

Fostering c-learning through the use of virtual tools, software and environments

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Abstract

Collaboration in the teaching-learning process has increased more and more in the education environment. Besides, technologies in general have become part of our daily lives in such a way that we cannot conceive certain domains of knowledge without them, like the field of education. In this paper a classification of certain tools and environments will be proposed so as to promote the acquisition of contents related to subjects of several disciplines as well as to foster a collaborative learning.

Keywords: ICT, LKT, virtual platforms and environments, higher education, c-learning, e-learning

Promoción del c-learning a través del uso de herramientas, software y entornos virtuales

Resumen

La colaboración en el aprendizaje es una tendencia que impera actualmente en el entorno educativo. Además, la tecnología en general ha pasado a formar parte de nuestra vida cotidiana de tal forma que no podemos concebir determinados dominios del conocimiento sin su uso, como el ámbito de la educación. En este artículo se ofrece una clasificación de herramientas y entornos virtuales para promover la adquisición de contenidos de varias disciplinas y para fomentar un aprendizaje colaborativo.

Palabras clave: TIC, TAC, entornos y plataformas virtuales, educación superior, c-learning, e-learning

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1. Introduction

Collaboration in the teaching-learning process has increased in the education environment. Besides, digital resources in general have become part of our daily lives in such a way that we cannot conceive certain domains of knowledge without the use of technology, i.e. the field of education. It is also relevant how certain virtual platforms and tools have been born with the aim of promoting the acquisition of contents related to subjects of several disciplines and also of providing students and teachers with virtual spaces for communication and interaction.

Apart from those aspects, and together with the increase of our students' motivation, the European Higher Education Area (EHEA), since it was launched in 1999 by the Bologna process, has also fostered not only a collaborative learning of cognitive contents and knowledge, but also a lifelong learning, a term defined in Berlin Declaration (European Commission, 2003). Besides, such concepts of collaboration, permanence and interaction related to the term of learning lead us inevitably to the concept of interdisciplinarity for ensuring and guaranteeing them.

With the aim of taking into account these premises, this paper deals with several virtual tools and platforms and their possible application in a classroom environment for fostering c-learning in our students.

2. C-learning: a new model of learning

Conceptualization of the term “new technology” has evolved in the last few years. In fact, what we conceived as “new” today it is considered as “traditional”, so we need to redefine the situation according to our current context. We are now immersed in a society surrounded with technological devices that have changed the way we get in contact and keep in touch with other people. And also, our students are considered today as digital natives, according to Prensky (2001).

Therefore, naming current technology as “new technology” cannot be admitted, from our point of view, as the most appropriate term. It would be advisable to call them digital resources and tools, or even Information and Communication Technologies (ICT), when they are used for our daily and professional lives, as well as Learning Knowledge Technologies (LKT). This new term, as we defined elsewhere (Castillo, Ríos, Cristófol & Carrasco, 2013: 113): “describes a new point of view that is deeply concerned about the way [they] could be applied and implemented in the teaching-learning process so as to foster and promote individual learning in all our undergraduate students”.

In the frame of this shift of paradigm, faculty members (as digital immigrants) need to adapt themselves to the requirements demanded by these digital natives. That is why collecting and providing a useful classification of certain types of resources

we have at our disposal seem essential for getting updated with regard to ICT and LKT tools and how they can be applied in the classroom environment.

Regarding the first technological improvements related to collaborative learning using a computer, it was before the 21st century when a new approach arose, i.e. computer support for collaborative learning (CSCL), which, according to Koschmann (1994: 219), is: “the most focused study of the use of collaboration technology in instruction”. Consequently, Strijbos, Martens and Jochems (2004), once they have reviewed the existing literature around CSCL, pointed out that there were several authors who mentioned this term, but none of the studies explained how to design a learning of such characteristics. That is why they proposed several steps for the design of a learning they called Computer-Support Group-Based Learning, which is, on the other hand, in accordance with the concepts of cooperative and collaborative learning.

As for the use of Internet, we have witnessed in the last few years other types of learning, for instance, blended learning, e-learning or even e-learning 2.0 versus the traditional face-to-face learning. In fact, certain authors such as Adell (1997) and Laurillard (1993) already highlighted the new teaching role with regard to the use of virtual platforms and environments so as to favour collaboration. This means that new faculty members’ role is not only transmitting knowledge and information about certain disciplines but also guiding the learning process so as to foster the construction of a learning based on collaboration thanks to the use of Web 2.0 tools. As far as Web 2.0 term is concerned, it was coined by O’Reilly, 2005, who even declared that this concept “began with a conference brainstorming session between O’Reilly and MediaLive International” and whose philosophy lies on sharing knowledge created and built by means of collaboration (Herrera, 2007).

The term blended learning (b-learning) was drafted by Allan (2007) as the learning emerging in the 21st century which takes the benefits of both online learning and face-to-face learning. Besides, Allan (2007: 4) points out that this type of learning implies: “the use of different internet-based tools including chat rooms, discussion groups, podcasts and self-assessment tools to support a traditional course”. Nevertheless, we have at our disposal more virtual tools and environments, as the ones listed in the following pages. On the other hand, the term e-learning is widely conceived as the learning taking place by means of electronic and technological devices.

Today, other new terms have emerged, such as the term we are concerned in this paper, i.e., collaborative learning or c-learning, which, according to Owen, Grant, Sayers and Facer (2006: 10), could refer to: “community learning, communicative learning or collaborative learning”. Such authors also highlights the term of e-learning 2.0 that has arisen as a new type of learning where Web 2.0 tools are used together with an online learning. The term was first proposed by Downes (2005), but there are other authors who have defended the tendency of including e-learning 2.0 in the current teaching-learning process (Baelo Álvarez, 2009; Rittberger & Bles, 2009).

3. Virtual tools, software and environments for c-learning

Next, several tools, software and environments will be listed and classified for fostering collaboration, which is the main feature of the c-learning. These tools will be classified as it follows: i) sharing-purpose software; ii) virtual events and meetings; iii) social software; iv) social networks; v) virtual learning environments.

3.1. Sharing-purpose software

Today there is a wide range of programmes that allow the user to share their material and resources. This is, in fact, the philosophy of c-learning, that is to say, sharing above all for enhancing collaboration in the learning process. Even though there are plenty of programmes enabling the users to share their materials and resources, in this study we have made an attempt of classifying them, depending on the purposes we might pursue in certain contexts and situations.

3.1.1. *Sharing files, documents and presentations*

The amount of materials and resources that we can share with our students in a classroom environment can be limited by some time and space coordinates. However, when we are dealing with blended learning or e-learning we can foster collaboration among our students. Supplementary materials and resources can be stored and shared in a web cloud, according to the terminology used currently to define new applications enabling the users to save their files, documents and even their presentations on the Net.

Besides, our students can be proposed a task directly related to this aspect. Not only do we, as teachers, share our materials online but also our students need to learn how to share their materials with their classmates so as to promote collaboration. The benefit of using these services, apart from the previous ones, is not to waste time in photocopying or copying materials, as it happened with the traditional learning. Even though the most popular sites for sharing files, documents and presentations are Dropbox and GoogleDrive, there are other sites used for this purpose (Table 1).

3.1.2. *Video sharing websites*

Apart from the previous sites for sharing every type of files, users have at their disposal other sites whose function is to share video files. That is the case, for example, of YouTube (please see Table 1 for an overview of other sites for sharing videos). Students from almost all the disciplines might find useful to visualize certain teaching videos of some units for obtaining more specialized knowledge. Besides, not only can faculty upload brief specific videos for explaining some process and contents, but also students can enhance their own learning and a c-learning if they upload videos themselves.

For example, medicine discipline's faculty might find this useful as they can organise their students in groups for working during a semester. Each group, which normally contains 8-9 students, establish every time a coordinator of certain practices. The coordinator involved in the practice of Anatomy subject has to explain certain bones and muscles in detail by means of a video. For this purpose, a channel for each group can be created in YouTube site so as to have together all the videos of the students who are in charge of the practice at least twice in the whole semester.

3.1.3. Sharing photos, pictures and images

As mentioned in the previous section, although there are sites for sharing every type of files and documents, there are other sites for sharing exclusively photos, pictures and images. An example of this is Picasaweb, an online site, owned by Google, which allows the users to upload their images.

Once again, some disciplines can benefit from this type of sites more than other disciplines. For instance, Art History undergraduate students may face some tasks related to the identification of certain works of art. Practice tasks can be developed, for example, in a classroom environment. Faculty members from this discipline with an account in one of these sites can have several materials and resources related to major works of art so as to be identified by their students. Please see Table 1 in which more tools for sharing photos and images are shown.

Table 1. Examples of tools for sharing materials

Type of sharing-purpose tool	Name of the tool	URL
File sharing websites	Dropbox	https://www.dropbox.com/
	GoogleDrive	https://drive.google.com/
	Box	https://www.box.com/
	MediaFire	http://www.mediafire.com/
	Megacloud	http://megacloud.com/
	SkyDrive	https://skydrive.live.com/
	4Sync	http://www.4sync.com
	Slideshare	http://www.slideshare.net/
	Prezi	http://prezi.com/
Video sharing websites	YouTube	http://www.youtube.com/
	Vimeo	https://vimeo.com/
	Dailymotion	http://www.dailymotion.com/
	Brightcove Videocloud	http://www.brightcove.com/en/online-video-platform/
	Flickr	http://www.flickr.com/
	Wistia	http://wistia.com/
	Stagevu	http://stagevu.com/

Image sharing websites	Photobucket	http://photobucket.com/
	Favshare	http://www.favshare.com/
	Flickr	http://www.flickr.com/
	Piwigo	http://es.piwigo.org/
	Picasaweb	http://picasaweb.google.com/
	Hiboox	http://www.hiboox.com
	Picyourlife.com	https://www.picyourlife.com/
	Imgur	http://imgur.com/
	ImageShack (beta)	http://www.imageshack.com/

3.2. Virtual events and meetings platforms

We have devoted a special section to the virtual meetings and events. In this sense, on the one hand, we highlight the event scheduling sites, and, on the other hand, the virtual meeting platforms.

3.2.1. Event scheduling sites

A collaborative learning in every discipline implies that sometimes our students would have some meetings for developing certain tasks. Students might need to agree on common dates and times for having either virtual or face-to-face meetings. Event scheduling sites are presented as the ideal option for that purpose, instead of sending and receiving long chains of emails. Thus, we are fostering new ways of communication, as they will find in the business world.

Among event scheduling sites available on the Net, there are some commercial sites and other freeware sites. All of them work similarly as one of the users establishes some dates and times and other users involved in the meeting are invited to indicate their dates and times. All the updates are always sent through email. Some of the commercial sites offer a demo version or have special plans for free with certain limitations with the aim of testing the service before purchasing it. Apart from the commercial ones, some of the most popular freeware options are, for example, Google Calendar (a Gmail account is required) and Doodle (compatible with Facebook). Please see Table 2 for an overview of a brief list of event scheduling sites (commercial and freeware).

3.2.2. Meeting and webinar platforms

Once the students have arranged some date and time for their meeting, they can use certain platforms for having a virtual event. This way, virtual platforms enhance real-time collaborations with other people from remote locations. This is very useful in the case they have to put in common several aspects related to a task they have to develop in groups. Having a meeting with other classmates is not new; in fact, it has been always a traditional way for establishing some issues in common with regard

to tasks our students are usually involved in team works. However, one of the drawbacks of having a face-to-face meeting with other partners is to collect the availability of everyone. With the previous sites it is now possible to select a day and a concrete time to celebrate a meeting. And, besides, with the platforms enabling students to have streaming meetings with other partners who are in different and distant places, collaborating with their partners is even easier.

There are many platforms designed for this purpose, for example, the well-known Skype, but in this paper we will also highlight others that allow the user to even share documents, videos in a real-time meeting or conversation with other users: Adobe Connect or Google+ Hangouts are some of these examples. However, please see Table 2 which shows some other sites with this type of services.

Table 2. Examples of tools for virtual events and meetings

Virtual events and meetings		Name of the tool	URL
Event scheduling sites	Commercial	AgreeADate	http://www.agreedate.com/
		Genbook	http://www.genbook.com/
		Meet-o-Matic	http://www.meetomatic.com/
		TimeToMeet	http://www.timetomeet.info/
		WhenIsGood	http://whenisgood.net/
	Freeware	Google calendar	http://www.google.com/calendar
		Doodle	http://www.doodle.com/
		TimeBridge	http://www.timebridge.com
		Presdo	http://www.presdo.com/
		Meeting Wizard	http://www.meetingwizard.com/
		ScheduleOnce	http://www.scheduleonce.com/
		ClickBook	http://www.clickbook.net/
		Diarsed	http://www.diarised.com/
		SAM	http://www.setameeting.com/
		Tungle	http://www.tungle.com/Home/
Meeting and webinar platforms	Skype	http://www.skype.com/es/	
	Adobe Connect	http://www.adobe.com/es/products/adobeconnect.html	
	Google+ Hangouts	http://www.google.com/+/learnmore/hangouts/	
	Cisco Webex	http://www.webex.es/	
	ShowDocument	http://www.showdocument.com/	

3.3. Social software

The term social software, according to Owen et al. (2006), was coined by Shirky (2003: 2), who describes it as: “software that supports group interaction”. The first tools gathered under the conceptualization of the social software included the e-mail and the chat, among others (Allan, 2007; Shirky, 2003), but now the term refers to

the tools from Web 2.0. Shirky (2003) highlights the blog and the wiki as the most popular social software, while Allan (2007) also includes the podcasts. In fact, these three programmes, according to Richardson (2006), are the most relevant tools which enable collaboration in the teaching-learning process, since they allow the users to read and listen to the information gathered in them as well as to create their own contents and share them with other users.

Blogs are considered online diaries in which the user shares his/her thoughts, ideas and all the information he/she is interested in. In the teaching field, the use of blogs can be used as a support to certain virtual platforms, making it possible to update subjects' contents. Examples of sites enabling the users to create a blog are Blogger, Wordpress, Tumblr or Blog.com. Wikis, on the other hand, are not linear as the previous ones, and they are conceived as websites in which not only can the creator of the website edit the content, but also other users are invited to this purpose. Therefore, one of the benefits of using a wiki for educational purposes is the knowledge creation and building in a collaborative way so as to foster our students' lifelong learning. Some sites offering this service are Wikispaces and Google sites. Please see Table 3 for checking their URL as well as other sites for wiki creation. Finally, podcasts are audio or video files recorded in a digital format and broadcast on the Net. Even though podcasts can be used in many disciplines, it has a clear impact on the learning of foreign languages and on the practice of interpreting tasks, since one of the benefits of using them is to enhance listening and speaking skills. Among the sites that offer this service we can highlight PodOmatic and Audacity.

Table 3. Examples of social software

Social software	Name of the tool	URL
Blog sites	Blogger	http://www.blogger.com/
	Wordpress	http://wordpress.com/
	Tumblr	http://www.tumblr.com/
	Blog.com	http://blog.com/
Wiki sites	Google sites	http://www.google.com/sites
	Wikispaces	http://www.wikispaces.com/
	Pbworks	http://pbworks.com/
	Wikifoundry	http://wikisineducation.wikifoundry.com/
	Zoho Wiki	https://www.zoho.com/wiki/
Podcast sites	Audacity	http://web.audacityteam.org/
	PodOmatic	http://www.podomatic.com/

3.4. Social networks

A social networking site (SNS) is a virtual space in which people get in touch with other individuals or institutions and interact somehow with them. Even though

there are many SNS at our disposal they can be classified as it follows: personal SNS, scientific-academic SNS, and professional SNS.

3.4.1. Personal SNS

The most popular personal SNS are Facebook and Twitter. In the case of Facebook, although some research works around the use of Facebook in the educational field have been published (Gómez, Roses & Farias, 2012), we can point out that this tool, apart from establishing and keeping academic relationships with other partners and with the faculty member, is a dynamic source for sharing information in a very easy way. Besides, this SNS allows the user to create groups, so this will reinforce the c-learning by means of a social network our students are used to using everyday.

With regard to Twitter case, this SNS is a system of microblogging by means of which users can post messages (their ideas, thoughts, news, etc.). With a similar philosophy of blogs, although limited to 140 characters, this SNS seems to have completed the social and technological element started by blogs at the end of 20th century (Orihuela, 2011). As Hermida (2010: 297) states: "Twitter is one of a range of new social media technologies that allow for the online and instant dissemination of short fragments of data from a variety of official and unofficial sources". This SNS is useful in the educational field as it allows sharing information so it is also ideal for fostering collaboration in the learning process. Students can follow some users and profiles so as to extract information and complement content and knowledge from certain disciplines, and also to expand to other disciplines. This SNS, as well as the previous, constitutes an ideal means of communication and for sharing information, as well as a way to bring closer applications used in their daily lives to the educational contexts.

3.4.2. Scientific-academic SNS

Our second classification of SNS is related to the scientific-academic social networks, such as Mendeley, Academia.edu, and ResearchGate. These sites, apart from being extremely useful for faculty and scholars in general, since they can share their publications and results of their research as well as check and consult others publications, allow our students to update bibliography of some authors seen in their subjects. For example, when they are working on a wiki, in a concrete topic of a discipline, our students may face some difficulties when collecting sources they have to consult and include. Using a search engine or certain specialized databases that include scientific journals can also be useful, but sometimes it is worth it to give them some guidelines for searching certain authors. Today, scientific-academic SNS are considered a rich source of publications as the authors themselves are the ones who publish the list of their research for being consulted by a great academic audience, including our students as well.

3.4.3. Professional SNS

Depending on the domain of knowledge of higher-education disciplines, it would be interesting to teach how to search for potential clients. With this purpose in mind, professional SNS like LinkedIn and XING are options to be taken into consideration. Our students, for example, the ones from the final years of their degrees, are interested in knowing how to surf the net for collecting sites and pages allowing them to get in contact with the work world. Professional SNS offer the advantage of finding contacts through different sectors thanks to some advanced options. Likewise, they enable the inclusion of recommendations and references, so it would be ideal to highlight in a teaching-practice task some of the qualities of our students. Apart from that, another task which will be beneficial for our students can be related to how to write a good curriculum vitae and which aspects, knowledge and interests they must highlight so as to show them to those potential clients.

Table 4. Examples of social networking sites

Social networking sites	Name of the tool	URL
Personal SNS	Facebook	http://www.facebook.com
	Twitter	https://twitter.com/
	MySpace	https://myspace.com/
	GooglePlus	https://plus.google.com/
Scientific-academic SNS	Mendeley	http://www.mendeley.com/
	Academia	http://www.academia.edu/
	ResearchGate	https://www.researchgate.net
	My Science Work	http://www.mysciencework.com/register/
Professional SNS	LinkedIn	http://www.linkedin.com/
	XING	http://www.xing.com/es

3.5. Virtual learning environment

Virtual learning environments (VLE), also known as Learning Management Systems (LMS) or commonly called virtual platforms, are web-based spaces developed mainly to facilitate teaching-learning process. Such VLE allow our students to become an active part of their own learning, as they can participate in those environments when elaborating and building knowledge. Some of the common benefits of VLE for both students and faculty are the management of a great amount of resources and documents, creation and participation in forums/chats, elaboration of wikis and glossaries, organization of groups, among others. There many VLE at our disposal for educational purposes, but the most popular one is Moodle (freeware). Table 5 offers a list of commercial and freeware VLE.

Table 5. Examples of virtual learning environments

Virtual learning environments	Name of the tool	URL
Commercial VLE	WebCT/Blackboard	http://www.blackboard.com/Sites/International/EMEA/index.html
	FirstClass	http://www.firstclass.com/
	E-college	http://www.ecollege.com/
Freeware VLE	Moodle	https://moodle.org/
	Claroline	http://www.claroline.net/
	.LRN	http://www.dotlrn.org/
	ATutor	http://atutor.ca/
	Chamilo	http://www.chamilo.org/es
	Docebo	http://www.docebo.com/es/
	Dokeos	http://www.dokeos.com/es
	FLE3	http://fle3.uiah.fi/
	Olat	http://www.olat.org/
	Sakai	http://www.sakaiproject.org/

4. Conclusions

Today, collaboration and technology are two terms related directly to the teaching-learning process. On the one hand, technology has evolved so fast that we, as teachers, have to be constantly updated with the new applications, above all, because our students were born in the technological explosion and they are used to using technological and digital tools in their daily lives. On the other hand, these students are used to sharing ideas, thoughts and even some news by means of certain sites and applications, for example, through blogs and some SNS. Faculty must profit from this situation because we are witnessing a great revolution in the process of teaching and learning. That is why collaborative learning (c-learning) is the new tendency we are adopting together with the so called blended learning or e-learning.

We have taken these premises into account and we have offered a classification of some applications, environments and tools for fostering c-learning. The tools involved in this paper have been classified according to certain categories: 1) sharing-purpose software; 2) virtual events and meetings platforms; 3) social software; 4) social networks; and 5) virtual learning environments.

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