First Steps Towards a University Social Network on Personal Learning Environments

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Abstract

The evolution of the media and the Internet in education today is an unquestionable reality. At the university level, the use of Web 2.0 tools has become increasingly visible in the new resources that professors have been incorporating both into the classroom and into their research, reinforcing the methodological renewal that the implementation of the EHEA has demanded. The aim of this article is to introduce DIPRO 2.0, an educational social network for university professors to develop their training in the area of personal learning environments through collaborative learning and production of knowledge.

Keywords: Networks; university professor; university; Web; Internet; mass media; personal learning environments; Web 2.0 tools.

Introduction

Human beings are communicative by nature. From the time we become aware of our own existence we wish to communicate, to interact with our fellow humans, as we are social beings who seek contact, connection, and closeness. This search for communicative relationships also implies a desire to be informed. The need for knowledge as well as an awareness of what occurs both in our immediate surroundings and in the world is an inherent quality of humanity that has become increasingly prevalent as information and communication become more globalized.

The mass media have played an important role in this development to the point where they have become, as pointed out by Prado (2001), one of the features that characterize modern society; it is important to be aware that the reality that characterizes our lives at this time is one in which the mass media have seized control of our lives. As Marin (2006, p. 193) indicates,

> Information has been, is and will be one of the biggest tools in the world of communication. The reason for this reality is simple and straightforward: it helps us to change and/or improve our knowledge of our environment, in addition to the location and perception of the world of communication.

We share with Rodríguez Izquierdo (2005) and Malita (2011) the idea that today we live a technological reality that, on the one hand, has multiplied the channels by which individuals establish and maintain communicative relationships and, on the other hand, has modified the way in which we communicate. Information and communication technology (ICT) has become the basic pillar in the construction of new learning processes, overcoming teachers' and researchers' past worries of its slow incorporation into education (Lei & Morrow, 2010).

Today we find authors like Smeets (2004) who describe ICT as "powerful" given that it provides the individual and the community with a large number of opportunities to access information and, as a consequence, learning, making this process more effective (Chitiyo, 2011). More specifically, Tu et al. (2012, p. 13) speak of Web 2.0 technology as empowering learners to "create, share, and organize their personal learning environments in open network environments".

Today, it is inconceivable to speak of ICT as separate from the social, political, economic and educational dynamic, due to the rapid development of information technology and telematics. This article focuses on the area of education and the importance of ICT in the teaching-learning process. In this sense, a study by Cheung, Chiu, and Lee (2011) on student use of online social networking sites points out the importance of this phenomenon for the academic community since the use of these sites tends to increase motivation as well as a more active and collaborative approach to learning.

The incorporation of ICT to the university educational platform in general and to university classrooms in particular demands a new way of designing the teaching-learning process. The methodology presented from this new perspective should favor the continuous exchange of ideas, as well as collaborative work strategies. In this process, group interaction and exchange of experiences (Ortíz, 2006; Davoli, Monari, & Eklund, 2009) as well as the content shared among members of the university institution is a constant variable. With the European Higher Education Area (EHEA) now in place, the challenge that university communities have to face in this new panorama, which is by no means limited to the European educational community, is the presence of the Internet in all areas of its members' lives.

Salinas (2004) pointed out that ICT based learning had and has two approaches: one technological and the other methodological. The first is based on the idea of the sophistication of technological environments, oriented towards the building of knowledge, and the second combines the perspective of the student body, the technology used and the organization of the teaching-learning process. At present, one of the identity descriptors of higher education institutions is the search for quality in all its processes. In light of this, we consider that both approaches should be combined into one, given that the development of technology determines the growth and production of quality teaching and learning.

As a consequence, teachers must know "what ICT classrooms are like and what they should be like, their role in learning (in education), what ICT in society is like and what it should be like, and its role in education (and in learning)" (Gutiérrez, 2007, p. 152).

Web 2.0 Tools: Social Networks

Working with the Internet is a great adventure because of its rapid growth and the many tools incorporated into it. As indicated by Cabero (2006, p. 8), "the Internet has progressively changed from being a depositary of information to converting into a social instrument for the elaboration of knowledge". The Internet provides us with free, global communication, thus its flexibility will benefit an adaptable training that adjusts to the educational processes that occur, in this case, in university teaching. The growth of the Internet comes hand in hand with the design and redefinition of its tools which give it meaning as a communicative instrument. All these tools provide, in different measure, the possibility of communicating with others and/or keeping informed about events in the world. From the point of view of the communication of information, the use of the Internet for education has as its main advantages the speed with which the information is transmitted, the diversity of sources, and the overcoming of time and space barriers, among others. However, one must also consider the possible disadvantages, which must be kept in mind when including it in the teaching and research routine of university teachers and students. These include the difficulty some people have of accessing the

Internet (Rodríguez Izquierdo, 2005), a lack of knowledge of linguistic codes generated by some tools, for example, the case of emoticons used in Messenger.

Web 2.0 tools, as well as their medium the Internet, are growing at a vertiginous rate. Each year, new proposals arise that are incorporated into the already long list of Web 2.0 tools, for example, new ways of creating blogs, wikis, social markers, content syndicators, information managers, conceptual map generators, to mention just a few. At present, there are more than 3,000 digital tools at society's service (Marín & Reche, 2011a). Due to the speed with which this technology has evolved, both from Web 1.0 to Web 2.0 and within the vast number and variety of Web 2.0 tools, members of educational institutions have had to relearn both its work structure and its presentation or interface as well as attempting to diversify its contents or utilities as previous tools have either been brought up to date or have disappeared.

When we speak of Web 2.0 tools we must go beyond the simple idea of communication instruments. If we talk of blogs, for example, we must have in our minds the word 'dialogue', if we talk of wikis, the word 'collaboration', of podcasts, the phrase 'democracy of expression', and so on. Hence, Web 2.0 tools are more than simple work tools; they are generators of relationships, knowledge, attitudes, values, and new ways of teaching. "Web 2.0 has become synonymous with a more interactive, user-generated, and collaborative Internet instrument" (Tu et al, 2012, 13) which reflects a different way of seeing and understanding what happens around us. The role of this technology, as much in the area of education as in the social realm, is according to Tinmaz (2012, p. 235) "to provide a network of people who connect to each other wherever and whenever they need information." The study carried out by Holcomb and Beal (2010) points out that Web 2.0 tools are a vehicle for the students to develop their learning, basing this learning on the development of curiosity and creativity. Along these lines, teachers must integrate those Web 2.0 tools that they consider most useful into their daily class routine, but in order to do this, teachers need not only to be digitally prepared but also to attempt to incorporate them, given that they allow for

1. a reduction of costs and movement;

2. enabling and promotion of collaborative work through cooperative groups;

3. the expansion of information available to the student as well as its continual updating;

4. the facilitation of autonomy;

5. better control of the educational progress of students;

6. the promotion of a multi-channeled, multi-media education;

7. the encouragement of interaction with group members;

8. the facilitation of new content building;

9. enabling increased synchronous and asynchronous communication;

10. the increase of students' self-esteem as they advance;

11. flexibility (Ródriguez, Borges, González, Hernández, & Acosta, 2003; Cebrián, 2003; Cabero, 2006; Gallego & Alonso, 2007).

Using Web 2.0 tools in education today is not a new proposal, but rather a reality to the point where expressions such as Education 2.0 (Cabero, 2009) and University 2.0 (Hartman, Dziuben, & Broph-Ellison, 2007) are becoming increasingly more common. Of all the tools available, social networks are gaining great importance at a personal as well as a professional level. Speaking today of social networks implies a new way of understanding, seeing, and perceiving communication between individuals, which has and will have as many critics as supporters.

Before going into more depth in pinpointing the reasons that justify the use of social networks for education, we believe it necessary to offer a conceptual approximation of what we understand about social networks at a general level in order to delimit the term within the field of education.

The encyclopedia Wikipedia understands social networks as "social structures composed of a group of people who are connected by one or various types of relationships such as friendship, kinship, common interest or people who share knowledge". From this conceptualization we can determine the features that characterize it and that, in consequence, make it adaptable, versatile and attractive to the general public, and that offer the possibility of interaction with other people. Social networks help to avoid isolation, and encourage plurality; they are an open system under constant construction. The tools or components they usually include are designed for this; for example, the friends lists and wall space allow for communication with other users.

According to Boyd and Ellison (2007, p. 211) these sites are

> web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site.

The connections formed on social networks "provide a context for the implementation of Connectivism" which "explains learning in terms of interactions on a network where the learners exchange their knowledge" (Tinmaz, 2012, p. 234). In this sense, social

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networks are important for maintaining connections among people in different areas while constructing or updating knowledge.

This idea is in line with that of Campos (2008) who maintains that social networks are built on collaboration structures which, together with the desire or need to share information, are reasons why, in our opinion, they can and should be brought to the educational field as a methodological resource that makes the teaching-learning process dynamic. In addition, there is the philosophy of the six degrees of separation created in 1929 by Frigyes Kstinthy, which maintains that people establish active relationships in a chain of up to six people, which increases in multiples of six, thus supporting the creation of social networks.

The objective of educational social networks is to facilitate teacher-student-institution communication, independently of the direction in which it occurs.   Within the classroom, their aim is to encourage collaborative work among equals. Santamaría (2008) specifies the advantages of educational social networks as the following:

- "Creating a new dimension of socialization, making possible the visualization of the contents in a plural manner and, with the appropriate tool, being able to create community.

- Providing a base for thinking about an impressive tool for inclusive education.

- In primary and secondary centers, social networks are being used as a meeting place for the different participants in the teaching-learning process. They allow for the creation of work groups and social activity groups through parents, teachers and students, although their use is usually of a communicative nature, for which in many cases we would refer to them as social software rather than social networks.

- They serve as links to companies offering work. This is where professional networking comes into play (sites like Xing or LinkedIn) to make contact with professionals in a specific area or branch of knowledge.

- As an identity and personality on campus they offer students a safe and practical space to create bonds with other members of the community.

- They facilitate the task of immersion in a foreign language environment by means of networks or communities. Within these, students are obliged by necessity to read and write texts, with the resulting learning built into this practice.

- Sound Retrieval Systems (SRS) are being used to open up the organization of conferences, seminaries, workshops etc. so that participants can get to know each other and ask questions of interest to organizers, speakers and lecturers. In

this way, very useful feedback is generated prior to the event. In addition, links related to the subject matter can be gathered and shared to expand the event.

- They can be useful in educational organizations as a tool to reduce gaps in knowledge and technology.

- We are inclined to advocate the creation of practical communities and learning networks as a means of dynamization and construction of a digital identity."

It is important to note that there are also disadvantages, such as the over-exposure of our privacy, the loss of control and ownership of the information that we upload to the network. But, over and above the advantages and disadvantages stated, why involve teachers in the creation of an educational social network for their classroom dynamic? Although it is a form of innovation, the reason goes beyond mere teaching innovation. It is the responsibility of the teacher to know the educational and social reality of the student body and it is evident that social networks are an important part of this reality. Therefore, we consider that the main reason for incorporating them into our teaching methodologies lies in the fact that students are dependent on them, they have incorporated them into their routines and, as a consequence, they have become normalized.

In studies carried out by Marín and Reche (2011b, 2012) and Marín and Maldonado (2011) it was found that the university students consulted had reduced their knowledge of Web 2.0 tools mainly to Tuenti, Facebook, Messenger, and YouTube, as well as virtual platforms for online learning in the case studied concerning Moodle. However, we should indicate that although the results showed that the students were familiar with this platform, their knowledge of it was scarce or limited, as they only used it at specific times when the teacher asked. These studies show that the knowledge today's university students have of social networks is fundamental. Faced with this outlook, teachers must not stay on the sidelines. In consequence, we consider it necessary to incorporate the use of social networks into the teaching methodologies used in higher education classrooms in order to improve the teaching-learning process.

The role of the university professor today, after the introduction of the EHEA, has shifted to that of guide and adviser to the students, and, for this reason, it is necessary to be in touch with the reality that students live and work in to make the course content more accessible. This reality implies searching the Web 2.0 tools that students do and do not know and developing a methodology that is not only original, creative, and innovative but also close to their world, in pursuit of the search, construction, and development of a collective intelligence.

Social networks have been incorporated gradually into the field of primary and secondary education with little difficulty. Edmodo, EduTwitter, Socialgo, So.cl, Ning, Gnoss, Grouply, and Twiducate are often used as additional resources together with the traditional textbook. Given the immense popularity of social networking sites among

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teenagers, Callaghan and Bower (2012, p. 3) saw an opportunity to "transfer motivation and associated information and communication literacies into an educational context." Their study found that the use of social networking sites in the classroom encouraged self-directed learning and increased motivation and engagement. In addition, students had no difficulty transferring their personal use of social media to the context of the classroom. The study also highlighted the importance of the role of the teacher in implementing the use of SNS into the classroom. This is in line with the shift in the role of the university professor to that of guide to complement the more autonomous role of the student. This shift is also highlighted in an article by Fonseca (2011) describing a series of technology training workshops in Colombia called EduCamps designed as a forum for teachers to explore ways of implementing ICT in the classroom. The role of teacher in these workshops is "distributed among all the participants in the workshop" (p. 72). It is this idea of the teacher as learner that is highlighted in the use of social networks in university teaching methodology, as is the case of Redes Sociales Educativas (Educational Social Networks) (http://eduredes.ning.com/?xg_source=badge). These help not only students but also teachers, who find themselves facing a great software repository of work that will help them to begin incorporating innovations into the dynamic of the subject material.

Teachers are aware of the value of social networks, which includes autonomy, diversity, openness, and connectedness. However, many hesitate to incorporate this element of online learning into their teaching methodologies due to lack of knowledge (Tu et al., 2012), which is why it is important to create sites where teachers can find and share information, increasing their knowledge and confidence in the use of social media for educational purposes.

First Steps towards a University Social Network.

DIPRO 2.0

The proposal described here was developed within the framework of a R&D project approved by the Spanish Ministry of Science and Innovation (key: EDU2009-08893) in their 2010 session, called DIPRO 2.0 "Design, production and evaluation of a learning environment 2.0, for the training of university professors in the educational use of Information and Communication Technologies (ICT)".

Among the activities considered in the project is the creation and setting up of a social network in which participation is not limited to members of the research group, but also includes teachers interested in Web 2.0 tools, particularly in PLEs.

In general terms, this project has four aims:

a) Develop, along with professionals of different areas of educational technology (TE), basic topics around the most important areas in which university professors should be trained in order to use ICT for teaching.

b) Create a telematic training environment using Web 2.0 architecture, with a goal to training university professors in the acquisition of different capacities and competencies for using ICT in their professional activity.

c) Validate the telematic training environment, both in terms of the structure of the content and of the various communication tools (blogs, wikis, etc.) created.

d) Organize a virtual community of university professors concerned with the educational use of PLE.

In relation to achieving aims a) and d) it should be pointed out that the project includes the creation of materials that can be consulted at http://tecnologiaedu.us.es/portal/ and http://dipro20.ning.com/. In order to achieve aim b), and as a result of c), a repository of learning material was created, that can be accessed through the following link: http://tecnologiaedu.us.es/dipro2/. A personal learning environment (linked to aim a) was also created and is available at http://tecnologiaedu.us.es/portal/.

These aims are developed based on the following core concepts: possibilities that the networks offer for learning, teaching requirements that the materials created for training in PLE should fulfill, opportunities that PLE offer from a training point of view when designed from the perspective of 2.0, and the training of university professors in ICT.

To this end, the following steps were followed:

1. design and creation of the beta version,

2. evaluation of the beta version by the members of the research team,

3. creation of the alpha version,

4. evaluation of the telematic environment produced.

DIPRO was built using two basic technologies: as a LMS the Moodle platform was used as well as a service based on the standard OSID (Open Service Interface Definitions) of OKI (The Open Knowledge Initiative), which allows the creation of a SOA-type architecture (ServiceOrientedArchitecture). By integrating OKI, it is possible for Moodle to include in its activity modules Wordpress and Mediawiki, as if they were elements that belonged to the platform created. Teaching materials are included in the different courses created within Moodle. Each course has static resources, including files, links

and directories, and collaborative activities, for example, forums and chat rooms, as well as interactive tests and activities.

With respect to PLE, which the DIPRO 2.0 network is centred on, the user has access to 14 teaching units on different topics, covering a diverse range of areas all related to ICT. These units are as follows:

1. types of training that incorporate ICT: face-to-face teaching, e-learning, b-learning and m-learning;
2. use of technologies in university teaching;
3. general criteria for the integration, design and development of ICT in university teaching;
4. multimedia resources for university teaching (I): interactive whiteboard and computerized group presentations;
5. multimedia resources for university teaching (II): hypermedia and multimedia;
6. internet audiovisual resources;
7. videoconferencing as a teaching tool;
8. telematic tools for communication;
9. Web 2.0 environments in university training – Web 2.0 tools;
10. student-centred teaching methodologies and strategies for individual and group online learning;
11. virtual tutorial;
12. webquest and university training;
13. general requirements for the evaluation of ICT for university teaching; and
14. the use of ICT as an instrument for student evaluation.

The design of the materials for these PLE-based units stems from the premise that they should all have the same structure and be made up of the following elements: materials guides, learning tools, taxonomies, concept maps, and e-activities.

The guide offers a general overview of the materials and activities, and includes information about unit and module, competencies and capacities achieved after completion of all activities, presentation of activities, and explanation of different materials that can be used during activities. The learning tools offered in each module are of different types: PDF, videos, multimedia presentations, websites, courses, and others. The activities were prepared taking as a reference Bloom's taxonomy for the digital era and a description of the activity, level of difficulty, approximate completion time, self-check list, and rubric are included.

In addition, a series of tools or gadgets, such as YouTube, Google calendar, Skype, Google docs, Google reader, Google Groups, Blogger, Picasa, Slideshare, Dropbox, Flicker, Delicious, Twitter, Facebook, Diigo, Wordpress, Messenger, Myspace, Mahara, Vimeo, Gloster, Google sites, Wordles, Tagxedo, Scoopit, Prezi, Evernote, Edmoto, Wikisspaces, Voicethread, and Animoto, is provided. This selection was made based on the suggestions of the experts who evaluated the environment, of the members of the

research team, and an analysis of the *Top 100 tools for learning* of the Centre for Learning & Performance Technologies (http://c4lpt.co.uk/top100tools/).

For the overall design, a constructivist approach was used as a starting point, in which students can build their own knowledge based on their needs and interests and according to their own learning rhythm and interaction with the environment.

DIPRO Social Network

The main idea around the social network is, as previously stated, the collaborative production of knowledge, the motivation of teachers towards the search for active information, the stimulation of the learning process itself and, in consequence, self-education, overcoming the fear of openly asking other participants questions, given that some teachers are reluctant to show the possible learning gaps they may have about a specific subject (in this case PLEs), the stimulation of divergent, analytical, and critical thinking, and the attractive presentation of information. In short, the DIPRO 2.0 network was conceived as a repository of information about personal learning environments which would allow its users to overcome the obstacles pointed out by Meyer (2011), namely lack of time and training.

We consider that implementing a social network implies an act of achievement on the part of the professors given that it grows out of their particular will and initiative to create content and spaces to meet with students and with other colleagues. It implies making known the innovative actions that as educational practitioners they are carrying out in their classrooms, which means overexposure to the critical masses; nevertheless we believe that this is the strong point of incorporating social networks into education, it implies a continuous act of knowledge building in so far as it is a social construct. Aliaga takes this point further by stating that (2011, p. 54)

> in a social network each student is the owner of his/her
> own image, that is, s/he does not work on a prototype,
> model or platform designed by the professor, but rather
> can create, upload his/her own images, put a personal
> style on the account or personal web page.

However, we did encounter the disadvantage that a large number of professors are not aware of the educational potential of social networks and therefore, creative learning situations cannot be developed using this resource (Camacho, 2010); and, furthermore, social networks are perceived by students almost exclusively as an instrument of leisure (Vázquez-Martínez, 2011).

These issues are addressed by Handley, Wilson, Peterson, Brown, and Ptzaszynksi (2007, p. 2): «we need to provide our students with lasting collaborations and intellectual management tools that will be useful/will serve them in their learning process for life». With social networks, a sense of community is promoted, a feeling of

belonging to a group that watches out for the individual, so that the individual learning process achieves its maximum expression.

Another aspect to consider is the centralization of the themes of the social network. Why use PLE in this case? The answer, in our view, is simple and, as previously mentioned, the students that fill the university classrooms are digital, they are multitaskers, and as a result their workspace is the digital universe with all the tools found in it. They use several tools (blogs, wikis, repositories, etc.) at the same time to produce an assignment, all of them combining to make up a particular PLE. For these reasons, professors should be familiar with this element and capable, after adequate training, of creating their own and encouraging their students to use it.

The use of PLE in higher education depends on the overcoming of certain disadvantages or weaknesses and the acceptance of the advantages or strengths that their use entails. Barroso, Cabero, and Vázquez (2012) point out as strengths that they are inexpensive, student-centred, and open to interaction, exchange, and connection as well as the almost unlimited variety and functionality of the tools, among others. These same authors cite as weaknesses their complexity, possible problems with security of information, and lack of a centralized management system. The intention of the PLE of the DIPRO 2.0 network is for both professors and students to relate directly to the new media-focused structure of the knowledge society, where, unlike other historic moments more centred on and preoccupied with data capture and retention, today the preoccupation is centred on what we might consider the 6 H, that is, how to find information, how to filter it and select it, how to organize it, how to generate new information from the mix and remix of what already exists, how to share it with classmates and colleagues using different devices, and how to interact with others to build and confirm new meaning.

We could say that we have attempted to create a «Personal Knowledge Network» (PKN), overcoming the separations and disputes established between PLE and LMS, and seeking instead to combine and integrate both which would allow us to speak of «e.PLE» or «p-Learning». As Salinas states, (2009, p. 210) personal learning environments

> are presented as a hinge system where the virtual institutional environment associated with formal learning where we distribute courses, can be integrated with the more informal environment offered by social networks and virtual learning communities to build a Personal Knowledge Network PKN.

For this project, the inclusion of PLE in formal educational activity is associated with «Personal Knowledge Management» (PKM).

The origins of DIPRO can be found in the now extinct network Grouply. This medium was chosen because it is versatile, free, and has an interface that is pleasing to users. In this first attempt the network had 162 members. Nevertheless, the disappearance of the network from the market forced a reconsideration of the creation space of the network, which was one of the aims of the project. The second network used, also free, was Elgg and with it the number of participants increased slightly to 176.

The final DIPRO 2.0 social network was created with the Web 2.0 tool called Ning. This educational network is characterized, as the previous ones, by its versatility and pleasing interface, as well as by its highly intuitive functioning, and the possibility to invite others to participate. The methodology presented from this new perspective aims to promote the continuous exchange of ideas as well as collaborative work strategies (Ortiz, 2006), where group interaction and sharing of experiences form the basis of DIPRO 2.0. The research conducted by Baltaci-Goktalay and Ozaditek (2010) showed that 32.5% of the students consulted claimed they used social networks in their classroom dynamic, specifying in particular the use of Facebook. For this reason we believe it could be of great help in facing the changes that the introduction of the new curriculum has brought, such as the development of new classroom methodologies where Web 2.0 tools have a strong presence. We propose, therefore, a new scenario of mediated learning that is interactive, cooperative, and collaborative, although the collaborative should take precedence over the cooperative. In this sense Cabero (2003) indicates that they should be expressed symmetrically and reciprocally, should be based on the responsibility of the individual and the group that constitutes the network, to produce knowledge, and not be a mere transmitter of information. Along these lines, Wolton (2000, p. 37) considers that «equality of access to knowledge is not equality in the presence of knowledge». Therefore, the network should be equipped with rich and valuable resources, so that from a pedagogical point of view we may speak not only of social networks, albeit educational, but of virtual learning communities, and this is what DIPRO 2.0 is.

The educational social network DIPRO 2.0 was created with the Web 2.0 tool Ning and is characterized by its versatility, being free to use, and having a pleasant interface for users, a highly intuitive function, and the possibility to invite others to participate.
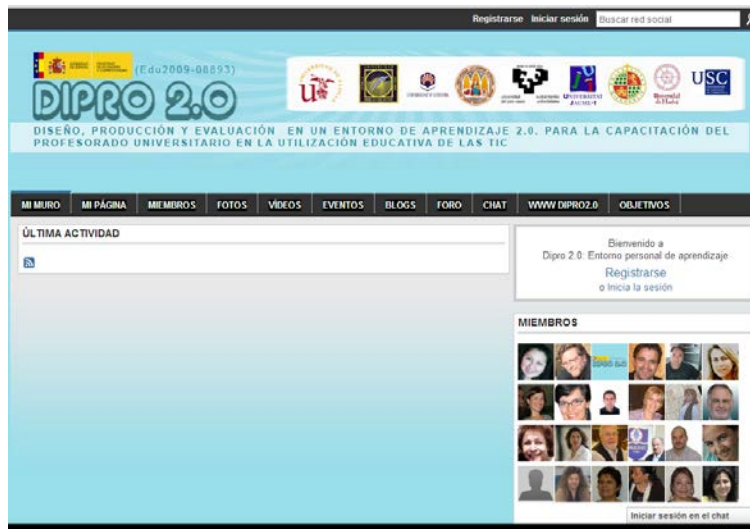
Figure 1. Gate of DIPRO 2.0 (see http://dipro20.ning.com/).

The network DIPRO 2.0 (see Figure 1) had, at the moment of writing, 387 national and international members from different fields by invitation given that, at present, it is being evaluated by international experts from different areas of expertise.

The present distribution of the participants in terms of gender is 184 men and 203 women. Regarding the countries of origin, as shown in Graph 1, the country with the greatest presence is Spain with 178 subscribers, followed by Mexico with 38. On the opposite end of the scale are Germany, Belize, Italy, and Ghana with only one participant. It is important to point out that only 10 participants did not indicate place of origin.
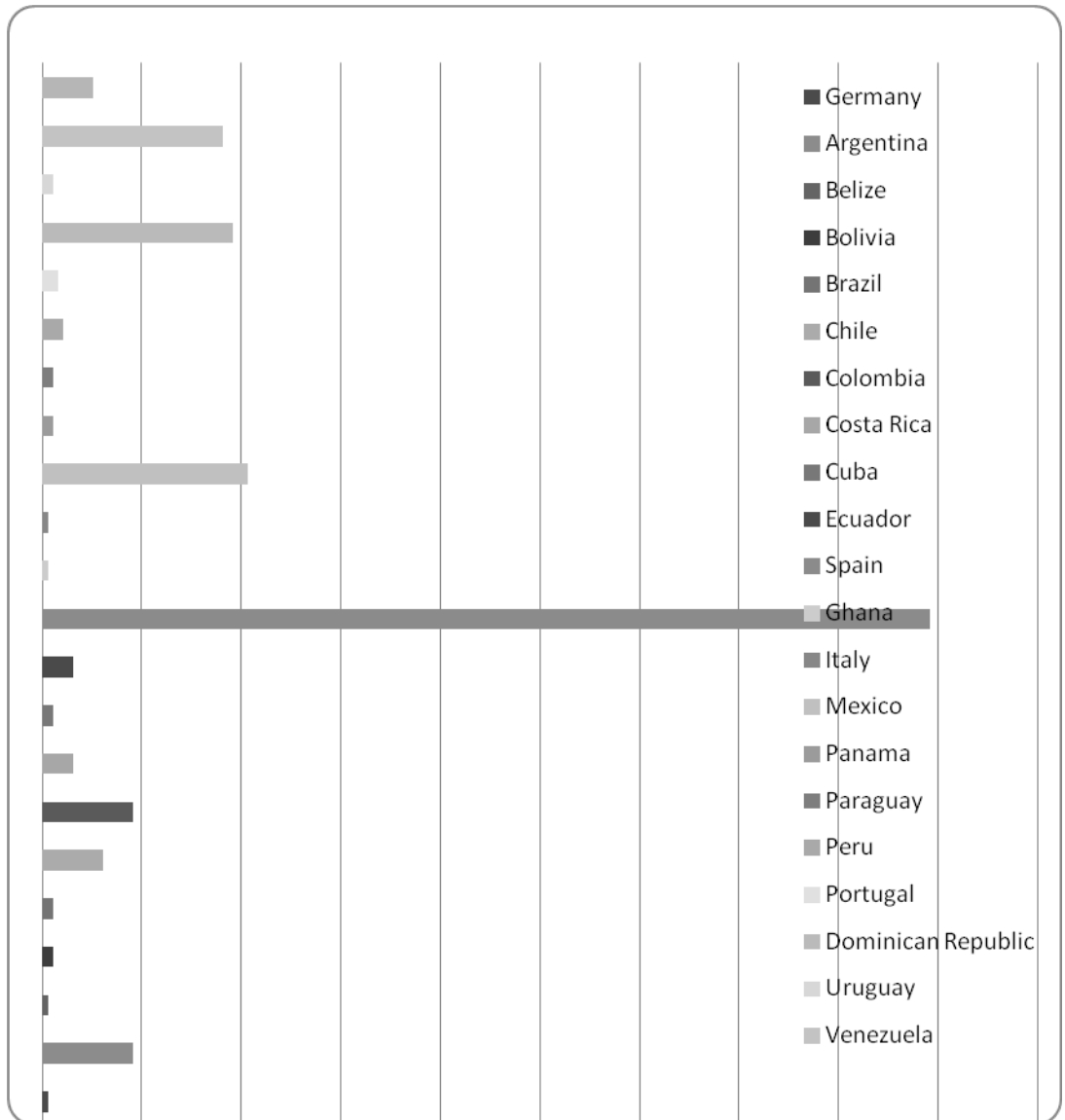
Graph 1. Distribution of participants by country of origin.

Regarding country of origin and gender, the members of the network are distributed as shown in Table 1; as can be observed, Spain with 90 women and Venezuela with 26 are the countries with the greatest presence of women as compared to Germany, Ghana, Bolivia, and Peru where there are no women participants.

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Table 1

Distribution of Participants

Country	Men	Women
Germany	1	0
Argentina	5	3
Belize	0	1
Bolivia	2	0
Brazil	0	2
Chile	6	6
Colombia	9	9
Costa Rica	2	4
Cuba	1	1
Ecuador	5	1
Spain	88	90
Ghana	1	0
Italy	0	1
Mexico	25	16
Panama	1	1
Paraguay	1	1
Peru	4	0
Portugal	1	2
Dominican Republic	20	18
Venezuela	10	26
Uruguay	0	2

With respect to men, again it is Spain that has the greatest presence (88) as compared to Brazil, Belize, Italy, and Uruguay where there was no participation.

The main objective of DIPRO 2.0 is to be a place of reflection and help for PLEs. It aims to be a space where university teachers can find information, help or advice on this subject matter in order to incorporate it into their work as researchers or teachers. The way this works can be seen at http://tecnologiaedu.us.es/diproinfor/difusion/videos.

With regard to the network, the structure of the collaborative area is distributed into discussion forum, events, photos, videos, archives, chat, and blog, with clearly differentiated functions that we can organize into two main focus points: the area in which information is shared directly (events, photos, videos, archives, blog) and the development of common knowledge through the presentation, confrontation and discussion of ideas (discussion forums, chat rooms), all of these focused on the topic of PLE.

Additional possibilities include creating alerts and marking and creating tags. In Figure 2, an example of an event is shown in which a participant communicates to the rest of the community the holding of a conference, one of the objectives of this option. Each recipient can grade the information supplied and communicate to other members if they will attend, may attend, or will not attend. A total of 10 events have been posted which

the network itself has catalogued and distributed into five congresses, two conferences, two academic events, and one workshop.

Figure 2. DIPRO 2.0 events.

In the same way, the video option allows participants to get to know elements considered important. It also allows the grading of a video after viewing and the posting of comments about it that can be sent to the rest of the members or only the person who posted the video, depending on the wishes and interests of the reader. Figure 3 shows examples of available videos and the option of adding videos to include new elements.

Figure 3. DIPRO 2.0's videos.

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Of the 29 videos posted to the network, the one most viewed by members, with 112 visits, is a description and definition of PLEs by Dr. Castañeda of the University of Murcia (Spain).

So as not to make the presentation of elements too detailed, we will focus on one of the main tools which gives rise to the most participation: the forum, where members can create a topic and the rest of the participants can express their ideas through a process of reflection and analysis or contribute other documents such as videos, PDF documents, or URL addresses, that corroborate, reinforce, or refute other documents analyzed and other approaches put forward.

Although we consider the contributions described below important, it is necessary to point out that this is one of the least used tools given that only four forums have been created with a very diverse participation in addition to the unequal participation of the members.

García Aretio (2003, p. 172) understands that, "in a community people form groups to interact socially, establish common bonds and share certain interests, beliefs, expectations, values and activities that establish the limits and distinguishing identity of the group and all, at least for some time." In addition, Salinas (2003, p. 36) clarifies that we find ourselves before a virtual community

> when a real community uses telematics to maintain and increase communication. The fact that interaction between people can be carried out physically but be intertwined through telematic networks is what leads us to talk about virtual communities, which can be considered personal communities, in as much as they are communities of people based on individual interests, common ground shared and the values of their people.

For Cabero (2006, p. 7) making reference to a virtual community is making reference to "communities of people who share some values and common interests and who communicate through the different tools offered by telematic networks, whether they be synchronous or asynchronous". Combining the aforementioned, we can ask, what are our interests? What are our values? What are our activities? The answer is clear and simple: They are nothing more than facilitating the training of university faculty, deepening our own knowledge, going into an exercise of conscious introspection in our daily teaching routine, weaving a tight social fabric of ICT professionals through telematic networks, in which everyone generously contributes their knowledge, localized resources, and research into this fascinating branch of didactic and pedagogic science to locate the best practices. The contribution of Cabero (2007) is also interesting when he indicates that an efficient virtual community must have clearly defined objectives and goals known by all its members, quality of information and relevant content, clear operational rules and knowledge of these by its members, and the existence of a positive

behavior system. We understand that all the efficiency requirements stated can be found in the network DIPRO 2.0. For Paloff and Pratt (1999) the requirements of a virtual learning community are: active interaction, collaborative learning, social construction of meanings, the sharing of resources, and the exchange of supportive messages between students (in our case between the teachers themselves). Garrison, Anderson, and Archer (2000) define social presence as the capacity of individuals to cast themselves socially and emotionally into a research community, and by Arbaugh's (2004) judgment it is comprised of three components: affection (expressions of emotion, feeling and state of mind), interaction (indications that the student is following the discursive thread, the expression of thanks, additions to posted material), and cohesion (the calling of other members by their name, the inclusion of closing messages).

It is from this asynchronous discursive line that the elaboration of objectives and work hypotheses are obtained: the pre-elaboration, verification, and conformation of theories; the consensual and collaborative conceptualization of terms all contributed and made visible to other participating members.

However, at the same time, this delocalized discourse temporarily allows for the flexibility of the act of communication and the delocalization of information, increasing the possibility of reflecting on the content and the praxis itself, eliminating the necessity of being physically present, putting researchers from different parts of the world in contact, with different areas of experience and a broad knowledge and experience that supports, allows, and facilitates the social construction of knowledge. As an example of this, in Figure 4 four contributions relative to collaborative work and social networks are shown.

Figure 4. Examples of contributions to the forum.

We should also indicate that this tool provides information about recent messages and those most commented on. This allows us to center our attention on those elements that

the community has selected as most relevant, or those that for different reasons have not been visited until that moment, all the more since the number of open categories is important, as in this case, in which we find at the moment 23 categories and which, as is to be expected by the vitality shown by the DIPRO 2.0 virtual community, will increase exponentially.

Following in this line of communication, 10 blogs have been created in which the greatest participation was in the topic referring strictly to PLEs (PLE: keys to online educational ecosystems) with 34 contributions. Graph 2 shows the distribution of participation for the 10 blogs created.
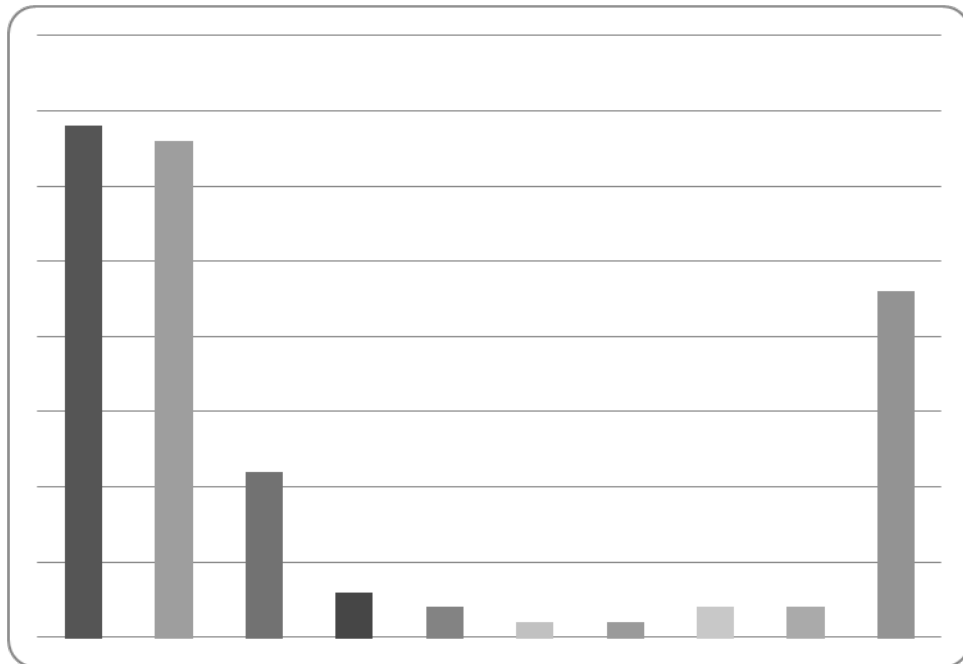
Graph 2. Themes of the blogs.

Initial Conclusions

Valverde (2007, p. 53) indicates that, "just as ICT satisfies real educational needs, its curricular integration and good practice are generalized." In this way, the use of Web 2.0 promotes an education and training that responds to the demands manifested by society. As mentioned, the Internet is one of the tools that are currently contributing the most to helping individuals in the construction of their teaching-learning processes, in establishing relationships with other individuals, in discovering other realities, and so on.

In the educational field we agree with Holcomb and Beal (2010), that the rapid growth of the Internet in general and of Web 2.0 tools in particular implies that teachers should be conscious of their limitations with them.

The creation of educational social networks has been growing over the last few years, although at a university level these have been linked to another type of tool such as blogs and wikis. At present, we have passed from an education that based the teaching-learning process on 'teaching by telling' to one that currently focuses on 'learning by doing'. According to the comment of Castañeda and Gutiérrez (2010) concerning networks, it would consist of good learning through good social networks. These new circumstances propose that university teachers, those who have to take on their new role, present new methodological necessities and they need new tools to help them along this road. And on this road we find educational social networks. The network DIPRO 2.0 has been conceived as a repository of information for PLEs which will allow for the overcoming of obstacles as pointed out by Meyer (2011), namely lack of time and training. From our point of view and after the experience developed through the project and the DIPRO 2.0 network, we consider that professors in general want to communicate about PLE, they want to share their experiences with and knowledge of this tool and how they have worked with it. Nevertheless, their limitations or gaps in knowledge remain in the background, not showing the need to increase their knowledge in this particular area, either due to fear, or lack of self-confidence, or because they think it is a sign of weakness to have gaps in their knowledge of the subject.

On the other hand, the main handicap that we were able to detect is maintaining the active participation of the participants. If we examine the data, at the time of writing this manuscript there were 387 members; however, the active participation of the members was only 28.94%. Therefore, we believe that it should be more dynamic and encourage greater participation. Although we also believe that active participation in a social network, whatever the content, can be exhausting for professors, especially if they are fully involved in the various forums that are created within them and develop a continuous feedback that could occupy all of their time. Nevertheless, we consider this to be an initiative that with the willingness of the professors to participate could broaden the methodological horizons that we are developing today, since the presentation of classroom innovation through PLE is a way for the educational community to gradually introduce them in their classroom dynamics, so that both parties–professors and students–will benefit.

University education, which ultimately seeks to encourage Internet teaching, lies in the promotion of creativity and flexibility of training environments by higher education professionals to bring this social reality closer to the university, always remembering that ICT is in continual evolution and growth. However, as Flores (2009) indicates, the changes affect not only the way in which things are done but also the content that is given. Therefore, we put forward the suggestion that a social network can be transformed into a learning community, into a rich environment of not only technological elements but also training elements, which, through the participation and interaction of its members, grows and helps its members to grow.

To conclude, it should be indicated that both the training environment and the PLE were evaluated by experts in ICT on four dimensions: 1. Technical and aesthetic aspects,

2. Ease of navigation and movement around the environment, 3. Guide/tutorial of the program, 4. Quality of environment to create a "Personal learning environment". The instrument used was a Likert-type scale with six possible answers (from 1 = *very negative/strongly disagree*, to 6 = *very positive/strongly agree*). The response can be considered highly favourable since all of the dimensions received a score of 5 (agree/positive) or 6 (strongly agree/very positive). This leads us to believe that the environments created may be of interest and be beneficial for training university professors in ICT. As a limitation of the study we should explain that we have not yet carried out a study of the degree of satisfaction of the users of the DIPRO network, although we are in the process of developing a questionnaire for this purpose. We understand that the analysis of the results obtained will allow us to develop and strengthen both the strong points indicated by the users, and those that are susceptible to improvement. An analysis of the results of the participation of the users will also foster a greater sense of belonging and responsibility as well as a more active use of the network and participation in the activities.

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