



## **Learning in the knowledge era: On-line universities as harbingers of change**

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I will organize this intervention in two points: The need to rethink learning in the knowledge era, and some thoughts about on-line universities as harbingers of change. As a sociologist, I often use the limits of things, the avant-gardes to foresee the future. And in our context, the avant-gardes are people under 25.

Let's start with the first point

### **1. Learning in the knowledge era: Rethinking higher education**

At the last year UNESCO World Education Conference, the Minister of Human Development of India pointed out three historic global realities that warrant a rethinking of higher education:

1. Global economies.
2. ICT's revolution.
3. The knowledge society and its different approach to knowledge.

By one hand, **Global economies** are more and more interdependent and increasingly integrated, and by the other hand, difficult times can be a catalyst for change, and universities at different points in history have acted as the driving force for change. We all know that well educated citizens produce a stronger economy, better health, more engaged communities, lower unemployment, lower crime rates, enhanced global understanding and tolerance, more competitiveness, greater adaptability and innovation, and a richer cultural life.

Concerning ICT's, **ICT's revolution** has transformed delivery systems in higher education, or, in other words, ICT's have changed the access to knowledge. The change of millennium has brought with it a new model for social organization linked to technological revolution, and ICTs in particular. ICTs are not the protagonists of change, but without them the type of society we live in

would not exist, because the network society and ICTs are two sides of the social structure that marks this age, the web.

As has happened in other processes of structural change, the new society is born out of the old and coexists with it, and ways of organization and of life from the industrial age and even from agrarian societies intermingle with processes resulting from the ongoing transformations. Now then, to the extent that the new society is born out of that which precedes it, and furthermore does so within a cultural, institutional, historical and diverse economical context, the emerging society adopts specific forms and processes according to the social matrix from which it derives. That is, the network society is a planetary social form but with specific characteristics in each one of the societies in which it is manifest. But in the same way that not all people, activities and territories base their organization on the structure and logic of the network, all of them, wherever they may be found, are conditioned, as far as the fundamental aspects of their lives are concerned, by what takes place inside of the global or local networks. These networks are responsible for the configuration of the network society, because they include and organize the most essential components of power, wealth, knowledge and communication in our world. This is neither good nor bad in and of itself; simply, it is our world, and the consequences will be good or bad depending on what we do with this society and with the instruments it offers us.

The university has played, and continues to play, a central role in the development of society. It ceased to be, decades ago, the institution for the education of the industrial society elite and has become an open university, a university of the masses. As an educational institution, it now provides training to the great social masses and prepares them to live in a society in constant change. My question, however, is: has the university learned how to transform itself?

My hypothesis is no, it has not learned to transform itself as an institution; that level of determination it brought to its participation in social change is missing. We are, then, faced with an institution shaped by persons who are active and committed to social change, capable of provoking great transformations out of generated knowledge, but continuing to function as an institution based on a traditional structure and methodology. The university, like most institutions, centers its transformation on survival and on competition with other institutions.

Meanwhile, the nature of teaching has remained practically unchanged for centuries, and an educational system designed for assembly-line education lives on. Globalization and people's mobility, multiculturalism, technological advances, the end of distances, financial crisis, necessary efficiency in the management of resources and, finally, a new type of student, born in the age of the

Internet, will have an impact, sooner or later, on who teaches and how they teach, on who learns, and on the mediums and organizational structures used to teach and learn

For years, we have been studying the effects of ICTs on a wide range of aspects of our lives and institutions. We have looked at how to manage technological convergence, without realizing that this convergence takes place in our minds and in our social interactions and without understanding that this convergence is not the end, but the beginning of a great cultural change. But how will this cultural change affect the learning process? I am convinced that the educational discourse has ignored the receiver, and failed to take into account the enormous cognitive, emotional and relational changes that the influence of ICTs has brought on in our young people and in ourselves.

We see the web as an infinite warehouse full of disordered information of more or less use. Whereas our young people live on the web and do not understand most of the questions we ask them.

And finally, the third point raised by on the UNESCO World Education Conference: **The knowledge society and its different approach to the knowledge.**

In the urgency to open new frontiers of knowledge (green technologies, nanotechnologies, biotechnologies....) we need to find flexible ways and as Edgar Morin wrote in his book *La Tête bien faite* we need to solve this growing mismatch between our discordant knowledge sliced into disciplines, and problems that are increasingly multidisciplinary, cross-dimensional, transnational, global and planetary. It is clear that our future is interdisciplinary and interdisciplinarity needs flexibility.

To give a response to these challenges we need to adapt ourselves to change. Reflecting this need, the Indian Minister invited the global community to start thinking about education as a global good, an, more concretely, he asked higher education institutions to understand that time has come for education to reach students rather than keep students to reach out to institutions.

Even if, as universities, we adopt a skeptical attitude, that is going to happen....and the change will be lead by the private sector, by which, I don't mean private universities, but alternative education providers, private business that are already operating as knowledge business brands. The higher education marketplace is also changing rapidly with wholly online institutions, for-profit universities and businesses offering higher education and creating competitive challenges for

traditional universities. In this context, the traditional institutions have been slow to make decisions to adapt to change and have held tightly to outmoded models of deliberation when action is required.

We have to accept the fact that knowledge is no longer restricted within the boundaries of universities or educational institutions. Educational institutions no longer have the monopoly of education. But this doesn't mean that educational institutions are going to disappear; it certainly implies that we have to open and adapt to new spaces of learning and research.

An example is the inclusion of trade in educational services in the new services negotiations of the General Agreement on Trade in Services (GATS). The GATS is promoting the liberalization of international trade in services, including trade in educational services. Some argue that the GATS can help facilitate the entry of private and foreign tertiary education providers into countries where national capacity is insufficient. If you observe what happens in Africa, for instance, you are going to see that multinationals of knowledge are operating there. I don't know if that is good or if that is bad, but one thing is clear: they are not universities, they are not educational institutions. They are business.

Perhaps, the first great difference we should underline between them and us is that we believe in the transformative role of education. But, which is the role and responsibility of universities on this scenario?

If we really do feel that our world needs a new template for growth and that education is a powerful tool for transformation and a factor for well-being, then, we need to place it at the centre of the social debate and provide it with the necessary resources to help deal with the challenges it faces. In short, it is time that we make educational excellence a priority. The future is at stake and there is no more time to lose.

As Dr. Mayor Zaragoza mentioned yesterday, to construct a new economy, transform society and fight for equity, we need the support of knowledge and the backing of educational institutions. Change does not usually come from natural resources. It comes from ideas – and those ideas come from well trained people. I like very much a quote of Richard Davis, vice chancellor of Swansea University in Welsh: we should take advantage of recession to create an economy where the wealth came from our minds, not from our hands. (in catalan sounds great – ments/mans).

It is in times of both, social and economic crisis, that it becomes clear that investing in quality education is the best strategy for improving people's employment opportunities, their future well-being and the well-being of society as a whole. There is a consensus that the opportunities for growth in the future will depend on high-tech and high-value-added products and services, which will require a highly qualified workforce.

Today, and more specifically in our context, problems with education tend to boil down to quantitative issues: bigger budgets, more faculty, more or fewer credits, and more or less education. However, I feel that the answer goes beyond investing more public money in the education system (which is also needed). It is a question of being brave and innovative because we are in a society that is changing rapidly, a society that needs new answers to the challenges of education. We need to teach longer, we need to teach better and we need to teach more people and, to do so, educational institutions have to change. We cannot respond to the challenges we face if we do not know how to make the educational system an agent for innovation.

Although the mission of higher education has remained the same over the centuries, the context in which that mission exists is changing dramatically. In these times of openness, we are still dealing with a monastic institution that has survived due to inertia, rather than vital academic programs adapted to the needs of the times. What are the forces that affect our institutions? The crucial factors that are shaping the future of universities are, among others, democratization of access to knowledge leading to a larger and more diverse student body; an explosion in the number of courses due to specialization; the need for a lifelong learning strategy; the taking on of a third mission, that of being a socioeconomic driving force; the culture of assessment and accountability, and, more generally, globalization, multiculturalism and technology.

Therefore, the objective of education is, or should be, to improve citizens' quality of life, contributing to the development of people, society and the economy. The studies and reports conducted by all kinds of institutions around the world clearly show that in the twenty-first century the leading economic powers will be those that have been able to convert themselves into learning societies, making lifelong learning their main aim. To do so, they will need educational institutions that are strong enough and flexible enough to adapt to these new times and new demands. Universities have to be able to respond to the needs of society.

However, we cannot transform society if we do not first transform universities and this leads me on to my second point: the title of this intervention.

## **2. On-line universities as harbingers of change**

In 1998, Peter Drucker predicted that big traditional universities (distance or residential) will be relics within 30 years. Why? In part, because the emergence of on-line universities, more flexible, more accessible and more adaptable to our changing world. But flexibility, access and adaptability are not enough. There is an important gap between the model of learning offered by traditional universities and the natural way that young people who have grown up digitally learn. The spread of Internet access, broadband, social networking and the use of collaborative tools have been connecting people in new ways much more related to mentoring and expertise than to old time lecture notes. All of these must be intelligently and sensibly adopted and incorporated in educational models to enrich the learning process and to keep it relevant to the new digital generation. It is time to put our emphasis on learning, not on teaching anymore. This represent a big change in our framework of thinking about the knowledge era and in the very foundation upon 21st Century learning is build.

Let me spend some time on this issue, the digital students and their demands.

Over the last academic year, I have attended a number of international meetings with ministers, presidents and managers of educational institutions from around the world. At every meeting, concerns were raised regarding the change in the type of students going to primary, secondary and tertiary education and about faculty resist efforts to keep the curriculum up-to-date and students start abandoning the traditional classroom to search the Internet for celebrity professors, quality content and collaborative learning from collaborative knowledge, preparing them to excel in exams. Where content was once bound by time and place, it now pours freely from an abundance of sources. What used to be a one-way conversation, teacher to student, has become a multi-party conversation between teachers, students, external peer groups and open content. Don Tapscott writes that the old-style lecture, what he describes as the broadcast model, with the professor standing on the podium in front of a large number of students, is still a norm of university life on many American campuses. This teacher-focused, one-way, one-size-fits-all model leaves the student isolated in the learning process. These students have grown up in a digital, interactive and multi-mode world. They want a different kind of learning. They want to inquire, and not just rely on the professor. Our digital students want a conversation, not a one-way lecture. They want an interactive

and participatory education. Our students are making new demands on our universities and we cannot ignore them. These changes are placing unprecedented demands on educators, administrators and students alike as the learning process changes faster than institutions can react.

Institutional approaches must respond to today's challenges and our higher education institutions must shift from industrial society practices to knowledge society realities and needs.

The dynamics shaping the 21<sup>st</sup>-century educational landscape show that where the traditional educational model was fueled by content, the new educational model rests on mentorship. The traditional educational model is based upon the assumption that educational content is scarce. Today we know that what is scarce is not content, but sense-making. In the coming years, mentorship and guidance will be our most valuable and limited educational resources. Thus, student-centered learning is moving from an abstract idea to a reality, and the role of professors is shifting beyond instruction to sense-making.

It seems clear that higher education institutions need to become more change-capable. Our universities often spend too much time discussing what should change and too little time figuring out how to make it happen. Somebody wrote that "good ideas with no idea on how to implement them are wasted ideas". Personal (individualist) and group (corporatist) resistance continues to grow within our institutions, creating a culture of resistance to innovative change that may end up strangling our universities. The tension between the techno-cultural redesigns that we need and that our students demand, and the academic and bureaucratic resistance, represents a great barrier in our attempts to move towards a university model that can respond to the needs of our society.

Our young people under 25 have grown up at a time when mobile phones, internet, Twitter and Facebook are as normal as fridges were for us. This immersion in the interactive at a formative stage in their lives has affected the way they think and learn.

Yes, even if we don't like to assume this reality, there is an ever-growing division between the learning model offered by universities and schools and the natural way young digital students learn.

It is easy to assume that we know what our students need, but we should to understand them and not simply to assume that digital students are like we were. Our tools and their tools are totally different. The gap between them and us is immense. So, we should start asking the right questions. I just start doing research on that issue and I don't have the right questions, I just have one very first question: **Who are our learners?** When I ask that question to my staff they send me plenty of data

about demographics. This is useless. Beyond demographic information we need to understand student practices in their daily life, student new values, how they learn best... And the only way is to start a dialogue with them to better understand their perspectives. Doing assumptions is risky. I could put you a lot of examples of risky assumptions on this issue. Big investments without any result. The cause? A lack of understanding. (PIC)

So, we need **to understand** how today's learners are different from us (or may be the same in some aspects).

A second question surely is: **Which are their needs?** ICT's alone are not the solution. That has been a risky and expensive assumption. The massive investment on computers at primary and secondary schools is not the solution. They are useless if curricula and the learning model used is the same than half a century ago. Today students are experiential information seekers and learners. They learn in an interactive and collaborative way in their daily activities. Maybe because of that lectures may not be an optimal learning methodology. If there are community oriented and network builders, providing peer to peer experiences may be much better than individual activities....and that is just an example.

Observing the way they live, behave and manage information could give us some important clues to how we can improve learning. When people ask me what to do to start understanding my answer always is: Look at your children room. I recognise that for us, the academia, that is an embarrassing question. But to understand we need a great dose of humility because we are certainly living a revolution that is going to change our world, that is already changing our world, and the leaders are they, not us.

Digital students want a more interactive education. Students want and need another type of teaching, and if we ignore them, they will end up ignoring us. Now more than ever do the words of Montaigne make sense: "rather a well-made than a well-filled head". John Zogby, a pollster and commentator who has developed the concept of today's young people as "First Globals", wrote in a recent article an example of the Montaigne words: "*Young people are not defined by facts they know but by their awareness. They may not be able to immediately find Darfur on the map, but what sets them apart among earlier cohorts of twenty somethings is that they know there is a Darfur on the map*". That is the reality we live. Deny it is totally useless.

It is now time that we realise that we no longer have the monopoly of knowledge and that the web has become the dominant infrastructure for accessing to it, being, at the same time, the global platform and forum for people's exchanges. Universities cannot live with their backs to their students, when more and more of whom are increasingly calling for real changes and reforms.

They believe that education is essentially an interactive and transactional process. We must, then, open the door and open the way to new student-focused learning methodologies which are accessible and collaborative, and which make the most of strategic use of digital technologies.

A third important question is : **Which kind of institutions are needed to face this reality?** Let me put on the table just some values that perhaps will help us to understand and to start answering questions: Traditional learning institutions are lineal; 21<sup>st</sup> century learning institutions should be multidimensional. Traditional are stable. 21<sup>st</sup> century are in continuous change. Traditional have fixed structures. 21<sup>st</sup> century must be flexible. Traditional are based on individualism, 21<sup>st</sup> century are based on collaboration. Traditional are based on consistency, 21<sup>st</sup> century are based on dynamic reconfiguration. Traditional have been very good for the last centuries, but 21<sup>st</sup> are necessary for our current context.

So, what kind of learning for the 21<sup>st</sup> century?. We have to think and work much more about that and before to understand the first question about who are our learners. But let me talk a little bit about new learning models.

Learning models have not evolved sufficiently for traditional universities, whether they employ traditional classroom or distance learning environments, and with each day it is becoming more difficult for them to fulfill their missions. We, the institutions and persons involved in higher learning, must redefine our priorities and the challenges and opportunities we confront, while always working to evolve towards a model which allows to impart knowledge and teach students how to access knowledge. This is enormously difficult because such a mission clashes with the methods followed until now. Active participation on the part of students integrates them into the process of the creation of knowledge. Our Google generation learns by doing, achieving the experience necessary to reason, construct strategies and give meaning to practical situations.

The book *The Kids are Alright: How the Gamer Generation is Changing the Workplace* (Beck & Wade 2006) presents multiple cases of rapid and creative decision-making on the part of the digital

generation. For example, they are highly trained to learn from mistakes. They make mistakes and begin again as many times as necessary, because they know that, in the end, if they are persistent they will achieve their objectives. This attitude is coherent with that which leads them to question the instructor and trust in the team, or to analyze maps or construct strategies. An interesting value affirmed by the book is that in videogames there are no hidden moves or betrayals. Everything is above board. In every case, success, I repeat, is related to having a good strategy and a good team.

Redefining higher learning and its role in a globalized world, in which global challenges require global solutions, continues to be a challenge. The institutions of higher learning which were created in order to cover local needs now face the challenge of covering needs which go beyond the local framework.

The universities which have been born out of, and which move within, other environments have had to adapt to them; we no longer perceive these environments as a threat, but rather a magnificent opportunity to rethink ourselves.

Maybe I should not do so but excuse me if I introduce a few words about my university. Created by our autonomous government 15 years ago, (we are teen) the Open University of Catalonia has a dynamic and flexible model. It has been conceived to adapt and evolve constantly in time, as the Internet and society of knowledge evolves. In this regard, it is a model that guarantees that students learn in a similar way to how they work, they communicate with each other and they have fun on the Web. As a result, one of the added values of this model is that it guarantees the digital competences of students.

It is a model that revolves around the design of spaces, resources and dynamics that favor learning. The student and his/her learning activity is at the centre of the teaching activity.

The assessment is a perfect strategy integrated in the learning process, in the sense that it is conceived as a mechanism to learn and give reciprocal feedback of this process. That is why we say that UOC assessment is continuous and educational. In this regard, the assessment activities foster the achievement of learning objectives and competence acquisition. In this way, the student can be assessed while doing his/her activity and obtaining competences.

The model is oriented toward collective participation and knowledge building from an interdisciplinary plan and it is open to the students' learning, social and working experience. It is committed to collaborative learning through methodologies that involve resolving problems, project development participation, combined product creation, discussion and enquiry.

The student is accompanied at all times by specialised teaching staff whose main functions are

guidance, advice, support and dynamism during the whole educational process.

- The counsellor guides the student through their learning process in a personalized way.
- The tutor supervises the student's progress in each of their subjects.
- The course plan of each subject defines the learning process, the method of working and the evaluation criteria.
- The continuous assessment guarantees the academic process and the development of the course.
- The Virtual Campus is the support and learning area from where the student can access resources and interact with the university community.
- The multimedia learning materials complement the specific material for each subject.
- The virtual library gives access to all of the information resources.
- The university community services include resources, activities and advantages to assist with the student's integration into the UOC.
- The support centers offer personalized attention, study resources and a place to meet with other students.

All of these elements combine and become interrelated in the Virtual Campus of the UOC. The life of the university community takes place in the Campus, and this large community of more than 100 000 people is made up of students, teachers, researchers, collaborators and administrators. The student has access to the virtual classrooms through the Campus. The classrooms are learning spaces where the teachers, classmates, content, activities and communication tools necessary for studying and learning can be found.

In our online study programs, the UOC places the student at the centre of the learning process and provides him/her with the necessary distance learning resources for interaction with the whole of the university community.

Learning at the UOC is oriented to responding to the needs of the student and takes into account the demands of the professional environment and technological and social evolution.

\* *The resources*: they include the content, spaces and tools necessary to carry out the learning activities and their assessment.

\* *Collaboration*: understood as the set of communicative and participative dynamics that favour the combined building of knowledge among classmates and teachers, through teamwork to solve problems, develop projects and group product creation.

\* *Accompaniment*: this is the group of actions carried out by teaching staff to monitor students and to give them support in planning their work, in resolving activities, in assessment and in making decisions. At the same time, the student receives personalized treatment from teacher accompaniment, s/he enjoys continuous guidance during his/her academic path and s/he establishes relations and communication with the educational community.

The model is also flexible because it is open to the implementation of a very diverse range of learning activities in accordance with the competences worked, the area of knowledge or the specialization level that the student is studying.

This means that the dynamics and resources that these activities also need to be very diverse: heterogeneous and adaptable to a large scope of learning needs and situations. In this regard, the UOC is committed to providing the learning activity of the student with the most advanced technological and communication elements, some of which are:

- \* social tools that facilitate collaborative work (blogs, wikis, social markers, etc.),
- \* multimedia content that enables multidimensional content to be offered,
- \* advanced communication systems, both synchronous and asynchronous, which provide flexible and clear communication adapted to each situation (videoconference, collective intelligence systems in forums, etc.),
- \* 3D virtual environments based on video games that permit interaction with people and objects simulating real situations, or
- \* access to teaching through mobile devices to support mobility.

Flexibility and a proper use of TIC will allow traditional universities to improve their capacity for innovation, as has occurred in virtual universities, at least in the case of the UOC, and will allow them to face the greater degree of complexity and interdependence which characterizes the new environment.

Online universities such as ours have been an agent for change, for better or for worse, but in any case an agent for change which has introduced elements of flexibility and adaptability from government structures and from management and learning methods. In any event, we have introduced a strong transforming tension. Of what are we speaking? Allow me to cite a number of

points for consideration:

- ICT's have provoked important changes in learning models and have generated the need for innovation and leadership at every level and stage of academia.
- Higher learning deals tackles the offer of services and contents destined for mobile and personal devices.
- The emphasis on collaborative learning pushes the educative community towards developing new forms of interaction and evaluation.
- The academic world is confronted with the need to provide digital competence to its members, thereby allowing them to generate content, using tools already available to them.
- The growing use of the Web 2.0 and social networks in combination with the potential offered by collective intelligence and mass content production on the part of the entire world changes the practice of learning, gradually but inexorably. We need look no further than Facebook, with its 120 million active users, in 20 languages, 400,000 entrepreneurs working on new applications, 24,000 new applications, 140 each day.
- The way in which we work, collaborate and communicate with one another evolves as borders become more flexible and globalization grows. It does not matter where students and teachers are. I myself have administered tests from South Africa and have participated in classroom debates while in New Zealand...
- Access to contents and their transportability are growing as their size shrinks and as they increase in power.
- The gap between the perception of technology on the part of students and professors continues to grow. Each group sees and experiences technology in quite distinct ways. Students have adopted, en masse, social technologies such as Facebook or systems for the diffusion of contents such as You Tube. These technologies are still a mystery on many traditional campuses, in institutions which employ traditional classroom settings and in those which employ distance learning environments. Web instruments with a clear potential for use in learning suffer the same fate: the traditional teaching staff tend to be unaware of tools such as Google Docs or Swivel. This is about learning or working in a different way. Students' expectations are important, and not meeting them carries consequences.

Any discourse or any text about the university, today, not tomorrow or the day after, must begin by recognizing that, if one thing is certain, it is that the university must transform itself, and that ICT's can help bring transformation about.

At this moment, I'm preparing an article or better, a case study, with my colleague Begoña Gros, about the changes on our students profile. I mean, on UOC's students profile. Full time students coming to us as their first choice, after the high school is growing and growing and we do nothing to have them. We have been created to reach part time students, to working students in their thirty something.

And now let me to open brackets to be clear: I believe that the future of higher education is not 100% on-line. 100% On-line is for specific students with specific needs. If we have now young students is because traditional higher education institutions must change and accept that times are changing. The future of higher education is a blended future. I close brackets.

Concluding. We believe that the future of learning models, traditional or online, will have to contemplate all of the reflections which already form part of the environment in which the students who are arriving at our universities have grown up. The paradox is that in order to rethink the learning model along these lines, a particular kind of institution is required, an institution able to adopt values such as:

- **Flexibility** in the organization, the normatives, the processes and the applications.
- **Autonomy** on the part of the professors, researchers and students, in relation to management procedures.
- **Transversality** in the teaching activity, the management of contents and the technological resources.
- **Interoperability** of information, contents and tools, which would facilitate access to different applications and to distinct uses.
- **Opening-up** and utilization of the possibilities presented by the Internet, which would facilitate the diffusion of content and the relationship between the university and society.
- **Multimediality** which would allow for the creation, diffusion, reproduction and modification of content in distinct formats and multiple platforms.

And all of this, with the necessary quality which would allow it to stand out in a global and competitive environment.

If we compare and contrast these values with those listed in the study sponsored by the McArthur Foundation on education and the students of the 21<sup>st</sup> century (Jenkins 2006), we will see that each set represents values which the system cannot provide without the involvement of digital means. (Play, Act, Simulate, Multi-task, Appropriation, Distributive Knowledge, Collective Intelligence, Common Sense, Multimedia or Transmedia, Connection, Negotiation.

Over the last seven years, the New Media Consortium (NMC) and EDUCAUSE Learning Initiative have published a report on the trends seen in emerging new practices and technologies. The 2010 edition highlighted the trends forecast for the next five years and stressed those challenges that will have to be faced by universities over this period of time.

According to these trends, firstly, higher education institutions will have to start reflecting on the value that they contribute to a world where information is open and widely available, and learn how to disseminate it so that it reaches society. Thus, we have to ensure a high quality contribution to sense-making and the credibility of the information with which we are working. Indeed, since the 19<sup>th</sup> century, universities have prepared students to face up to the challenges of the world in which they live, but now, although we still make efforts to do this, we have to accept that the rules have changed slightly and that there are more competitors compromising our mission.

Secondly, we have to take into account that our young people cannot understand a world in which they cannot work and learn where they want and when they want. The exponential growth of new technologies that aid greater mobility means we have to adapt. In one way or another, it is time we started to contemplate this.

Furthermore, we must not forget that the technologies that we are increasingly using are decentralized and cloud-based; in other words, the boundaries of our personal computers are now permeable and applications are to be found on farms of servers that can be accessed from anywhere with connection to the Internet. Thus, we no longer have to worry about where we save our work and documents. What we need to worry about is having access, no matter where we are or what device we use, whether it be a computer, telephone, iPod or iPad. And this reinforces the idea of mobility and ubiquity that we have already mentioned and that we need to know how to manage.

Lastly, we need to bear in mind that our students' work is collaborative and interdisciplinary, (or not). This even has consequences on the design of learning environments. Schools and universities around the world are designing environments to aid transversally, interdisciplinary and collaborative work. Likewise, other trends highlighted include the personalization of the educational process , or the use of technology to cover the gaps in learning and the differences in styles and models.

There is no doubt, I expect, that faced with the global, competitive environment, the scarcity of resources and the need to be held accountable to society, we will have little choice but to do it well. With each passing moment it will become more difficult to recover from mistakes and inaction. And in order to do it well and to have the capacity to respond to the challenges presented to us by the universities and digital students, we must change radically, and we must start now.

Without our realising, ICTs have changed aspects throughout the academic sector and I am sure that they will change many more and not because we at universities or those in government have planned it this way. Our students are leading the way in terms of change with their everyday practices and in most cases they have done so, despite our denial and resistance. I am convinced that the great force that will change learning in our century is the practice of digital students, and if I am right, we either listen to them and change the educational model and transform traditional structures, or they will change them for us. In that sense, leaders of 21<sup>st</sup> century higher education institutions must be willing to break with old models and look for new and innovative ways to address the challenges that, believe it or not, threaten the survival of our institutions. With the example about what is happening at the Open University of Catalonia and with some evidence about what is happening in other quality on-line universities, I can affirm with humility, that you should take us as harbingers of change.