

Universities and Web 2.0: Institutional challenges

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Summary

The irruption of the Web 2.0 internet in universities does not modify only learning models - organizational models are also challenged, creating important fears among the managers of the institutions. Teachers, researchers and students started some years ago to use social software tools, but in few cases these experiences have allowed any scaling from the individual to the institutional level.

The promises and potential of Web 2.0 in universities need an adequate strategy for their development which has to confront the bottlenecks and fears common in these institutions, which could explain the lack of adaptation. Some of the bottlenecks highlighted in this paper are: a) the rejection by the users, personnel and students, b) the lack of an incentive system, c) the available pre-web 2.0 technology, and d) universities show in some cases a culture of aversion to innovation and entrepreneurship.

The adoption of a Web 2.0 approach to learning in universities is a complex process confronting important technological, managerial and human barriers. For these reasons, the design of a set of objectives and a strategy accepted and promoted by the managers, especially those in charge of knowledge management, is absolutely needed. This first step requires in many cases radical cultural changes for people used to work and make decisions in a different scenario. The introduction for the Web 2.0 approach to learning in universities must be done through an adaptive strategy, one that may be designed integrating previous experiences of educational, research and business organizations.

Keywords: Web 2.0, universities, openness, knowledge, managers, establishment, bottlenecks

1 The promises and reality of web 2.0

Web 2.0 could facilitate a change of paradigm in learning; from a top-down system focused in teachers and established knowledge to a networked approach where teachers should change their roles to become coaches and facilitators of the learning process (Anderson 2007, Brown & Adler 2008, O'Reilly 2005). The objectives of the new European Space for Higher Education and the needs of our contemporary societies both pay special attention to innovation and entrepreneurship as basic abilities for the future of our graduates. Learning by doing and applying methods for collaborative and active learning are essential approaches to attain these objectives, and the web 2.0 could be an instrumental and strategic tool in their development (Anderson 2006).

However, the irruption of the new internet in universities does not modify only learning models. Organizational models are also challenged causing some acute crisis in institutions (Brown & Adler 2008). Web 2.0 has already entered the university walls in a bottom-up process. Teachers, researchers and students, in most cases without any institutional stimulus, started some years ago to use social software tools (Anderson 2007, OECD 2007). Some of these experiences are successful, but in few cases have allowed any scaling from the individual to the institutional level. Institutional, top-down, adaptations have been considerably slower or absent

widening in many cases the “digital divide” between universities and some of their personnel and among teachers using or not web 2.0 in their work.

2 What is web 2.0? Beyond technology; open knowledge and network collaboration

Web 2.0 could be defined from a technological point of view as a loosely-coupled system of Internet applications (Fumero & Roca 2007), but represents also a “Trojan horse” for a new social and cultural paradigm (Shirky 2008, Weinberger 2007). In this sense it could be defined as technologies for the social creation of knowledge, comprising three main characteristics:

- a) **Technology:** Internet moves from “push” to “pull”; from an era 1.0 associated to the old hierarchical portals and a restricted group of content creators to searching engines, aggregators and user-based content typical of the era 2.0.
- b) **Knowledge:** web 2.0 is challenging copyright (the strict protection of intellectual property) because the open source paradigm (allowing for open access and creative remix of contents) has demonstrated important competitive advantages, allowing for more creativity and productivity (Lessig 2004). This new open knowledge paradigm is grounded in the success of free software and the old tradition of scientific communities (Benkler 2006, Weber 2005), and is characterized by four properties: independent (“*free speech*”), cost of distribution is zero or very low (“*free beer*”), modularity and generative capacity. In this sense, the modularity or granularity of open content shared in networks allows for the development of the complete creative potential of remix (Baldwin & Clark 2000, Zittrain 2006).
- c) **Users:** the shift from consumers to active users participating as curators and creators that characterize web 2.0 has been sometimes defined as the “revenge of amateurs” and modifies the traditional roles of the agents of the chain value of knowledge creation and consumption.

The promises and potential of web 2.0 in universities need an adequate strategy for their development that have to confront different bottlenecks and fears common in these institutions. In the following sections these topics will be analyzed.

3 Bottlenecks for institutional adoption of web 2.0

Universities and their managers, when they assume an active role for the adaptation to the new paradigm described above, discover a series of internal bottlenecks:

- a) **Rejection by the users, personnel and students.** Many of the users of the tools available in the Internet 1.0 are reluctant and fearful of learn new abilities needed to use new software and change their attitudes about education and knowledge. Also, in most cases, change is a matter of personal interest and work without any specific incentive system adapted to these objectives.

The journal and editorial group *Nature* is an excellent example of the users bottleneck. This group has developed in the last years an extremely innovative and experimental strategy for web publishing (Hannay 2007). However, some of its projects have been restrained by users (scientists in this case). For example, the experiment about “open peer review” failed due to the lack of interest of the scientific community (Nature 2006).

Learning from these experiences, it seems clear that, in parallel to the deployment of new technologies, it is critical to introduce and expand a new knowledge culture based in active users able to create, modify, search, communicate and share information and knowledge. This new role model differs from the conventional students and, in many cases, teachers found nowadays at our universities. In any case, the imminent arrival of the digital natives (Palfrey & Gasser 2008, Prensky 2001a,b) to university could revolutionize this situation, probably making easier the introduction of web 2.0 approaches but increasing the cultural gap between students and teachers.

- b) **Lack of an incentive system or perverse effects.** This topic has been discussed above related in relation to user changes. For instance, sometimes institutional strategies are designed for the goal of a global change, conducting to the adaptation of the complete university community in the short term. These approaches fail due to the institution inertia that impedes to develop adequate incentives with the required timing and/or to the excessive support to the reluctant users, giving a perverse example to the lead users.
- c) **Available pre-web 2.0 technology.** Universities have made large investments during 1980 and 90s to develop in-house or buy software platforms. This infrastructure could become a barrier more than an active. Most of this technology is starting a phase of accelerated obsolescence and has to be changed by tools available in the market (and in most cases at a very low cost), that have to be configured, integrated and remixed to create new applications or mashups adapted to the needs of local users. Low cost is in many cases a matter of distrust in the decision-makers, due to the misunderstandings that the concepts of free software and open source continue to generate. In many cases the best scenario to introduce web 2.0 could be the lack of technology, and we could (paraphrase the classical question of Nicholas Carr (2004), IT doesn't matter?, at least the traditional concept of IT.
- d) **Universities show in some cases a culture of aversion to innovation and entrepreneurship.** Bureaucracy, governance, procedures for decision-making and inertia in large institutions are in many cases the worst environment for inside innovation and entrepreneurship. However, the adoption of technology and working methods associated with web 2.0 requires a high dose of experimentation and creativity.

4 Institutional fears of web 2.0

Besides bottlenecks, web 2.0 challenges the core structure of universities creating important fears among the managers of the institutions. Probably, the ultimate causes of these fears are both 1) the implicit criticism to the traditional model of university respect to knowledge production and education and 2) the need for control and power of the IT departments that, as discussed above, are sometimes considered irrelevant in a "world 2.0".

A recent report of Forrester Research (Koplowitz & Young 2007) identifies risks that an organization (the original report refers to enterprises) perceives associated to web 2.0: reliability, security, governance, compliance and privacy. These risks are associated to the uncontrolled entry of web 2.0 in institutions giving rise to a growing trend of "unsanctioned employee usage" and to some unintended consequences as violations of intellectual property and/or contracts (i.e., client, or student, data located outside of institutional firewalls). The response of some companies, establishing web 2.0 policies and usage guidelines, could kill the opportunities provided by web 2.0, mainly its openness, producing a perverse effect of the reduction of users' innovation.

Strategically the fears of web 2.0 illustrate the confrontation between trust and openness. Organizations have two competing needs: 1) visibility that obligates to be open to exterior (and important efforts are made in marketing, communication and collaboration with external clients and partners) and 2) security and trust that obligates to restrict most of management and activities to the interior of the enterprise. Probably, new developments in social networks based in web 2.0 tools, i.e. *Facebook*, could be a potential useful solution to this compromise, because they provide the combination of web 2.0 tools used in a controlled environment (allowing a flexible system of restricting users and content)

Finally, web 2.0 poses some important infrastructural challenges to organizations; another side of the security vs. openness debate. How to provide a trusted system for key administrative and managerial processes allowing, at the same time, the exploratory and risky use that provides the most rewards with web 2.0? (Havenstein 2007). There are different proposals to solve this paradox with the deployment of a double physical network: one closed and designed

for Internet 1.0 (for critical processes) and other open for web 2.0 allowing the development of social networks and a considerable dose of experimentation.

5 Elements for a strategy of web 2.0 adoption in universities

The adoption of a web 2.0 approach to learning in universities is a complex process confronting important technological, managerial and human barriers. For these reasons the design of a set of objectives and a strategy accepted and promoted by the managers, especially those in charge of knowledge management, is absolutely needed. This first step requires in many cases radical cultural changes for people used to work and make decisions in a different scenario. The strategy should be supported for at least some of these elements:

- a) **Learning from previous and on-going experiences.** Successful uses of web 2.0 are yet an experimental field where trial-and-error is the basic approach. A considerable base of experience is being developed (and shared) by lead users and organizations that could be mined by other interested parties to gain efficiency in their processes of adoption. Basically, we could find two sources of experience:
 - Lead (or passionate) users inside the organization (Young 2007, Von Hippel 2005,). Instead of developing a learning platform with functionalities defined a priori, universities could let the community (teachers and students) to explore, test and adapt tools. The institution should focus in the monitoring of this activity and the integration of the successful experiences, and associated tools and practices, in their platforms and procedures.
 - Other organizations involved in the adoption of web 2.0 tools and open paradigms, especially other universities and research institutions and enterprises. Universities provide some excellent experiences; to cite only a few: MIT Open Course Ware, Stanford on iTunes U, the web 2.0 experiences of the Harvard Law School or the University of Warwick, the web 2.0 strategy and action plan developed in the University of Edinburgh, or the recent proposal of a Harvard Open Access Policy. In Spain, some universities are starting to explore the utility web 2.0 tools, but probably the most complete experiences are those of the Universitat Oberta de Catalunya and of some business schools (for instance the communities of blogs and the master programs based in a blended model using intensively e-learning and web 2.0 tools of the Instituto de Empresa).

Institutions involved in research provide other interesting examples with cases as *InnoCentive* or *Nature Web Publishing*. As explained previously, in the case of *Nature*, the world most prestigious scientific journal (pertaining to a strong editorial group) is at the forefront of the innovative experiences in the use of web 2.0 for scientific communication and development of communities of interest.

- b) **Open access and use of contents.** Web 2.0 is especially useful and creative when knowledge is digitized, modular and allowed to be used and distributed in a flexible way. New models of licences, as Creative Commons or Colorluris, introduce this needed flexibility respect to the absolute restriction of uses and distribution that characterized copyright. The use of technological and social standards (i.e., formats of databases or the use of tagging to allow the discovery of pieces of information) is also especially relevant to make the information available in search engines and aggregators (basic tools to navigate the overabundance of information) and to allow its reuse in the different web 2.0 tools (Weinberger 2007).
- c) **Design the organization as an open platform for knowledge creation and sharing,** both among members of the internal community and with the participation of external users. This proposal is a consequence of the experience of evolving organizations, academic, focused on research and companies (Chesbrough 2003, Tapscott & Williams 2006). The

experiences with the management of business moving to an open model for innovation (similar to the uses proposed here for web 2.0 in universities) allow identifying three main benefits:

- Lowering costs using *crowdsourcing* (Freire 2008, Howe 2006), i.e., the external development of web 2.0 tools would reduce considerably the costs of IT infrastructure and software.
- Accelerating innovation and knowledge creation. The Internet has produced an exponential growth of available information, where the main cost for users is the searching and filtering of sources. In parallel, cycles of creation of new products and services, marketing and obsolescence are becoming shorter. An open approach is in many cases the only opportunity to keep both the user of information and knowledge and the enterprises in the course (The Economist 2006).
- Increasing creativity. The generation of new ideas, one of the main objectives of universities, benefits from open collaboration. Many enterprises have discovered in the last years that this process is more creative than the traditional developed inside de R+D departments.

Similarly to the evolutionary path followed by enterprises transforming in open platforms, universities approach web 2.0 in the first phase to reduce costs. However, successful enterprises enter a second phase where they transform in an open platform to increase innovation rate and creativity. This trend opens new threats: how to manage intellectual property?, how to compete being open?, or how to manage human resources?

6 Conclusions

Web 2.0 is an emergent key driver changing learning and organizative paradigms at universities. Besides technology, web 2.0 challenges intellectual property and transform consumers in active users creating and curating knowledge. However, until now, universities have not made the needed efforts to adapt to the new needs of the network society and digital natives and immigrants studying and working there.

Different bottlenecks and fears could explain this lack of adaptation. Among the bottlenecks facing the universities for the integration of web 2.0 are: a) the rejection by the users, personnel and students, b) the lack of an incentive system, c) the available pre-web 2.0 technology, and d) universities show in some cases a culture of aversion to innovation and entrepreneurship. Complimentarily, universities show two main kinds of fears about the changes needed for web 2.0 adoption: 1) the implicit criticism that web 2.0 includes to the traditional model of university respect to knowledge production and education and 2) the need for control and power of the IT departments that are sometimes considered irrelevant in a "world 2.0".

Due to those barriers, the adoption of a web 2.0 approach to learning in universities is a complex process confronting important technological, managerial and human barriers, and an adaptive strategy is needed that could be designed from previous experiences of educational, research and business organizations. This strategy could include the following lines:

- a) Learning from previous and on-going experiences, before developing a priori technology and protocols inside the institutions. Both lead users inside the organization and other organizations adopting web 2.0 tools and paradigms should be especially useful.
- b) Opening the access and use of contents. Web 2.0 is especially useful and creative when knowledge is digitized, modular and allowed to be used and distributed in a flexible way.
- c) Designing organizations as open platforms for knowledge creation and sharing, both among members of the internal community and with the participation of external users.

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