestow prestige on an institution (Pinto, Balagué & Anglada, 2007). Evidence of this is what has been termed the “managerial university”. This type of university focuses on adopting business management values, techniques and approaches (Sánchez & Elena, 2007). This approach means that all the activities of public institutions, and educational institutions at all levels (including their libraries), should engage in a commitment to quality, for which the EFQM (European Foundation for Quality Management) model is followed. From this point of view, an information literacy programme, as a service, has an evaluation model.

Attaching quality and evaluative scope to an information literacy programme as a service raises the question as to whether or not accreditation or certification is worthwhile, even though it is a well-refined process in libraries, which have their own methods, ways and documents (Jorge, 2007). The creation of evaluation and accreditation agencies as part of this whole movement, such as ANECA in Spain and its counterparts in the regional context, have raised the stakes of the phenomenon. Accreditation seeks expert, public recognition of the fact that an institution possesses the necessary standards, through verifiable evidence, to provide a quality service through a standardised process. Certification aims to

verify that the institution contemplates an evaluation and revision system to ensure that the services the institution provides are programmed; these services are the ones that its users demand, and the institution must assure both service quality and user satisfaction. The debate on the best system for evaluating information literacy has existed and been evidenced in IFLA's Information Literacy Section. Elsewhere, there are initiatives on best practices for information literacy programmes, such as those published by the IIL, the AASL (American Association of School Librarians), the ARL (Association of Research Libraries) and the ACRL (Association of College and Research Libraries), and accreditation agencies have not taken long to emerge. Among others, we find the Middle States Commission on Higher Education (Neely, 2006).

However, information literacy is a competency-based specialty for knowledge and know-how, meaning that an “interpretation” of both accreditation and certification is required. In its evaluative expression, it would seem very plausible that an information literacy programme should have accredited recognition by bodies and/or associations specialising in information literacy. The aim of such accredited recognition would be to ensure that the programme is capable of offering quality competency training. Evidence of this would come by way of a certificate for students, demonstrating that they have attained the competencies stipulated in the competency objectives of the programme's instructional design.

This accredited and/or certified competency-based expression should, however, respond to an evaluation design that is appropriate and particular to information literacy. In order to provide an appropriate response, it is necessary to make another conceptual clarification: evaluation is understood as a means to determine how effective an information literacy programme is in terms of developing students' knowledge and competencies in accordance with its objectives, and also as a means to improve the programme itself; assessment is an evaluation scheme that considers not only knowledge and competencies, but also attitudes, values, and skills acquired throughout the programme. In the same way as for evaluation documentation (accreditation or certification), an information literacy programme should not be selective about either design. Rather, it should incorporate both. Indeed, the tools for evaluating information literacy programmes should have a dual dimension: first, it should be programme-related evaluation for the institution (evaluation), using indicators; second, it should be educational evaluation for the students (assessment), using diagnostic questionnaires at the start of the programme, and competency questionnaires at the

end. Both evaluations should be incorporated into an evaluation of results.

Elements applicable to evaluation include parameters or categories. These serve as a framework for a more effective interpretation of the data supplied by the indicators. Evaluation also requires procedures, whose methods are consistent in terms of the way they are applied to categories and their indicators. It would seem clear that, in an information literacy programme, the categories should be structured on a scale that progressively articulates skills, abilities and competencies, each with their own indicators, to measure and evaluate a student's level of expertise in each of these categories. The procedure, based on a method, deserves some thought because, even though quantitative methods are very well developed (and particularly so for ICT penetration), qualitative methods are much more expedient due to their competency-based nature. Indeed, qualitative methods are very useful for evaluating attitudes, assessments and motivations; they allow trends to be diagnosed and, moreover, they get the population to which they are applied much more involved (Viñas, 2004).

Furthermore, the evaluation of information literacy programmes should have a clear reference to an educational approach; that is to say, face-to-face, blended or e-learning. The competency-based nature of information literacy in digital environments advocates their application to LMSs, meaning that evaluation approaches to e-learning are useful: socioeconomically, to evaluate the benefits of a programme; technologically, to evaluate the excellence of an LMS; educationally, to evaluate the effectiveness of learning construction by a student as a consequence of interaction with the content. These approaches are expressed in a number of evaluation principles, including interiorisation (mastery of the technologies), prioritisation (ability to select the ideal ICT for learning) and reintegration (the ability to master the language of ICTs to make the best use of them). These principles could become suitable indicators (Colás, Rodríguez & Jiménez, 2005).

4. Tools for Evaluating Information Literacy Competency

There have naturally been a number of proposals for evaluating information literacy. These include the classification proposed by the IFLA (diagnostic, formative and summative evaluation), the most relevant aspects that need to be evaluated for the ACRL (programme and teaching staff evaluation, student outcome evaluation and

good practice transferability), and the evaluation criteria for good practices of the IIL (programmes, attainment and attainment programmes). There have also been some very interesting reflections on the topic, like the one made by B. G. Lindauer, with three areas particular to information literacy evaluation: the learning environment for both formal education curricula and non-formal and informal training courses; programme components referring to the existence of opportunities, their scope, curricula and evaluation; learning outcomes for student performance, evaluating their products throughout the programme (Lindauer, 2006). A number of other appropriate methods for evaluating information literacy have been pointed out, as published by Licea (2007).

On the basis of the evaluation design, as mentioned earlier, there are two ideal tools for evaluating and assessing an information literacy programme: questionnaires for assessment, to effectively process trends and perceptions; indicators to effectively process statistical factors. We should recall that each tool is based on quantitative and qualitative processing methods.

Indicators are understood as being a metric for measuring specific variables or conditions in order to analyse a phenomenon and its evolution, in that it processes data that contain a great deal of information, with reference to a general interpretation structure. When applying indicators, the approach and perspective taken to measure and evaluate the phenomenon are very important. For educational environments, the perspectives for information literacy pointed out by the OECD therefore appear to be appropriate: context of reference (strategic position of programme accreditation or certification), system potential (quantity and quality of programme resources), processes (planning, methodology, plan design and programme management), outcomes (attaining the objectives of the competency and its benefits).

The application of indicators requires a classification of several categories to establish effectiveness criteria:

- Situation and diagnostic indicators: for evaluating the planning of programme implementation, identifying deficiencies and dysfunctions in order to improve the design.
- Monitoring indicators: for evaluating the effectiveness and efficiency of programmes in order to improve the process. Infrastructure quantity, quality and effectiveness are relevant criteria.
- Outcomes/Results indicators: for verifying the fulfilment of the objectives and evaluating their benefits. Efficiency, coverage and impact are relevant criteria.

The gradual definition of measurement initiatives, methods and models for evaluating information literacy has given rise to a proposal for specific evaluation tools with its own methodology (Emmet & Ende, 2007). In 1997, and inspired by a Wisconsin Ohio evaluation programme, SAILS (Standardized Assessment of Information Literacy Skills) began to be developed. It was based on ACRL and AASL standards for evaluating information literacy programmes by level. For its part, the company Educational Testing Services developed the iSkills test, comprising a set of questions aimed at demonstrating a student's mastery of ICTs and information literacy by solving specific problems. In Australia, R. Catts has promoted the CAUL (Council of Australian University Librarians) Information Skills Survey (based on CAUL/ANZIIL standards), whose aim is to identify students' competency levels in specific academic areas, so that they can be used for decision-making purposes by universities and faculties, in their training programmes, as an indicator of the institution's quality. In the Spanish setting, worthy of note is the ALFIN-HUMA project led by M. Pinto, which is clearly applicable to the higher education environment.

As a global response to these initiatives, account should be taken of R. Catts & J. Lau's conceptual framework paper entitled *Towards Information Literacy Indicators*, published by UNESCO, Paris, in 2008. The project was put forward as a conceptual framework with a list of indicators for measuring information skills on the basis of indicators that had already been designed and had shown themselves to have a certain evaluative worth, such as the LAMP and PISA programmes, and the questionnaires of the UNESCO Institute for Statistics, the OECD, the DHS and the ILO. The orientation proposed for the indicators is significant, since they are directly related with the benefits expected from information literacy competencies, such as development, health and welfare, civil society, higher education and employability. Also very interesting are the generic indicators such as oral tradition, ethics and equality (gender, language, economic and political impact and constraints).

This set of initiatives for designing models, applying methods and managing systems of indicators, and for information literacy programmes also, has begun to consider the possibility of coherent analysis and interpretation problems. This has led to the creation of indicator model convergence bodies, such as the Partnership on Measuring ICT for Development, whose aim is to publish standards for indicators that allow them to be compared. Emphasis is placed on their international scope, reliability and comprehensibility, in order to ensure that they have greater analysis and interpretation power.

5. Incorporation of Evaluation Tools into an Information Literacy Programme

The scope and relevance of information literacy has become so clear for political, administrative and academic authorities that turning it into a subject for formal education (it has already been incorporated into the higher education curriculum, and not only in the documentation discipline) is now a reality in Spain. In 2001, Johnston & Webber offered the following classification, which corresponds to information literacy as an academic discipline according to Becher & Trowler's model: a soft applied discipline, in that it is grounded in theories that come from other sciences, of which it is an auxiliary part; its aim is to prepare citizens for managing and taking action in society; its methods are qualitative. Without a shadow of a doubt, the scientific principles, laws, standards, object, objectives, field, methods, methodology and research lines and paths have now been defined for information literacy as an academic discipline. Research teams and projects, conferences and scientific publications are evidence of this unstoppable advance.

Given this situation, it would seem useful to put forward an evaluation proposal for an information literacy programme. The programme arises from cooperative endeavours between the company Baratz and several lecturers in documentation at Carlos III University in Madrid (Miguel Ángel Marzal, Mercedes Caridad & Pablo Parra). The context for this cooperation is one of the lines of research of the ACRÓPOLIS research team at the mentioned university, focusing on information literacy and the development of the Baratz Absys.edu platform. This is an attempt to incorporate the social networks of library 2.0 and the semantic tagging of educational web resources into educational digital libraries (CRAI-Learning and Research Resources Centre and CREA-Learning and Teaching Resources Centre), with their content management tools.

The instructional context elements of the information literacy programme are: a blended educational approach (Moodle platform); an educational space, educational libraries (university, school and public libraries); a competency model, Tuning; information literacy standards, ANZIIL; target audience, e.g., teaching staff, librarian-lecturers with information literacy responsibilities and students (formal and non-formal education); teaching duration, six weeks.

The instructional design of the programme is neither projected as an e-learning course or a tutorial, nor as a web resource on an educational "site". The programme

has been designed on the basis of arguments associated with educational hyperdocument principles (interactivity, associativity, multisequentiality, virtuality, dynamicity) and, essentially, in accordance with the properties, characteristics and elements of learning objects.

The programme structure is divided into five training modules: module 1, *basic competencies*, for skills and abilities to search for and retrieve ideal resources for knowledge generation and, above all, for collaborative learning; module 2, *digital reading*, for abilities to use content management tools and to evaluate educational digital content; module 3, *content assimilation*, through the edition of concept maps and their application to web environments; module 4, *knowledge generation*, through the edition of knowledge and content using Web 2.0 tools; module 5, *digital writing*, which demonstrates know-how through the edition of learning objects.

Given its paramount importance, the programme incorporates *evaluation* as a substantial component, both programme-related evaluation for the institution and educational and diagnostic evaluation for the students, applying indicators to the former and questionnaires to the latter. The programme incorporates a module 0, *competency recognition*, with a diagnostic questionnaire to identify information literacy competency deficiencies. The purpose of this is to ensure that the programme does not conclude with a qualification, as in academic areas referring to knowledge and thought, but with questionnaires about competency attainment, evidencing that excellence in information literacy has been reached on completing module 5. Finally, the programme incorporates an impacts and benefits indicator for the programme at the institution, for the purposes of programme improvement and implementation, and educational strategy decision-making.

The questionnaires and indicators are the outcome of a research project on editing and publishing teaching materials, approved and funded by the Spanish Ministry of Education (approved in 2008 and funded until June 2009). The project had three phases: the creation of an indicator model for information literacy competencies; the development of questionnaires based on the indicator model, referring to the indicators, for effective competency processing and the effectiveness of educational analysis and interpretation; the application of questionnaires to Spanish primary and secondary schools in Asturias, Madrid and Navarre.

The indicator model was structured into three parts, in accordance with a scheme of capacities: *skill indicator category*, basically referring to a reader's capacities in terms

of accessing and using technologies of resources that are read, meaning that the protagonism lies in the interaction of the reader with the resource; *ability indicator category*, referring to a reader's capacities to acquire knowledge and know-how through a grammatical mastery of the discourse, meaning that the protagonism lies in the reader's mastery of the inferential process of reading to generate knowledge, a procedural protagonism; *competency indicator category*, referring to the reader's capacities resulting from a mastery of information literacy standards, corresponding to the protagonism of a user-student, given that his/her competencies are evaluated in terms of lifelong learning autonomy, with inherent mechanisms, values and ethics. The structure of each indicator was designed so that each indicator was classified within its category. Each one has a label, a definition, definition milestones, objectives and source data, which, at all times, correspond to the data obtained after applying the questionnaire, which led to phase two of the project. The structural design was inspired by the indicators of the UNESCO Institute for Statistics, *Guide to Measuring Information and Communication Technologies in Education*. The aim of these indicators is, therefore, to serve as a basis for decision-making and for the evaluation of monitoring.

After consulting information literacy evaluation methods, model and tools, the questionnaires gave rise to the creation of a template reflecting the competency objectives that should be evaluated by the indicator model. These were categorised into skills, abilities and competencies. On the basis of the competency objective template, the competency questionnaires were designed, as a tool, in such a way that each objective led to several questions, in accordance with the interests and intellectual maturity of the institution and the students. Consequently, the model is scalable. A series of questions that vary in number and difficulty can be designed for each "course" of the programme, always in accordance with a competency template and an interpretation provided by an indicator.

In any event, the definition of principles conditioning the evaluation model is based on an insistence on generic aspects for the particular measurement of each object of the indicator, an object of the indicator being understood as a phenomenon on which action is taken. These generic aspects, which give a generic bias to the indicator model, are the insistence of the training function and the evaluative measurement. Moreover, it should deal with the intensity of the evaluable phenomenon as a means of highlighting priority actions that need to be taken. The properties of the indicators should not, therefore, simply focus on measuring the degree of competency fulfilment

and success, but rather on the transfer of the results of these actions to the educational community, which is a basic element of effectiveness and progress.

Conclusions

For progress towards a knowledge society, which aims to be socially cohesive and inclusive, evaluation is a fundamental element for defining strategies and deciding on actions that need to be taken. However, evaluation is a complex phenomenon, and its incorporation into information literacy programmes is something that should be very well thought out. At the same time, a dynamic approach needs to be taken because the incorporation of these programmes into the educational activities of libraries and the educational curriculum means that the challenge is immediate. Evaluation has become an extremely important topic in the field of information literacy, and it should also become a priority line of research. The incorporation of evaluation into information literacy programmes should not be reduced to a qualification system; rather, it should outline a specific model for competency attainment. Evaluation models, methods and tools should undergo a concerted process of convergence and confluence, and become a second line of priority research. To that end, it is necessary to develop specific research projects and cooperation between research teams to generate standards and questionnaires referring specifically to educational digital libraries (CRAI and CREA).

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Monograph “Information and Digital Competencies in Higher Education”

ARTICLE

University Libraries and the Development of Lecturers’ and Students’ Information Competencies

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Abstract

This article explains why university libraries assume, as one of their priorities, the development of lecturers’ and students’ information competencies. It also explains some of the options for achieving that goal.

Keywords

information competencies, university libraries, university lecturers, university students, library services, information literacy

Las bibliotecas universitarias y el desarrollo de las competencias informacionales en los profesores y los estudiantes

Resumen

En este trabajo se exponen las razones por las cuales las bibliotecas universitarias asumen entre sus prioridades el desarrollo de competencias informacionales de docentes y estudiantes. Además se explican algunas de las posibilidades para conseguirlo.

Palabras clave

competencias informacionales, bibliotecas universitarias, profesores universitarios, estudiantes universitarios, servicios bibliotecarios, alfabetización informacional

Introduction

Today, Spanish university libraries believe that their function goes beyond the mere provision of instrumental support for teaching and learning activities. There is an intrinsically educational function, in which they get wholly involved. Indeed, they have made it one of their priorities (strategic plan, REBIUN, 2007). Libraries are a resource for documentary research, and they should teach people how to do it properly. It is not simply about how to find information, but also about how to evaluate, select, rework, use and communicate it. In other words, it is a matter of contributing to information competency training, which includes procedural, conceptual and ethical aspects alike. It is fundamental to active, constructive and situated learning. Libraries are making a considerable effort to achieve this goal: they have digital repositories for both research and learning, they have implemented a resources centre model for learning and research, they carry out more and more general and specialised user training, they publish tutorials and guidelines for information management, they organise thematic digital resources, they provide OpenCourseWare, they promote reference services, they use social networks, they provide support for lecturers to prepare new teaching materials and so on. This, therefore, is the broad, evolving process covered in this article.

1. Why Do Librarians Want to Assume Educational Duties for Information Competencies?

This new role may, in the first instance, seem rather strange to the university community, because one of the characteristic features of our higher education system is the considerable compartmentalisation of know-how and functions. The fact that librarians want to “teach” as “learning mediators” represents:

- For some lecturers, the potential for their duties to be usurped, because the more formal, regulated teaching function corresponds to them: establishing what a student ought to learn, what content should be covered, how to convey it and how to evaluate attainment. Many lecturers still consider libraries to be nothing more than a container of organised resources at the service of their duties and, through their mediation, the tasks assigned to their students.
- For students, something unexpected, because libraries have traditionally been spaces for collective study, with a number of infrastructure facilities for developing habits like working with others, getting hold of recommended materials and so on. However, they have never seen librarians as teachers in the strictest of senses. At the most, they may have considered librarians as assistants or advisors to help them find information when they had special or specific requests.
- For librarians themselves, an effort to adapt to the changes, because their professional development and self-concept has transformed them into organisers, processors, technicians, intermediaries and so on.

Consequently, becoming teachers is, for librarians, a shift of profession and model, and one that is both significant and difficult, like any other. It is a matter of becoming involved in duties carried out by others – albeit not explicitly requested – in a competitive context, since everything has a financial and organisational impact (What recognition is there? What evaluative legitimacy is there? What other departments and services are they working for or against?).

Thus, we come back to the why and the wherefore. There are conceptual and practical reasons. The former are connected with the evolution of a library's mission in line with changes taking place in the university context in which it is located. The latter are connected with the need for a library to justify its existence, to demonstrate that it is worthy of the investment made in it, and to gain greater protagonism than other university services. It is a matter of engaging in a commitment to universities and of becoming relevant.

The world of education and the world of information have changed tremendously over the last 40 years. Means of accessing and consuming information have evolved to such an extent that libraries are forced to restructure their function so as not to become obsolete. Accessible information networks and the spread of hypertext reading, with a host of new ways to interrelate and incorporate knowledge; the ease of communicating and publishing information, opinions and knowledge of differing value without any filters or intermediaries; the demands of the productive system and the labour market with respect to graduates' competencies; the excessive and fragmented nature of information; the availability of virtual campuses where lecturers and students share learning materials and so on. Together, what impact does all of this have on libraries?

- Changes to intermediation duties. Services of a merely intermediary nature are brought into question, given that people can and want to get direct, immediate access to knowledge. A user may not need a library to obtain information. Universities' virtual campuses on the one hand, and the collections of resources that lecturers make directly available to students via subject websites on the other, mean that students do not go to libraries to look for those materials. This leads to a decrease in traditional lending. Likewise, the existence of a large quantity of free information sources and documents in open access archives on the Internet also means that students and lecturers make less physical use of libraries. Moreover, they do not seem to take library web portals as a basic point of reference for obtaining the information they need. On the contrary, they consider, albeit mistakenly, that they have everything on the Internet and in search engines, and that they do not need library web portals.
- This compels libraries to offer innovative, added-value services:
 - The provision of new working and learning spaces: despite the intangible, virtual nature of information, people want places where they can interact, talk and exchange ideas with their lecturers, and where they can get support and technical, methodological and educational advice for the creation of knowledge. Libraries provide all of this through Learning and Research Resources Centres (CRAI).
 - The edition and publication of an institution's digital content, with open access. Libraries promote digitalisation and publication of digital content via digital repositories. These repositories broaden the distribution of theses, journals, conference proceedings and other documents published by members of their university communities through initiatives that foster self-archiving, open access and the use of protocols for optimum document gathering. This promotes an ethic of disseminating scientific knowledge created with public funds.
 - The selection and filtering of high-quality content: this role is becoming more and more crucial to users; if a library manages to do this, it becomes an accredited source of relevant, accredited content.
 - Cultural facilitation. Traditional cultural activities run by libraries are on the up once again: reading clubs; creative writing workshops; painting, photographic, scientific dissemination and social

awareness exhibitions; book, music and film collections; literary or other artform competitions and so on are ways of attracting people to libraries and of making libraries a useful social space. This enriches the function of spaces and services, over and above their curricular learning use.

- Participation in the attainment of basic and generic competencies. The above-mentioned services benefit the students' integral education, their personal maturity, the development of creative facets, critical thought and citizenship habits and values, cultural practices, and social and disciplinary interrelations.
- Teaching a competency that is specifically linked to library services, "information management and use", the mastery of which is considered to be an essential attribute for any university graduate in the framework of educational models arising from the European Higher Education Area (EHEA).

The conclusion is that libraries are interested in information competencies because today, rather than physical and digital collections in real or virtual spaces, libraries are places where a group of professionals aspire to ensure that students learn, enabling them to become competent in digital and information skills while they are at university and throughout their lives.

2. But How Do Students and Lecturers Access and Use Information?

An object of study and a question that interests librarians a great deal is the information behaviour of its users. If they understand it, they can identify users' expectations and needs and habits. This will allow librarians to adapt to users in order to guide and improve their practices through information literacy services. These services have been around for over 30 years in Spanish documentary institutions (Pinto, Cordón & Gómez, 2010). Although there are many traits particular to the behaviour of information searching and use (depending on the knowledge area, course, degree or activity of study or research), from works such as those cited in the bibliography at the end of this article, it is possible to obtain a general picture of the identifying traits most common to university lecturers and students in connection with our topic.

Students

University students are familiar with digital reading based on hypertext browsing; in addition to reading, they create, publish and share content by taking part in networks; they like immediate access, anytime, anywhere, through simple interfaces without intermediaries, through search engines rather than library portals; they are able to multitask, though they skim the information, spending more time on browsing than on reading the information displayed; they usually download and save information that they do not have time to read later; their speed of communicating and viewing information is greater than their in-depth critical capacity. Specifically, the CIBER report (British Library & JISC, 2008), OCLC (2006) and University of Seville (2009) identified a number of shortcomings among new students:

- A poor understanding of information needs and, therefore, difficulties in developing effective search strategies. A lack of reflection on the problem to be solved and what its application is going to be leads to impulsiveness in superficial searches using natural language rather than keywords, with a loss of relevant information.
- A lack of evaluation of the suitability, accuracy, authority, authenticity and intentionality of the information obtained. When faced with a long list of search results, young people have trouble evaluating the relevance of the materials presented and often print pages after a superficial glance.
- Mismatch between prior knowledge and the diversity of sources.
- Little reflection on the means of communicating results in accordance with the intention or the context, and a lack of awareness of the ethical aspects involved in information access and use.
- Search engines are the starting point for almost all information searches, not library portals, and most students are happy with their general experiences of using them, because they are better suited to their lifestyles than physical or online libraries.
- Books are the main image associated with libraries, despite the massive investment libraries have made in digital resources. Indeed, most students are unaware of the digital resources that libraries have.

When questioned, librarians stated that undergraduate students do not know how to search in library catalogues or holdings; they do not master the potential of advanced

search systems; they do not know how to interpret the reference of an article or journal, perform database searches or evaluate the quality of websites. They stick to their lecturers' electronic dossiers; these play a determining role as bridges or links. Reworking of information is poor, writing processes for different contexts and types of work are not mastered, there is too much copying of information, no thought is given to the organisation of information and there is a lack of awareness of the ethical issues connected with copying and citation.

All of these comments lead to the conclusion that being a digital native is no guarantee of competence, and that work needs to be done with them to attain it. It may be the case that more and more students are arriving at university with fewer information skills due to the impulsiveness, fragmentation and superficiality of information consumption and use. It is very important to raise awareness of the importance of this competency. Librarians also need to be made aware of the need to get closer to these users in ways that allow them to connect.

Lecturers

Even though it can be assumed that lecturers are information competent, given the high degree of specialisation they have in their teaching or research fields, a few clarifications do need to be made. Lecturers also suffer from information overload, either generally or in their specific fields. They also find it hard to refresh their digital skills when faced with new search systems, new sources of information, new information management software, and new means of communicating knowledge and of taking part in social networks. Information competency is evolving all the time; tools sometimes change the form, pace and moment of academic writing; they imply a revision of values connected with the channels of knowledge publication and dissemination.

Several studies on lecturers' use of information have drawn certain conclusions that are of great concern to libraries. Libraries should act to stem these issues and turn them into opportunities. Even though lecturers' behaviour is different from students' for certain knowledge areas, reports like *Ithaka* (Housewright & Schonfeld, 2008) show that lecturers also like to find information directly through Google Scholar and other online sources rather than library portals. This implies that a library is somewhat invisible, despite the fact that it is usually the provider of access to many resources that are found through those channels. Lecturers believe that they depend less often on libraries for their teaching and research as the use of digital

resources increases; they value a library's role as a buying agent over and above other functions that librarians prefer, such as being the point of access to information resources.

These are just a few examples, but we believe that lecturers may be using information poorly and possibly need to refresh their competencies in the light of new products or the potential of the world of information. It would be rather inconsistent for them not to embrace the lifelong learning and literacy models that they preach to others. Throughout their academic lives, lecturers combine teaching and research activities with management activities that may prevent them from being up to date at all times. That is the reason why they need to refresh their information skills. They need to do this for themselves so that they can encourage their students to do the same.

3. What Prevents Libraries from Having a Greater Impact on Information Competency Acquisition?

Given that information is so vast and so complex, that it is accessed and distributed through so many channels, and that it is hard to master and to keep up with; and given that lifelong learning is a requirement that implies being able to draw on meaningful information throughout one's life, there are two questions that need to be asked. First, what obstacles have existed – or still exist – that prevent libraries from cooperating more with students? And second, what can be done to get lecturers to consider this a priority, so that a joint effort can be made to raise the profile of libraries?

The first, as we have already mentioned, refers to the risk of libraries being somewhat invisible, which may affect the expectations that people have of them. In this respect, libraries are called upon to take promotional and marketing actions: they must get closer to users, have a greater presence in their learning spaces, adapt to the different teaching and research needs and habits of lecturers in each discipline, get involved in innovative educational experiences, take part in social networks and means of informal learning of the type that new users like. Specifically, there is still a certain lack of awareness of the information literacy concept among lecturers, students and some librarians even. In comparison with the simplicity of search engines, users feel that library tools and technologies are rigid and hard to use, and this discourages them from using them. We do of course

believe that any divergence between users' and librarians' technologies, desires and practices should be avoided. A mutual coming together needs to be achieved in order to facilitate new working processes, channels and better use of information.

Another difficulty has been the slow pace of change in teaching culture, which has held back the implementation of teaching methods that foster a broad, reflexive, critical and intentional use of libraries' scientific information, collections and digital resources. Ten years on from the Bologna Declaration, teaching culture is beginning to change, but there have been a number of counterproductive elements hindering that change, such as very little recognition of teaching with respect to research, the lack of activity planning for teaching-learning through problem-solving and library use, the minimal value placed on educational training in the teaching sector and the reproduction of practiced or received methods. In general, the various disciplines have been viewed as a closed set of pieces of knowledge that needed to be conveyed or transferred to students in order to incorporate them into the paradigm in force via a synthetic representation contained in a manual or basic selected texts. In fact, libraries continue to fill up around exam time with students who are prepared to memorise content in shifts, 24 hours a days, 7 days a week. Their study materials are on a virtual campus instead of in photocopiers, the basic texts for the exam are in electronic dossiers instead of in a library, a great deal of information is on the Internet and lecturers project their presentations or web pages in class to give examples of what they are trying to get across in their lectures. To a large extent, however, students still listen so that they can regurgitate pieces of knowledge in a conventional exam. This is why an insistence on supporting the change in teaching culture is still necessary.

With regard to carrying out training activities in libraries, which is very common in all universities (REBIUN, 2008b, c), there are a number of aspects that need to be improved to ensure that they become more successful (Somoza & Abadal, 2007; Roca, González & Mendoza, 2006):

- Educational training for librarians, because training tasks have usually been carried out by specialists in specific scientific areas. Librarians have not been trained to teach or to design instructional activities. It has not been part of the degree in library science and documentation and, therefore, has not been systematised in the university degree curriculum for librarians, though it has gradually been incorporated into professional refresher training plans. As it

becomes more widespread, librarians will gradually acquire teaching competencies and the degree of reticence about a duty that they have not traditionally had will be overcome.

- Instructional designs have not been based on students' levels of prior knowledge. Instead, training content has been defined in a more intuitive way, based on the course students were on or a superficial assessment of needs discussed with their lecturers. The lack of awareness of user profiles and their specific needs in the thematic area of their learning prevents more tailored and flexible training from being offered. A minimal, initial diagnostic evaluation of the target audience for the activities has not usually been carried out. An evaluation of the results has not usually been done either.
- The integration of these activities into the curriculum has not been good enough for them to have an impact, to be recognised or to be properly situated. If training activities are not done when and where (the curricular context) the need to search for information arises, or if they are not linked to subjects, then effort and motivation with respect to such activities is diminished. This is a common and serious problem, because the relevance of doing so is not appreciated.
- In training content, instrumental skills (using the library catalogue, databases and sources of specialised information) have prevailed over more conceptual content, such as selecting information available on the Internet, citation methods and the organisation of information. The predominant methodology used has been expository, which is not consistent with the rationale behind information literacy.
- Attendance for advanced training activities (accredited or extracurricular) is usually very low in comparison to the huge success of training activities carried out to welcome new students. This would indicate that they are not linked well enough – from the students' point of view at least – to their academic interests, or that students do not see any benefit in them. It is the students who have attended training activities that are precisely the ones who are more aware of the need to acquire information competencies, not those students who have shortcomings.

With regard to the organisational aspects of information literacy services:

- There has been a shortage of human and financial resources to incorporate these competencies,

particularly in small libraries. When overloaded with duties, information literacy may be put on the back burner; if it is a priority issue, then the organisation needs to adapt to it. Libraries with a greater awareness of this issue have systematic information literacy plans and reflect this in their organisation charts.

- The new role of librarians has not received sufficient recognition. Today, librarians are advisors and consultants on the utilisation, use and relevance of resources that the community can use, which makes their involvement in teaching very variable. Sometimes they take part actively in doctoral programmes when academic rules do not contemplate such involvement, and they teach practically all of the programmes of some subjects outside their working hours, with or without any financial recognition. However, this is something that largely depends on the environment's motivation and predisposition.
- Even though libraries are now more recognised by teams of deans and rectors, institutes of education science or IT services, more institutional support is still needed, either that or an overall policy to develop information literacy in a generalised way for all degrees.

4. Advances, Opportunities and Strengths for Information Competency Teaching in Libraries

The above-mentioned difficulties do not undermine the fact that significant advances have indeed been made in recent years. In reality, libraries have always carried out user training in a more or less explicit way: through user reference and consultation interviews, introductory sessions for new students, on-demand bibliographical instruction on specific resources and sources of information, the publication of explanatory guides and so on. From the late 1990s, (Gómez Hernández, 2000), these were gradually extended to deal not only with resource-use skills, but also with more complex competency-related issues. Today, all libraries offer information literacy programmes containing basic or advanced activities – whether self-directed or included in teaching programmes – with a wider variety of content. Libraries also offer activities for teaching and administrative staff, courses on virtual platforms, tutorials available on library websites, face-to-face or online (via e-mail or chats)

consultation-response services, collaboration with lecturers on theory lectures or practicals, collaboration with students on their final projects, virtual campus courses, Social Web activities¹ and so on. These offerings are highly valued by those making use of them, and librarians are becoming more and more involved with fewer reservations.

In recent years, libraries have also taken a number of organisational decisions to consolidate this service, such as: considering the inclusion and recognition of the librarian-trainer in library organisation charts; incorporating this service into the priority lines of strategic plans, institutional evaluation processes and service charters (Roca, González & Mendoza, 2006); modifying and adapting spaces in libraries to create training rooms equipped with computers, projectors and other teaching resources; strengthening relations with governing teams and deans' offices of universities in order to include library presentations or content in different teaching spaces and times; and training working groups.

The EHEA has created a favourable climate for information competency because it recognises it as a generic issue in white papers and in new degree curricula, fostering learning methods that effectively help it to be transferred to all disciplines. Vice-rectors' offices for EHEA affairs and institutes of education science grant institutional subsidies to improve teaching; there are technological resources; educational training is supported; and, after the initial questioning of the Bologna Process, we believe that teaching culture is evolving. A number of ways to include regulated information competency are being considered, and lecturers are requesting the collaboration of librarians. Libraries have an ever stronger presence on virtual campuses, social networks, new student welcome days and university career fairs. In subjects that libraries take part in, services are better oriented and adapted to users' needs and practices, and there is greater cooperation between different services connected with generic competency learning. Thus, relations between language services, career guidance centres, institutes of education science, educational psychology guidance services and IT services are becoming stronger.

5. What Can Be Done to Keep Moving Forward?

It is logical that institutions like universities should change slowly, and it is essential to carry on working together towards lifelong literacy. For example, it is necessary to maintain and strengthen a knowledge of practices – and to adapt to the practices of digital natives – in order to develop new educational strategies for trainers. This implies that librarians should learn to use the potential of the Social Web's participatory technologies, such as wikis, blogs and social networks, to foster information competencies in informal learning contexts that, today, are becoming an integral part of university students' lives. In a context of information overload, attracting the users' attention in their environments is very important, as is knowing what they want and need, and how to deliver it to them.

It would be a significant step forward if information and digital competencies were a specific and compulsory subject for every degree. This has been achieved in some universities with departments of library science and documentation, where their libraries are well-positioned. This is the case at Carlos III University in Madrid. However, most degree courses are now shorter and departments are interested in holding on to as much teaching as possible. Together, these two factors will probably prevent this model from spreading to other universities. Therefore, as a basic competency that students will have to attain, this competency will need to be situated and related to the specific content of different subjects, final practicals and final projects. It is anticipated that information literacy will be attained by articulating the endeavours of lecturers in their particular subjects and helping them to include information literacy content. Librarians will provide support through complementary courses, tutorials, teaching materials, e-learning or blended learning courses, and work guidance in libraries and virtual spaces (Area, 2007). This will be a great opportunity for librarians to become learning mediators in cooperative environments, a role that, in Spanish, we have termed "entrenauta" (Gómez Hernández, 2008).

1. REBIUN (2008b, c) compiled a list of almost 400 tutorials or guides of an instrumental nature (relating to specialised documentary products and databases), and around 100 courses on competency-related aspects such as information selection, evaluation, reworking or distribution. Some libraries have almost 100 tutorials for databases and other sources of information; they manage to get most new students to take part in introductory sessions; they have regular courses and participate in subjects as collaborators. For example, in the 2006-2007 academic year, the library service at the Technical University of Catalonia (UPC, 2007) organised introductory sessions that were attended by 3,967 out of 5,883 new students (67% of the total), took part in lectures of 100 subjects (in a variety of university degrees), and taught five courses with three recognised credits in information management (also in a variety of degrees) and nine courses focusing on preparing final projects. They also had 11 master's degree subjects with recognised credits and a further eight without accreditation, and taught sessions on two doctoral programmes.

This interaction with lecturers needs to be developed at all levels. Librarians should consider them as allies and sources of mutual support by:

- Helping them to keep up to date by providing individual assistance, depending on demand, relating to the sources and tools that they need, at the time and place of their choice. This will ensure that students learn about and subsequently work with these sources.
- Using informal approach mechanisms that work, even though their physical use of the library may be lower due to electronic access: regular talks, such as “technology cafés”.
- Providing them with teaching materials and ideas that make it easier for them to work on information literacy in their particular subjects; suggesting joint practicals, offering evaluation criteria or offering to carry out evaluation directly.
- Offering librarians' collaboration in the organisation, training and evaluation of final projects, from the viewpoint of bibliographical correction, reviewing sources relevant to the sector, good structuring of the project and so on.
- Offering institutes of education science and other educational services for lecturer refresher training the chance to include information literacy courses in their programmes, particularly on the use of documentary resources for teaching and research.
- Directly offering the courses that libraries run each year in faculties, with academic recognition agreements to ensure that students take part.
- Providing all the technical, material and human resources (in the same as the CRAI or “resource factories”) for libraries to produce teaching and learning materials that lead to changes in traditional teaching.
- Helping to define, design and programme the basic information management competency, so that it can be developed and incorporated into the curriculum, with examples like the UPC guide (2008).
- It is also necessary to work together on the question of how to evaluate information competencies and the results of training actions, not so much (or only) for qualification purposes, but rather for fostering metacognitive processes, their application to new contexts and their transfer.

We believe that the good practice recommendations for developing information literacy services adopted by

REBIUN (Spanish Network of University Libraries) (2008a) all point in this direction, as do the conclusions drawn from conferences attended by information literacy managers from various libraries (REBIUN, 2009). In addition to these, we feel that it is important to:

- Try and obtain external accreditations for information literacy training programmes, which are accepted and valued by future employers.
- Cooperate with secondary schools to ensure that pupils arrive at university with an information competency base.
- Train librarians in new teaching methodologies, in an attempt to motivate them to face up to the challenge of competency training and to become part of interdisciplinary teams alongside IT specialists and lecturers in a confrontation-free manner.
- Integrate digital competencies and information competencies, something that we feel is logical so long as the instrumental components do not displace the reflexive and critical components of training (REBIUN, CRUE-TIC, 2009).
- Use 2.0 tools, websites and social networks, and be prepared for Web 3.0, all the while bearing in mind that they are a means to an end and not an end in themselves, on the basis of a plan that gives them meaning.
- Not to leave aside face-to-face sessions, since the concept of information literacy does not imply virtuality, and attempts should be made to ensure that they are very practical and active.
- Try to be useful allies of teaching staff; if they come to a library to seek a solution to a problem, it will be much easier to collaborate on information literacy.
- Carry on promoting the new image of libraries and communicating their initiatives in this sector.

To give an example of libraries that have systematised information literacy teaching, we would mention the library at the University of Seville (2009), because it has a description of its training offerings in basic, intermediate and advanced subjects for undergraduate and graduate students. In addition, it synthesises and integrates models developed by universities like the Open University of Catalonia (UOC), Pompeu Fabra University, Rovira i Virgili University, the University of La Laguna, Pablo de Olavide University, Carlos III University and the UPC. The UPC programme is very strong (UPC, 2007). It has training subjects and activities for undergraduates, final projects, graduates, teaching and administrative staff,

subjects for face-to-face learning and virtual campuses, evaluation criteria for these subjects, teaching methods and teaching activity proposals. In the University of Seville's case, we would underscore the introduction of the philosophy of Social Web participation in the development of this training, with blogs and wikis for lecturer training and support, and the production of guides that are cooperatively updated and completed. Another case worthy of note is the library at the University of Granada, which also manages trainer training courses via its virtual campus. The concern for educational consistency is demonstrated by the teaching methods being considered for these activities: the use of a portfolio as a student learning and self-evaluation method, tests by module, discussion forums, coursework related to other subjects, research diaries, practical exercises and so on.

Final Reflections

Libraries are making a considerable effort to develop information literacy services, through self-directed learning (while trying to situate the objectives, tasks and levels with students) and cooperation with lecturers, so that the latter can incorporate content into their teaching-learning activities that contributes to students' information competency. It is a long and arduous process because of the slow pace of change in university culture and a considerable number of determining factors ranging from the levels that students have on arrival at university to the characteristics of scientific information in the different disciplines and the confluence of interests in university organisations. Today, several years after the implementation of new degrees, the recognition of a basic competency to use information efficiently – a competency that is connected with others – may lead to a greater integration of libraries and their information literacy services into teaching processes. Faced with an apparent “disintermediation” with regard to accessing and using information flows, information literacy has become one of the main services that libraries are able to offer. In order to attain the objectives of information literacy when learning activities are undertaken, training should be planned by taking account of the students' prior knowledge, the students' practices and activities and the students' needs. Cooperation with lecturers and an evaluation of results are also necessary. It would be unacceptable for university students to complete their education without attaining information competency, since it is a prerequisite for lifelong, cooperative and self-directed learning. Managing to deliver a higher education

that measures up to the demands of the 21st century is a challenge for librarians, lecturers and students alike.

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Monograph “Information and Digital Competencies in Higher Education”

ARTICLE

A Plan for Information Competency Training via Virtual Classrooms: Analysis of an Experience Involving University Students

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Abstract

This article describes and analyses an information competency training programme for students, implemented by the University of La Laguna library. The initial experience began in 2006, when several information competency courses for new students were given in collaboration with several lecturers teaching core subjects.

The success of the initiative led to a change in the library Training Service's plan and programme. The main aim was to foster the acquisition of information management competency (finding, evaluating, using and communication information). To that end, a competency training programme was developed. The programme had a sequence of learning levels to cover different needs throughout a student's academic life. It also included competency refresher courses for teaching staff and administrative and service staff (PAS), and courses for external users interested in acquiring information competencies.

Training was carried out using an e-learning approach and several virtual classrooms were created to teach the courses. These were created on the Moodle platform and integrated into the University of La Laguna's virtual campus. The results of the users' assessment of the courses are presented, showing that they successfully attained the planned objectives.

Keywords

information competencies, information literacy, training, virtual courses, e-learning

Un plan de formación en competencias de información a través de aulas virtuales: análisis de una experiencia con alumnado universitario

Resumen

En este artículo presentaremos la descripción y el análisis de un programa de formación en competencias informacionales para estudiantes desarrollado por la biblioteca de la Universidad de La Laguna. La experiencia inicial comenzó en el

año 2006 con la impartición de distintos cursos sobre competencias informacionales dirigidos a los alumnos de nuevo ingreso, en colaboración con varios profesores que impartían asignaturas troncales.

El éxito de dicha iniciativa motivó un cambio en la planificación y programación del Servicio de Formación de la Biblioteca. El objetivo principal era potenciar la adquisición de la competencia en la gestión de información (localización, evaluación, uso y comunicación). Para ello se elaboró un programa de formación en competencias secuenciado con niveles de aprendizaje diferenciados a lo largo de toda la vida académica del alumno. También incluyó cursos de reciclaje en competencias para el profesorado, el PAS y los usuarios externos interesados en adquirir competencias informacionales. La formación se desarrolló bajo la modalidad de e-learning. Para ellos se formaron varias aulas virtuales para la impartición de los cursos. Estas fueron creadas en la plataforma Moodle e integradas en el campus virtual de esta universidad. Se presentan resultados de valoración de los usuarios, que reflejan que fueron exitosos en el logro de los objetivos previstos.

Palabras clave

competencias informacionales, alfabetización informacional, formación, cursos virtuales, e-learning

1. Introduction

Faced with the challenge of the European Higher Education Area (EHEA) and the change in design of the teaching/learning model under the Bologna Process, the library at the University of La Laguna began to adapt its training activities in 2006. The main aim was to foster training in one of the basic generic competencies: information management (finding, evaluating, using and communication information). At that time, the aim was to complement more traditional training (in resources and services) focusing, above all, on the acquisition of instrumental skills (using the library catalogue, databases, etc.), with ICT-supported information competency training for new students. It was conceived as a support tool for the changes that had begun to take place in our university's educational process, a process that certain lecturers had already begun to lead. From the very outset, it was, therefore, considered to be a cooperative project between lecturers and librarians, taking advantage of the close ties that have always existed between both groups at our university.

Regarding graduate students, we identified an opportunity to offer them training to help them refresh their information competencies and to provide them with the necessary guidance to enable them to successfully complete their research work. For other members of the university community (administrative and service staff [PAS]), information management training would be offered with the aim of it being applicable to their daily duties, as

a way of extending the concept of competency training to their working lives, while also being transferrable to their personal lives.

In a context of technological change in which there is an exponential growth of information production, the library felt that its commitment to the institution should focus on an activity that it had always carried out, although now it would have to readapt its training model to the new demands of education and the knowledge society. In order to do this, the librarians had to assume the role of trainers and make a considerable effort to acquire the new competencies themselves. The library, as a teaching and research support service, had to contribute to the enhancement of university students' information quality; a topic that was being debated in several forums at that time, and which gave rise to various regulations and reports.¹

The library wanted to play a proactive role and decisively participate in the changes that could just be made out on the educational horizon. As a centre that traditionally provides information, it wanted to take a step further and train users to become information competent. At the same time, it wanted to provide them with training that would be useful to them throughout the educational process and be transferrable to their working and personal lives. New technologies provided an important support mechanism when it came to planning the new service, which was based on offering training via a teaching/learning platform like Moodle. At that time, advantage was taken of an initiative called e-TU (e-Teaching Unit for teaching staff) which had

1. In his article entitled "Formación de usuarios y biblioteca universitaria", Cristóbal Pasadas Ureña offered an overview of quality evaluation plans and guides for universities, as well as situation reports. Pages 413-416.

just opened its doors at the university.² This platform was considered to be the most appropriate one for attaining our objectives, and an interesting formula for making the users the protagonists of their own learning; learning based on independence and collaboration.

2. From Training Users to Training Students in Information Competencies

Of the services that libraries usually offer, user training is one of the most traditional. Trainers have put considerable effort into this task, only to reach a very low percentage of the student population. The students' participation in activities has depended to a large extent on teaching staff support (course recommendation, requests for classroom sessions, practicals and so on). Above all, students have received training in library services and resources. It should also be said that clear institutional recognition and support for this activity has not been forthcoming.

However, the outlook has started to change in recent years. The concept has become richer, and there has been a shift from traditional user training to information competency or information literacy training. Besides receiving information about the library's services and learning how to handle and use information resources available at the library, the new concept includes the necessary tools for learning how to find and select high-quality information from the vast number of documents that exist on various media, to evaluate it, to use it ethically and to communicate it appropriately. In addition, it implies that students acquire more self-directed working methods, take responsibility for creating their own content and are capable of transferring competencies acquired during the training process to their working and personal lives, as a concept of lifelong learning. Connected with this concept is another term that complements and enriches it. Here we are referring to IT literacy or digital literacy, which implies the acquisition of competencies for handling and using ICTs appropriately. In the same way as lecturers focus their efforts on offering an education based on students' self-directed work, on the analysis of multiple information resources and on the use of ICTs, libraries are working

towards a training model that goes beyond traditional user training.

To that end, university libraries have equipped themselves with information competency training plans that include abilities, knowledge elements, dispositions and conducts that enable individuals to recognise when information is necessary, where to find it, how to evaluate its suitability and how to use it appropriately in accordance with the problem posed.³ Through declarations and documents, various organisations (OECD, UNESCO, etc.) and professional associations (IFLA [International Federation of Library Associations and Institutions], SCOUNL [Society of College, National and University Libraries], ALA [American Library Association], ACRL [Association of College and Research Libraries], REBIUN [Spanish Network of University Libraries], etc.) promote the need for citizens/users to acquire information competencies and highlight the role that libraries play as facilitators of the necessary tools. The importance of acquiring generic competencies linked to information management at the university education stage has also been studied by a number of researchers. Area suggests several reasons why it is important to acquire and master information competencies. One of the reasons is that they give degree holders the ability cope more successfully with innovation in the scientific and professional fields in which they work, and they help them solve all kinds of problems and have a better understanding of the environment in which they live.⁴

3. Face-to-Face Training at the University of La Laguna Library

The background to the library's current information competency training is its face-to-face user training activity, which began in the late 1990s. The intensive activity deployed and the experience gained provide a better explanation of how we developed the Framework Programme for Information Competency Training (Information Literacy). In order to approach a radical change in training planning from 2006, we took account of statistical data. The evaluation of face-to-face training results meant that we were able to consider the expediency

2. The e-TU felt that the library could play an important role in information competency training for university students and lecturers.

3. Comisión mixta CRUE-TIC, REBIUN (2009).

4. Area Moreira, *Documento marco de REBIUN...*

of diversifying the training programme, not only in terms of the number of sessions and courses, but also in terms of the type of training. Consequently, we started planning information competency e-learning. In the 2002-2003 academic year, we gathered information about the number of people attending training activities. We also applied satisfaction questionnaires that allowed us to find out what opinions users had of the sessions or courses taken.

In addition, before starting to plan information competency training courses, users were asked to fill in a questionnaire to find out if, among other things, they would be prepared to be trained virtually. In that questionnaire, 74% of the respondents said that they would be prepared to be trained virtually.⁵

From the study carried out using training data for users between 2001 and 2006, we were able to draw a series of conclusions:

- The overall data for user training activities showed that, even though there was an upward trend, there were some fluctuations depending on activity type. Most new students attended introductory or welcome sessions (events put on in collaboration with a faculty or a school).
- A considerable effort was made to offer instrumental skills training (using the library catalogue, databases, specific information resources, etc.), only to reach a limited number of students.⁶

The following stages describe what the evolution of user training offered by the library entailed:

- From 1998 to 2002, training was only carried out sporadically in certain points of the service.
- Since 2002, the library has had a Training Service, and a training committee has been created⁷. Training processes were standardised.
- In 2004, the first Integral Training Plan (2004-2006) was drawn up. The target audience for the plan included users (students, lecturers and researchers), PAS and external users.

- In 2005, work began on a series of tutorials for users to undertake self-directed learning.
- In 2006, work began on developing a pilot project for the acquisition of information competencies using an e-learning approach. In the 2006-2007 academic year, virtual courses were offered via the Moodle teaching/learning platform for eight degrees. In addition, free-elective credit seminars on information skills in social sciences were held.

4. Information Competency Training: Virtual Courses

As already indicated, up until the 2006-2007 academic year, a small proportion of users received face-to-face training for finding, selecting and using information. The number of attendees at sessions on the use of tools like the library catalogue and databases was also limited. In its 2006-2008 strategic plan, the library had already considered creating a line of work on information competency training to support the new educational model. It also included another line of work to support awareness-raising, among the university community, of the Moodle teaching/learning platform, which had just begun to operate in our university. The idea of offering e-learning via this platform arose from both of these lines of work.

The pilot experience began with new students joining the university in the 2006-2007 academic year. Training would be based mainly on information competency e-learning courses. This e-learning was perceived as a challenge and a great opportunity for the library, since it opted for an e-learning service as a way of diversifying its training programme, of attracting users that did not request traditional training (with specific offerings and timetables) and of reaching out to as many students as possible.⁸ It was also considered a challenge and an opportunity for trainers, because they would have to learn how to train people in a different, more active way (interacting with students in the virtual classroom) with a new ICT-based teaching model.

5. The questionnaire (end of 2005) was issued to 100 users.

6. The reasons why most users did not undertake training activities were connected with teaching plans. As a general rule, a characteristic feature of these was the high number of lecture hours, for which students did little class work and did not need to consult sources of information. The course timetable also discouraged students from attending.

7. The training committee's mission is to develop instruments to identify the training needs of library staff and users, to take part in developing teaching materials for training and to collaborate on course planning.

8. In massified universities, it is more feasible to reach out to students through virtual courses because virtual classrooms have learning tools that allow the highest number of participants to be trained.

The librarian-trainers would have to improve their competencies, since they had to take part in the development of training programmes and had to raise awareness of information competency-related actions. In addition, they had to improve their knowledge of information resources, prepare learning evaluation activities, learn about and know how to use educational methods, have technological knowledge, use standards, collaborate on teaching material development, etc. In short, they had to assume lifelong refresher training and their new role.

Finally, e-learning also represented a major change for students, because the new model involved using ICTs to acquire information competencies via a platform with a learning concept based on self-directed and cooperative work. Likewise, collaboration with the teaching staff had to be very close, since training was understood to be a cooperative project to ensure that students acquired new competencies.

Consequently, the main reasons behind opting for an e-learning training model via virtual classrooms were the following:

1. The need to diversify training activity, adapting it to the characteristic features of each degree.
2. The advantages that Moodle offered for training the highest number of students possible, using the tools it offers for self-directed and cooperative learning.
3. The need to raise awareness of the Moodle platform (a strategic objective of the library).
4. Support received from the e-TU.

At the beginning of 2006, work began on the project and contact was made with several lecturers interested in information competencies for first-year students. The idea was to offer a course in various degree subjects. Advantage was also taken of other lecturers' collaboration with students in higher years, for core subjects in both cases, with the aim of reaching the highest possible number of students. The lecturers incorporated the course into their subject programmes as an activity that was both compulsory and marked.⁹ The lecturers' participation in the project went much further than realising the expediency of the course as a yet another activity in their subjects. They provided the topics on which students should do their search practicals and reviewed the thematic units forming

part of the training project and the information resources selected by the librarian.

A decision was taken to begin the experience with first-year students on various degree courses, basically because we were aware of their information competency shortcomings. Work was not being done on this issue in the non-university education system. In fact, this issue is still pending in our region.¹⁰ Consequently, when students arrive at university, they all have very similar characteristics:

1. They have very few skills when it comes to finding, selecting and using information for an assignment.
2. They do not know how to perform a search that is appropriate to their needs.
3. They search for information on the Internet but do not compare it; they only use one search engine (Google).
4. They are unaware of the information resources that libraries offer.
5. They are used to copying and pasting information that they do not compare.

The pilot course entitled "How to find sources of information to..." was planned for various degrees (eight in total). Students had to invest between five and 10 hours of their time on the task, depending on their prior competency level. Courses were given in the following subjects: journalism, psychology, nursing, economics, education, philosophy, language studies and geography. These pilot courses were organised into thematic units. A series of resources were added to these units: a platform user guide, a glossary of terms, tutorials for more effective learning, practical exercises, self-evaluation of learning tests, a discussion forum on course-related issues and a forum for queries and suggestions. A test was also included to assess user satisfaction. In addition, students were offered a selection of general and more specialised information resources, as well as a recommended reading list for their degrees.

As a consequence of the positive results of these courses, steps were taken to establish a regular programme of competency training based on e-learning courses. From this initial experience, we drew a series of conclusions that helped us to improve subsequent courses:

9. Lecturers who chose to participate without committing their students to the course were also offered the option to mark it.

10. The Spanish LOE (Organic Law of Education) includes the need for information processing competency training and digital competency training. Spanish Decree 1513/2006 contains eight competencies, one of which is information processing and digital competency.

- The need for greater facilitation in the forums.
- The need to improve some units and the inclusion of specific objectives in each unit.
- The need to consider a new, simpler and more flexible course model with more test-type activities.
- The need to have a course on the methodology of organising information better.¹¹

At the end of the initial experience, it was concluded that the courses should be offered to all new students. This represented a significant challenge for the library, because, on average, 4,100 students enrol per year at the university.¹² Information competency training would have to be present, at the very least, at the initial level. The courses should be compulsory in core subjects and have the support of lecturers, who are ultimately responsible for their students' academic education. On courses where lecturers were more involved, the number of students who dropped out was lower. Some of the important elements that led to the success of the experience were the librarians' and lecturers' motivation (which was conveyed to the students), the constant support provided by the trainers in terms of resolving queries in the virtual classroom, and the mark that students were given if they passed. Out of a total of 292 enrolled students, 204 passed.

5. Information Competency Training: Activity Development (2007-2009)

In the following academic year (2007-2008), the model for first-year students (initial level) continued to be improved, and it was offered to lecturers with new degree core subjects. The lecturers who collaborated with the library in the first year carried on doing so subsequently. A considerable effort was made to raise awareness of the project in our university, and the repercussions it had are proof of that. In this academic year, the numbers increased dramatically on the previous year. The number of enrolled students rose from 292 to 1,103, the number of librarian-

trainers rose from 8 to 23, the number of collaborating lecturers rose from 10 to 29, and the number of courses given rose from 9 to 35.

The 2008-2009 academic year was a year of consolidation for training offered to first-year students and the start of training offered to graduate students and teaching and research staff (PDI). These two groups were, at that time, the ones that needed a wider training programme. Owing to technical problems at the library, several first-year student activities were suspended, which led to a slight drop in enrolment (944 students). The number of trainers and lecturers remained constant.

With the support of the Office of the vice-rector for Academic Regulations (through the Office of the director for the Graduate Secretariat), a 15-hour course was offered for master's degree and doctoral studies. Twenty-four students enrolled on this course. In collaboration with the Office of the vice-rector for Teaching Staff and Teaching Quality (through the Office of the director for the Training and Teaching Innovation Secretariat), a 20-hour course was offered to PDI. Thirty lecturers enrolled on this course. This first course for lecturers had two novel aspects. First, collaboration between lecturers from the Faculty of Education and librarians, who joined forces to ensure that information competencies were present in all subjects¹³ and evaluable throughout a student's academic education; and second, the Office of the vice-rector's firm belief in the expediency of offering this type of course to all lecturers in the future.

From the end of this academic year, competency training began to be diversified and improved. The framework programme was revised and new courses were added. The basic idea is to complete the sequence of students' learning.

Alongside this, work began on "Familias en red" ("Families on line"), a collaborative project between the regional Ministry of Education and the two universities in the Canary Islands. The library's mission was to raise parents' awareness of the importance of acquiring information competencies at school-going age via virtual courses.

At the end of the 2008-2009 academic year, a project was submitted to the Office of the vice-rector for Teaching

11. This need was included in the library's Training Plan (2008-2009). In June 2008, the librarians attended a course called "Methodology and Teaching Applications for Training".

12. Enrolment data for the last three academic years.

13. The course is for teaching staff interested in incorporating information management into their curricula. It covers the topic of information competency in the new educational model, and the tools that the library offers for teaching staff to keep up to date with this competency. The main objectives of the course are: to understand the meaning and curricular implications of information competency, to apply information updating knowledge and to be aware of the information services and resources that the library and the Internet offer for teaching and research.

Staff, for the incorporation of competency training into the university's official programme through a subject with three European Credit Transfer System (ECTS) credits. This subject would be given in conjunction with the University of La Laguna's Open Software Office, since it included both information and IT competencies. This will begin with a pilot project (2009-2010) for students in four subject areas (health sciences, pure and experimental sciences, social sciences and humanities).

In the 2009-2010 academic year, the aim is to cover the first year of all degrees. Initial courses have been planned for 35 degrees (including the 20 approved undergraduate degrees). In previous years, only 18 degrees had been covered. Since the pilot project began, the library and the vice-rector's office to which it reports felt that it was crucial to reach out to as many users as possible. It is important to underscore the considerable effort made by all the librarians (who are facing up to new challenges and improving training all the time) and the interest shown by lecturers in terms of motivating their students to take the course. The sum total of these efforts is now visible in the first semester. A total of 1,008 first-year students and 86 graduate students have enrolled.

The evolution of training offered by the library, both face-to-face and e-learning, is shown in table 1.

In this academic year, a competency refresher course is being given to library PAS for the first time. On the one hand, they are provided with the necessary tools to update their knowledge and, on the other, they are shown how users are being trained in information competencies. There are more and more students taking courses in the library's rooms. Their basic queries can be resolved by these

members of staff. In addition, and due to their closeness to users, they are better able to support awareness-raising of this activity.

Likewise, the library, through the Office of the vice-rector for University Services, has begun to certify the benefit that first-year students and graduate students get from these courses. PDI and PAS receive a certificate from the Office of the vice-rector for Teaching Staff and the PAS Training Unit, respectively.

Over these years of constant work, awareness of this activity¹⁴ has been raised via:

- The university library's website (Training Service).
- Annual talks with the university's deans and department directors.
- Promotional materials for the university community (posters, guides, a video, etc.).
- The presentation of the programme at various professional forums.
- Specialised journal articles.
- The organisation of courses to share the experience with staff from other Spanish university libraries (Cadiz, Carlos III, Granada, Burgos, Castilla La Mancha, Santiago de Compostela, Zaragoza, etc.).

6. The Organisational Dimension of the Plan

The change in direction from traditional to competency-based user training has entailed the reorganisation of the

Table 1. Evolution of face-to-face and e-learning training: activity types

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
USERS								
Presentation attendees	2,454	2,200	2,325	1,834	2,287	1,605	1,855	2,570
Session attendees	130	180	479	492	528	211	172	55
Competency course attendees						292	1,103	944
TOTAL INTERNAL ATTENDEES	2,696	2,507	2,844	2,326	2,815	2,108	3,130	3,569
External attendees		314	348	988	135	352	184	63
TOTAL INTERNAL + EXTERNAL ATTENDEES	2,696	2,821	3,192	3,314	2,950	2,460	3,314	3,632

14. More information about what raising the awareness of competency training has entailed is available on our library's website: <http://www.bbt.ull.es/portal/viewcategory.aspx?id=1796>

Training Service's plan and a new training programme. The new programme responded not only to the learning-related changes that were taking place in the library and its environment, but also to one of the lines of action of its strategic plan (2006-2008). It contemplates the inclusion of face-to-face and e-learning courses, although the latter model is the one that is being developed most. The planning and coordination of competency training, in the same way as any other type of training that the library carries out, is the responsibility of the Office of the assistant director for Services and Personnel. A training committee is in charge of firming up the training programme. This committee has several working sub-groups (undergraduate, graduate, PDI, PAS and external), who work on each course model (procedure, units, practicals, teaching materials, type of evaluation, etc.) with the technical coordinator.

The programme contemplates communication between working groups via tools that the Moodle platform offers for exchanging ideas, queries and suggestions. This platform is also useful for communicating with other trainers. In addition to this, there are face-to-face meetings of sub-groups and other librarians. It also includes the periods covered by the courses offered: a semester for undergraduate and graduate students, and a year for PDI and PAS. Other external information depends on the agreements reached with interested groups or organisations.

An important element in this programme is trainer training, with topics connected with methodology and teaching, library 2.0, the new EHEA educational model, e-learning, Moodle, information competencies, etc. It also includes the competencies to be worked on at different course levels: identifying information needs, finding, selecting and evaluating information, using it ethically and communicating it in the most appropriate way by making an effective use of ICTs, as well as a methodology based on practicals and problem-solving that is supported by tutorials (to foster self-directed, independent learning). The use of some Moodle tools (discussion forums, queries and suggestions) allows for more active participation in learning. e-Learning is always complemented with face-to-face sessions, in which the course objectives are explained, platform use is demonstrated and queries are resolved.

Each course unit has a series of practical components (most of which are self-correcting) that help students check their learning. Trainers also provide tutoring for practical components requiring their supervision.

First-year student courses are scheduled to take place at the time that collaborating lecturers consider most appropriate. This is the step prior to carrying out class work, research, etc.

The programme specifies the types of face-to-face activities and e-learning courses for each user profile. Whenever possible, this is done in collaboration with teaching staff and other services or vice-rectors' offices:

- Undergraduate students. They start at an initial level of training in the first year with a variety of activities (presentations, guided tours, etc.) and a virtual information competency course. Teaching staff take part in the latter of these two. They acquire basic information competencies. They can go on to train at intermediate level, which is offered between the second and fourth years, through a subject that has three ECTS credits (in conjunction with the University of La Laguna's Open Software Office). It is a specialised course where they acquire information and IT competencies.
- Graduate students. They have an advanced level course to refresh their information competencies, as a support for carrying out their research work (in collaboration with the Office of the vice-rector for Academic Regulations).
- PDI. They have a course to refresh their information competencies and to raise awareness of the importance of incorporating these competencies into subjects (in collaboration with the Office of the vice-rector for Teaching Staff).
- PAS. They have a course to refresh their information competencies to improve their work (in collaboration with the University of La Laguna's PAS Training Unit).

The programme also includes external training courses to raise awareness of information competencies in other social sectors. This allows the following groups to learn about and refresh their information competencies:

- University degree holders, as a means of professional refresher training (through their professional associations).
- Non-university teachers, as a way of raising awareness and working on information competencies in initial cycles (through the regional Ministry of Education).
- Parents of children of school-going age, with the aim of raising their awareness of the importance of working on information competencies with their children to improve their schoolwork (through the regional Ministry of Education).
- Librarians and libraries in the region, as a way of refreshing their information competencies (through

Table 2. Courses by user type

Students		Information competency training	Accredited or certified	Level	Hours
Under-graduate	1 st year	Initial training Welcome days (face-to-face) Guided tour (face-to-face) Basic information competency course (virtual)	Marked by lecturer	Initial	12,5 h
	2 nd /4 th years	Intermediate training Intermediate information competency course	Accredited	Intermediate	3 ECTS credits
Graduate		Advanced information competency course (virtual)	Certified	Advanced	15 h
PDI		Teaching staff refresher course (virtual)	Certified	Advanced	20 h

the Canary Islands' insular government authorities, town and city councils, and the regional Directorate General for Books, Archives and Libraries).

The programme is open to collaboration with different organisations for the development of competency training. Before this programme was in place, the library already carried out a number of activities on the Programme for Reading and Libraries of the regional Directorate General for Education Management and Innovation, to train school library teaching staff and grantholders in topics connected with libraries and the acquisition of information competencies. Today, work is being done on the organisation of courses for parents through "Familias en red", as referred to earlier.

In recent years, the library has offered university extension courses to raise awareness of the importance of information competencies (for municipal libraries, teachers and the general public).

Finally, it should be pointed out that the programme includes training evaluation by means of:

1. An initial questionnaire about users' prior knowledge and competencies.
2. A satisfaction questionnaire about the course and how useful users find it for their training.
3. A user self-evaluation test, to find out about the degree of content assimilation and course objective attainment.
4. An evaluation by librarian-trainers of the tasks undertaken by users.
5. A librarian-trainer report about the course, including the number of people enrolled on it, the number of passes, the numbers of fails, a summary of tasks and

test results, a summary of questionnaires, problems that have arisen and suggestions for improvement, etc.

7. The Education Stakeholders' Opinions: Students and Lecturers

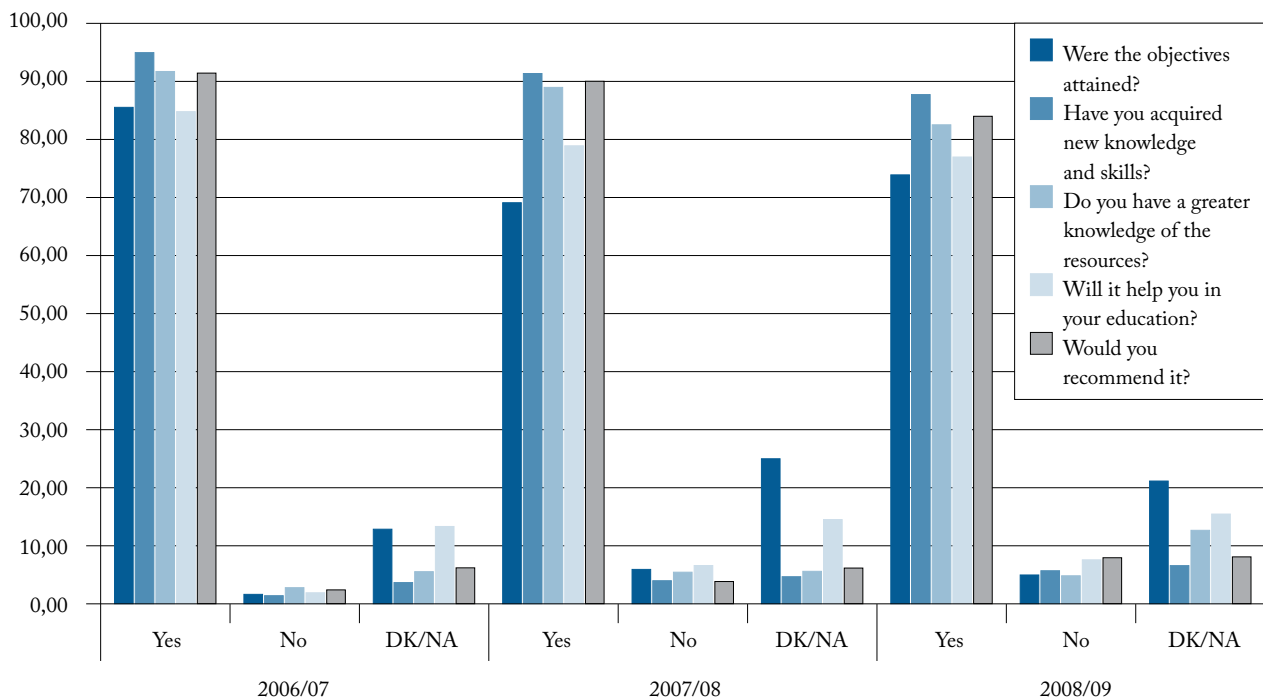
Over these years, users have expressed positive opinions about the courses, and this has been reflected in the questionnaires that they fill in at the end of each course. On the whole, first-year students are satisfied with the courses. Questionnaires completed in the virtual classroom have been analysed over a period of three years. Their responses to questions posed were positive, and a summary of the results obtained is given below:

1. The course objectives were attained (between 70% and 85%).
2. They have acquired new knowledge and skills (between 85% and 90%).
3. They have a greater knowledge of general and specialised information resources (between 80% and 90%).
4. The course will help them with their academic education (between 75% and 85%).
5. They would recommend the course to other students (between 85% and 90%).

These data are shown in table 3.

In May 2009, the library made a video containing the opinions of members of all the groups involved in new

Table 3. First-year students' opinions of the information competency course



student training. The opinions of all of them highlighted the importance of acquiring information competencies in the new educational context.¹⁵

The data for the graduate student course (2008-2009) also show a high rate of satisfaction, and these students gave positive responses to the same questions as first-year students. The only exception was the first question, about whether the course objectives had been attained. To that question, 85% of those questioned responded with a "yes", whereas 100% gave positive responses to all the other questions.

The course offered to PDI (2008-2009) also had good results. They gave positive responses to the following aspects:

- The course objectives were attained (80%).
- They have acquired new knowledge and skills (89%).
- They have a greater knowledge of information resources (90%).

In May 2009, the opinions of lecturers collaborating on the first-year student course were gathered. A series of

questions¹⁶ complementing those contained in the video were posed:

- They monitored students' learning: 65% responded "yes", 35% responded "no".
- They noticed improvements in students after they had completed the course: on a rising scale, their responses were 27% "a little", 65% "quite a lot" and 9% "a lot".
- They thought the course was necessary: 59% thought that it was "indispensable", 41% thought that it was "necessary" and no-one thought that it was "dispensable".
- Attendance on this course should be compulsory or voluntary: 76% thought that it should be compulsory, 24% thought that it should be voluntary.

8. Conclusion

Competency training has demanded a considerable effort from the library, but the satisfactory results have made it

15. The video was presented at the VII Jornadas CRAI (UPM-Technical University of Madrid, June 2009).

<<http://www.youtube.com/watch?v=qQWVTJ7oioI&feature=related>>

16. Seventeen lecturers filled in the questionnaire, over half of those collaborating in that academic year (2008-2009).

worthwhile. Being one of the first libraries to offer this type of training, now it is a service of reference on this topic. Year after year, the library has seen how the training project has gained in momentum and institutional support from the teaching staff at our university and from other libraries. We only hope to be able to carry on providing a teaching and research support service at our university. The library's Framework Programme for Information Competency Training (Information Literacy) is merely a proposal that we make to the institution in order to collaborate on competency training.

However, this plan alone is not enough. A number of aspects still need to be improved to ensure that students and other university stakeholders manage to learn new competencies and refresh old ones. Among the possible strategies for development, we suggest the following:

- Information and IT competency training for the whole university community should be one of the university's strategic objectives.
- Competency training should be explicit in the training plan for all degrees.
- The institution should support library staff so that they can devote enough time to this activity.
- Lecturers, librarians and other support services at the university should join forces to help students work on their competencies.
- Lecturers, who are responsible for their students' learning, should get involved in competency evaluation.
- Information and IT competency refresher training should be promoted for everyone involved in training.
- The university should certify and/or accredit information and IT competencies, and work towards ensuring that they are recognised in the labour market.
- Universities need to cooperate with other educational levels. It is fundamental for information and IT competency training to start at school and reach out to the groups involved (parents, non-university teachers, etc.).

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