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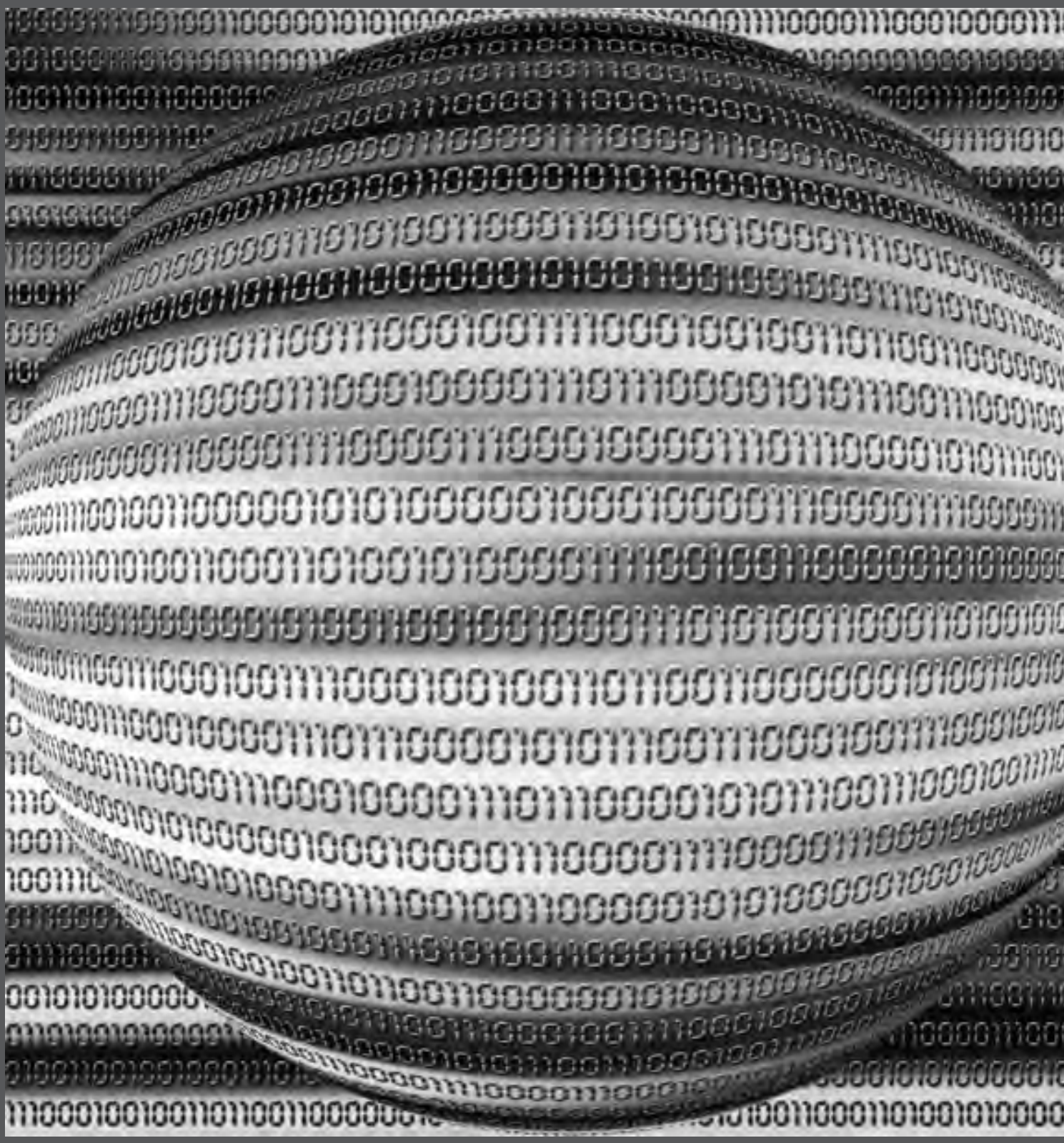


Knowledge management as a social scenario for education and learning

Carlos Gutiérrez Cuevas

Abstract
Knowledge management through the development of information and communication technologies (ICT), constitute a key factor of the network informational society with strong impact on the learning processes that lead to overcome educational conceptions based on teaching. Cycles of knowledge management spread out around instrumental, strategic and creative actions elevate performance, allow differentiation and determine new challenges to educational agents.

Key words
Knowledge management, learning, teaching, competence, performance.

La gestión del conocimiento como escenario social para la educación y el aprendizaje

Resumen
La gestión del conocimiento, gracias al desarrollo de las tecnologías de la información y la comunicación (TIC), se constituye en factor clave de la sociedad red con una fuerte incidencia en los procesos de aprendizaje que llevan a superar las concepciones pedagógicas basadas en la enseñanza. Los ciclos de la gestión del conocimiento desplegados en torno a las acciones instrumentales, estratégicas, comunicativas y creativas, elevan el desempeño, permiten la diferenciación y determinan nuevos retos a los agentes educativos.

Palabras clave
Gestión del conocimiento, aprendizaje, enseñanza, competencias, desempeño.

La gestion de la connaissance comme scène sociale pour l'éducation et l'apprentissage

Résumé
La gestion de la connaissance, grâce au développement des technologies de l'information et la communication (TIC), est constituée en facteur clef de la société-réseau, avec une forte incidence dans le processus d'apprentissage qui dépasse les conceptions pédagogiques basées sur l'enseignement. Les cycles de la gestion de la connaissance, dévoilés au tour des actions instrumentales, stratégiques, communicatives et créatives, améliorent le dégagement, permettent la différenciation et établissent de nouveaux défis aux agents éducatifs.

Mots-clefs
Gestion de la connaissance, apprentissage, enseignement, compétence, dégagement.

Introduction: the axiom of Nonaka and Takeuchi

In the early 90s, Ikujiro Nonaka and Takeuchi Irotaka could not imagine that their statement about knowledge management would lead a trend which, according to some, defines current key processes. The term was coined by these professors of the Institute of Innovation Research at Hitotsubashi University, Tokyo, to describe the mechanisms leading to take advantage of ideas, knowledge and innovations that employees continually develop in their work processes (Nonaka, 2000).

According to this approach, such knowledge arise from the daily routine, are intuitive, unpremeditated, implicit and, consequently, different from knowledge explicitly instituted in texts, documents, orders, manuals. Therefore, Nonaka and Takeuchi proposed a *spiral* where tacit knowledge becomes explicit in order to facilitate their transfer to the entire organization. That argument quickly became an axiom that, two decades later, deserves consideration in the light of the transformations of relations of production, experience and power, as a result of the rapid development of ICT. Today the economy, society and culture are shaped by widespread access to vast information accumulated which power upgrades the role of intellectual work, modifies and amplifies the learning and teaching processes and indicates the emergence of a socio-economic trend characterized, among other things, by the growing incidence of intangibles, information and knowledge in the processes of wealth creation.

The role of informational technologies

ICTs facilitate the spontaneous and broad participation *of social movements that have the potential to create another world, different from the reproduction of rules and disciplines embodied in the institutions of society. Providing new information, new practices and new actors into the political system, the insurgents defy the inevitability of typical politics and regenerate the roots of our fledgling democracy* (Castells, 2009, p. 530).

Hence the need to face those trends of knowledge management that persist in conceiving the architecture of the processes and the structure of organizations in a linear, hierarchical and predictable way. An approach from the theories of systems and complexity allow us to understand how —in scenarios characterized by many conflicts and problems— the relations of production, experience and power are continuously updated and transformed.

From this perspective, the relations of *production* cover every process leading to the use of resources —material and intangible, natural, including those of human nature and the transformed ones, among others— through their conversion into satisfiers destined to replace social needs through acts of consumption. For them to be effective, efforts destined to innovate, streamline production processes must dynamize the relationships which frame production.

On the other hand, the relationships of *experience* condense interactions among people either directly or through technical, communicative, artistic and cultural mediations. However, the field of experiences where mediation involves subjection or domain by using physical or symbolic violence, even though it constitutes relationships of experience, are classified as power, and when they fall under the sway of those who control or own the means of production, it is defined as class relations (Castells, 1996).

For its part, power, based on the monopoly of the force in the State, incarnates in institutions and organizations that define the codes, behaviors, orders and fields of individual and collective action. Education is undoubtedly a key element in the framework of power relations (Foucault, 1991). Today, however, intense and constant flow of information boosted by ICT primarily takes place on that territory, which is the network where the power has to face the challenges imposed by a society that manages its own experiences and productions.

Indeed, in the network society processes are preferably configured over oriented structures towards learning, innovation and the creation of mechanisms to deal with the complexity and build trust (Luhmann, 1995). These structures collide, of course, with those configured on the segmentation, stratification, and exclusion. The dilemmas faced at the present time by education lie, precisely, in that old-type structures are reluctant to allow the consolidation of emerging structures.

In these terms, knowledge management is within the framework of the network society whose legislative, educational and economic elaborations seek to influence —through promotion, culture and communication strategies deployed over technological infrastructure— on the users-regardless their location (figure 1). The ubiquity of ICT grants users instant, reliable and permanent access to vast collections of information, through the range of Internet services: voice, data and images; so that people can be fairly autonomous, operate rhythms and sequences of their interactions and the production, processing and transfer of content beyond the specific areas in which they work.

Figure 1
Network society.

Source: own elaboration.

These functions are fulfilled by ICT thanks to their attributes of interactivity, immediacy, variety of mathematical and graphical languages, automation and diversity that today —thanks to the expansion of connectivity and mobility of communications— are practically available to all people, forcing organizations to assess the frequency and persistence of contacts rather than routine tasks.

The role of Web 2.0 is becoming more and more important: services such as blogs, wikis and social networks help to make better use of information on the interactions between users and organizations and among people themselves. Work spaces are complemented by social networks which facilitate the organization of work teams, exchanges of documents, monitoring of processes and activities, coordination of agendas and maintain a direct and permanent contact among members of a group. For example, the so-called micro-blogging —twitter, buzz— facilitate the sharing of information of all kinds, update of instructions and plenty of work to coordinate at a remote distance.

It is possible to say, consequently, that the application of knowledge and information in cumulative spirals although it induces innovation processes, makes more demanding, competitive and unpredictable the processes inside organizations, while requiring them to modify their operation and individuals to review their skills to optimize their performance and take advantage of the new opportunities for personal and family development.

The rise of poly-functional mobile phones, for example, is revolutionizing the interfaces of use with great accessibility, more processing, communication, storage and mo-

bility capacity. The big Internet players compete with the traditional suppliers for the acceptance of new clients through attractive offers of privacy, security and low rates. Television over the Internet (TV/IP), faces similar challenges to those lived by mobiles in the mid-90s with one key difference, though: the majority of households have the necessary pieces of hardware needed for TV/IP either a television screen or a computer monitor, although there are some legislative and economic aspects to resolve so that this channel can become widespread.

Hence the importance of examining, with solid theoretical foundations, these realities related to technological development and innovation based on information and communication processes. The turbulence of demand related to the expectations revolution is characterized by a great diversification of requirements and, hence, with lots of variations "customized" within the same service. Given the magnitude of these changes, the initial approaches of knowledge management must necessarily be refocused.

Numerous studies and empirical evidence show that when investigating to know the economic, productive and social reality of innovations opportunities are identified, approaches, incentives and flaws inherent to the processes of incorporation and appropriation of new technologies. It is therefore essential to identify carefully the systemic role of education as a vehicle of learning and socialization par excellence.

Education between teaching and learning

Scientific-technological development has increased the ability to transmit and create knowledge through teaching and research, so that the supply of educational goods and services now constitutes one of the most profitable cultural industries. Prestigious universities, research centers and institutes are competing on the international market of studies, courses, publications, research and consultancy. However, many sectors of the population still receive if any, education in deplorable conditions in contrast to the repeated claims about the importance of education in achieving economic progress, social equality, coexistence and environmental sustainability.

Certainly, in the middle of that picture ICTs offer exciting resources to expand coverage and improve the quality of educational services, but also demand adjustments in their educational devices and teaching-learning objects, new roles for educational institutions and other content providers, greater social control and direct responsibilities to educational agents starting with the families, communities, authorities and learners themselves.

Education is understood as a set of planned activities in order to provide some receiving people with a given body of content in accordance with criteria of ranking, established order and sequence in curriculum and other teaching devices (Bernstein, 1994). In general, the quality of teaching is proven with social acceptance obtained by the performance of the recipients.

Through ICT people transform the factors and ways of production and interactions, behaviors and educational structures, thus overcoming the traditional role of passive recipients or consumers to become active agents of the processes experienced in their lifetime. There is not enough research on the impact of technology on learning and it is expected that the incorporation of ICT in educational processes and educational environments is poor. As technological developments alter the behavior and social habits, in fact they also change some criteria prevailing in education.

The concept of learning as an educational object is replacing the prevailing notion that the object is education. Learning involves the complex construction of knowledge, partly independently and simultaneously linked to the social dynamics by structuring the information compiled, prior information, experiences and theoretical and practical actions. In this sense, the teaching duties reduced to expose endorsed content, lose preponderance to the wide availability of information provided by the digital channels. Teachers are pushed to bring forward their own research, discern different versions, get ahead of empirical observations and redefine their provided guidance.

They must also respond to new demands and requirements that appear in social fields for which it is essential to articulate experiences and confront references in order to raise understanding of the concomitant phenomena with scientific and technical advances of society, to build confidence among academic communities in the social con-

texts in which they perform. The contrast between content, information and meaningful experiences provided by students and those references supplied by educators, are a rich source of knowledge to fuel the development of individual and collective competencies and induce innovation and creativity in teaching.

In these terms, it is urgent to appeal the other educational agents to academic activities: encouraging their presence in the formative events —especially when ICT facilitate their intrusion— it is vitally important for both the ascendancy of the family, communities, friends and socialization groups; how and why the reciprocity of learning reduces the classification and hierarchies of knowledge and raises the individual and collective competencies.

The involvement of such actors in educational activities through ICT can sustain mutual relations somehow harmonious, rapid flow of information and dissemination of innovative ideas, define problems, know what others know and what they can contribute to the design and implementation of programs. With the participation of these people virtual networks of exchange of information can be created —through, for example, surveys on selected topics— making contests, festivals and other events in social environments and times, including educational facilities (Gutiérrez-Cuevas, 2008).

The opening of channels of interaction and the realization of specific practices also expand the options of approximation offered by ICT to educational activities, facilitate learning, as it helps to overcome conventional limitations —time of study/leisure time or school spaces/social spaces— and, indeed, generate emerging patterns where learning condenses experiences, stories and knowledge from different contexts. The articulation of communities of practice with the students amplifies the roles of educators, reduces the segmentation and induces self-assembly of users of ICT.

Education is a scenario where such phenomena find wide display, so it is important to look beyond the purely instrumental or operational aspects, effects and prospects offered by ICT to the processes of teaching and learning. To deal with these realities and to ensure the improvement of the quality of education it is necessary to bring forward many efforts in the training and educating of the use and appropriation of ICT and the implementation of classroom projects to be used as cross-cutting tools in education.

The emergence of educational criteria concomitant with the new realities granted to intangibles, and especially to information, a not previously recognized value matches the articulating role of the data-information-knowledge flows within the knowledge management processes. It is important that educators have a clear understanding of how the processes of acquisition of information, writing and graphic expression in virtual media and the phenomena related to social networks operate. In this sense, it is advisable the intensive use of email, online discussion groups and/or virtual forums and additionally, the discussion in classrooms and conventional scenarios about their experiences had with the use of these technological tools.

Another version of knowledge management

The extraordinary boom of the Internet has brought, along with many other phenomena and changes, a redefinition of knowledge management which, currently, is conceived as an attitude that promotes integration of communities of practice in collaborative environments through the appropriation of information technologies, in order to condense initiatives, encourage competencies acquisition and facilitate exchanges among people to enrich personal and collective life.

In this sense, the main challenge for organizations and those who are governing lies in being able to differentiate themselves from the rest, i.e., by producing new things or new ways and styles of doing things. That is the only sure way for getting profitability and value. Surprisingly, many organizations follow that lead. Otherwise, long ago had they disappeared in the maelstrom of intense competition that faces them with countless entities as or more prepared.

However, few organizations are aware of how things are done. They do them *per se*. It is therefore, the primary task of managers and, in the first place, of those who are interested in knowledge management, to make explicit and intentional what is already being done inadvertently, so, by becoming aware of how processes are

given, opportunities provided by the environment are better taken as well as initiatives constantly generated by the staff; all of which reconverts intangible assets into value and wealth.

This concept of knowledge management considers that in the various types of action —instrumental, strategic, communicative and creative— practice and theory merged in order to achieve differentiation through performance which is the real expression of competencies. The knowledge for performance covers from basic or operational scales to even those new creations designed to meet individual and social needs (figure 2).

Figure 2
Knowledge management cycle.

Source: own elaboration.

From this perspective, the results of knowledge management depend on how the dilemmas posed by dialectic between theory and practice are solved while learning is being fed. People are linked to organizations for a practical reason: they need to perform certain functions and basic operations in order to receive a salary. In this sense, they develop instrumental actions that show empirical knowledge, which through processes of participation, identity and connection to communities of practice become structural knowledge provided that the organizational intelligence facilitates this to happen. In turn, structural knowledge induces strategic action that encourages collaborative practices that, by extracting through productive intelligence operations, so to speak, the best practices spread by what is called communicative action (Gutiérrez-Cuevas, 2005).

Communicative action dilutes the boundaries between internal and external, connects the areas of organizations, network nodes and themes —communities of practice are in fact social fields in which actions unfold— and strengthens the relational capital. With the operation of relational intelligence accumulations reached in this process are integrated with the intention to originate the immanent conditions that allow innovation, creation or creative action: the one that generates the difference.

There is no better prepared activity, nowadays, than education to adopt knowledge management as an object of study and subject of its work. In such a case, it requires abandoning the idea of teaching as educational paradigm par excellence and reducing the distance that usually separates teaching from social sciences to understand the theoretical and practical ramifications of management, to deepen into the formulation of a social learning theory and analyze the impact of ICT in the economic, cultural and social aspects of this era.

In this perspective, educational activity must overcome the functions meant to provide content to become a source of strategies towards the development of competen-

cies which, as shown by numerous experiences, are indispensable to effectively assume the realities of the networked world and move forward with Solvency amid the vertiginous changes of today.

The function of providing regulatory codes and variables fulfilled by education, establish the layout and common interests among educational agents to measure the scope and result of the educational process. The supply of content is becoming more reciprocal and recurrent, so that it nullifies the distinction between "issuers" and "receivers" and offers destinations ad hoc to the competencies built in formative dynamics.

Cultural and technical determining factors

The consequences of an education based on knowledge management will be verified in better performance, aptitude to assume initiatives in stages of complexity and self-development of capacity, so that everyone can responsibly arrange their competencies, share them in their concrete practices consolidating long lasting behaviors.

Indeed, the behaviors are explicit and verified in the concrete activities while attitudes are implied and expressed in the interactions. But just as the trajectories condense prior accumulations and are projected into new competencies, the conceptual, or theoretical ingredient, of such competencies is specified in the know-how, the instrumental ingredient is abridged in skills, while the functional is expressed in experiences. The specific practices with ICT tools promote competencies and innovative abilities which, in turn, generate difference. The transfers of knowledge support the reclassification and acknowledgement of competencies and performance.

In these terms, knowledge management allows that those ones who are involved assume with energy responsible and independent management of their competencies and skills, socialize and intensify the exchange of experiences and knowledge, enhance their capacity for innovation and leadership, and mold lasting and technologically appropriate solutions. The great result consists of, therefore, *making things better*, which does not necessarily mean that participants have to work harder: skillful incompetencies, or do more work: defensive routines.

Knowledge management suggests aspects and elements tested in other contexts, i.e., it collects significant experiences and links them with conceptual and functional tools to facilitate learning. In this sense, it is one in countless elements obtained through the advancement of the relations of experience, production and power in the context of the network society.

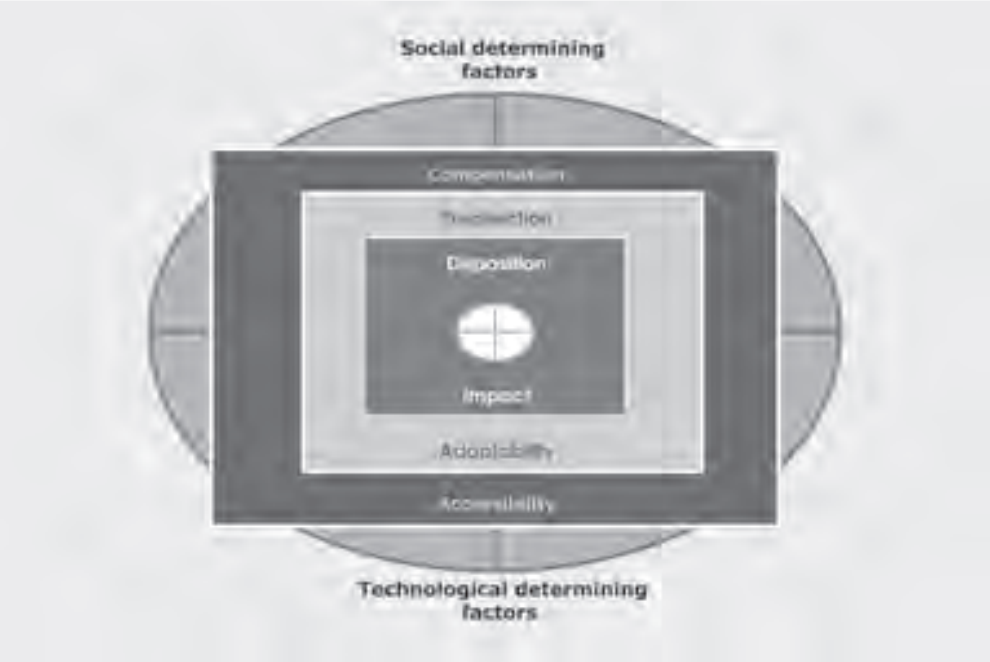
A successful knowledge management program goes, therefore, beyond the learning reported in the participants' grades. Often, these grades do not mean the reduction of defensive routines or skillful incompetencies —unintentional but counterproductive consequences— which inhibit the transformation and reduce the importance of knowledge.

The main factor, when it comes to data resources, is the set of intangibles potentially susceptible of producing value through management: intellectual capital, consisting of available and required informational resources. The former are those ones which a person or organization has and can use whenever they need them, while the required ones are not possessed but are indispensable and must, therefore, be obtained.

In fact, the concept of management refers to obtaining the needed resources out of and with the resources available. When you start a process of this type it is advisable to verify the existence of the intellectual capital available in the individual, structural and relational areas and identify the resources demanded by the organization.

The infrastructure, equipment and network and libraries access services, databases, among others, although they are not intangible assets as such, are important for the advancement of pedagogical activities. For educational institutions that lack sufficient resources, the preliminary measurement of the intellectual capital can yield surprising results. Of course, this involves changing the conventional reasoning to achieve congruence between the knowledge management programs in order to increase intellectual capital and, in agreement with, the social and cultural conditions that influence on the ICT (figure 3).

Figure 3
Determining factors ICT.



Source: own elaboration.

The social conditions —disposition, predilection and compensation— mobilize people in favor or against the use of a particular technological tool: if they find visible compensation, they will choose to use a technology and arrange whatever it takes for its acquisition. For its part, the circumstances inherent to technology itself —impact, adaptability and accessibility— facilitate social inclination when the initial positive impact is accompanied by a friendly adjustment to users who can access easily.

Conclusions

Reiterating that ICT allow the transformation of information into knowledge, it should be taken into account that *every day we are informed of what's happening in the four corners of the world. Of course this information is always partial and possibly biased: but alongside the evidence that a distant event can have consequences for us, it strengthens daily our feeling of being inside history, or more accurately, keep it hot on our heels, to be touched by it again during the eight p.m. news during or the morning news* (Augé, s/fys/p).

A central aspect of learning based on knowledge management is the contrast of meaningful experiences coming from the academic and extra-academic environments with readings, texts, research and studies: *facing an informational conception of the receiver as point of arrival of the message, without any other choice but to get or not the information contained in the message, textual semiotics presents us that 'a text is a lazy mechanism that lives off the added value of the intention given by the recipient' ... and that 'a text postulates its recipient as an essential condition not only of their own communicative skills, but also their own meaningful potential'* (Barber, 1987, pp. 239).

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