

Learning 2.0: concepts and experiences with social networks and software

César Córcoles, Carlos Casado, M. Antonia Huertas, Ana Guerrero
UOC
Spain
{ccorcoles,ccasado,mhuertass,aguerror}@uoc.edu

Abstract: Knowledge society has brought new educational paradigms. E-learning arises in all educative contexts and levels with the use of information and communication technologies and massive access to internet connected computers. On the other hand, the fast development of social networking tools and web 2.0 technologies are producing an evolution of e-learning towards what is called a learning 2.0 paradigm. In this presentation we shall discuss the main technologies and pedagogical issues related to that new way of learning and how we can use them to improve the acquisition of competences and new knowledge. We will also present some experiences of social network tools supporting e-learning at UXX.

Introduction

The end of the 20th century saw a *Digital Revolution* that transformed the workplace as radically as the Industrial Revolution did at the end of the 18th century, leading to a *knowledge society*. As the University acknowledges the need to “build” workers for that knowledge society it should also assume the impossibility of teaching each and every one of the competences students will need to know in the workplace: on the one hand, there are too many competences to fit in any curricular design; on the other one, competences, even core ones, are in a constant change process

This leads to the need of “know-where” to complement know-what (as traditionally taught) and know-how (competence-based teaching, as defined in the European Higher Education Area (European Commission, 2006), for example, with the ability to locate information and knowledge, when necessary is of the foremost importance. This forces us to adopt the discipline of knowledge management and to embrace the connectivist paradigm to improve learning environments and also learners’ profile.

In addition, we have to take into account that the so called “digital natives” are now reaching higher education. They have ICT competences and expectancies the university system had not seen before. They are used to non linear media and informal learning. In order to provide users and students with efficient ways to learn we, as professional educators, have to adapt some new technologies and new forms of teaching within the network, but always making sure we do so in a meaningful way.

We will see a variety of web based tools, which we can group under the ‘web 2.0’ definition, that will allow us to link the know-where need created by the Digital Revolution with new ways of teaching to a new audience.

This paper is organized as follows: Section 2 describes briefly the main features of web 2.0 technologies. Section 3 reviews theories of pedagogical models in the context of social networks. Section 4, presents some past experiences and presents another one intended to improve on them. Finally, the conclusions of this paper and the current and future research lines are summarized in Section 5.

Web 2.0 technologies

We have been speaking of “web 2.0 technologies” since 2004 to refer to a set of relatively new ways of doing things on the web. As the internet has become a medium for a lot of the activities of the knowledge society,

this “web 2.0” has had its effect on almost all of them, and now we talk, for example, of business 2.0 and enterprise 2.0... and also of education 2.0.

It is important, so, to know what 'web 2.0' is. Although there is not a consensus, maybe the best document on the subject is *What is Web 2.0* (O'Reilly, 2005). Essentially, we may speak about 'web 2.0' when:

- we consider the web as a platform where software applications, rather than documents, live;
- these software applications are designed to take profit from “collective intelligence” and effectively move from a developer-centric point of view to a user-centered one;
- according to that user-centered model, the user's data is the most important element in every transaction, and developers allow users total or almost total control of their assets;
- as more applications live on a web server, and not on a desktop, the meaning of software releases and versions is lost, because there is no need to deploy a new release of any application to have it working for every single user.

Web 2.0 came to be, among other reasons, because of the generalization in the use of some technologies and concepts, such as AJAX (Asynchronous JavaScript and XML), RIAs (Rich Internet Applications), RSS (for content syndication) or “folksonomies”. All of these ideas had been around since the late 1990's but only attained generalized use around 2004. A very brief description follows.

- AJAX is a series of web development tools and technologies that allow web pages to behave as applications exchanging data with remote web server in a transparent way to the user. AJAX partially closes the gap between web applications and their desktop equivalents.
- RIAs go one step beyond AJAX. Through the use of virtual machines (mainly Adobe Flash, but most recently also Microsoft's Silverlight and Adobe Apollo technologies) web applications attain an even higher level of user interaction.
- RSS (Really Simple Syndication) allows an easy flow of information between data sources and users. “RSS readers” allow users to obtain information from multiple sources using just one application, with no need to travel to the different web sites which originated the content. RSS effectively transforms web information from a “push” model (where the user goes to the website to gather information) to a “pull” model, where information is aggregated in a single container.
- Folksonomies represent a new form of metadata gathering. Users “tag” content with their own labels, and applications aggregate those tags and share them between users. Later on, when one user searches for, say, “education”, the application will return content which has been tagged with that word, thus building a social index to the web.

Another factor we have to take into account is the extreme lowering of the cost of access to a strong presence on the web using sophisticated resources. The advent of lightweight content management software, from personal blogging tools to corporate portal management systems allows any average web user or organization to publish quality information comfortably and efficiently, and thus educators can now publish content on the web and use a wide range of new tools to communicate and work in order to improve teaching and learning process. We have to take into account that digital natives, as learners, have high media literacy skills. But the availability of these new tools presents new challenges: when should an educator use one of them? Which is better for each use?

Connectivism

Briefly reviewing the theories of the pedagogical models behind traditional learning systems in chronological order, starting with behaviorism, going through cognitivism and constructivism and leading to social constructivism (Downes, 2005), an evolutionary path can be established that would lead us to the next stage: e-learning 2.0,. These theories, however, were developed before learning was impacted by ICT technologies. For the present situation Siemens et al. (2005) propose a new theory, “Connectivism”, intended to explain both individual and social learning processes, going beyond the social constructivism approach that states that individuals make sense by constructing their own models of their experiences (Jonassen et al, 2003). Connectivism theory's starting point is that knowledge exists by itself and “individuals are supposed to realize that knowledge by connecting the nodes where it's located; being that nodes other individuals, organizations, different clusters weakly tied. It is

changing the know-how and know-what for know-where the knowledge is". Some of connectivism key principles are:

- Learning is a constant building of a network
- Capacity to learn more is more important than current knowledge
- Connections, not content, are the starting point of the learning process
- Knowledge can rest within the network, not only within individuals

The connection between these two facets or contexts of the same emergence process (connectivism and web 2.0) is the learning 2.0 paradigm (Downes, 2005). Some of its key principles are:

- Learner-centered design: the learner constructs her own knowledge
- From communities of practice to social networking: the learner shares her knowledge
- Teachers and learners as peers within a social network
- From traditional learning applications to open learning environments.

This new scenario and these new social tools require a new focus and design for educative experiences and a learning process redesign for using them to enrich student's knowledge.

Learning 2.0 Experiences

UXX is a completely online university. The UXX educational model places the student as an active agent at the centre of her learning process. During this process, the student is assisted by a team of teachers and is also helped by her partners in the virtual classroom, which is located inside the virtual campus (a highly developed intranet which satisfies all academic necessities, including registering and technical assistance). In these virtual spaces, the student can find a complete course syllabus, the course learning materials and other resources (as the digital library or academic software). UXX's virtual campus is, by definition, an extraordinary scenario for social networks and learning 2.0 experiences.

Next we will explain some learning 2.0 experiences carried out at the Multimedia Graduate degree and newly designed experiences for the Computer Science degree.

Past experiences

The first experience used blogs (Downes, 2005) as a tool to help a student with her final project, where she had to create a multimedia application. This forces students to face a number of difficulties. The help of the instructor and classmates is very valuable in the solution of any emerging issues. A student with an especially hard final project was advised to maintain a public blog where she could explain her project and the work she had already done. The blog had two main goals:

- Firstly, it forced the student to keep a record of all the steps that she took, which would help her to write the final report to be delivered at the end of the course.
- And then, it provided a place for the student to present her doubts so that she was helped by her peers or even people alien to the university.

This first experience was considered positive although there were some aspects to improve. The student was very active at the beginning of the process and she received more feedback from people outside the university than from her colleagues. However, after some time she only wrote when she had important problems. Even so, the blog helped her find some solutions to the encountered problems.

In the same vein, another experience, in the Computer Science degree at the university was to do an activity in interdisciplinary teams. The main goal was to do a virtual project about an interesting area related to their degree. Students had to write all their communication process in a blog. This process consists on explaining all the actions related with an activity for being informed and for taking decisions about how to follow it. With this idea each team really keeps a 'diary' of their opinions and their evolution along the activity. The experience was considered very interesting but students commented that it also added to their work load.

The second experience involves the use of wikis. In most subjects of the Multimedia Graduate degree, the teacher provides students with links to external content of interest. Although many of those links point towards current articles with perishable content, some of them that can —and should— be kept from semester to semester since the provided information does not expire and their conversation leads to the creation of a knowledge base of the greatest utility.

In some of the subjects (such as Interface Design, Networking or Virtual Reality) wikis were created to collect all that information. Furthermore, those wikis have proved themselves to be very useful tools for teachers to create repositories, not only for commented links, but also to collect projects carried out by students in previous semesters and useful information.

In this same sense an experience at the Computer Science degree was to perform several activities in virtual teams. All the information generated by teams had to be included in a wiki. The information and documents about each activity had to be collected there and all the members uploaded their information. Students without any knowledge about wiki use noticed that it was really easy and a good tool for learning. We have found, though, that students' use of wikis varies widely from subject to subject, and intend to study the causes of that variation.

Designing a new learning 2.0 experience

UXX's computer engineering students are required to carry out a final project. That final project in the area of human computer interaction (HCI) presents some features that make it interesting for a pilot test of web 2.0 tools (Berzinger, 2006):

- The subject matter is broad and multidisciplinary, including many different subjects, such as user centered design, usability, accessibility, interface design, information architecture and interaction design.
- There are no ad-hoc learning contents for the final project, but students can use the more generic ones from other related subjects. Also, there is a lot of good documentation about the concrete subjects on the web. The instructors provide links and resources at the beginning of the project.
- Students have to search more concrete resources according to the subject matter of their project. Those resources are evaluated by the teacher and students.
- Knowledge is built during the project by finding resources and commenting on them. Currently this documentation and knowledge get lost unless the teacher keeps it in a text document, since it remains distributed between the forum and personal messages

A tool allowing the labeling of resources and providing continuance among semesters would be necessary. It would be convenient if that tool or a complementary one would allow comments and assessments of the resources. In order to find and use that web 2.0 tool a learning 2.0 experience has been designed. Project students should use a social bookmarking tool to tag the found resources (del.icio.us or an open source tool, such as de.lirio.us).

That 2.0 tool will allow to collaborative construct the tags and also to share them. Then, another complementary tool will be necessary to allow comments about the different tagged resources, their evaluation and their use. This second tool would be a Wiki or similar. The search of a tool (preferably open source) that allows tagging and comments simultaneously and to maintain the shared information in a revisable repository and syndication would be interesting. If found, that tool would be preferable to the use of two different ones.

The objectives of that pilot test of using tagging and wiki-kind tools are, firstly, to analyze the different available tools for the task and choose the one best fitting the requirements and, secondly, to use it with the following purpose:

- To work collaboratively to find good resources for the different subjects in the HCI area.
- To construct collaboratively a network of knowledge in the area, easily be usable and maintainable in the next semesters.

Conclusion

In this brief presentation we have seen that a series of changes, both pedagogical and technological, have brought about the existence of what is being called 'learning 2.0', a new paradigm universities have to get ready for.

UXX is a very adequate scenario to carry out some experiences, gather and analyze results and move forward in an iterative way. As such, we have briefly presented two past experiences and present a further one intended to take those one step beyond in the process of taking forward teaching and learning at the higher education level. Future work will show and analyze the proposed experience.

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