

A digital literacy proposal in online Higher Education: the UOC scenario

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Summary

Universities have a key role in providing students with strategies and competences to allow them to be part of the current information society and hence to be able to develop a productive career. The Open University of Catalonia (UOC) is a fully online university created in 1995 to provide distance-learning university-level education. ICTs were integrated to UOC's educational activity since its first steps as a compulsory subject common to all degrees, aimed to help students to cope with a virtual environment and to familiarize them with the university's specific online tools. This subject has been evolving along these last 11 years of existence in line with new technologies and also according to the necessities of students. Nowadays it is a subject that works the basic competences in ICTs and is inspired by the declaration of Bologna.

In a scenario in which the university is making strategic decisions about the implementation of the new degrees within the framework of the EHEA, this competence is defined at the UOC as follows: "The use and application of ICTs in the academic and professional environment". UOC's proposal of digital literacy for the acquisition of ICT competences in the academic and professional scope is based on a compulsory subject of each degree. This 6-credit ECTS subject is mandatory during the first semester within the cross-sectional basic credits and is based on the rational and critical use of ICTs, some knowledge of digital technology, the procedures of the virtual project and on new forms of constructing and representing knowledge for the new social Internet (blogs, wikis, social markers etc.) and for multiple alphabetizations.

On the basis of UOC's experience we are in a position to single out the key transferable elements for designing a proposal for achieving digital literacy in any educational context: the definition of the ICT competence, the gradual acquisition of ICT skills through creating a project-based work, team work to using and applying new tools and the role of consultants.

Keywords: Digital Literacy, ICT competences, Higher Education, EHEA, online environment, UOC

1 Introduction

Within the framework of the European Commission and the scenario of the Open University of Catalonia (UOC), the aim of this article is to present a higher-education proposal in Digital literacy for other institutions. We believe that other institutions may find an ICT-skills based model for European higher education in the context of the UOC (a fully virtual university making intensive use of ICTs), involving ways of working on the acquisition of key ICT skills for present-day society through a curriculum design that starts with a compulsory subject and is then consolidated as studies progress. In this detailed presentation of the way the subject is taught at the UOC.

In the first section of this paper, digital literacy is set in its context by reviewing the literature on the European level and in connection with the European Higher Education Area (EHEA). We then go on to present digital literacy at the UOC, from its origins and in the context of the subject intended to cultivate ICT skills. Next we turn to describing and analysing the digital-literacy curriculum proposal as it is in the UOC scenario in the move towards the EHEA. We conclude by presenting the key elements for a digital-literacy proposal for various educational contexts beyond the UOC.

2 Digital Literacy

2.1 The European context

To speak nowadays of the information and knowledge society is no longer to speak of an abstract remote future, vaguely defined and featuring unforeseeable dispersed impacts on diverse aspects of the personal, professional, economic and cultural activity of the citizens.

For more than a decade all over the world, and particularly in what is termed the First World, the so-called Information and Communication Technologies are driving an unstoppable transition towards the digital society, *“a society in which knowledge-generation and information-processing conditions have been substantially altered by a technological revolution centred on information processing, knowledge generation and information technologies”*. (Castells, M. 2002)

In our present digital society, technology, information processing and the distribution and the creation of knowledge are the axes on which new social, cultural, economic and political scenes are dynamically shaped. We together establish new models for relations that include the full range of human activity: from how to organize society to how to understand the economy and work; from the way to generate, distribute and consume services to schemes and attitudes when accessing education, training and learning.

The Commission of the European Communities, within the framework of the European Council of Lisbon in March 2000, recognized the important challenges Europe faces in adapting to a new digital economy and acting as a cradle for knowledge. In this sense, it insisted on the need for all citizens to have the knowledge required for living and working in the information society, and that a Europe-wide scheme would have to define the new basic competences that must be facilitated by education and training systems, with competences in information technologies among them.

Digital competence was defined by the Commission (2005): *“Digital competence involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet”* (p.16).

In this vein, the Catalan Government is working to ensure that these ICT skills can be demonstrated in learning and by all citizens as well. Specifically a Work Plan has been approved to create certification in ICT skills. This accreditation will be voluntary, and it will enable the competences and knowledge of Catalans in the use of the information and communication technologies to be certified, and also it will be useful for companies when looking for new employees, as this qualification will give further information.

2.2 The Bologna Process; the EHEA

The role of universities is important in fostering strategies and competences enabling students to have a productive career. In this sense, and within the framework of the UOC, we are

currently in the middle of a discussion process on the generic and specific competences that we want our students to acquire, bearing in mind the social, cultural and technological changes that force us to update our skills constantly. Besides, nowadays human and professional profiles are more and more interdisciplinary, and hence students need to be provided with strategies that can be used on the academic, professional, university and personal levels. It is necessary to have a cross-curricular vision of competences and of university studies that clears the way for quality education.

Schools and universities thus play an essential role, as discussed and analysed by many (Castells, 1994; Delors, 1996; European Commission, 1994; Bates, 1994). Accordingly, the education world is expected to respond to those changes going on and to contribute actively to the new challenges that the new technologies bring up in conventional teaching and learning methods, as the UNESCO World Report claims (1998). Teacher training actions need to be designed according to changing needs in society and in education. European higher education institutions have accepted those challenges through the Bologna Process, and have taken on a prominent role in constructing the European area of Higher Education. *“Universities can act as protagonists in preparing students to play a productive career and to behave as responsible citizens.”* (pp 59 in González, J. & Wagenaar, R. (2003). The project Tuning Educational Structure in Europe is one of the few in Europe that actually links the political objectives set in the Bologna Declaration of 1999¹ to the higher education sector. Tuning is a project developed by and meant for higher education institutions. In this sense, universities face three main challenges: to qualify future professionals to fit in with the current new profile, to train researchers-to-be, and to educate citizens for today’s society (Michavila & Calvo, 1998). Hence, it is essential that teachers are trained taking account of all these issues, and bearing in mind the new teachers’ profile as well, a profile that has naturally evolved and adapted to our current information society, and all the new competences and skills that they need to master and, consequently, be trained in.

Also, it is claimed in the Bologna declaration that it is important to provide students / citizens with the necessary competences to cope with the demands of today’s knowledge society. By competence we mean a *“set of skills, knowledge and attitudes needed to produce the desired outputs of the work place”* (Williams, 2003), complemented by Tuning’s definition that competences *“convey meaning in reference to what a person is capable or competent of, the degree of preparation, sufficiency and/or responsibility for certain tasks”*. In today’s society students *“spend their adults lives in a multitasking, multifaceted, technology-driven, diverse, vibrant world and they must arrive equipped to do so”* (Partnership for 21st Century Skills, 2003). In this sense, a learning process is needed that is focused on the activities that the students carry out and on the skills they acquire while performing them, rather than on the content on itself, such as the Bologna process promotes.

It is important to identify what generic competences students should acquire at university, bearing in mind all the social, cultural and technological changes. These competences need to be more and more transversal and interdisciplinary every day, as so are human and professional profiles nowadays. These competences need to support current studies, enhance future employability, and enhance lifelong learning. One needs to acquire skills that can be common to all degrees, such as the capacity to learn, to take decisions, and a capacity for analysis and synthesis. In a society in constant change and renovation, all these generic skills become basic. The report *“Tuning Educational Structures in Europe”* brings together the reflections and conclusions of professionals of Education from all Europe on what competences students should attain at university level. Generic skills have been classified in the report into three main categories:

- Instrumental: those that have an instrumental function
- Interpersonal: those related to the capacity to express feelings, and to critical and self-critical abilities

¹ http://www.bologna-bergen2005.no/Docs/00-Main_doc/990719BOLOGNA_DECLARATION.PDF

- Systematic: those related to the ability to plan or redesign planning.

ICT skills would be located in generic skills, but are mostly instrumental, interpersonal and systemic.

3 Digital Literacy in the UOC scenario from its origins

The Open University of Catalonia (UOC) is a fully online university, created in 1995 to provide distance-learning university-level education. The educational system of this university is based on the concept of a Virtual Campus, which is supported by a communications network that overcomes time and space barriers and provides personalized contact between students.

The UOC² teaching model places the student firmly at the centre of the learning process; learning process resources are all based around the student. Not only does the UOC provide a virtual campus, but it also includes other factors, with the result that we can say that its methodology is a genuinely integrated system providing all the support necessary for successful distance learning.

Figure 1 set out the UOC teaching model. The student interacts with all the various components, normally by means of the campus virtual.

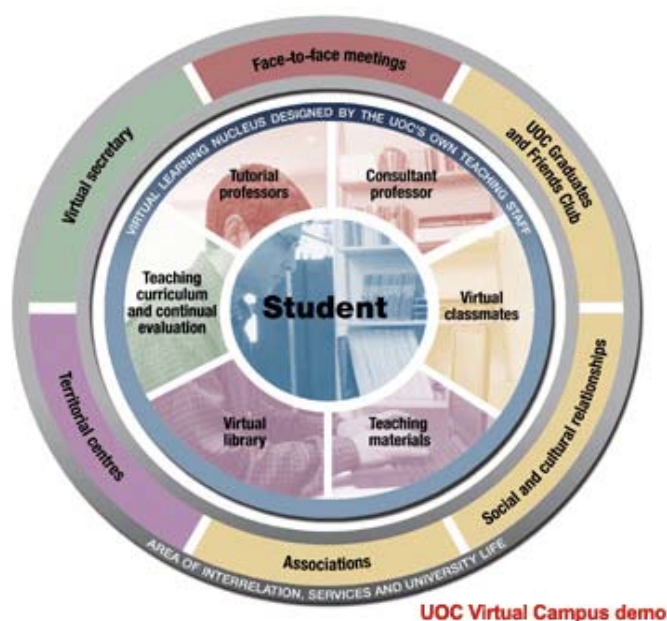


Figure 1. The UOC Educational model

The student is seen as being at the centre of his or her own learning process; the other components are available to the student so that he or she can manage and control the process.

The role of teaching at the UOC is to provide students with tools and guidelines which facilitate their learning processes, while also responding to their needs. Instead of functioning as mere sources of information, teachers become facilitators of learning. This new teaching role is also determined by new technologies. In the words of J. Delors 1996, *"in the information society, the teacher can no longer be seen as the exclusive possessor of knowledge, which he or she must transmit. The teacher is now associated in some way with a collective knowledge which he or*

² UOC website: <http://www.uoc.edu>

she must organise, placing him or herself at the forefront of change." In this light, the UOC has introduced the concept of two different teaching roles: the counsellor and tutor.

The **consultant** guides students through the entire process, including enrolment, learning and being part of UOC. He or she offers academic advice on all matters related to the fulfilment of educational challenges, the process of integration within the university community and professional orientation on completion of studies.

The **tutor** guides and supports student learning in relation to a given subject throughout the semester. He or she works to facilitate the learning process, by making suggestions, answering questions, and providing guidance and advice.

Online environments allow us to break time and space barriers, and this implies that people can study no matter what their age is, where they come from, or what their work schedule is. In this sense, a description of Higher Education students would not only include those coming straight after their secondary studies but also adults who may already have other university studies, and people who work and study at the same time; in short, individuals that wish to study as part of the concept of Lifelong learning. This is actually the background of the students who decide to study in an online university such as the UOC. This concept of Lifelong learning is nowadays *"part of the vocabulary of the industrialized world. It describes the need for people to continue their education and training throughout life because they will face multiple careers in changing economies and enjoy longer lives in evolving societies..."* (McIntosh, C. 2005). By making learning possible to a wider audience, we are undoubtedly enriching our society.

Since the UOC's foundation in 1995, there has been a compulsory subject common to all UOC degrees, one that aimed to help students to cope with a virtual environment and to familiarize them with UOC-specific tools. That subject has been evolving all through these last eleven years of existence in line with new technologies.

From the outset, the UOC has witnessed the growth of the Internet and its various phases of popularisation, which were absorbed and channelled through the 'Multimedia and Communication' subject. That subject was created specifically by the UOC in order to facilitate the induction of students into an off-site learning environment by creating and fostering certain habits in working, studying and virtual learning - in short, to help students to move on to a different outlook, from an on-site to a virtual environment, and to facilitate making good use of technological resources and tools for optimum virtual learning.

'Multimedia and Communication' is a subject that is constantly changing on account of progress in the ICTs, and it is thus subject to constant updates to its content. The subject has been evolving from the outset to adapt to the needs of society: from the use of the mouse to acquiring basic digital skills. It responds to differing student profiles, with a range of skills arranged in 8 standardised qualifications from the UOC (Catalan and Spanish). The subject is taken by an average of 3,500 students per semester, and has 70 consultant teachers with an interdisciplinary profile, ranging from philosophers to Information-Technology specialists.

3.1 The team of consultants

The figure of the consultant for Multimedia and Communication (MIC) takes on some importance in the learning process since he or she helps out with the induction of students over their first months at the UOC. The team of consultants for that subject comprises 64 members, and works virtually and collaboratively in a shared space in the virtual campus; there, through coordination among the teachers in charge of this, the semester is prepared, and there they deal with queries from students, teaching experiences, information, new proposals for innovation in the classroom, and other issues connected with the digital-skills content area.

By its very nature, innovation is a key element in this subject. And that is why two processes are involved in recruiting consultants: first come a face-to-face interview, and then a second

selection process that involves carrying out virtual training to try out and to implement in practical terms the proactive and innovative dynamic virtual teaching model called for by the subject. This education model has been with us from the early days of the subject's launch, and over time it has given us very favourable ratings of the consultants by the students - approval levels stand at over 90%.

The profile of the teachers varies greatly, to respond to the various qualifications offered by the university. There are staff teachers who come from the university and non-university academic world, and there are also contributions from professionals working in various professional spheres (journalists, economists, lawyers etc.) with wide-ranging profiles but sharing ICT usage skills in the sphere of learning, and a facility to adapt constantly to change.

This team of consultants remains stable to some extent in helping out with this subject, even though some consultants may not be active in some semesters; however, they go on collaborating in digital-literacy skills outside the subject, and stay on as active users in the virtual space of the consultants' room.

3.2 Stages in the evolution of the subject

The three most significant stages in the evolution of the subject so far were:

First step: compulsory-subject tools to facilitate students' ability to handle virtual studies at the UOC. The subject had 3 credits and was transversal to all degrees. It had an academic calendar different to the rest of UOC, starting before the others subjects. Its content was centred on reaching a good command of the tools: mouse and computer, Word, Excel etc., and getting familiar with the virtual campus.

Second step: ICT compulsory subject strategies. The subject was adapted to the evolution of the new technologies, to the popularization that these have in society, and to the needs of the different degrees (less in the tools and more in the strategies). The content, which was initially based on knowledge of computer science, has evolved to the achievement of work and study strategies for learning in a virtual environment. Strategies necessary for learning in virtual environments include: abilities in study, work organization and communication; Internet skills in searching for and processing information; and acquaintance with the tools necessary for study in certain degrees at the UOC. The subject had 4.5 credits, 1.5 being specific to each degree.

Third step: compulsory subject - towards Bologna. The subject starts at the same time as the rest of the subjects. It has 4.5 credits and is specific to each degree.

The main objective is to provide students with a set of generic competences in ICTs for working and studying in the UOC environment. The competences to achieve are the capacity to organize and plan work and study in virtual environments, the capacity to communicate virtually, the abilities to search for, manage, process and present the information, and the abilities to work in teams and to design and manage projects. All these competences are supported in the Tuning document (González, J. & Wagenaar, R. 2003), and in (Prieto, J.M. 2002).

The subject is based on a continuous learning process, focusing on the accomplishment of a series of linked activities that lead to the production of a report (Final Project). This continuing process is achieved through a project-work methodology that facilitates the progressive acquisition of generic ICT competences. The production of the online project (individually or in groups, depending on the studies) involves research on a specific area of study so that students put into practice and acquire all the competences necessary to accomplish their studies, competences that have been listed previously (Guitert, M., Romeu, T. & Pérez-Mateo, M., 2007).

Experience in this subject during the years preceding this step is an introduction to the use of ICTs, putting learning strategies into practice in virtual environments, and thus encouraging the learning to move towards the acquisition of competences, as an evolution of the procedural content worked on previously in the framework of the subject.

3.3 Data confirm the curriculum in this subject

Several semesters were spent working on skills in line with the European Higher Education Area (EHEA) even though the university had not yet made the transition to the EHEA through the transformation of the degree, and an ICT process was launched in the expectation that ICT skills would be important. A questionnaire put to students was intended to ascertain the extent to which ICT skills had been acquired through this project-work methodology in the course time spent on them.

The data gathered during the semester February-June 2007 corroborate a good valuation by the students of the competences put into practice in the subject. 27% of the registered students (998 students in total) answered the survey rating their degree of acquisition for each of the ICT competences. This rating on the subject is part of the end of the course in that subject. 96.85% agreed that working on ICT skills through a virtual project had helped them to acquire generic competences in ICT.

Table 1: Students' rating on the acquisition of each of the ICT competences

Competences	Valuation
Virtual communication style	99.28%
Management of a virtual project	98.17%
Search for and selection of information in a network	96.45%
Analysis, treatment and interpretation of digital data	96.35%
Presentation and structure of digital information	96.55%
Presentation of digital information	96.55%

In addition to the data gathered in the subject questionnaire, an institutional survey was sent out to the students in the same semester (February-June 2007). 785 out of 2728 students (21.4%) responded to the survey, a figure that allows us to obtain valid information on the degree of satisfaction of the students and to generalize from it.

Table 2: Students' rating on quality indicators concerning the institution

Quality indicators	Valuation
General satisfaction with the subject	76.03%
Overall assessment of the virtual teacher	90.34%
General satisfaction with the learning resources	77.13%
General satisfaction with the evaluation model	86.99%

The results show that the consultant was very positively rated (90.34%), as was the evaluation process (86.99%).

All past data and those data gave us clues enabling us to reinforce and improve the subject model for the general alignment of the UOC with the EHEA.

4 UOC cross-training curriculum proposal in Digital Literacy in the EHEA

One of the basic instruments for encouraging mobility and competitiveness and preserving diversity in the European Higher Education Area is the design of programs for academic skills. In this vein the UOC has opened an internal debate to reflect on and define the powers that our students should have according to certain professionals, including how to profile the set of defining characteristics of a professional function. The institution has adopted the following definition: *"the set of skills that a person puts into practice in the pursuing professional and*

academic life to make them efficient, independent and flexible”, and a distinction is made between specific skills (referring to a level of knowledge), transversal skills (common to all programmes), and finally the abilities that are present in all the qualifications, and which are the distinguishing feature of the institution, differentiating it from other universities.

Information from outside the institutions themselves was also consulted, along with documentation on the EHEA and other literature including the Tuning document (Gonzalez and Wagenaar, 2003) that details skills that are generic and specific to the university level in Europe and taken by universities as a reference in developing relationship skills.

It is worth pointing out that, throughout the data-gathering stage, account was taken of the UOC's nature as a virtual, distance-learning university featuring intensive ICT use and aimed at an adult audience, and so there is a constant factor that must be reflected: digital skills, promoted by the net-based working method. *“Technologies for us are more than a tool or an anecdote: they are our context, and they go beyond a merely instrumental role to enable knowledge to be implemented in practice”*. (Martin, A. and Grudziecki, J., 2007)

In the scenario in which the UOC is making strategic decisions about the implementation of the new Degrees within the framework of the EHEA, the competence is defined at the UOC as follows: **The use and application of ICTs in the academic and professional environment**. This includes working with ICT competencies that already had been developing in the course we discussed in the preceding paragraph.

This institutional option is based on the historical one of the university that from its origins created its own specific subject, which valuation data on satisfaction and the results of a semester show as positive and the decision of the Catalan Government to create a certification in ICT skills.

The UOC makes the following cross-curricular proposal in Digital Literacy for all UOC degrees based on the definition of a compulsory subject in all UOC degrees, prioritizing those aspects that have become important in the evolution of the subject:

- Accomplishment of a virtual project on a subject specific for each degree
- Prioritizing the technological tools used in each degree
- The contents of a subject as a battery of resources

The UOC's proposal on digital literacy for the acquisition of ICT use and application competences in the academic and professional field are the following:

- A subject aiming at ICT competence, compulsory for the Degree and amounting to 6 ECTS credits that students are recommended to take in the first semester within the cross-sectional basic credits.
- The rest of the subjects will be optional, and can be taken throughout the degree course. (at the proposal stage)
 - A higher-level subject specialising in one or more abilities linked to the necessities of the Degree
 - A 6 ECTS-credit methodological subject on working on-line.
 - Course/seminar on the use and application of ICTs in the professional environment, linked to the Final Project in the Degree concerned
- Mastering horizontal Digital Literacy (likewise at the proposal stage), intended for any professional wishing to improve in this respect and to be independent in the use and application of ICT competences.

The acquisition of this competence includes the rational and critical use of ICTs for working and studying in the information society. This competence includes specific abilities within the degree framework and cross-curricular programme favouring a network methodology

Here are the detailed proposals from the initial compulsory subject, in which competence has already been worked on in a comprehensive way; all other courses are currently being defined.

4.1 Proposal for the compulsory Subject “ICT competences”

This 6-credit ECTS subject is defined as obligatory in the first semester. It is based on the rational and critical use of ICTs; some knowledge of digital technology; the procedures of the Virtual Project; and on new forms of constructing and representing knowledge for the new social Internet (blogs, wikis, social markers etc.) and for multiple alphabetizations: textual, visual, medial and audio (Lankshear & Knobel, 2003).

The competences that are achieved in each subject are the following:

Table 3: Competences and description

Competence	Competence description
Search for and location of digital data	Planning and managing the process of finding information. Implementation of tools and resources to find information. Use of the services available on the Internet for finding information, using criteria, and appropriate restrictions. Selection, storage and retrieval of digital information.
Treatment of textual information, graphics, sound, and numerical data	Using text editors to create, treat, prepare and present textual information, intended to be printed or to be published on the Internet. Processing information graphics, audio and still or moving images. Creating and using spreadsheets and applying them to activities that require the use of their operations and functions. Maintenance, consulting, management and presentation of information through databases
Presentation and dissemination of digital information:	Designing presentations by integrating different types of objects, to present the information in different media, to be designed, printed and / or published on the Internet. Setting out integrated information processed in different formats (text, hyper-graphic, visual, audio, etc.)
Communication strategies on the net	Interpersonal communication and the exchange of information and services on the net, sharing knowledge, and networking. Social networks and professional networks
Basics of digital technology	Using the functions of a computer and its operating system. Mastering the concepts, functions and basic applications, devices, and the interrelationship between programs. Plus knowledge of computer security concerns.
Planning and management of the network (individual and group)	The plan involves the allocation of time in a balanced way based on priorities, and is essential for studying, working, daily professional activities and being able to pursue individual and group objectives, define the problems / tasks that exist and seek solutions; designing an appropriate work plan, taking into account the availability of resources, the viability of the tasks to pursue, the time available, information, and knowledge about the subject matter, involving time and information management.
Net-based teamwork	Teamwork as a methodology competence for enhancing communication and participation via the net, exploiting the potential of the tools and resources in collaborative projects. Teamwork means the capacity to achieve an objective or goal jointly as a result of the interaction of members of the group. Teamwork in a network involves a process of managing the various information inputs that teamwork involves, which requires planning, the sharing out of tasks, negotiating agreements and decision-making, discussions, a similar degree of commitment among members, all with a well-defined organisation enabling the team to be managed and developed via the network.
Civic attitude	We have to work across all content efficiently, with civic sense, and to secure critical resources available to the public in a digital society, applying them selectively in different areas of their lives and careers.

4.1.1 Methodology

To develop and implement the ICT competences described above, we have relied on the methodology of project work because it allowed us to initiate, develop and practice each of the competencies in an integrated way and interrelated with each other.

The methodology of project work involves an ongoing process and learning from each stage in activities related to each other (see the Figure 2). As can be seen, every stage has a set of activities that are planned initially to be reviewed, and a process of continuous assessment.

The project development team will make it possible to acquire and implement a range of knowledge, skills and attitudes considered essential in the workplace, such as: searching for information, processing and presenting digital information, exchanging knowledge and ideas, negotiating through different points of view, communication and social interaction, the academic network, decision making, individual and group planning (Guitert, M.; Romeu, T.; Pérez-Mateo, M., 2007) etc.

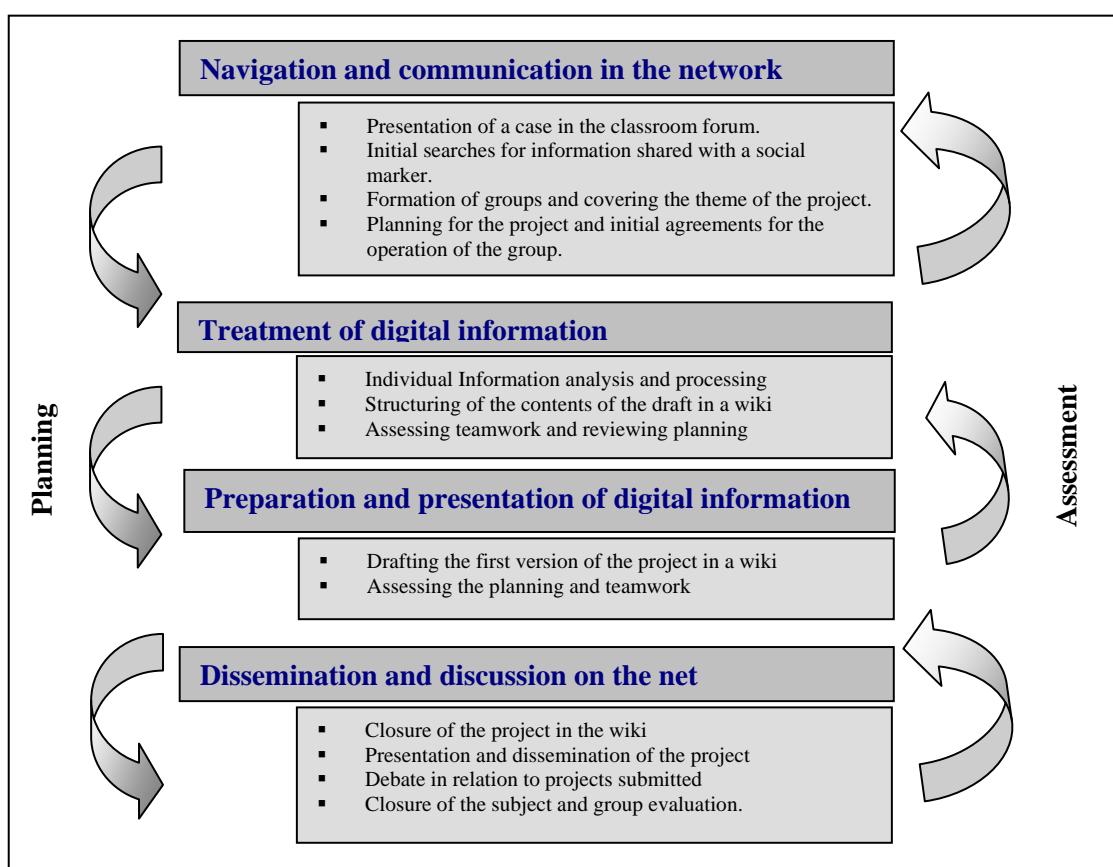





Figure 2: Stages of the virtual Project (own sources)

4.1.2 The resources and contents

The course develops from a set of resources in different formats (textual, interactive, audiovisual, etc.) working on the different competences. The content will all be reflexive, with methodological and instrumental tools that facilitate the acquisition of specific skills in ICTs.

Table 4: Contents

Type of content	Description	Content	Example
Reflexive	A critical, civic and secure use of the technologies to power personal, academic and professional performance.	<ul style="list-style-type: none"> ▪ Critical and rational use of ICTs ▪ ICT application in the field of study ▪ The social network ▪ The digital attitude 	
Methodological	Methodological guides for student competencies related to cross-over	<ul style="list-style-type: none"> ▪ Project planning and virtual management ▪ Group work in virtual environments ▪ Styles of communication network 	
Instrumental	Tools designed to guide the process of acquiring the expertise for work	<ul style="list-style-type: none"> ▪ Technology basics ▪ Searching for, locating, processing and presenting digital information ▪ The contents that are instrumental in implementing the tool in specific fields of study 	

4.1.3 Continuous assessment model

Evaluation is based on continuous assessment through a series of activities that assess the learning process. The achievement of each stage of the online project is linked to an assessment activity that needs to be understood globally, as they are all linked and interrelated.

Once the students finish the group project, they rate the process and the results obtained. They do a self-assessment and a group assessment. The teacher facilitates the process of group learning for the students, and helps them to reach the competences concerned. The teacher guides students in all the stages of the development of the project. He/she helps them to detect and to correct errors, clarifies their doubts, and gives feedback to students on each of the activities delivered.

The added value of competence in the use and application of ICTs in the academic and professional environment is that it starts in the compulsory subject in the first semester; it is reinforced throughout the whole degree, and is finally consolidated in the Final Degree Work.

4.2 Implementation analysis

We have implemented this in this semester (September 2008-January 2009) in three different degrees: Psychology (455 students), Law (321 students) and Humanities (141 students) with different specifications based on the necessities of each degree, and of those students, over 70% have passed the subject.

At the end of the semester, we sent out questionnaires to those students for them to rate the subject, and an average of 50% responded. The questionnaire comprises a set of closed-end questions relating to the acquisition of ICT competences, to the activities involved, to the tools

and resources used and to the allocation of time, plus other open-ended questions on the subject in general. Here are the most significant data on this project as a whole.

Student responses to the question on the extent of ICT competence acquisition were as follows:

Table 5: Competences

Competence	Low	Medium	High
1. Searching for and locating information on the net	0.27%	22.19%	77.53%
2. Processing and reworking digital information	0.55%	32.60%	66.85%
3. Presenting and disseminating digital information	0.27%	35.62%	64.11%
4. Acquiring communication strategies on the net	1.64%	28.77%	69.59%
5. Mastering basic digital-technology functions	1.64%	36.99%	61.37%
6. Planning and managing a virtual project	1.37%	31.51%	67.12%
7. Acquiring a civic digital attitude	0.27%	13.15%	86.58%
8. Acquiring net-based teamwork skills	2.19%	16.44%	81.37%
All the competences in all three degrees	1.03%	27.16%	71.82%

As regards the most highly-rated aspects of the subject, noteworthy among them is the students' perception of this subject as a good way of introducing them to the area of ICT competences: *"it is a subject employing a good method for making contact with other students and with the virtual learning environment."*

As for the questions on the role of the consultant, all the responses were very positive. Some students also added that *"the guidance, help and rapid response of the consultant when difficulties arose meant that the follow-up in this subject was a success."* *"The classroom notice board was an important point of reference for following this subject, since it gave us advice on working methods."* *"I wish that all the virtual subjects were as well guided and structured as this one."* *"The consultant's function is decisive for us not to feel lost in the vastness of the Internet."*

In relation to which elements are considered as keys for the creation of a group work virtual project, the majority responded: good initial planning, fluid and sincere communication, the participation of the members of the group as well as commitment, involvement, the cohesion of its members, and the agreements of the group. The possibility of working in an asynchronous way has also been an element that has helped the creation of the virtual project, although initially most of groups needed to be working at the same time. Specifically, some students remarked that *"The creation of a virtual project in group is very useful for learning to work in a team in a virtual environment."*

Another highly rated aspect was individual and group planning as an important component for undertaking the group's virtual project. In that context, the project-based working method facilitated the gradual acquisition of ICT competences: *"I rate very highly the partial production of the final project, which let me progress step by step."*

As for the question on the strong points and the weak points of the subject, it is important to note that working as a team in a virtual environment was one of the most frequently selected as a strong point of the subject, the good group dynamics, the willingness of group members to take on responsibilities and share out the work, and the readiness to work together. Some students remarked that *"the experience of working as a team was very gratifying."* *"Working in a team helped me a lot, and encouraged me to complete the project; the motivation provided by other students was fundamental."*

The students also rate highly having learnt to work asynchronously as a team in a virtual environment, the experience of group work, acquiring skills for working together, and the way the assessment was arranged individually even though the project was produced by group work.

As for learning to handle technologies, they cite having been introduced to and taken further into using and applying new web 2.0 on-line collaboration tools.

On the basis of that analysis, we are now in a position to design new subjects for ICT competences suiting the needs of the UOC's new degree courses to be brought on-stream in the new academic year which include Computer Science, Economics, Communication, Documentation, Tourism, Catalan Language and Literature.

5 Conclusions: key elements for a Digital Literacy proposal

On the basis of the UOC's experience, we are in a position to single out the key transferable elements for designing a proposal for achieving Digital Literacy in any educational context.

To start work on what is a key competence for present-day society through a compulsory subject in the first semester, since it enables students to sort out their ICT skills, and learn new ones through new tools and new resources.

The gradual acquisition of ICT skills can be arranged through project-based work. That way, a learning situation can be arranged that enables practical use to be made of various tools with a genuine ultimate aim in mind: creating a project.

Teamwork fosters personal and group commitment bonds and social interaction, work planning and organisation, information management, and the joint building of knowledge, all which are basic in the net-based society.

This collaboration process offers students strategies for finding out about and applying the potential of web 2.0 from a conceptual and technological perspective.

Introducing students gradually to using and applying new tools as and when required by their own real needs it is very important since in some cases they know how to use them but not how to apply them in academic or professional fields.

In this scenario, the consultants must be rather more than skilled ICT users: they must also be able to make the most of resources at all times and to offer strategies and teaching scenarios fostering ICT skills among their students. All this is only possible if the consultants share their experiences, interests and needs with other teaching staff in a virtual community.

For the future, it is essential to carry on investigating how to bring in the new tools that emerge, and how and when the various competencies become firmly assimilated in the degree course. Alongside that, we must bear in mind that ICT skills are not stable in present-day society: they may go on evolving or changing as ICTs and new social needs evolve.

References

Bates, T. (1999) La tecnología y el futuro de la educación. En Duart y Sangra, A (eds) Aprendizaje y virtualidad. Barcelona: Ediciones de la Universitat Oberta de Catalunya.

Castells, M. (1994) Nuevas perspectivas críticas en educación. Barcelona: Paidós

Castells, M. (2002) La dimensió cultural d'Internet, retrieved July 2002 from www.uoc.edu/culturaxxi/cat/articles/castells0502/castells0502.html

Commission of the European Communities (2005) Proposal for a recommendation of the European Parliament and of the Council on key competences for lifelong learning, retrieved Mai 2, 2008 from http://ec.europa.eu/education/policies/2010/doc/keyrec_en.pdf

Delors, J. (1996) Learning: the treasure within. Report to UNESCO of the International Commission on Education for the Twenty-first century, Paris, UNESCO

- European Commission (1994) Libro Blanco. Competitividad, empleo, retos y pistas para entrar en el siglo XXI. Luxemburgo: Oficina de publicaciones de las Comunidades Europeas.
- European Commission (2005) Proposal for a recommendation on key competences for lifelong learning. Brussels 10.11.2005 COM (2005) 548 final 2005/0221(COD)
http://ec.europa.eu/education/policies/2010/doc/keyrec_en.pdf
- European Parliament (2000) Lisbon European Council of March, retrieved Nov 2, 2008 from
http://www.europarl.europa.eu/summits/lis1_es.html
- González, J. & Wagenaar, R. (2003) (coordinators) Tuning Educational Structures in Europe, 2003.
- González, J. & Wagenaar, R. (2003). Tuning Educational Structures in Europe, retrieved June, 2008 from http://www.relint.deusto.es/TUNINGProject/spanish/doc2_fase1.asp
- Guitert, M. Romeu, T. Guerrero, A. (2006) Les competències genèriques en TIC pels estudiants de la UOC en el marc d'una assignatura. Jornadas virtuales EEES, retrieved October 2006 from www.uoc.edu/symposia/eees
- Guitert, M.; Romeu, T.; Pérez-Mateo, M. (2007) Competencias TIC y Trabajo en equipo en entornos virtuales. RUSC, Revista de Universidad, Sociedad y Conocimiento, 4 (1).
- Lankshear, C. y Knobel, M. (2003). New Literacies. Changing Knowledge and Classroom Learning. Buckingham: Open University Press.
- Michavila, F. y Calvo, B (1998). La universidad española hoy. Propuestas para una política universitaria Madrid: Síntesis.
- McIntosh, C. (2005). Perspectives on Distance Education. Lifelong Learning & Distance Higher Education. UNESCO publishing, Canada.
- Partnership for 21st Century Skills (2003). Learning for the 21st century: A report and mile guide for 21st century skills. Washington, DC: Partnership for 21st Century Skills, p. 4
- Prieto, J.M. (2002) Prologue. Levy-Leboyer Claude: Gestión de las Competencias, Gestión 2000, SA, Barcelona
- UNESCO International Sub-regional Seminar. UNESCO Institute for Education (2003). Annual Report 2003. Hamburg: UIE

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