



Introducing ICT in higher education: A strategic planning approach

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Abstract

Strategic planning is being used in Higher Education as a tool to facilitate the appropriate integration of Information and Communication Technologies (ICT) at universities, even if its impact is already not very perceived. This article focuses on the results of a research that shows which are the main strategic performance areas that universities are adopting and putting into practice to achieve it.

1. Universities, Knowledge Society and ICT

One of the most relevant aspects of the beginning of the century is the consolidation of the so-called Information and Knowledge Society. Most of the universities have perceived it as a strong driver for change.

Consequently, how to face a new scenario with important social, political and economic changes that questions the educational nature of universities, and how to organize it in a new way, are the main concerns for the academic decision-makers.

In this scenario Information and Communication Technologies (ICT) could play a very important role, together with how to integrate them in university teaching and learning procedures is a very highlighting challenge.

Despite it has been a long time since ICT reached the universities, never before the use of these ICT produced any modification in the functioning of traditional universities. From this perspective, it seemed that ICT were just to get into university teaching as a complement or just for further development of distance learning.

However, the above mentioned aspects (social needs and changes from the shift of Information and Knowledge Society) have made the universities to face ICT use as a driver to help their willingness of institutional change.

As Castells (1989) said, «technological change only can be understood within the context of the social structure in which it occurs». In this sense, Dillman (quoted by Hanna, 2002) affirms that universities must change in order to satisfy the new students' needs, on the basis of being a public service. In the same way, Bricall (2000) expressed himself when he said that ICT are going to be «one of the main key factors for change in universities in the very next years» (2000, pp. 237-249).

Then, it has started to be understood that the consideration of distance education through online environments is not exclusive of distance teaching universities. In the same way, an important number of academics and decision-makers do not think the quality or outcomes of this kind of mediated education to be inferior to the conventional one. For these reasons, lots of universities are trying to integrate ICT in their teaching and learning activities, using blended or purely online courses.

2. Integrating ICT in University teaching: looking for a strategy

After analysing a number of experiences, we may consider that the integration of ICT in the universities has been made quite arbitrarily, getting a few widespread patterns, given the different technological potentials and applications that could be done. This matter led us to conclude that integration should be made in

an explicit, planned and systematic manner, involving the organization as a whole and its members, both individually and collectively. Only under these conditions ICT integration will become a factor for change and improvement.

From an institutional point of view, some universities use to include an epigraph in the strategic plans related to ICT. Although this inclusion is being gradual, most of the universities, especially the American ones, have ICT strategic plans or more general ones with a specific mention to the use of ICT for teaching and learning.

In these plans, there is a vision that the university would like to get in the very next years. Obviously, depending on the characteristics of the university, they will need to develop different kind of strategies to get their own objectives. Bates (2000) highlighted some basic reasons which could tell us why integrating ICT in teaching and learning is interesting for the universities. We group them in four blocks:

1. to facilitate and increase the access to education and training to a wider range of people;
2. to improve the universities' economical expectations;
3. to respond to the «technological imperative»;
4. to improve the quality of education.

In any case, given the new scenario of a broader Europe, ICT are called to be a very important issue in university education to develop a fruitful and fellow relationship between the new coming countries and the old ones.

3. Strategic planning for University ICT integration

In the recent years, universities have begun to develop a more strategic leadership, being conscious that they need to transform themselves if they want to go on being a reference in the current society. To make this transformation in the right way, they must make the appropriate decisions by glancing and analysing their own environment.

In this sense, some universities have started a strategic thinking process to identify the actions they should carry on and, also very important, the «no-actions», i.e. the actions that should be avoided, to get the aims and objectives for the very next years.

- a) *The vision*. The first element they need to have is a clear representation of the position and the role they want the university to play in a particular period of time. This «vision» will help them to identify the arrival point and decide the actions needed to get it.

To determine the vision means «to anticipate the future» (Gimbert, 1998) and, therefore, to be placed in a position of privilege for maintaining and increasing

its competitive advantage with regard to other educational institutions. It is important for this vision to be global, concerning the university as a whole, beyond what a department or a faculty is doing.

We cannot forget that we should reflect on our own mission as well as on our vision. Despite the case of universities, this hardly comes determined by the demands of the society, the particular identity which makes one institution different from another, is always needed to be added.

- b) *The external analysis.* After having defined the vision, the university is facing the need of starting a process to know how its environment is evolving, from the potential users to its competitors and also the stakeholders and other social agents which could influence its evolution.

From this external analysis, some opportunities to go forward and some threats that can impede them should arise. The arising of the use of ICT in education has often been seen as a threat (Noble, 1998). A good strategy may turn it into an opportunity of development.

- c) *The internal analysis.* Moreover, it is important to know the internal reality: the agents which belong to the own organisation, its strengths and its weaknesses, those aspects that will help to face the threats and to take profit of the opportunities.

The strengths will be those institutional skills and competencies we have in our university and that make us better than the others. The weaknesses are important to be known in order to overcome them.

- d) *Aims and objectives.* Afterwards, we need to define our aims and objectives, those which will help us to reach our vision. They will have to be well formulated and to have several parameters and benchmarks in order to evaluate them properly.

- e) *Strategic decisions.* From this point, it is needed to make those strategic decisions which will lead us to the aims and the objectives and go forward to our vision. The strategic decisions can be shaped as actions, activities, attitudes or, even, absence of action in some particular area because we consider they will lead us far away from the road to our vision.

As a summary, it seems appropriate to use an adaptation of the graphic representation from Andrews, quoted by Gimbert (1998, see figure 1).

The process of strategic thinking should get the maximum consensus between all the internal agents (Government Board, faculty, students, management staff, etc.) together with the external ones with regard to the objectives and the actions to develop. Therefore, to define the vision, the mission, the strategy and the action plan are the fundamental elements to guarantee an appropriate institutional development, especially important when transforming organizations.

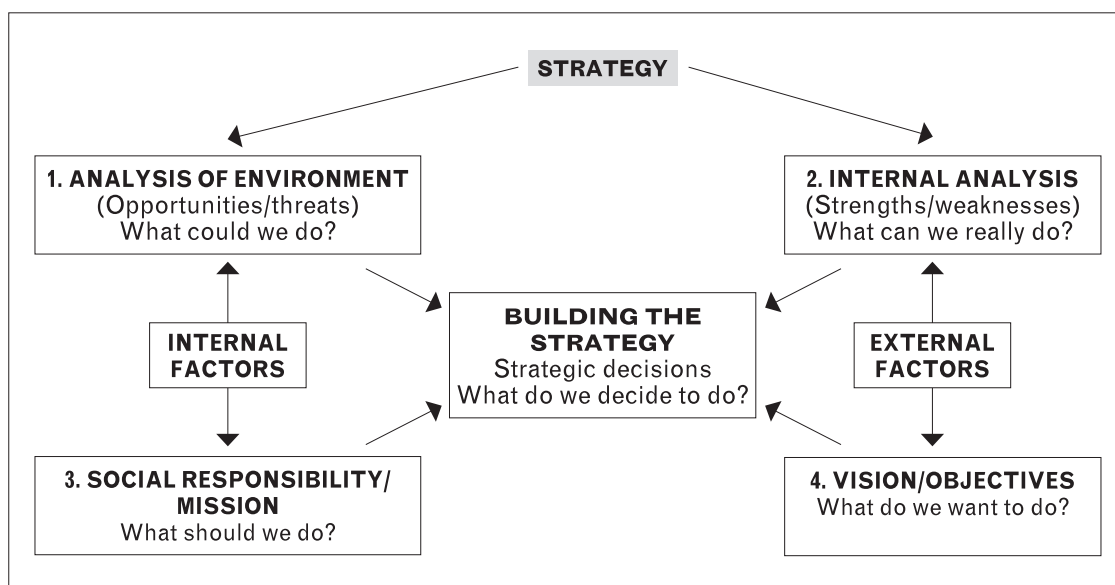


Figure 1 Graphic representation adapted from Andrews' Strategic Thinking Process (1971).

As Gabriel Ferraté¹ said, «To plan strategically is not worth in itself. It is just an excuse (the big one!) to debate and discuss ideas. To know each other better and to cooperate more to network, to overcome barriers, to know what the others do, to *think*».

4. University and ICT strategic action areas: a research

For universities, to integrate ICT to their regular functioning is a real challenge, but it is also a tool that helps them to modernize these institutions and to avoid becoming obsolete with regard to the demands that the society asks for as organizations which must contribute to the building of the so-called Knowledge and Information Society.

However, if we really want ICT to be a real tool to transform universities, we have to plan the strategy we want to get it with. To what extent do we have to integrate digital technologies in our institution? How should we use ICT to make Higher Education easier? The answers to these questions require strategic decisions, financial investments in equipments and training, and a transformation of the behaviour and ways of working in the Higher Education organizations.

Until now, there are few evidences of development of strategic plans of ICT integration at the university. It is also true that this field has not been fully explored

¹ Formal presentation of the UOC's 2002-2005 Strategic Plan.

by research areas because it is quite new in the educational context. The systemic vision in which the university is going forward as a whole instead of a set of disaggregated independent actions is quite recent.

5. Research design and development

5.1 Research design

We designed a research study to identify and analyse which are the main strategic performance areas that universities are adopting and putting into practice.

The research focused on the analysis of those university documents in which we can find the objectives and the strategies to take an advantageous position of the university in the context of the Knowledge and Information Society, and particularly, on those referred to the integration of ICT to the university as a strategic and key factor of institutional change.

As each university could call these documents in a different way, we decided to list of kinds of documents in which we were initially interested in, in order to analyse them on the basis of their content: General Strategic Plans, Technology Strategic Plans, Academic Year's Memory, Specific Programs, etc.

To do the study we created an analysis model, from a selection of documents from a number of universities all over the world. We used an inductive design, which let us start with specific observations and go forward to general patterns (Patton, 1987).

This way the categories we have used for the analysis arose from the reading and observation of the different institutional documents when we found out which concepts and patterns were more frequently used, even with different terminology, in each document.

5.2 Selection criteria

To elaborate the analysis model we selected the strategic documents from 16 universities. These universities covering an international approach and focusing on those countries where the use of ICT in Higher Education is a reality from several years, particularly in Australia, Canada, United States and Europe.

Accessibility was the first criteria we used. It was needed that the strategic document was public and easily accessible. Secondly, from the different accessible options, we selected those more prestigious in the international Higher Education context. Finally, we selected different typologies of universities, even a Distance Teaching one.

The list of universities and the analysed documentation are shown in figure 2.

<i>University</i>	<i>Analysed documentation</i>
Georgia Institute of Technology	Strategic Plan of Georgia Tech: Defining the Technological Research University of the 21st Century
Iowa State University of Science and Technology	Becoming the Best Land-Grant University. Strategic Plan for 2000-2005. Pursuing Excellence as Iowa's Engaged Land-Grant University
Northwestern University	Northwestern University Information Technology Strategic Plan FY2003-FY2005
Purdue University	The Next Level: Preeminence Strategic Plan for 2001-2006
Stanford University, School of Medicine	Stanford University School of Medicine Strategic Planning. Information Resources and Technology.
University of California at Davis	Creating a New Information Technology Reality: Strategic Directions for the Campus
University of Wisconsin at Madison	Connecting ideas: Strategies for the University of Wisconsin-Madison
Universidad de Puerto Rico	Plan Estratégico (2000). Borrador preliminar para la discusión en las facultades
University of Saskatchewan	Strategic Plan. Strategic and Effective Application of Information Technology at the University of Saskatchewan
Monash University	Strategic Plan Overview-IT Supporting a connected Monash
University of Leeds	Strategic Plan 2002/3-2006/7
Open University, United Kingdom	Plans for Change: The University's Strategic Plan for 2002-2012
Universidad de La Rioja	Plan Estratégico de la Universidad de La Rioja 2002-2005
Universidad de las Palmas de Gran Canaria	Plan Estratégico Institucional ULPGC 2002-2006
Universidad de Murcia	Bases para un plan estratégico en la Universidad de Murcia
Universidad de Zaragoza	Plan estratégico. Segunda parte. Reto estratégico: Tecnologías de la Información y Comunicaciones

Figure 2 Universities and analysed documents.

5.3 Categorization

To decide the categories for the analysis, we followed three stages. At the first one, we identified the processes and the actions the universities planned in each document and we gathered them into each university.

The second stage consisted in comparing the achieved categories in each university and faced them with the others, identifying the most common or general ones which let us consider the actions of anyone or the most of the universities.

6. Categories for a model of analysis

The result of the development of the research gave us five main categories.

1. *Accessibility and infrastructures.* In this category we can place all those initiatives, processes and actions addressed to facilitate the access to the technological resources and to the information of all the university staff, but with no educational aim. To this, we should add the actions related to the existence, assurance and improvement of the required technological infrastructures. Furthermore, facilitating people with the appropriate technical equipment, technological infrastructures and which support they need to be maintained and updated.
2. *Management processes.* It regards the optimization of all management processes and affects fundamentally the university internal processes (administrative, economic, etc.), but also to the students (remote registration, access to the personal record, etc.) and the faculty (uploading of qualifications, updating the personal curriculum vitae, etc.).
3. *Communication.* Existing processes and actions that try to strengthen and improve communication, both external and internal, through the use of ICT. They usually find out new ways of expression and relationship with people.
4. *Research.* Actions in this category usually relate to the promotion and facilitation of research, especially the possibilities of collaboration between researchers placed in different locations, allowing to overcome cultural and geographical barriers and facilitating collaborative work.
5. *Teaching and learning.* Being very large, this category has been subdivided into four subcategories to get a more appropriate analysis. First, actions integrating ICT in the educational offer, sometimes as a subject and sometimes as a tool to widen the institutional offer with new formats (blended courses, online courses, etc.). This category accepts both kinds of actions. Secondly, there is a set of actions and processes aimed at widening and facilitating the access to learning resources. They allow to design, produce and store teaching materials or other kind of digital educational resources, their location and the options that could facilitate their retrieval.

The third subcategory focuses on all the actions and processes for the improvement of the learning resources. That is, the elaboration and updating of digital teaching materials, the search into the Internet, and also the electronic platforms as virtual learning environments and the teaching strategies that should be applied in these environments.

Finally, we also found a number of proposals linked to the faculty training needs to use ICT to make effective their integration in the teaching and learning activities. These needs are technological as well as pedagogical.

7. Conclusions

Although in this research we have developed other important aspects that will be presented in future articles, we can draw these provisional considerations.

- a) Strategic planning is growing, but it already has a weak impact on university activities, as some previous studies considered (Sangrà and González-Sanmamed, 2004).
- b) As far as the university is a system, the institution as a whole suffers the effects of the principle of homeostasis (Bertalanffy, 1976) of the integration of ICT: organizational issues will be a key factor.
- c) Universities are developing a number of strategies to integrate ICT. We can organize them in 5 areas of strategic performance:

<i>Areas of strategic performance</i>	<i>Examples of actions</i>
1. Accessibility and infrastructures	Setting up of multimedia classrooms or Wi-fi zones; Help Desk 24/7 Student grants to get laptops
2. Management processes	Virtual registration office Automatic fees payment
3. Communication	Use of internal Bulletin Boards University web site as a Portal
4. Research	Digital researchers' Network Digital resources for research
5. Teaching and learning	Online and blended courses Virtual library Assumption of an electronic platform Faculty training plan on ICT appropriate uses

- d) The existence of actions in almost all the areas of strategic performance in most of the universities means that they try to scaffold integral solutions. However, the analysis of the documents of the 16 universities tells us that some of the universities make efforts in some particular areas and a few ones in other areas. This means that the process of ICT integration could be unbalanced and have some implementation problems.

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