# INTEGRATING PERSONAL AND INSTITUTIONAL VIRTUAL LEARNING ENVIRONMENTS

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## Abstract

The present project aims to introduce the use of Personal Learning Environment, PLE, in the educational practices at the Post-Graduate of Educational Psychology. Currently, this Post-Graduate program uses a Virtual Community as a platform for the promotion of the relationship between teachers and students from the several promotions of Master degree and Ph. D. The program also offers virtual classrooms to support the face-to-face sessions for mandatory subjects and for the complementary curricular activities. Our next step will be to add a new level between on-line classrooms and the virtual community and offering students the opportunity to build their own PLE.

The main objective of our proposal is related with the use of a PLE platform in order to promote innovation in the design of higher education environments. The design should offer more flexibility and possibilities to combine the institutional (formal) virtual environment with a more customizable environment that the students should configure following their interests and preferences. In this way, students could have more control over managing their own learning processes. Using PLE platform, our aim is to encourage students to explicit and share with other some resources, services and online applications even to share their own network learning whereby they participate in different educational and professional contexts.

In this proposal we describe the first phase of the Project. The main focus of this phase has been a pilot study in order to evaluate Elgg, an Open Source Social Networking Engine, as the technological platform to allow the students configuring their personal learning environments. We detail the overall design decisions regarding the selection and configuration of Elgg's tools or widgets for building PLE. From our perspective, PLE building should consider three different levels of resources or widgets: widgets for elaborating information, widgets for sharing information and widgets for publicizing information. The different widgets, at the three levels, should offer the possibilities to work in three levels of "activity": personal level, small group level and the whole community level. In short, from of our point of view, building a PLE suppose decide how to create, organize and maintain both the personal network of resources for learning as the persons from whom to learn at any moment.

Finally, we analyze the structure of the PLEs configured by a group of 16 students over a semester and the effective uses of the possibilities offered by the several tools. We contrast too these results with the assessment of the students themselves about their experience in configuring and using these environments for learning.

Keywords: Personal Learning Environment, Learning Ecologies, Higher Education, Elgg.

## 1 INTRODUCTION

Enhancing the role of students in the management of their own learning and in the acquisition of skills for learning to learn throughout their professional careers is undoubtedly one of the priorities of university education today. The information and communication technologies (ICTs) and the Internet play a decisive role in the acquisition and development of many of the new skills that students will need to successfully meet the challenges of the information society [1].

Personal Learning Environments (PLEs) allow students to build their own spaces on the net in accordance with their interests and preferences, in which they can organise all the resources and services they use to learn to access information and the network of people that serve as reference points in their learning ([2], [3], [4], [5], [6], [7]).

With the importance of social networks as resources for learning, PLEs are environments that combine individual learning spaces with collective spaces for learning in small groups and in multiple

communities. Moreover, PLEs allow interactions at different levels of privacy and publicity. A PLE's configuration could combine private individual spaces and individual spaces with access only for some participants or fully public, combined with collective spaces with access only for partners, only for some participants or fully public.

The review of studies of PLEs shows the coexistence of a wide range of approaches and experiences rooted in different theoretical and disciplinary traditions. Some papers focus almost exclusively on the characteristics of the tools and resources that make up the "personal (digital) environment" (e.g., [8], [9], [7], [10], [11]). Others emphasise psychopedagogical aspects deriving from the first part of the title – "personal learning" – and focus on helping learners to create and manage these environments as learning tools (e.g., [4], [2], [6]). However, beyond this distinction between technological and psychopedagogical aspects, there are at least two shared elements or features that are of particular interest when viewed from the perspective of education.

First, the theoretical base of PLE is a vision of the learner as an agent who seeks, creates, adapts, and disseminates content, a "prosumer" rather than a mere consumer of content or training programmes created by others (e.g., teachers or publishers), someone willing to set their own learning goals in response to their interests and determined to achieve them: in short, someone able to take control of their own learning, making decisions about what, how, when and where to learn at all times, and above all, who to learn with.

Second, the notion of PLEs takes a broad view of learning, and does so in two particular ways. On the one hand, it emphasises the need for permanent knowledge updates throughout the professional career and the need to adapt to the rapid and constant changes that characterise the digital age. On the other, it extends the learning processes in formal education settings to all contexts and systems that provide learning opportunities for people – family, work, cultural institutions, religious institutions, community activities, sports, leisure activities, hobbies, and so on. In this way, we can say that PLEs give expression to individuals' learning ecologies ([12], [13]).

With this view of learning and the learner, our proposal for innovation aims to use PLEs as a platform for the design of a more flexible university environment which combines the virtual institutional environment with one that students create and customise based on their own interests and preferences, thereby giving them greater control over their own learning processes. Via the use of PLEs we aim to help students to make explicit their particular learning ecologies and to share them with others: in other words, to present and share their online facilities, services and applications and the networks of personal relationships they use to learn in different educational and professional contexts.

In this paper we describe the first phase of this project. In this first stage we focus on the assessment of Elgg, an open source social networking platform, as a means to enable participants to create their own PLEs. In particular, we detail the decisions taken by designers in order to explain the selection and setup of the plug-in or tools for constructing the PLEs, the final structure constructed for a pilot group of students using the Elgg platform, , and their assessment of the process as a whole.

# 2 METHODOLOGY

## 2.1 Context and participants

The trial was conducted during the first term of the 2011-2012 academic year under the framework of the Postgraduate course in Education Psychology, which comprises the Interuniversity Master's in Education Psychology (MIPE), and the Interuniversity Doctorate in Education Psychology (DIPE). This postgraduate course is run jointly by four universities in Catalonia, the University of Barcelona, the Autonomous University of Barcelona, the University of Girona and Ramon Llull University. It is aimed at students and professionals interested in acquiring a solid theoretical and practical grounding in the contributions of psychology to educational theory and practice.

This Postgraduate programme currently has a Virtual Community comprising the students and faculty taking part in MIPE and DIPE. As well as offering all the standard resources, the MIPE-DIPE Virtual Community provides access to the virtual classrooms of the courses and to the complementary curricular activities of the two programmes. Both the virtual community and the virtual classrooms are built on the Moodle platform. Using this framework, we propose an innovative project which aims to replace this Moodle platform with one that incorporates the resources currently available and also allows users to (re) construct and (re) organise it as a personal work and learning environment.

The trial involved 15 students (12 women and three men) and three teachers (two male, one female) from the optional module on the MIPE *Environments, tools and practices of virtual learning* (bearing 10 ECTS credits). This module is organised in fortnightly work sessions, supplemented by online activities held during the two-week interval in between the classes.

## 2.2 Design of the PLEs

The trial began by adapting the Elgg platform in two ways. First, some of the plug-ins or tools provided by the platform were customised and adapted for use to construct PLEs; second, using the same plug-ins, a virtual environment was organised that would facilitate the construction of PLEs suited to the educational design of the module. The organisation of this environment includes two levels: the public webpage providing access to the module, and the spaces or sites for the construction and use of the PLEs by students.

Figure 1 shows the screen that is seen by participants and Internet users who access the environment's public website. The site is organised in two columns displaying different types of information and activities relating to the module. In the left-hand column, the first block, *Acerca del M9 (About M9)*, briefly introduces the module and its objectives and contains a link to the syllabus. The next block, *Documentos (Documents)*, provides links to some of the required reading for the module. Below is the syndicated content of the module, and further down the block *Foros (Forums)* shows the titles and presentations of the course's open forums (accessible after registration). The first block in the right-hand column is *Grupos activos (Active group)s*, which shows only the name of the group and number of participants and does not allow access to their names or profiles. Below are the block *Noticias (News)*, the module's public blog, and the block *Etiquetas (Tags)*, which aids the search for documents and information via keywords. The block *Foots (Photos)*, showing images of the sessions, closes the right-hand column.


Figure 1. Public view of the module M9 environment

From the plug-ins or tools offered by the platform Elgg we selected the ones that were likely to be most useful to students in their attempts to create three distinctive spaces for their PLEs: **desktop**, **profile**, and **groups**.

The **desktop** has two functions. First, it is an individual, private space where each user can activate plug-ins or tools (blogs, personal files, bookmarks, RSS, calendar and events, activity on the platform, etc..), depending on their interests and preferences. Second, we added a set of default plug-ins common to all members of the class group (files, links, photos, videos, news, active groups, labels…). Using this shared plug-ins, teachers incorporate materials for the module (compulsory and supplementary readings, links to web sites, video presentations, etc.), although students can also add resources they consider being of interest to all participants. Moreover, some plug-ins are set up in such a way that their contents are fully public and accessible to any Internet user.

Participants automatically access this desktop after registering on the M9 public website. The individual plug-ins are distinguished from the default plug-ins that are common to all members by the colour of their titles: black for individual plug-ins, and red for common ones. Figure 2 shows an example of a participant's desktop.

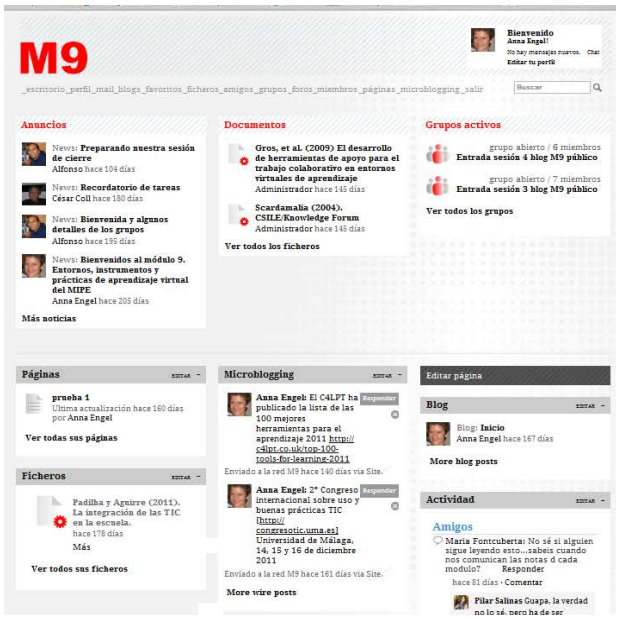
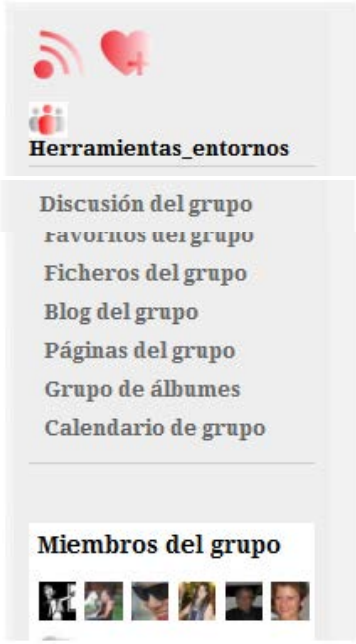



Figure 2. Partial view of a participant's desktop.

The **profile** (see Figure 3) is an individual space that allows participants to present information to others at different levels of privacy: to individual participants, to specific groups, to all registered participants or to all Internet users in general. As in the case of the individual space on the desktop, in the profile each user can activate the plug-ins or tools they choose (blog, personal files, bookmarks, RSS, calendar and events, activity in the platform, etc.). However, in contrast to the desktop, each participant can also decide who they will share their resources with – i.e., with individual participants, other small groups, all registered participants or the general public.


Figure 3. View of a participant's profile.

**Groups**, as the name implies, are spaces for group work. Group members can activate the plug-ins they consider necessary to carry out their work, and, as in the profile, they can set the level of privacy of each of these resources (allowing access to individual participants, other groups, all registered participants or to Internet users in general). Figure 4 shows the plug-ins available for groups, discussion (forum), bookmarks, files, blog, pages (collaborative editor), photo albums and the group calendar. The most interesting feature is the fact that all participants can create groups at any time, including as many other participants as they wish. So there may be predefined groups for the educational activity as a whole, or temporary groups that appear or disappear according to the interests and needs of the participants in a community.




.Figure 4. Plug-ins available for Groups

Furthermore, the environment also has forums, an internal message system and a microblogging tool which participants can access via a navigation bar located on the top of each page after registering and entering the module's virtual space.

As we noted above, the module (M9) is organised in work sessions which are held every fortnight and complement the online activities. Each of these face-to-face work sessions consists of two parts. The first comprises a set of activities that work on five main thematic clusters – i) the impact and uses of ICT in formal education, ii) learners in the twenty-first century: learning in the context of digital culture; iii) online learning environments: technological and educational design and use; iv) from online learning environments to personal learning environments, and v) ICT and education: towards a new ecology of learning. In the second part, which takes place in a computer room, a set of ICT tools and environments is explored (blogs, tools for visual representation of knowledge and wikis and collaborative editors, forums, etc.) along with studies and trials selected because of their relevance and interest to education in general and to formal and school education in particular. Each part lasts around 2 hours and 30 minutes.

To create and manage their PLEs, students were explicitly advised to use the features that Elgg provides for the following:

- seeking, organising, processing, sharing and disseminating information in groups of varying sizes;
- creating spaces for individual work and learning, both public and private;
- creating spaces for collective work and learning, both public and private;
- incorporating inputs from other virtual spaces;
- incorporating inputs from persons not connected to the module.

The second part of the first face-to-face session was devoted entirely for training participants to use Elgg's tools and resources in order to build personal spaces for working and learning. In the remaining

sessions, the problems raised by students in the use of various resources were resolved. Doubts or problems that arose during the course of the term were resolved online through the message platform.

## 3 RESULTS

To assess the results of this innovation study, we use three sources of information: the structure of the PLEs built by the pilot group of students, their responses to a questionnaire rating their overall impressions of the construction and use of PLEs which they completed at the end of the course, and the comments during a classroom session evaluating the experience, also at the end of the course.

Regarding the structure of the PLEs built by the students, we use activity logs to identify the number and type of plug-ins added by each participant in their desktops or profiles and to assess the extent to which participants customise their environment. Table I shows the total number of plug-ins activated by each of the participants from the 18 available. Importantly, some plug-ins (such as RSS feeds) can be activated more than once. As can be seen, more than half of respondents (10) activated between 10 and 20 plug-ins in their desktops or profiles, three activated between six and eight, and five participants activated only three or fewer. For example, student E1 shows a high degree of customisation, combining the following plug-ins: friends, favourites, files, RSS feed, blog, bulletin boards, groups, calendar and my location. In contrast, student E6 presents a low degree of customisation, with only friends, blogs, photo albums and pages.

Table I. Number of plug-ins activated by participants

| Participant | Number of plug-ins activated |
|---|---|
| E1 | 20 |
| E2 | 17 |
| E3 | 1 |
| E4 | 1 |
| E5 | 8 |
| E6 | 6 |
| E7 | 8 |
| E8 | 20 |
| E9 | 18 |
| E10 | 11 |
| E11 | 13 |
| E12 | 20 |
| E13 | 3 |
| E14 | 1 |
| E15 | 1 |
| P1 | 10 |
| P2 | 17 |
| P3 | 18 |
| E = student<br>P= teacher | |

Table II shows that the plug-ins most frequently activated were friends, favourites, files, RSS feeds and activities, followed by microblogging, blog, bulletin boards, groups, photo albums, pages, and calendar. The least used were Twitter, video, my location and my last pictures. My latest videos and video feeds were not used at all.

Table II. Type and number of plug-ins activated by participants

| Plug-in | Frequency |
|---|---|
| Friends | 16 |
| Favourites | 11 |
| Files | 10 |
| Activity | 9 |
| Rss feed | 8 |
| Microblogging | 6 |
| Blog | 6 |
| Bulletin boards | 6 |
| Groups | 6 |
| Photos | 5 |
| Pages | 5 |
| Calendar | 4 |
| Twitter | 3 |
| Video | 3 |
| My location | 2 |
| My latest photos | 1 |
| My videos | 0 |
| Last RSS video | 0 |

The questionnaire was answered by 14 of the 15 students who participated. Their satisfaction and their global assessment of the PLEs were evaluated through four questions using a five-point Likert scale, with 1 corresponding to the minimum score and 5 the maximum. The first of these questions asked students to state the extent to which the PLEs helped them learn to learn. The responses were clearly positive, with a mean score of 3.07. The second question asked students whether the PLEs helped them improve their own learning processes and strategies. Again the answers were mostly positive, although slightly lower, with a mean score of 3. The third question asked students their opinion on the possible interest of building the MIPE-DIPE Community on the basis of PLEs. In this case the responses were largely positive with a mean score of 4.07. The fourth and last question asked students to rate their overall satisfaction with the technical performance of Elgg; 42% rated their overall satisfaction as low or very low, 35.7% as high, and none as very high. In this final question the mean score was 2.8.

During the assessment session after the end of the trial, students briefly presented their reflections on the experience in small groups. The analysis of the transcript of the session sheds further light on the responses to the last question in the survey. There was strong agreement that the technical performance of some of the Elgg plug-ins is very limited, particularly the forums plug-in, because discussions cannot be nested with the messages in response to the answers and because there is no text editor for the messages. The pages plug-in was criticised because it lacks a collaborative editor like wiki or GoogleDocs, and the files plug-in files because it does not offer the possibility of organising documents into folders. A final weakness mentioned by all the students is the lack of tools to customise the environment (e.g., different themes, colours, fonts, etc.).

## 4 CONCLUSIONS

This study has enabled us to reach a series of conclusions regarding the possibilities and limitations that Elgg offers for the design of virtual teaching and learning at university level, and its ability to combine an institutional context with a space, or set of spaces, that students can customise according

to their interests. Via Elgg, students create their individual learning ecologies and establish synergies between different educational and professional contexts, and develop their ability to learn to learn throughout their professional careers in the information society.

From this perspective, Elgg has two main strengths. First, it allows users to create spaces for individual learning and for learning in small and large groups, and in each of these spaces allows them to establish interactions at different levels of privacy. It creates an environment that combines individual and collective spaces that may be accessible only to colleagues, to the general public, or to particular people. Moreover, Elgg offers easy access to a large range of tools that each user can activate and configure according to their preferences and needs.

However, compared to other tools of the same type in regular use, the analysis of these tools shows that the benefits offered are quite limited. For example, Moodle forums offer many more features in terms of viewing and editing the contributions than Elgg, and editors like Google Docs allow much more sophisticated tasks than the corresponding tools in Elgg. However, the major limitation of Elgg (in our particular design) is, in our opinion, its inability to organise files in folders or some other form of ordering. This deficiency means that browsing the activities and files in Elgg is difficult and inefficient.

After mentioning these strong points and weak points, we should now look at the uses that students made of the tools available. Most students configured the tools to work in small groups and occasionally provided information of interest to the whole class group. However, we found no activities or tools specifically configured to pass on to the class the learning that students acquire in different non-formal educational and professional contexts, or the voices that are significant to them in these contexts.

We believe that through close collaboration with the developers of the technology, it will be possible to optimise the different tools in Elgg to promote the type of teaching and learning processes that we propose. We are more doubtful about the possibility of changing the organisational culture that pervades our universities: a culture which makes a clear distinction between knowledge and voices from "inside" and knowledge and voices from “outside”.

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