

ARTICLE

e-Learning as an Object of Study¹

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Abstract

The article seeks to typify e-learning as a transversal object of study particular to the development of the network society. To that end, the article presents the conceptual premises, the institutional framework, the study levels and the working focal points of Scopeo, a new Observatory of Activity, Innovation and Trends in e-Learning. The article also presents the results of the first two research projects on e-learning in four basic study contexts: pre-university, higher education, public administration and private enterprise.

Keywords

learning, e-learning, research, observatory, digital university

La formación en red como objeto de estudio

Resumen

El artículo busca caracterizar la formación en red como objeto de investigación transversal propio del desarrollo de la sociedad en red. Para ello se presentan las premisas conceptuales, el marco institucional, los niveles de estudio y los enfoques de trabajo del nuevo Observatorio de la Actividad, la Innovación y las Tendencias en la Formación en Red, Scopeo. Se presentan también los resultados de las dos primeras investigaciones sobre la formación en red en los cuatro ámbitos básicos de estudio: el nivel preuniversitario, el nivel superior, la Administración pública y la empresa privada.

Palabras clave

aprendizaje, formación en red, investigación, observatorio, universidad digital

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Conceptual Premises

Typifying e-learning as an observatory's object of study is not a decontextualised idea; it is based, implicitly and explicitly, on a series of hypotheses that can be typified as follows:

1. Virtuality is the technological condition for the network society's operation and regeneration. The emergence of this new instrumental era, whose emblematic archetype is the Internet, represents a very important technical advance for humanity. Nevertheless, it creates a new sociocultural horizon of human development that heralds a series of local and global transformations, all of which are subjected to ongoing validation.
2. The network society opens up, puts flexibility into and enriches a particular educational environment. Besides the impact on various social dynamics, like the processes of production and labour, citizen participation, models of cultural production, opportunities for commercial exchange, alternatives to affective expression, methods of journalistic communication, options for recreation and so on, e-learning emerges as a "natural" extension of the new context of socio-technological development.
3. e-Learning environments add changes to education and determine new focuses of attention. For learning, they imply a series of new purposes, processes, convictions and conditions, as well as the emergence of new social stakeholders and new approaches to traditional educational roles. Together, all of these things shape a series of opportunities for standards of human interaction in general, and a series of new challenges and dilemmas for education in particular. As part of today's educational models, education in the broadest of senses will therefore need to embrace them.
4. Besides the political and economic optimism surrounding e-learning, the latter has an impact of a symbolic nature on people, institutions and social dynamics. Whether a complementary activity to face-to-face learning, a strictly virtual activity, a regulated activity, an informal process, a part of occupational or staff-development training, or a part of basic or complementary education, e-learning is now becoming a social priority in the network society context.
5. Consequently, assuming that today's technology adds something to education, it is all the more nec-

essary to know what it is that research adds to this technological development to enhance educational competence in today's society. Access to information is not the same as access to knowledge. Having a tool available in a classroom – or as a classroom – does not imply educational quality either. As a result, studying the development of the many manifestations of e-learning from a variety of interdisciplinary angles becomes a justified action in the network society. This will allow its strengths to be maximised and its weaknesses to be minimised.

These and other premises have been approached in many other ways, from many other angles. However, many of these premises are supported by advances being made in research, which offer clues to the impact of e-learning on the world.

Let's cite some of them. The slowness of integrating technology into official educational programmes (BECTA, 2008) has been demonstrated. In such programmes, there are underlying problems of a systemic and educational nature. It has been shown that each generation of tools not only generates alternatives, but also its own technological culture, on the basis of which specific educational solutions are defined (Bacigalupo, 2009). Yet, of all the factors associated with e-learning, the development of the educational dimension is still missing, a dimension that allows better responses to be given to learners and teachers using new technologies (Zhao et al., 2005). Likewise, an understanding of the classic antagonism existing between face-to-face and e-learning still needs to be established for other realities. A recent meta-analysis (U.S. Department of Education, 2009) suggests that e-learning experiences are more effective than traditional ones, particularly when they are combined with face-to-face learning.

However, technological advances in education are not as uniform as they are in other sectors of society (Carnoy, 2004), and despite being equally as powerful, the difference will remain because each reality involves a series of educational factors that redefines the problem of research. Therefore, besides methodological adjustments to enhance the quality of teaching and learning in virtual contexts, it is also crucial to know why, with whom, where, with what and how such teaching and learning take place. These elements are particular to each e-learning practice and society.

This whole series of premises, contrasts and options has led the University of Salamanca to create a public open research space to investigate and strengthen e-learning in our cultural and social context. This space is the Scopeo Observatory. This initiative is not, however, an isolated en-

tity. Rather, it is part of a set of emerging technological innovations in the “Digital University” context.

The Digital University of Salamanca Context

To understand the role of technology in educational processes is to understand their impact as a condition of learning; hence, when talking about educational uses, the Internet is necessary but not sufficient. Seen like this, to talk about e-learning is to talk about new learning conditions (Suárez, 2008). This technological condition involves acting, thinking and being online; that is to say, without a centre and between nodes, all of which are vital to support learning. In this sense, e-learning is a way of organising learning in the network society, in which a condition of learning is knowing how to move in and around the nodes; it is not about looking for a centre. This implies changes in the way people think about the relationship between education and virtuality at all levels and in all areas of education.

As such, there is a theoretical and practical need to understand the educational impact of technology on the network society, a stage of society’s development that entails a culture organised around a diversified system of electronic media, one of which is the Internet (Castells, 2006, p. 58). In keeping with this is the emerging paradigm of innovation called the Digital University of Salamanca, which describes the Scopeo Observatory as an agent of research on society’s e-learning.

The virtualisation of universities is neither a frivolous matter nor a simple process; it implies a vision of the purposes, processes and design of its components (D’Antoni, 2005). The Conference of Spanish University Rectors (CRUE) had already defined six strategic principles of action for universities to implement new technologies in their respective areas. According to CRUE (Barro and Burrillo, 2006), these principles involve activities that go far beyond teaching and learning, opening themselves up to research,

to university management processes, to institutional information management, to ICT training and culture, and to ICT organisation. These parameters are setting the course of technological innovation processes in the network-society university.

Today, all institutions committed to education see, in networked technological organisation, an opportunity to renew their educational processes. In this context, one of the most systematic attempts to do technological research in Spanish universities is *Universidad Digital 2010* (Piatinni and Mengual, 2008). Thanks to this project,² in which eight universities supported by four companies are taking part,³ attempts are being made to facilitate the evolution of universities towards a more effective model, capable of meeting the needs of education, research and social projection in the context of globalisation, and particularly in the European Space for Higher Education (ESHE) (Cabero and Barroso, 2007).

To reassert this development, the University of Salamanca has set itself a series of challenges in the context of the Digital University of Salamanca project.⁴ The general objective of this project promoted by the Office of the Vice-Rector for Technological Innovation is:

“To define, acquire and implement a suitable logical and physical infrastructure to ensure that the processes of education, research and management can be carried out using technology as a tool or medium that facilitates or enables such processes, without said technology being an added barrier to their development. This objective is approached from a strategic perspective leading to an accessible, consistent and integrated solution.”⁵

Consequently, Scopeo brings a research perspective to various projects being rolled out by the Digital University of Salamanca. Among the projects behind the digital university idea, worthy of note are the Studium⁶ services portal for the development of e-learning; the Open Knowledge Office,⁷ which, among other things, promotes the University’s OpenCourseWare; the Multimedia Technology Centre;⁸ the Virtual University, which provides support, education

2. <http://www.universidaddigital2010.es/portal/page/udf/inicio/publico>

3. University of Alcalá, Carlos III University, University of Castilla-La Mancha, Rey Juan Carlos University, University of La Rioja, University of Salamanca, University of Seville, University of Valladolid, Oficina de Cooperación Universitaria, Banco Santander, Telefónica and the Universia portal.

4. <http://campus.usal.es/~vic.it/>

5. http://campus.usal.es/~vic.it/index.php?option=com_content&view=article&id=58&Itemid=70

6. <http://studium.usal.es/>

7. <http://oca.usal.es/>

8. <http://ctm.usal.es/>

and advice on everything connected with e-learning;⁹ the Diarium¹⁰ blog and personal web page manager; and the USALvideo channel.¹¹ None of the projects are isolated applications; rather, they all form part of a consistent unit.

Scopeo is part of the vision of this new breed of universities and, as such, requires a line of research and reflection on the implementation of e-learning in Spanish universities (García Peñalvo, 2007) and other sectors of society on which e-learning has the greatest impact: private enterprise (Babot, 2003), public administration (MAP, 2003) and basic education (Sigalés et al., 2008). Together, this vision and these sectors and processes form part of e-learning development in Spain.

In order to understand the virtualisation dynamics of education processes in Spain, it is necessary to understand how and in what direction e-learning in these four sectors of society is progressing – or not. Nevertheless, seen like this, they all involve the same entity of study. Therefore, to talk about an e-learning observatory is to talk about a social mission – able to generate opinion, add credibility and offer academic rigour – of e-learning in Spain, without, of course, neglecting the dynamics in the Spanish-speaking world.

The Scopeo Observatory

Without leaving the Digital University of Salamanca context, the Scopeo Observatory has a different line of action with regard to e-learning. On the one hand, the Observatory gathers experiences connected with the University of Salamanca's virtualisation (described above) and interdisciplinary research on e-learning. On the other hand, it channels the social experience and vocation that the Fundación Germán Sánchez Ruipérez has gradually gained through the International Centre for Advanced Technologies (CITA), in order to foster significant digital inclusion in society and to enhance people's digital competence. Both institutions now count on a special collaborative relationship with the Government of Castilla y León, with which they design the Observatory's action policy. A series of entities from the e-learning sector have also joined this management group, collaborating by supporting a variety of initiatives.

The general objective of the Scopeo Observatory is to promote and distribute e-learning in society through the following actions:

9. <http://uvirtual.usal.es/>

10. <http://diarium.usal.es/>

11. <http://www.youtube.com/usalvideo>

- Constantly evaluating the educational use of ICTs in the four basic lines of research (pre-university, higher education, public administration and private enterprise), as well in transversal or cross-disciplinary areas associated with these four areas.
- Making current, valid and relevant information available to every institution and person wishing to incorporate and develop training actions using new technologies, as well as keeping them constantly informed of new developments in the sector.
- Using the Scopeo website to create a global community of users, researchers, specialists, education managers and students in order to share information and develop joint actions to foster and enhance ICT-mediated educational experiences.

Together, these objectives form an overarching line of action, which is to meet, through the website, the needs of three services: investigation or research as a cornerstone activity, information as a work in progress and interaction as a dynamic. This has been termed the “three ‘i’ methodology of Scopeo”.

Study Lines, Levels and Methods

Regarding research, the Observatory distinguishes between two lines of research; a basic one and a cross-disciplinary one. As a basic line of research, Scopeo intends to study the four strategic sectors of society in which e-learning takes place: pre-university (schools and colleges), higher education, public administration and private enterprise (Graph 1). Each of these areas of research throws up a series of particular research issues.

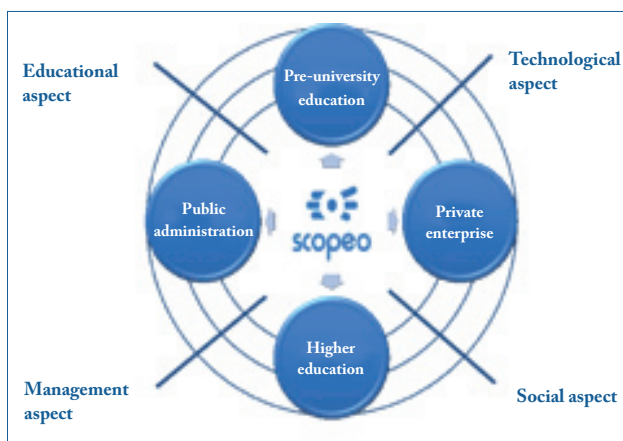
Each basic line of research on e-learning focuses on particular issues. To cite some of these, for universities it is knowing what the role of technology is in the implementation of the ESHE, for pre-university education it is taking up the challenge of developing students' basic e-skills, for public administration it is establishing the effectiveness of investment in ICTs in relation to citizens' learning competencies, and for private enterprise it is knowing what the degree of effectiveness of workflow learning is.

Graph 1: Scopeo's basic lines of research



However, as a cross-disciplinary line of research, account is taken of objects of study common to the four basic lines of research (Graph 2). This variety, without detriment to the unique nature of each one individually, can be broken down into key areas of research connected with a range of aspects, be they educational, technological, social or e-learning management-related, all of which are common to the four basic sectors of research.

Graph 2: Scopeo's cross-disciplinary lines of research

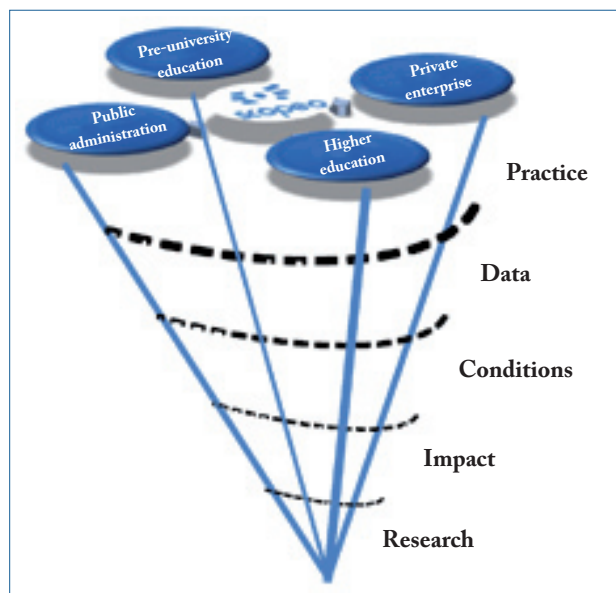


For example, regarding the technological aspect, some of the topics could be learning management systems, Web 2.0 applications and the personal learning environment. Regarding the educational aspect, they could be the educa-

tional paradigms of e-learning, and the design and development of learning objects or e-activities. Regarding the social aspect, they could be collective creation, e-tutoring and virtual learning communities. Finally, regarding the management-related aspect, they could be investment in ICTs, e-administration of learning, and the measurement of e-learning quality and impact.

Study levels can be described for each basic or cross-disciplinary e-learning research topic. Without wishing to be categorical, these levels could range from describing good practices, organising quantitative data and studying the correlation between learning and technological conditions, to producing evaluation studies (based on valid, reliable data) that support research on e-learning (Graph 3).

Graph 3: Scopeo's study levels



Regarding research techniques, there are many ways to approach e-learning studies (Area, 2006). However, while recognising this broad spectrum and epistemological debate, the observatory has opted for an interdisciplinary approach and the use of various scientific research methods to study e-learning. Within this process, it is necessary to stress the fact that virtual ethnography (Hine, 2004), in both sociological and educational research, is becoming very important in studies that aim to understand the realm of meanings, identities and dynamics of the educational interaction process in virtual environments.

Virtual ethnography, however, is not sufficient, and a series of research techniques relevant to studying e-learning are considered at Scopeo. These techniques are: focus

groups, to gather the opinions of managers and students in moderated groups; panels of experts, to make specialised and agreed forecasts and predictions; in-depth interviews, to do open analysis on ideas and cases; questionnaire surveys, to take a more quantitative approach to a variety of indicators of reality; semi-structured interviews, to compare opinions; meta-analysis, to combine several studies in a structured manner; or impact assessment, to estimate the efficiency and degree of success attained by different programmes.

Initial Results

Even though it was only in November 2009 when the Observatory was officially presented, two completed studies are described below.

Education Web 2.0

Nowadays, besides looking for information on the Internet, we actually create the Internet. Every time we comment on a post, expand on a Wikipedia article, post an image on our wall, tag a resource, provide a link to a presentation, embed a video, tweet a thought or invite our friends on social networks to an event, we are making and creating the Internet. Under these new conditions, which go by the techno-social name of Web 2.0, a kind of Education 2.0 unfolds.

Substantially, this Web 2.0 represents an era of social development that is driven by collective creation. In other words, it is a virtual participation environment in which users are also content creators. The incredible explosion of Web 2.0 applications can actually be quite overwhelming for users in general. The variety and blend, and the thin lines dividing Web 2.0 applications, prevent them from being properly directed at people who want to use them for educational purposes. Maybe, over and beyond equipping educational centres with computers,¹² knowing “how” to use them is the most significant challenge for 2.0 schools in Spain, which has already been thrown down, and in other countries too.

Therefore, in the light of this luxuriant 2.0 world and the compelling potential of recouping interaction as a social condition of learning in these new virtual environments, the Observatory has prepared a monographic study enti-

tled “Education Web 2.0” (Scopeo, 2009a). In this qualitative research project, the aim was to analyse and estimate the educational value of current Web 2.0 applications, to offer educational guidance for using these tools for education, to identify tools and cases of Web 2.0 application in the Observatory’s basic lines of research, and to estimate trends for future educational use; the Semantic Web.

This process of estimating the educational potential of Web 2.0 technological tools and educational applications was done using four educational use criteria applicable to Web 2.0. Although commendable efforts have been made to understand, classify and guide the use of the myriad technologies that can be put to educational use (Hart, 2009), the cases analysed here represent points of reference for the development of a denser educational analysis of ICT use in education.

Specifically, analysed here were 54 of the most representative Web 2.0 technological applications, and a total of 57 good Web 2.0 educational practices in four sectors in Spain: pre-university, higher education, public administration and private enterprise. As in any evaluative study, the estimation of these Web 2.0 tools and educational applications involved formulating and identifying an evaluation parameter, typified, in this case, by four Web 2.0 educational uses: resource sharing, resource creation, information retrieval and social networks. It is not a matter of a four-part classification or anything of the sort, but rather of proposing certain directions for an educational understanding of the tools for learning.

These educational criteria of the Web 2.0 educational analysis are described as follows:

- Resource sharing: Allows other people’s public resources to be accessed and multimedia content to be distributed. These websites (YouTube, Flickr, SlideShare, etc.) are sources of information that education can not only take advantage of, but also validate for an appropriate educational use.
- Resource creation: Allows new content to be generated individually or collaboratively, which can be created by a variety of groups. This creation process may involve a number of tools, though the most popular ones are wikis, blogs and other platforms like Google Wave.
- Information retrieval: Allows selective, tailored access to web content, as well as mass distribution on a variety of topics. For this purpose, social tagging tools like Delicious, or subscription tools like RSS,

12. <http://www.educacion.es/horizontales/prensa/notas/2009/09/escuela2p0.html>

are used, which allow up-to-date, simplified access to information.

- Social networks or, more precisely, social networking services: Allow virtual communities to be created and managed. Through these tools, people establish ties and contacts, and exchange content, opinions and experiences, motivated by a series of shared interests.

The results of the analysis were incorporated into a “Web 2.0 Applications Directory” and a list of “Web 2.0 Educational Applications”, both of which bear witness to the fact that Web 2.0 educational use in schools, universities, private enterprise and public administration puts “resource sharing” as the most significant use of Web 2.0, followed by “social networking” and “information retrieval”. A Web 2.0 educational use that is less exploited is “resource creation”.

As such, the incorporation of Web 2.0 applications into educational processes involves the incorporation of new styles of communication, new roles, new forms of intervention, new scenarios and a wide range of collective creation activities. The challenge that educational uses of Web 2.0 have to face up to is, right now, the development of educational support (Scopeo, 2009a). In other words, Web 2.0 in education implies the creation of an educational dimension that adds a learning-oriented vision to the technical action component.

Sectoral Outlook of e-Learning Implementation

The *Informe Scopeo n.º 1* (Scopeo, 2009b) is a qualitative study that seeks to unravel the ins and outs of the process of implementing e-learning in Spain. In this instance, a focus group technique was used to gather the opinions of 50 renowned e-learning experts and managers in the four most significant sectors of e-learning implementation in Spain: pre-university, higher education, publication administration and private enterprise.

Each of the four sectors met in its own focus group on different dates and in different cities. In these sessions, an initial working guide was used to retrieve and contrast buried information about why education directors had felt it expedient to implement e-learning in their respective institutions. The answers went beyond the initial guide and were complemented with a series of appraisals concerning the ups and downs of the implementation process.

This study brings a crucial and complementary vision to existing studies on this issue, since it highlights the ins

and outs of the process as recounted by its protagonists, which are very hard to get from cold, hard numbers. This wealth of information, both referential and experiential, was organised into five major aspects concerning the process of e-learning implementation in Spain:

Regarding “reasons for implementing e-learning”:

- The main reasons for opting for e-learning was to delimit geographical dispersion, to develop greater educational flexibility and to allow teaching experts to offer tutoring without it being face-to-face.
- ICTs are perceived as fundamental elements for institutional modernisation and consolidation. As such, the e-factor is mentioned in the sense of it being a corporate policy for generating an e-culture in business, where it has had a decisive impact on competitiveness.
- Students ask for e-learning to be implemented because they are frequent users of ICTs (digital natives and not digital immigrants), particularly those who have previously taken online courses. Pre-university teaching staff use ICTs with caution, using them only as they think fit, whereas university teaching staff apply ICTs to suit students’ needs.
- e-Learning is perceived to be a complement to face-to-face learning, as yet another channel that is available within the overall educational offering, and not as a replacement for face-to-face learning.

Regarding the “main challenges for – or resistance to – its implementation”:

- From a corporate angle, the concern about managing to get directors “to believe” in e-learning was acknowledged. From the workers’ angle, a dialogue with trade unions was called for, to get them to recognise time spent on e-learning. The need to accept that e-learning is not simply about “using a platform” was perceived.
- The rigidity of the educational system prevents ICTs from being incorporated into the curriculum. This situation is a hindrance to ICT implementation in schools, though once ICTs have been implemented, the main problem in this sector is the students’ cognitive withdrawal in e-learning.
- Resistance to innovating through ICTs is perceived among teaching staff, which is worsened (technophobia) by teaching staff not having control over the tools and by an absence of e-learning educational models. This means opting for more consistent models and for

an acknowledgment of virtual activity, which is usually ignored.

- Intellectual property rights are a hindrance for many teaching staff and a social problem that global society and institutions need to manage. Also worthy of note, and particularly so in private enterprise, is the selection of relevant, qualified training providers to successfully deal with e-learning.

Regarding the “origins of the project”:

- The origins of e-learning projects in the various organisations can be traced back to around seven years ago. Universities lead the way in this respect, with the average being around nine years ago.
- For the origins of e-learning, the key actors were “intrapreneurs” or, in other words, a person or small groups of people who, through their own initiative, opted for its implementation. However, to gain momentum, media impact was fundamental for this educational approach.
- The implementation method was, and still is in many cases, one of trial and error, which can potentially lead to confusion over technological media for educational purposes.

Regarding “implementation areas and characteristics”:

- Even though technology in the pre-university education area has been used for many years, the implementation of ICTs is not as important in this area as it is in the other three sectors. Penetration in corporate institutions is practically 25% on average, and all universities offer a broad range of activities through virtual campuses.
- Moodle is the learning platform used in most institutions. In private enterprise, a wide variety of platforms is used (Moodle, SABA, Plateau, Blackboard, etc.), though some corporations actually create their own.
- In private enterprise, blended learning is the most commonly used approach, and it has been necessary for it to develop content in compliance with SCORM standards to avoid becoming over dependent on training providers. The most noteworthy concept referred to when talking about e-learning in private enterprise is the “corporate university”.
- In the university setting, the use of Open Source platforms is paramount. However, attempts are being made to integrate traditional virtual campuses into Web 2.0 through the creation of virtual networks between students and lecturers.

- It was found that being a digital native does not guarantee a beneficial educational use of the Internet. Therefore, there is an insistence on developing the teaching staff’s e-skills, which applies to trainers, teachers and lecturers, whether in training or actually working.
- In addition, it shows that editing digital content or administering virtual platforms are not roles that correspond to teaching staff, and that this activity makes more, rather than less, work for them.
- Likewise, e-learning is more expensive when an institution has to develop its own content. Though travelling expenses are lower.
- Emphasis is placed on the need to create a line of digital education content and products in Spain.
- A series of e-learning weaknesses were detected, which include: knowing how to take advantage of evaluative information in learning; the lack of criteria for assessing quality; the absence of an integrative management strategy; the cost-quality relationship; and security and digital identity risks.

Regarding “reactions of the stakeholders”:

- Employees recognise that e-learning helps them get used to “learning by doing”. Student’s use technology as a “natural” element of learning, and are often one step ahead of teaching staff.
- The role of tutor is perceived as being fundamental to e-learning, though it is hard to find good e-tutors. In higher education, teaching staff do not put up much resistance to accepting their new roles as e-tutors. It is in regulated education where more resistance can be found.
- Corporate management is a little sceptical about the effectiveness of e-learning, though this is mitigated as goals are reached.

Conclusion

The diversity of views, sectors and levels of educational work in the network society, the extent of educational uses of today’s technology, the variety of profiles and stakeholders committed to its development, the escalating dynamic of technological innovation, and the diversity of approaches and trends in research on the impact of e-learning are elements that add to the already complex reality of studying, understanding and guiding learning. All of these elements refer to e-learning, an object of study that requires an interdisciplinary vision in order to be able to understand the

characteristics of something that appears to very normal: learning and teaching under the flexible, deterritorialized and adaptable technological conditions of the network society. Scopeo, the Observatory of Activity, Innovation and Trends in e-Learning, seeks to be part of this techno-social *locus* in order to provide the necessary evidence for an educational analysis of the educational use of new technologies.

In this respect, bringing together various institutional forces around the digital university paradigm, the Scopeo Observatory deems it necessary to have a project strictly linked to the production of relevant, valid and reliable information on the process of e-learning implementation. To that end, it proposes an overarching line of action, the "Scopeo's three 'i' methodology", which considers investigation or research as a cornerstone activity, information as a work in progress and interaction as a dynamic.

Adding opinion, credibility and academic rigour to technology is a principle that the Observatory seeks to develop in, at the very least, the four most significant sectors of e-learning: schools, universities, private enterprise and public administration. From the studies on Education Web 2.0 and the implementation of e-learning in Spain described here, it is clearer to see that using technology in education means recognising and developing an educational dimension that, more and more often, involves research as a conceptual input.

e-Learning is the object of study of Scopeo, the e-learning Observatory. However, it is necessary to accept that each basic line of research is not a rigid entity, and that there are topics particular or common to all sectors of study that, consequently, allow ever more integrative and interdisciplinary research methodologies to be used. In this respect, new areas of research on e-learning need to be developed, such as e-learning applicable to rural areas, the elderly, trade unions and associations. It is also necessary to expand on ethnographic procedures in order to understand the dynamics of educational interaction in and through the Internet.

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