

A New Learning Model for the Information and Knowledge Society: The Case of the UOC

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Abstract

When it was created in 1995, the *Universitat Oberta de Catalunya* (UOC) served only 200 students and offered two degrees. Today, it has expanded its activities to serve over 20,000 students and 16 official degrees. UOC also offers more than 250 continuing education courses for those wishing to pursue learning opportunities outside of UOC's official degree programs. As an innovative university, UOC offers a new way of experiencing education, one that is capable of providing answers to an emerging global and universal knowledge society.

Today's rapidly changing world requires revised learning models that allow the widest possible access to knowledge throughout life, in a continuous, comfortable, and simple manner, irrespective of the geographical constraints. Capitalising on the intensive use of new information technologies, UOC is proactively breaking the barriers of space and time by offering an educational model of distance education based on the use of the Internet. Students of UOC's Virtual Campus now have easy access to a useful and dynamic learning experience wherever they may be. More significantly, each student becomes the centre of a completely personalized educational process. All receive guidance from an accredited teaching team and have access to some of the most innovative didactic resources and services currently available.

From the start, UOC was designed to be an exemplar of a new generation of distance education providers capable of creating cooperative interaction not only between students and professors, students and learning materials, but also among students themselves. To support this goal, flexibility, cooperation, personalisation and interactivity are the four pillars of practice upon which UOC's model is founded.

Research is also one of the main objectives UOC has achieved in recent years. Through the creation of the IN3, a research Institute focused on analysing the impact of the Internet on society, the institute is home to a virtual Ph.D. programme, and Edu Lab, which is a laboratory of educational innovation that researches the use of e-learning.

The UOC is open to the world, having achieved this objective by maintaining contacts with the principal international knowledge networks. As a result, it is anticipated that the UOC will become an important actor in future e-learning initiatives.

Introduction

Unlike a number of Virtual University¹ projects, the *Universitat Oberta de Catalunya* (UOC)² did not evolve from traditional face-to-face university. Sponsored by the Catalán Government, UOC was instead designed from the outset as a distinctly new virtual university teaching initiative.

The institution was developed in partnership with key stakeholders from Catalonia's public and private sector. The intent was not only to be distinct from, but also to complement the traditional Catalán university system. Within Catalonia's higher education environment, UOC's unique contribution is to provide access to higher education university studies available to any member of society who, because of work, residence, age or other factors, must opt for more flexible learning systems to achieve their educational objectives.

History of Catalonia's Higher Education System and Case Study Organisation

This case study offers an overview of the genesis, development and subsequent consolidation of the *Universitat Oberta de Catalunya* (UOC), the first fully distance teaching university in Spain to deliver higher education via the Internet. However, to fully understand and appreciate the distance education experience in Catalonia, we must step backwards in time to the 1930s, when the *Mancomunitat de Catalunya* created the *Extensió Tècnica Professional*, a classical correspondence school focused exclusively on vocational studies. Nonetheless, prior to 1975, Catalán was not an officially recognized language in Spain, and therefore independent initiatives were simply not possible. But times have changed. Today, people from different regions of Spain live in Catalonia. More significantly, for the past two decades, an autonomous government called *Generalitat de Catalunya* has guided Catalonia, making it a unique and important region within the boundaries of modern day Spain.

Due to its geographic location in the northeast region of Spain, Catalonia has also become a melting pot. As the region of Spain that both borders the Mediterranean Sea and is closest to the rest of Europe, Catalonia has played a strategic role in the development of maritime commerce. More importantly, Catalonia is unique in that it has its own distinct culture and language called Catalán. Both Catalán and Spanish are spoken fluently; Catalán is understood by the 99 per cent of population, while 100 per cent speak Spanish.

Until 1995, the only distance education provider in Catalonia was the Spanish National Distance University (UNED), which began in 1972. However, because of its unique regional culture, linguistic history, and newly autonomous govern-

ment, Catalonia now provides quality traditional education, as reflected by its conventional universities such as: the *Universitat de Barcelona*, the *Universitat Autònoma de Barcelona* and the *Universitat Politècnica de Catalunya*. More recently, the *Universitat Pompeu Fabra* was created, while territory-focused universities such as the *Universitat Rovira i Virgili*, *Universitat de Girona* and *Universitat de Lleida* have also gained their independence. Since 1990, private universities have also been legally recognized in Spain. For instance, *Universitat Ramon Llull*, *Universitat Internacional de Catalunya* and the *Universitat de Vic* were all established in 1995. But when UOC came into existence in 1995, none of the above mentioned institutions offered virtual learning programmes.

We will now explore the university in greater detail. First the societal and institutional environments that influence UOC will be examined, including structural elements designed to manage UOC's new university model, the culture that must ultimately support and sustain it, and the processes that help guarantee UOC's quality of teaching, learning and research. The main focus of this institutional case study is the UOC Virtual Campus, the first of its kind – a truly virtual learning environment that has allowed the University to significantly increase its student enrolment numbers, without experiencing significant technical problems.

Following this analysis, the main aspects related to the evolution of the UOC, its pedagogical model, and its user community will also be examined. Important lessons learned by the UOC, and how these lessons are likely to guide further development in coming years will be examined. Finally, this article will end with a brief overview of future projects.

Modern History

In 1999, the Catalán Government officially endorsed a strategic plan called “The Digital University,” designed to facilitate university initiatives. A wealth of experience has subsequently been gained, and continues to be gained, in sharing courses in the same virtual space.

Institutional Environmental Demands at UOC

Faced with the challenge of establishing an innovative system of distance education to address emerging needs of its citizens, the Catalán Parliament approved the establishment of the *Universitat Oberta de Catalunya* (UOC) in March 1995. Headquartered in Barcelona, this new university was to be distinct from all others in that it was to focus exclusively on virtual education, a delivery mode that allowed previously shut doors to be opened to large segments of so-

ciety who, by necessity or inclination, chose to combine work, family, particular lifestyles or personal factors with virtual learning to achieve their educational objectives. This new university was also designed to complement to Catalonia's existing university system. As a fully accredited university, the goal of the UOC is to provide the highest quality university education based on distance learning, using the latest information technologies delivered via the Internet. UOC's students reside not only in Catalonia, but also throughout the world.

In recent years, society has become increasingly aware of the need to base education not only on traditional face-to-face interaction between a teacher and a student, but also in virtual classroom settings. In Europe, as elsewhere, a new paradigm is being consolidated and adapted to respond society's emerging needs, changeable and diversified in terms of age, activity, economic level, place of residence, and personal situation. UOC was created to address emerging needs related to the transition of Catalonian society towards lifelong learning. Based on a flexible and open education model, one designed to maximize advantages of current and emerging information society technologies, UOC was to be an efficient alternative of distance higher education with the following characteristics:

- A commitment to be rooted in the cultural, social and linguistic reality of Catalonia, while remaining open to the world
- Knowledge availability for everyone, despite time and space constraints
- A special focus on lifelong learning
- Use of high quality and innovative teaching and learning models
- Intensive application and use of new information and communication technologies
- A commitment to research and development in the emerging information society
- Service to the student and the society
- Cooperation and coordination with the country's university system
- An ethical commitment to society
- A new university organisational model

UOC has a clear worldwide service vocation. For this reason, in the year 2000 the university started offering courses in Spanish, allowing it to expand its academic boundaries to include the rest of Spain and to penetrate new markets in Latin America. English language course offerings are also coming soon to UOC.

The educational model used by UOC is based on an innovative teaching and learning system, which encourages students to feel part of the university community in terms of communicating and learning with others. Therefore, students acquire knowledge not only through what it is taught to them, but also by means of the interaction and co-operative work with other members of their academic community.

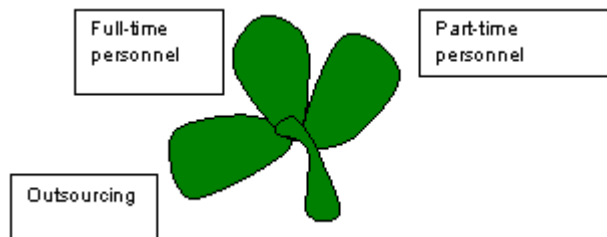
Distinguishing Structure, Culture and Processes of UOC

It was clear from the beginning that in order for UOC to succeed, it had to be agile, flexible, competitive, and cooperative and therefore, could not be organised as a traditional university. Rather, it had to be organised with an eye towards the future – a future in which the university would be responsive to both innovation and systemic improvement. Functioning as a not-for-profit foundation, the Catalán Government held the majority in its trusteeship. Other important trustees included the Catalán Chamber of Commerce, the Savings Bank Consortium, the Catalán Broadcasting Corporation, and a number of publishing companies. In response to previous proposals forwarded by the Foundation’s trustees, the UOC’s current Rector, Gabriel Ferraté, was appointed by the Catalán Government in 1995.

UOC Structure

As mentioned previously, the organisational structure and working style UOC differs in its organisation and working style from traditional universities. To achieve the flexibility necessary in its human resource allocation, UOC has adopted a “shamrock” organisational model shown in Figure 1.

Figure 1. UOC’s HR organisational model



In terms of fees paid by students, UOC is a state university, but in terms of its

internal operations, UOC is run more like a private company than as a traditional higher education institution. Recognising the need to be flexible enough to respond to the demands of a rapidly changing society, the university has adopted a new management and organisational model based on a process management system (PMS) that is implemented by three commissions: (1) Strategic Commission, (2) Educational Programmes Commission, and (3) Operational Commission.

The main reasons for adopting this model are: (1) to increase its client-oriented philosophy; (2) to avoid barriers by adopting a horizontal communication structure; (3) to generate better staffing systems to participate in the success of the project; (4) to improve internal information and communication systems; and (5) to promote quality assurance for all processes.

This non-bureaucratic management system implies agile co-ordination, generates participation and empowerment amongst staff, ensures communication and facilitates workflow, makes possible the integration of client and marketplace voices, and encourages continuous improvement procedures. In simple terms, it is vital that the PMS model be periodically updated and be public and collective. In light of changing organisational requirements, it also involves revisiting the institutional mission from time to time, periodic evaluation of management to implement improvements, and continuous self-assessments to optimise quality assurance.

The day-to-day business of teaching and learning is structured in the following ways. UOC's faculty is comprised of three different types of educators who carry out distinct teaching activities. Professors, for instance, are full time teachers who design the teaching plan of each subject and are responsible for overall course content. Counsellors are distance mentors who guide students through their studies. Tutors are distance teachers who are experts in given subjects. Instead of having usual face-to-face contact with students, UOC faculty members use communication technology to provide guidance, advice, and the tools to help students carry out their own learning. Instead of acting as sources of information, they act as facilitators of learning.

Depending on the number of students enrolled, counsellors and tutors are usually faculty from other universities or professionals within their fields of expertise who are contracted on a flexible term-to-term basis. Teaching coordinators train and coordinate full-time teachers, counsellors and advisors. Instructional designers who design the learning materials from a pedagogical and methodological point of view also give guidance to authors. UOC's management work as a team in subscribing to the EFQM,³ a business model designed specifically to help European businesses to make better products and to deliver improved services (in this instance, virtual education) through effective use of leading edge management practices.

Faculty and Staff development

The Human Resources Department operates a training plan for UOC staff that must be flexible, wide in scope, and structurally open in order to incorporate the new educational necessities as they emerge. The structure of UOC's training plan consolidates specific fields of knowledge corresponding to the evolving necessities of the organisation. Training programs are divided into areas such as development, abilities and techniques, training new staff, and languages.

Different modalities of the training plan may be classified into three areas. First, taking place during working hours, internal training addresses the needs of UOC staff who share the same technical or organisational skills. Second, external training is organised by other institutions for specific purposes. Third, professional training includes professional development seminars, congresses, learning exchanges with other institutions, short courses, and related activities.

Costs and Financing

UOC receives financial support from a number of sources. The Catalán Government covers part of the students' cost, accounting for about half of UOC's income. Student tuition and fees contribute a third of the total cost. The university makes up the remainder through provision of consultancy services, the management other programmes, and transfer of its business model and assessment structure to other institutions.

Research is funded by agreements with companies and by various public administration entities (Catalán, Spanish and European), mainly through research and development programmes. Companies also contribute to research programmes by sponsoring chairs, observatories and research projects. UOC has also signed agreements with public and private institutions in the region in order to share such resources as teaching staff, library resources and buildings. An important part of the investment budget is dedicated to production of content. Over the past six years substantial investments have been made in development of new multimedia teaching material as the core basis of its provision.

UOC has formed a partnership with a publishing company to meet the demands of moving into Spanish-speaking markets beyond Catalonia. Because there will be no public funds for this project, this initiative will be funded by student fees.

UOC Virtual Campus and its Technological Infrastructure

The *Campus Virtual*TM is an Internet based e-learning delivery and support system. It uses client-server Web technology and common interface to integrate a series of services and applications. Developed by the Information Systems Department at UOC, all *Campus Virtual*TM applications provide an efficient environment for tele-cooperation and e-learning, including a series of functions that parallel the structure of a traditional university. These functions include: access to online educational materials, library resources, and general academic and cultural information; student management enquiries service; and interaction with professors and other students through pre-defined communication channels (e.g., forums, activity spaces).

The software creates a widely shared learning space, fostering a sense of educational community where students connect to a virtual community from their homes; receive personal attention; interact with classmates, counsellors and tutors; gain access to university services; participate in virtual work or debate forums; and have the opportunity to come into contact with the Web's extensive university scientific and cultural community. The continuous assessment and development of this platform has allowed UOC to develop a marketable product that can be adapted to a variety of educational contexts. As such, this platform is of considerable interest to other institutions wishing to provide virtual university services.

There are two main characteristics to this platform, called *IDEASolutions*TM. First, *IDEASolutions*TM has been designed specifically for e-learning via the Internet. The tool allows the creation and management of complex training programs geared towards study, subject areas, and learning modules. In terms of ergonomics and intuitive interface, it is designed to be an easy to use environment for students, professors, managers, and administrators. The *IDEASolutions*TM administration tool aims to be flexible enough to manage learning environments across a range of company or departmental contexts, and it has a customisable interface. Moreover, it is language independent. Second, because it is installed on an Oracle Database, Oracle Application Server and Netscape Web Server, it has been developed with the most frequently used programming languages on the market and uses TCP/IP and HTTPS Internet protocols. It is adaptable to the Instructional Management Standard (IMS) for the management of training programs.

As a platform, *IDEASolutions*TM aims to provide a scalable, robust, and secure environment that allows for growth as the organisation increases the number of students, professors, managers, and courses online. It has an application programming interface (API), that allows the integration of external applications within the tool, and standardises access to the database. It also has a cus-

tomisable graphic user interface and allows input of various types of teaching materials.

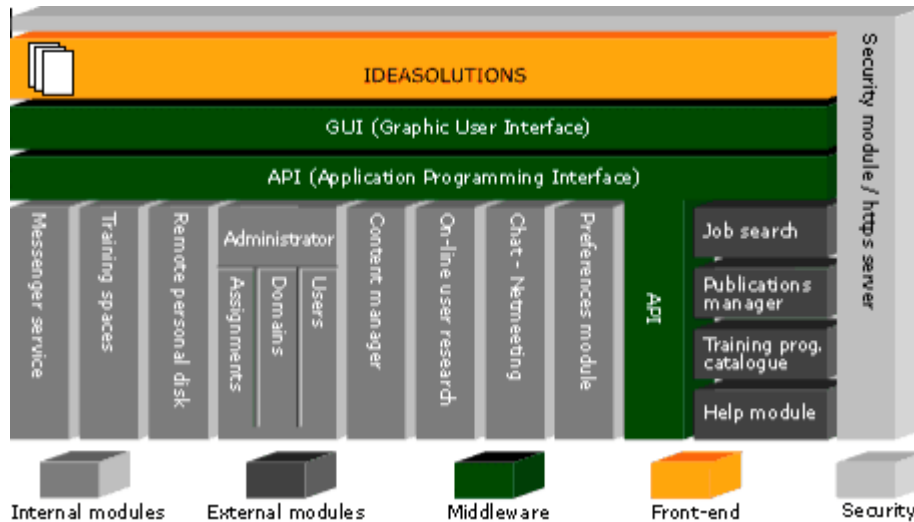
Table 1. Functionality and Features of the UOC Campus Virtual™

Functionality	Software Modules
Interpersonal communication and interaction between online members (individual, group, classroom, community)	Electronic messenger service, chat, debate systems and forums, message monitoring system at user level
Environment structure management, direct access to courses, modules, and work tools	Environment domain administrator
Advanced user management (student registration and modifications)	Administrator of environment users
Single-key, centralised access control to the environment and all its applications	Administrator of environment assignments, license modules, and access key and session key expiration; user validation system (user name and password)
Content management at user level	Remote personal disk system
Classroom-level repository of resources and information	Shared disk
Content management (teaching materials and common spaces) from the environment	Content manager
Integration of external applications	Application Programming Interface (API) system

Software Architecture

As demonstrated in Figure 2, IDEASolutions™ software is structured through layers and modules that embody user functions (messenger service, personal disk, chat, etc.) and additional applications (publications manager, help module, training program catalogue, multimedia resource manager). The layers interconnect the modules, control internal and external data transmission, and give support to transversal user services (e.g., graphic interface, integration of external applications through an API, access control, and security).

Figure 2. Modular scheme of IDEASolutions™ software



Hardware and Communications Architecture

The system uses one or more SUN servers connected to the Internet. Connections are made through the basic telephone network, ISDN, GSM cell phones, cable, and ADSL, among others. The system can therefore be accessed in remote environments, requiring only an Internet connection and a browser.

Evolution of UOC and Its Community

UOC initially offered two accredited degrees, Psychopedagogy (Educational Psychology) and Business Studies. Today, UOC course offerings include: Education, Business and Economics, Computer Science, Law, Humanities, Information Studies, Languages and Literature, Multimedia Studies, to name just a few. UOC also offers more than 250 different continuing education courses as Masters and Postgraduate Diplomas in the same fields.⁴ An international and interdisciplinary Ph.D. on Information Society has also been offered since 2000.

UOC course offerings are mainly based on the needs and demands of Catalán society, as well as the possibility of virtual delivery. One important aim of *Campus Virtual* UOC's Virtual Campus, therefore, is to give former students the option of completing any unfinished studies.

An important challenge is to develop a new pedagogical model that gives pri-

ority to learning over teaching. In this model, the teacher is no longer a mere transmitter of knowledge, but rather a guide in the learning process for which the student is ultimately responsible. The *Campus Virtual* (VC) platform allows for a widely shared training space. The need for a virtual community offering a group learning space that makes possible the creation of an active educational community, was viewed and supported from the beginning in order to allow all members of the community to interact through the VC. From their homes, by means of the VC, students receive personal attention, contact their classmates, counsellors and tutors, have access to university services, participate in virtual work or debate forums, and have the ability to contact with the world's university scientific and cultural communities.

The VC has evolved significantly from its inception in 1995. For example, traditional first-class mail was used for the University's original 200 students. By 1996, email provided a more integrated service for faculty and students. Between 1996 to 2000, additional technological improvements focused on supporting simultaneity of thousands of people in terms of content protection, teaching agenda, personal Web sites, more functional features to develop statistics, students follow-up, etc. Students can participate in the University's different social, cultural and academic activities, as well as access the University's administration services. Students can send messages at any time of day to classmates and professors, allowing them to share experiences, ask for clarification, or make suggestions.

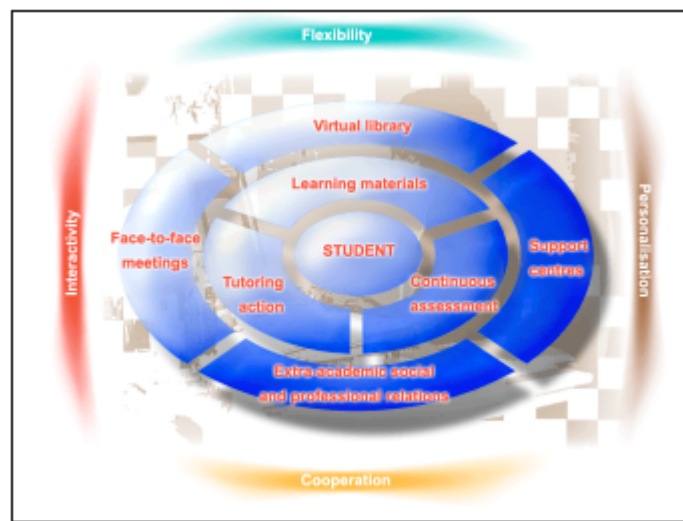
Teaching and Learning Model

Traditional universities are beginning to realise the advantages of these new technologies, and how distance higher education institutions are developing and using them to their advantage. The differences in the application of the technologies leads to three possible models focused on three main variables: (1) students, (2) faculty members, and (3) technological media. Three models evolve from this point of view (Sangrà et al., 1999): media-centred, teacher-centred, and student-centred. UOC has adopted a balanced model centred a little more on the student than on the teacher, and a little bit more on the latter than on the technologies, which must remain a mere tool serving the other two elements. Interconnecting university students, professors and central services, UOC's main objective in establishing this virtual campus model was to overcome time and space barriers, thereby offering students the highest degree of flexibility in order to carry out their studies.

UOC 's Educational Model

Student-centred models endow students with enough freedom to take advantage of the support offered, to plan their learning process and to regulate their own working rate. Every element in the pedagogical model is designed to serve students, allowing them to develop their own learning skills. In order to reach this objective, high pedagogical quality and emphasis on personalised support should be taken into account.

Figure 3. UOC's Student Centred Model.



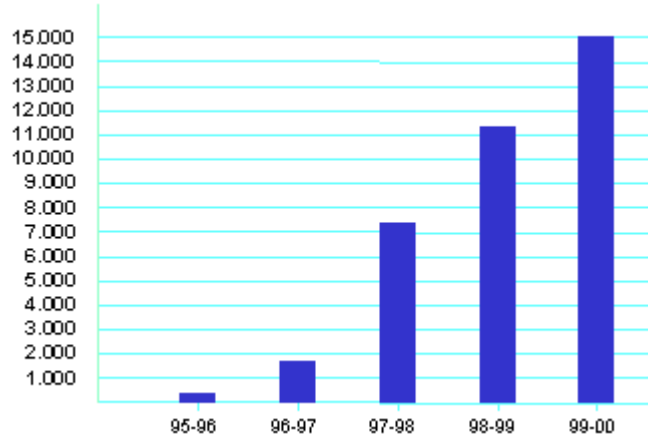
Students

The profile of a typical UOC student is the profile of an adult, one who can complete a degree at the same time that professional students do. Today, five years later, the first cohort of 200 UOC students are in the process of completing their degrees.

However, in continuing education programs perceptions are quite different. These shorter courses are market-oriented in their approach. With a 15 per cent dropout rate, a high degree of student satisfaction, good value, and positive recognition from stakeholder companies, the UOC considers these programs as highly successful.

Since the UOC is not a standard university per se, it is important to consider the particular nature of its student community, primarily an adult population.

Table 2. UOC Student Enrolment 1995 to 2000.



Most UOC students are adults between 25 and 45 years old (78 per cent), most work (95 per cent), and four out of ten have children. Sixty-five per cent have participated previously in university studies, which means that most are experienced students. In recognition of this, UOC is currently promoting a project called RAEP, the objective of which is to recognise and accredit learning students have acquired through prior experience. In this context, there is some history in Anglo-Saxon countries; nonetheless, in the rest of Europe, it is considered a major innovation. A RAEP pilot group was launched in September 2001, and expansion in coming academic periods is anticipated.

Learning Materials

The main role of the learning materials is to gather and transmit the basic content of the course and to present basic objectives, self-evaluation activities, summaries, etc. In short, they are designed to simplify and stimulate the learning process.

When the UOC was established 1995, the Internet, and especially the Web, could not deliver multimedia materials. For this reason, UOC initially sent traditional paper-based materials to its students. However, as technology progressed in terms of delivering rich information in a variety of formats, the University increased its use of CD-Roms and Web-materials, and teaching materials created by collaborative teams of designers and technological specialists (Guàrdia, 2000). Materials can be paper-based or multimedia. To date, more than 650 course materials have been developed by UOC.

Continuous Assessment

To assist students to achieve their learning objectives, the university employs a continuous assessment (CA) system during each semester. This evaluation is optional, as all students still must sit for their final exam(s). To achieve balance, course results are weighted between the assessment of the entire course and final exam results. UOC is currently testing new assessment models in order to increase its flexibility.

Students and professors have the chance to meet face-to-face twice each semester. The first meeting at the beginning of the semester serves as an introduction to the course, and the second meeting at the conclusion of the semester serves as a round-up session.

UOC is setting up a network of local support centres located throughout Catalonia as well as in Madrid, Seville, Valencia and Brussels. Each centre has a media library with all of UOC's multimedia and reference materials, as well as computers connected to the Virtual Campus. Local support centres also have meeting and study rooms students can use upon prior reservation.

The virtual library supports student training and allows students access from their homes to specific resources such as digital libraries, databases, etc., and information services such as documentation, UOC's virtual desk, and materials developed by the UOC Library. Students can also access other Catalán university libraries and services, or navigate through the World Wide Web.

For the UOC, the ideal is to create a learning system where students not only acquire knowledge and build their skills, but also learn to learn. Essential to attainment of this ideal is high quality materials that are carefully designed to be dynamic, intuitive and self-explanatory for students working within a distance education environment.

Intended and Unintended Consequences

UOC is carrying out a long-term study of their initiatives and the results should be available within the next two years. In general, the experience of the UOC suggests that a new type of learning organisation requires a new type of organisational structure, with its staff fully concentrated on a virtual or Web-centric approach to learning. In short, our view is that it is difficult to build up a new university based on an old-fashioned structure. As an e-university focused exclusively on providing learning experiences within the context of e-learning, UOC also benefits from solid support from public administration and from the complete commitment from its senior management at the strategic level. UOC uses a modern and innovative methodological teaching model supported by pow-

erful communication tools as a core effort in the creation an authentic sense of community amongst its students.

Because knowledge creation is considered one of the most important success factors, UOC is also promoting excellence in its field of expertise, namely ICT and its influence on society with special emphasis on e-learning: new ways of delivering learning in an interconnected world. However, this objective can only be achieved through collaboration with other universities, institutions and companies. In short, co-operation underlies all UOC's activities.

Other factors contributing to UOC's success include:

- Its consolidation in Catalonia
- Its is a pioneer in offering fully online accredited courses
- It is the only virtual university offering courses in Spanish
- It offers programs that meet market demand
- It entered the marketplace at a key moment of Internet history

Implications of the UOC's Experience

Currently, the University's first priority is to increase student numbers in Spain and South America. Therefore, UOC will concentrate on the subject areas of business, technical studies and continuous training. It is anticipated that this goal will help break down barriers of time and space, enabling UOC to become a major player in Latin American higher education. In Catalonia, UOC aims to increase the number of courses offered and to maintain its status within the Catalán university system. Likewise, efforts will be focused on research through the IN3 Institute.

UOC is now at a stage in its evolution when quality concerns are pre-eminent. In recent years, traditional universities have witnessed increased demand for online learning, something they view as a threat. These same universities also question whether virtual universities can meet good quality education standards. To address these concerns, UOC has faculty and other personnel involved in support services. As well, university management is looking for and establishing quality indicators to measure UOC's contribution to education. A list of UOC's contributions, as well as its leadership in a European project called "Benchmarking of Virtual Campuses" (BENVIC) can be found at <http://benvic.odl.org>. To create a favourable image and brand recognition for the university, UOC's faculty and staff are also working with key universities and research institutes from several European countries including the United Kingdom, Italy, Finland, Germany, Switzerland and Belgium. Furthermore, some new European and American

universities are in the process of joining UOC. It is anticipated that these efforts will contribute to a complete and reliable picture of distance education as a whole.

Increased flexibility is one of the major issues faced by traditional universities today. Indeed, all students – including those who study at a distance – encounter challenges during the study process. To increase student program completion rates, traditional universities could extend the same kind of flexibility that the UOC model offers. They could also achieve this flexibility by encouraging cooperation among students, raising levels of interactivity of learning materials, and personalising student work plans and curricula.

Currently, the concept of the *Metacampus* is being developed through advances in technology. As such, automatic translation and a multi-dimensional approach, the virtual campuses (Cabrera & Sangrà, 2000) are being examined, as reflected in a two year long project supported by the European Commission.

The development of a new version of UOC's Virtual Campus is another important projects to be undertaken in coming months. Because it is likely student numbers will continue to rise, the Virtual Campus will need to be able to respond to requirements for new levels of functionality. Furthermore, the new version will be adapted to integrate emergent technologies, such as increased bandwidth, mobile telecommunications, etc. With this upgrading of the *Campus Virtual*, UOC's management faces the challenge of managing knowledge inside the organisation itself. Accordingly, UOC has launched the "K2 Project," the objective of which is to organise a virtual space where shared knowledge is easy to find and easy to manage. The K2 Project will achieve this objective by focusing on standardisation and re-usability of the learning material contents ("learning objects").

Although UOC's Virtual University is still in its infancy, its experiences are both broad and enriching. Backed by the confidence of the Catalonia Government, diligent work of the University's personnel, and growing student participation, UOC is achieving its goals and realizing its mandate premised on being agile, flexible, competitive and co-operative. UOC views its future as an opportunity to continuously innovate and improve upon its system.

Conclusions

E-learning is experiencing tremendous growth in Spain. This dynamic is driven by a number of factors, the first and foremost of which is an increasingly competitive society's need for greater and more flexible learning opportunities to achieve continued growth. This explains why so many companies, especially those related to technology, are focused on training. Second, Spain's decreasing birth rate is threatening to lower student enrolments in coming years. While

some believe this will be an opportunity for universities to reduce student/tutor ratios, more realistically, it will likely result in a dramatic reduction in public funding. Therefore, most public universities are looking to widen their customer base and to establish new programmes in the private sector. Third, without abandoning face-to-face models, conventional universities will introduce ICT in the classrooms, offering “virtuality” as part of their curricula. As Tait and Mills predicted in 1999, the hybridisation and convergence between traditional and distance education will become a reality. Fourth, accessibility to communications is becoming much easier for many people. Costs are dropping and the number of Catalonians with home Internet access is rising daily. It is currently believed that regional bandwidth problems will be eradicated within two to three years and the rapid spread of mobile communications is expected to bring new possibilities for e-learners.

As a pioneer, UOC expects to be one of the most important players in the rapidly growing world of e-learning. UOC can fully contribute to the growth of e-learning by sharing its experience with others. The university is rapidly becoming a relevant and profitable partner not only for its e-learning initiatives, but also for its research initiatives through IN3, its research institute.

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Endnotes

1. As Virtual University we mean a fully distance teaching university, delivering education through an asynchronous mode based on the Internet.
2. It is the original name of the university, written in Catalán. It means “Open University of Catalonia.” The acronym UOC will be used along this article.
3. European Foundation for Quality Management (www.efqm.org)
4. [http:// www.uoc.es/fcontinuada/esp/ index.html](http://www.uoc.es/fcontinuada/esp/index.html).

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