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Facebook's Potential for Collaborative e-Learning

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Abstract

Today, Facebook (www.facebook.com) is probably the most palpable example of environments known as 'social networks' or 'Web 2.0'. Social networking sites are platforms that facilitate information sharing, interaction and collaboration among their users. However, Facebook's success is not solely dependent on its capacity to connect people, although this was its initial orientation. The platform's power for sharing resources and linking content on the Internet to user profiles, as well as its evolution towards livestreaming and microblogging, enable it provide support for complex, continuous interaction experiences and, consequently, to structure collaborative-learning processes. The platform's communication tools, combined with the option to enhance its potential by installing third-party modules and applications, allow members of a community or work team to carry out very diverse activities.

On the basis of theoretical underpinnings represented by the socio-constructivist perspective on communities of practice, the Web2Learn work group analysed and assessed the features that enable

Facebook to be used as a platform for carrying out collaborative online activities from two angles: technological and educational.

Keywords

Facebook, social networks, collaborative learning, communities of practice, Web 2.0

Posibilidades de la plataforma Facebook para el aprendizaje colaborativo en línea

Resumen

Facebook (www.facebook.com) quizás sea hoy el ejemplo más «palpable» de los entornos denominados redes sociales o 2.0. Las redes sociales son plataformas que facilitan el intercambio de información, la interacción y la colaboración entre sus usuarios. El éxito de Facebook como red social, sin embargo, no depende sólo de su capacidad para conectar personas, aunque sea esta su orientación inicial. La potencia de la plataforma para compartir recursos, para vincular contenidos presentes en internet a los perfiles de los usuarios y su evolución hacia el *lifestreaming* y el *microblogging* la facultan para dar soporte a experiencias de interacción complejas y continuas, y, con ello, para estructurar procesos de aprendizaje colaborativo. Las herramientas comunicativas de la plataforma, así como la opción de enriquecer sus potencialidades mediante la instalación de aplicaciones y módulos de terceros permiten a los miembros de una comunidad o equipo de trabajo desarrollar actividades heterogéneas.

Sobre el marco teórico representado por la perspectiva socioconstructivista de las comunidades de práctica, el grupo de trabajo *Web2Learn* ha analizado y valorado, desde una doble óptica, tecnológica y pedagógica, las características que hacen posible la utilización de Facebook como plataforma para el desarrollo de actividades colaborativas en línea.

Palabras clave

Facebook, redes sociales, aprendizaje colaborativo, comunidades de práctica, web 2.0

1. Introduction: theoretical underpinnings

Scientific and technological progress forces people to make a constant effort to adapt to changes and to be permanently prepared to learn. Individuals are confronted with new needs: they have to rise to unique social and professional challenges, and participate more actively in their own learning processes. The structures and demands springing up all around us, in both educational and professional arenas, call for greater interaction among people. The success of modern organisations does not stem so much from individual creative genius as it does from the organisational and participatory capacities of professional groups and the collective generation of shared knowledge; in short, from talents that are practically impossible to find in one individual alone.

One of the key features of Web 2.0 application is collaboration, not only between machine and user, but also among users. These social applications have the capacity to function as 'intellectual

partners' to promote critical thinking and facilitate cognitive processing (Voithofer et al., 2007). Text, voice, music, graphics, photos, animation and video are combined to promote users' thinking and creativity when undertaking high-level tasks. They offer a wide range of resources that can be used for problem solving, critical thinking collaboration and so on (Dillenbourg, 1999), in both physical classrooms and virtual learning environments. In addition, Web 2.0 technologies, with their interactivity potential, foster active participation and student-centred learning. Collaboration among students is a defining feature of constructivist classrooms (Jonassen et al., 1993), and Web 2.0 has wide-ranging potential for social interactivity and the promotion of collaboration and collective learning. Virtual communities of students can be organised on the Internet, allowing them to work in small groups to attain shared objectives and to strengthen their commitment to the values inherent to collaborative working. The more or less diverse grouping of students for the purpose of undertaking tasks may favour the creation of 'zones of proximal development' (Vygotsky, 1978) and provide students with opportunities to construct shared meaning for their practices (Dillon, 2004).

Facebook is an example of a Web 2.0 social networking site, which has enormous potential in the field of education despite the fact that it was not designed as an environment for constructing and managing learning experiences. It operates as an open platform, unlike other systems organised around courses or formally structured content. In fact, while Facebook is not a learning environment, either in its underlying concept or the design of its tools, it can serve as a very valuable support for the new social orientations now prevailing in approaches to educational processes. According to Garrison et al. (2005), learning communities represent a fusion between the individual realm (subjective) and the shared realm (objective). In this context, Facebook represents a great opportunity to generate knowledge and inter-group cohesion.

The theoretical and practical underpinnings for considering collaboration processes in virtual environments are now in a phase of expansion. Together with the classic theory of communities of practice, as described by Lave et al. (1990) and Wenger (1998) in the context of 'situated learning', it is necessary to consider the 'learning by doing' concept, the cornerstone of these communities, which may be better suited to the model of interaction and collaboration expressed in social networks. Jyri Engeström (1999) has tried to reconceptualise learning by doing in a paradigm called 'learning by expanding'. For Engeström, the 'community' concept is the central nucleus on which various dynamics converge, be they human (subjects), instrumental (objects and tools) or communicational (rules, division of labour). The result of these dynamics is necessarily a shared, agreed outcome. The structure underlying learning communities therefore implies the production of knowledge and the consideration of 'social knowledge' as an added value rather than the simple sum of many pieces of individual knowledge.

Facebook constructs 'sociality' by means of a strategy that connects users not only with each other, but also with numerous circles of sub-networks, events and groups. It assumes that the production of creative experiences is a social event, which is based on pooling resources and content contributed by people and processed using shared-use tools. In this article, our intention is to focus attention on a particular type of experience – educational – and to present the results of an analysis of the potential and, of course, the limitations of Facebook.

2. Work plan: objectives and activities on the platform

This article describes the work carried out by the Web2Learn¹ group in the second term of 2010, in the context of the master's degree in Education and Information and Communication Technologies (e-Learning) offered by the Open University of Catalonia (UOC). The group undertook a project, the main aim of which was to generate knowledge on Facebook's potential for carrying out collaborative e-learning activities. Web2Learn developed a theoretical design specifying the objectives and activities that had to be carried out, and then implemented them; to do that, it created a private group on Facebook and transferred the process of collaborative working to it.

The online activities carried out, described in relation to the initial objectives set by the group (in italics), were as follows:

- *To stimulate the development of basic technical and social skills in order to participate in the social network in particular, and in contemporary society in general.*
 - Creating individual accounts on Facebook.
 - Creating a group space (Web2Learn work group) to carry out collaborative activities, and configuring it properly.
- *To promote peer-to-peer learning and working.*
 - Individually exploring the features of the environment and pooling the results, making a note of the research results in the space itself.
 - Proposing strategies, resources and information sources to other members of the group in connection with the educational use of Facebook and its potential as a support for collaborative working.
- *To produce knowledge in the very process of collaboration among group members.*
 - Documenting the working process using external applications, for both written and multimedia formats (text, video, presentations, screencasts and mind maps).
 - Expanding the environment's connectivity through external data storage services (GDocs, Scribd, Box.net), showing the generative and expansive capacity of the network.
- *To assess the potential of the chosen environment as a means for collaborative working and to self-assess the group's work.*
 - Elaborating a mind map summarising the research results, the activities carried out and the conclusions drawn by the group.
 - Performing an assessment of the platform and a self-assessment of the group's work, specifically developing a tool for assessing the collaborative environment and its technological and educational potential.

1. The Web2Learn group was formed within the framework of the subject 'Learning based on virtual collaborative activities'. Members were grouped together on the basis of the professional e-learning experience, and the topic of the study emerged from the final activity of the subject, which anticipated carrying out a project for learning and collaborative work in a virtual environment. Besides the authors, the work group included Jaume Solans Cases and José Luis Soler Domínguez, who gave us their permission to use materials and conclusions drawn from the group work.

3. Facebook for online collaborative working: strengths and weaknesses

The process of interaction among individuals is key in the analysis of virtual collaborative environments from a socioculturally-oriented constructivist perspective (Barberà et al., 2008). It is vital to focus on the assessment of the quality of joint activities carried out by participants on certain types of content and tasks, and on the way technological resources mediate, transform and optimise those activities.

We have analysed whether a work group created on Facebook can incorporate the necessary learning resources to carry out collaborative activities in a safe, functional environment that is easy to manage and configure. Our assessment has been split into technological aspects (the platform's native and expansive capacities) and educational aspects (the development of communication and interaction methods suited to learning objectives). The results are described below.

3.1. Technological aspects

When Mark Zuckerberg created Facebook in 2004, his objective was to offer the general public a communication model that had initially been developed as an environment for use by students at Harvard University. This environment provided simple tools for students to share news. Today, Facebook has over 500 million registered users; it has become a true paradigm for the development of virtual social relationships and has definitively outstripped Myspace (www.myspace.com), its main competitor, especially in Europe. In the United States, the number of people aged over 65 registered on social networking sites has increased by 53% in the last two years, and Facebook is the out-and-out winner, with a total of 7.2 million users (Nielsen, 2009). There is no question whatsoever that social networking is a global phenomenon that is far more than a craze or a fashion. It represents a new way of relating to others, which does not discriminate on grounds of age, gender or culture. Facebook is a paradigm of inclusive interaction.

One of the keys to success of the site is its orientation towards what we could describe as 'extended technological development'. A feature of Facebook is its open architecture. More than one million independent people in 180 countries worldwide collaborate on the development of applications that can be integrated into Facebook to enhance its native functions. Extended technological development not only broadens the technological potential of the site, but also consolidates its expansion and uptake worldwide. Thanks to easy-to-develop application protocols (APIs), programmers and entrepreneurs everywhere can contribute to the creation of modules to meet very different needs. Facebook has become a model of global sociality.

However, one of the best aspects, in our opinion, is the initial simplicity of the platform for new users. From a functional viewpoint, and despite having evolved tremendously since its launch, the environment has not lost sight of the fact that the main objective of virtual communication is to share texts, links, photos and videos. Thus, Facebook's native tools are the ones required to immediately start creating a community of friends that is based on sharing these basic objects.

Regarding Facebook groups, the functional unit analysed in our study, the platform initially provides technological support for the following items:

- The group's *profile*, administered by the group creator/page owner.
- The group's *wall* for members.
- The group's *discussion boards*.
- The group's *photos*.
- The group's *videos*.
- The group's *events*.

The various modules all work in more or less the same way. When administrator rights are given to members of a group, any of them can take unrestricted action on any of the sections apart from *events*, which is reserved for the group creator/page owner. This anomaly does not allow members to interact on a shared calendar, which shows that the collaborative-working philosophy of Facebook is not the same as that of other collaborative-working environments – or at least those that have traditionally been considered as such. Facebook also permits three levels of privacy, classified as open, closed and secret. Everyone on Facebook can view and join open groups. Only members can view closed groups, and joining them is by invitation only. Secret groups cannot be found in searches. For most kinds of task-based collaborative projects, the ideal format is a closed group. Open groups allow interactions to be focused on long-term objectives, and the potential for generating viral knowledge to be increased.

From a technological viewpoint, Facebook's strengths for collaborative working are as follows:

- *Simplicity and speed of creating and administering a work group.* From his or her private profile, an individual user creates a new work group and invites other participants to join.
- *Simplicity of use of native tools.* Facebook's basic functions (wall, discussion boards, photos, etc.) are easy to use, accessible, intuitive and visually well-structured. A group can start interacting immediately after it has been created.
- *Chat, messaging and image tagging.* These functions, which are particular to Web 2.0 environments, are available on the social networking site. However, tagging is only available for images, and the main objective is to tag people in photos. However, there is nothing stopping us from using this function to document graphics, for example.
- *A high degree of external connectivity.* Due to Facebook's extraordinary expansion, the social presence of brands, advertising and events has compelled many external content supply services to implement Facebook connectivity. Indeed, it is possible to assert that this social networking site is a Web 2.0 product and that its enormous uptake has forced many external services to adapt to the new social philosophy or, in other words, to fit into the Web 2.0 environment.
- *Internal expansion capacity.* Thanks to the development of the site's own applications and to independent programmers, both users and groups can expand its native capacities by using

- add-on modules. For example, we can install modules for Google Calendar, To-do lists, blog sites, Flickr photos, Slideshare slides, etc.
- *Microblogging and livestreaming features.* In each successive redesign of the platform, its adaptability to the 'real-time Web' concept has become apparent. This concept is particular to microblogging services. The rise of other social networking sites aimed at real-time communication, such as Twitter (www.twitter.com), caused Facebook to improve its news feeds (the home page that opens by default for every user), offering faster, more effective refresh and tracking technologies.
 - *A powerful support for mobile learning.* Support for mobile devices and operating systems (iPhone, Android, Maemo, etc.) is one of the platform's most spectacular advances. Since September 2007, when Facebook launched the service, more than 100 million users now access Facebook via mobile devices, and it is a fact that these users are twice as active on the platform as users accessing it via their PCs. This flexibility is an indisputable advantage for developing mobile learning experiences that would not be very – or at all – functional in other environments.

The support features that we have just described demonstrate that what we are witnessing is a platform that is technologically rich, adaptable and expandable, capable of supporting collaborative-working experiences in learning communities. However, in order to issue a more accurate diagnosis, we must also take account of the site's shortcomings in relation to the objectives of our study. When taking an in-depth, critical look at Facebook, we find that there are several elements that tend to hinder the implementation of learning experiences, either because some of the native tools are not well-developed, or because certain tools are quite simply missing. Let's take a look at some of them:

- *Presence of 'noise' and distracting elements.* When Facebook is used to create a network for group working, certain elements that are justifiable for individual recreational use can become distracting. The environment shows advertising, warnings, suggestions and requests, which are the basis of its interactive richness, but they are also superfluous in teamworking environments.
- *The drop-down comments system on walls tends to make it hard to see information.* If a user is not a habitual user, the presence of new comments may be overlooked. Likewise, the difference between 'read' and 'unread' items is not easy to see, and is occasionally too spurious.
- *Facebook lacks a true system for tagging, filtering, searching and organising information.* The speed at which news is produced, and the same speed at which it disappears into *older posts*, are not compatible *a priori* with the task of undertaking 'storage work', whereby knowledge generated can be classified, saved, and easily and quickly retrieved. Collaborative working on complex projects over long periods of time is demanding with regard to the meta-tagging of documents and requires effective storage, organisation and look-up systems. Despite the fact that Facebook allows photos to be tagged, as already mentioned, this function is not very

- useful for anything other than indicating the one-off presence of elements in them (such as friends' faces), and it does not extend to other types of object.
- *Facebook's group discussion boards are too basic.* On the one hand, they lack a text editor offering the functions required by a minimally complex presentation of a topic. On the other, they do not allow any type of reply nesting, so, despite their name, they simply become lists of replies to the main topic. Once again, the site lacks a system for organising messages to facilitate searches on them. Trying to locate a message that we know is somewhere can often be very chaotic.
 - *Facebook lacks functions that are native to environments specifically oriented towards work groups.* It does not support file uploads (apart from photos and videos), multi-user file editing, task list creation or task assignment (to members), or monitoring. A truly shared events calendar does not exist, nor does the option (which is desirable under certain circumstances) to control the amount of time users spend working in the group space. It also lacks a good log of actions for individual members of a work team, which would otherwise allow their contributions to the group to be reviewed in an orderly manner, rather than being mixed up with their general contributions to the network.
 - *There is no way of installing, in one go, an application for a work group.* To make an application available to group members, each member needs to install it individually and configure it accordingly. Consequently, the application is available for each user under his or her private profile, and is therefore inappropriate when it comes to separating personal elements from elements shared by the group. The proliferation of applications does not mean that they always work properly, or that they behave in a stable manner. Managing applications requires greater technological competency, which cannot always be taken for granted. The configuration of Facebook applications, especially the really powerful ones, often requires a high level of skill and a prior understanding of what is expected to happen when the application is integrated into the social network.
 - *Individual members of a group cannot create events.* This is the case, even when they are group administrators. In its current state of development, this function is minimally operational because, if a decision is taken for several users to be group administrators, it is only to be expected that they should be able to manage events and the group's calendar.
 - *Facebook does not natively provide synchronous bidirectional audio and video.* While users can leave messages and video recordings, it is not possible to use this channel for bidirectional real-time conversations. It is necessary to resort to installing third-party, browser-dependent plug-ins to implement this functionality. Facebook's native chat is a simple tool and, therefore, is generally too slow.

As can be seen, a fair diagnosis of Facebook's potential for supporting collaborative-learning experiences should take account of the fact that the world's most widespread social networking site works differently depending on the viewpoint: it is not the same from a user-centric perspective as it is from the professional-requirement perspective of a learning or research community. However,

any considerations bearing negatively on the technological features of the site as applied to work groups should not mar a final judgment on its potential, since Facebook was not designed as a group-working environment, and cannot, therefore, be strictly assessed in the same way as a dedicated platform could. Some of the shortcomings we have highlighted may be irrelevant to the needs of many work teams. Despite the lack of certain features, Facebook is, for these work groups, a great support for their interactions, especially if they are based on discussing and sharing resources, and integrating external content available on the Internet.

3.2. Educational aspects

From the viewpoint of group working, Facebook provides a virtual space in which collectives involved in a shared objective can discuss topics, give their opinions, organise events, send information, share ideas and proposals, elaborate content, etc. Thus, a virtual community emerges. However, such virtual communities are not solely limited to sharing texts, photos, links or videos. Rather, a social sense of belonging to a group arises in them (McMillan et al., 1986), thus shaping a social aggregation that emerges from the network itself, since the group holds public discussions that are sufficiently widespread, with enough human feeling, to form networks of personal relationships in cyberspace. When the main motive for the existence of a community switches from simple information sharing to learning and professional development, what we then find is a virtual learning community.

Unlike the classic conception of a virtual community centred *a priori* on objectives or interests, Facebook is initially user-centric. In other words, it is a social networking site that starts with the user and is configured around him or her, without any precise objective or norms other than the dissemination of his or her own virtual existence. A user is the owner of his or her own space: the *profile*. He or she has a list of friends/contacts, and everything that he or she does, if he or she so decides, is visible to that list, which creates a thread of dynamic communication with others, giving them the chance to reply. Thus, complex and enriching lines of social interaction are generated. This dissemination mechanism is called 'virality', that is to say, the impact that our actions have on the accounts of others, through news and notifications. Learning and collective intelligence networks can be built in this way, based on communication and on open, shared knowledge. Facebook groups, whose transmission methods are identical to those on individual accounts, become spaces that are independent from the main network of interactions. This allows communication and cooperation processes to be focused on and directed towards the goals and objectives set by group members. Work groups can therefore benefit from the interaction tools available on the social networking site and from its dynamic capacities. Moreover, open groups are subject to virality.

Detailed below are the main aspects of the educational potential that Facebook offers for learning and collaborative working:

- *It fosters a virtual community culture and social learning.* From a psychosociological viewpoint, this culture is rooted in values that emerge from the users, who interact in the network on a shared objective or topic, and generate interpersonal links of trust and support, as well as

feelings of belonging and social identity. Furthermore, the existence of exchange networks and information flows is a significant aspect when it comes to shaping and maintaining a social network. The importance of collaboration should be underscored (Prendes, 2003): the objective is to create a 'shared experience' rather than an 'experience that is shared'. According to Cabero (2003), such online collaborative working is characterised by:

- o A social situation of interaction between groups of not very diverse subjects.
 - o The attainment of objectives by (individually and jointly) carrying out tasks.
 - o A positive interdependence among the subjects.
 - o Cooperative working, which requires participants to have communication skills, symmetrical and reciprocal relationships, and a desire to share the solution to a problem.
-
- *It supports innovative learning approaches.* Facebook a suitable platform for promoting informal learning, and it allows individuals to move towards the lifelong-learning ideal, user-managed open learning and collaborative learning. It is a permanent environment in which users can stay in touch after completing an educational action. Informal learning expands the potential to construct knowledge and develop skills. Rounded off with the presence of other teaching figures, such as learning mentors and facilitators, Facebook offers the potential to support lifelong learning. Likewise, it can be of great help for professional refresher training through collaboration among peers. When using a network, users negotiate ideas. They are the centre of learning activities and become active knowledge builders, since the network would otherwise be devoid of meaning. Furthermore, the core nature of interactions requires students to develop the necessary competencies for group working. Facebook allows users to work in groups and create shared experiences, thus promoting collaborative learning.
 - *It motivates students.* Although Facebook is a relatively new tool, it has an extraordinary level of penetration in society. Younger generations are very interested in using these new technologies for sharing information and communicating. Students tend to be more motivated by taking part in a learning environment in which they are the active users, the protagonists. The incorporation of new users may be a factor that encourages students to take part in this environment. In addition, social interaction may provide those with low self-esteem with greater benefit (Ellison et al., 2007). Furthermore, the platform stimulates creativity and makes learning more spontaneous and fun.
 - *It allows significant content to be presented by means of genuine materials.* Groups created on Facebook work on real projects and problems connected, for example, with professional experiences. From these, they are able to access information and work on suitable concepts. According to Jonassen (1999), the objective of learning is to think like any other member of the professional community on the topic in question. The task or problem that needs to be solved collectively is the thread of the to-ing and fro-ing of information transmitted within the social network. This consists of materials from users themselves, such as videos, podcasts, multimedia products, links to documents, Flash files and blog articles. These materials can be integrated into the learning environment by inserting hyperlinks or embedding them as objects. Thus, knowledge is articulated in the 'cogs' of connections.

- *Facebook supports synchronous and asynchronous communication.* The individual or group wall and discussion boards are examples of asynchronous communication. This provides students with important benefits and promotes critical thinking, allowing them to reflect on concepts for longer, and even encourages shy learners to express their ideas freely (Hara et al., 2000). Facebook also supports synchronous communication, although it does have its limitations, as described in the previous section. It is able to detect which members or friends are online. Thus, a user can initiate a real-time chat with other members. In addition, Facebook sends notifications of everything that is happening in a group by e-mail and feeds. Interaction and communication via this social networking site is really effective and continuous.

4. Conclusions

New frameworks for developing interactions between the actors of learning processes require new ways of gaining an understanding of such processes. Today, these frameworks are of a technological kind, and their prime expression is found in social networking sites, which have already been called 'social operating systems' (Piscitelli et al., 2010). In turn, these interaction models require a revision of classic paradigms of analysis, as well as the development of methodologies leading to the proposal of new knowledge-containing objects – Personal Learning Environments (PLEs), case methods, e-Transfolio (Barberà et al., 2009) and so on. The most recent educational methods (e.g. connectivism) tend to blur the rigid boundaries between formal and informal learning as a consequence of the manifest potential of these new collective knowledge repositories – social networks. As we have shown, their educational potential is extraordinary, and particularly so if a fresh look is taken at the concepts of education and training, and emphasis is placed on the social nature of knowledge construction.

From the viewpoint of its design and the degree of development of its native tools, it could be said that Facebook is not the best option for implementing collaborative-working projects, especially if they have high demands in terms of time control, information organisation and task-management flexibility. However, there is no question whatsoever that 'people are Facebook'. In other words, the spread of the site also brings about a democratisation of access to its resources (and to the thousands of 'essential' applications made compatible with Facebook to survive). This is something worth considering, in many learning experiences, before deciding on other platforms or dedicated systems. Creating an initiative and disseminating it is simple and immediate. Even though Facebook lacks a collaborative-project orientation (which is not its original vocation), the incredibly high uptake of this social networking site, combined with its external connectivity, the exponential enhancement of open projects, the innovative learning approaches it supports and its capacity to foster inclusive learning, makes Facebook an option that is worthy of serious consideration when proposing online collaborative-working experiences.

References

- BARBERÀ, E.; MAURI, T.; ONRUBIA, J. [et al.] (2008). *Cómo valorar la calidad de la enseñanza basada en las TIC. Pautas e instrumentos de análisis*. Barcelona: Graó.
- BARBERÀ, E.; GUÀRDIA, L.; VALL-LLOVERA, M. (soon to be published). "El e-Transfolio: Diseño tecnopedagógico de un sistema de evaluación de las competencias transversales mediante un portafolio electrónico". In: *Actas de las Jornadas Internacionales Docencia, Investigación e Innovación en la Universidad: trabajar con e-portfolio* (2009, 23-24 November: Santiago de Compostela).
<<http://www.redportfolio.org/inicio>>
- CABERO, J. (2003). "Principios pedagógicos, psicológicos y sociológicos del trabajo colaborativo: su proyección en la teleenseñanza". In: F. MARTÍNEZ (comp.). *Redes de comunicación en la enseñanza. Las nuevas perspectivas del trabajo corporativo*. Barcelona: Paidós.
- DILLENBOURG, P. (1999). "What do you mean by collaborative learning?". In: P. DILLENBOURG (ed.). *Collaborative-learning: Cognitive and Computational Approaches*. Oxford: Elsevier. Pages 1-19.
- DILLON, P. (2004). "Trajectories and tensions in the theory of information and communication technology in education". *British Journal of Educational Studies*. Vol. 52, No 2, pages 138-150.
- ELLISON, N. B.; STEINFELD, C.; LAMPE, C. (2007). "The Benefits of Facebook 'Friends': Social capital and college students' use of online social network sites". *Journal of Computer-Mediated Communication*. Vol. 12, pages 1143-1168.
- ENGESTRÖM, J. (1999). *Learning by Expanding. An Activity-Theoretical Approach to Developmental Research*.
<<http://lhc.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm>>
- GARRISON, D. R.; ANDERSON, T. (2005). *El e-learning en el siglo XXI*. Barcelona: Octaedro.
- HARA, N.; BONK, C. J.; ANGELI, C. (2000). "Content analysis of online discussion in an applied educational psychology". *Instructional Science*. Vol. 28, pages 115-152.
- JONASSEN, D. H.; MAYES, J. T.; MCALEESE, R. (1993). "A manifesto for a constructivist approach to technology in higher education". In: T. DUFFY, D. JONASSEN, J. LOWYCK (eds.). *Designing constructivist learning environments*. Heidelberg, FRG: Springer-Verlag.
- JONASSEN, D. H. (1999). "Designing constructivist learning environments". In: C. M. REIGELUTH (ed.). *Instructional Design Theories and Models: A New Paradigm of Instructional Theory*. New Jersey: Lawrence Erlbaum Associates. Vol. 2.
- LAVE, J.; WENGER, E. (1990). *Situated Learning: Legitimate Peripheral Participation*. Cambridge (United Kingdom): Cambridge University Press.
- LIEBERMAN, A. (1986). "Collaborative Research: Working with, not working on...". *Educational Leadership*. Vol. 43, No 5, pages 29-32.
- MCMILLAN, D. W.; CHAVIS, D. M. (1986). "Sense of community: A definition and theory". *Journal of Community Psychology*. Vol. 14, No 1, pages 6-23.
- NIELSEN (2009). "Six Million More Seniors Using the Web than Five Years Ago" [blog post]. In: *nielsenwire*.
<http://blog.nielsen.com/nielsenwire/online_mobile/six-million-more-seniors-using-the-web-than-five-years-ago>

- PISCITELLI, A.; ADAIME, I.; BINDER, I. (2010). *El proyecto Facebook y la posuniversidad*. Barcelona: Ariel-Fundación Telefónica.
- PRENDES, M. P. (2003). "Aprendemos... ¿cooperando o colaborando? Las claves del método". In: F. MARTÍNEZ (coord.). *Redes de comunicación en la enseñanza*. Barcelona: Paidós.
- VYGOTSKY, L. S. (1978). *Mind in Society*. Cambridge (Massachusetts): Harvard University Press.
- VOITHOFER, R. J.; FOLEY, A. (2007). "Digital dissonances: Structuring absences in national discourses on equity and educational technologies". *Equity and Excellence in Education*. Vol. 40, No 1, pages 14-25.
- WENGER, E. (1998). "Communities of Practice. Learning as a social system". In: *Systems Thinker*.
<<http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml>>

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