

Patchworking Web 2.0 for learning: Introducing ICT as a professional tool building Personal learning Environments

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Abstract

This paper reports on a teaching experience of the introduction of ICT to higher education students in a complementary professional approach and a Personal Learning Environment (PLE) development approach, as well as a naturalistic study based on this experience.

Over a 4 month period (a semester in Spanish universities) two groups of first year students of a Social Education degree (around 150 pupils), were introduced to and encouraged to work with different web 2.0 tools. Each one of these tools was able to be used as a professional/work instrument (for Social Education purposes) and as a general learning resource (to be integrated into the PLE of each student). Following these ideas, the dynamics of the introduction of each tool started with a students' hands-on session. Later, the students had to carry out some individual activities (proposed by teachers) using the tool, and finally, they had to integrate it into a group project dynamic, together with at least one special function (self organized).

In the final period of the course, students built, painted and published online their PLE diagram, and finally they reflected on the integration of each tool into their course work, into their group work (project developing dynamic), the impact of these tools on their PLE and the impact of the idea of the PLE on their professional and personal life.

In the meantime, teachers explored the student's general development using web tools, their perception and attitudes around ICT, and their development in working and learning in a patchwork proposal of a technology enhanced learning environment for the course we built with them.

Why patchworking?

Wikipedia says about patchworks:

"long forms of needlework that involves sewing together pieces into a larger design[.....] The larger design is usually based on repeat patterns built up with different colored shapes. These shapes are carefully measured and cut making them easy to piece together"

Would we use it to define the PLE building process as well?

Patchworking is used in this work only as a metaphor to describe the dynamic we have developed trying to help our students to build their own PLEs. Let's start to explore how needlework around Web 2.0 tools can or couldn't help our students to start to manufacturing their PLEs from the university.

1. PLEs in a university course methodology, ICT for Social Education

For this experience we have used a course with first year students of the degree in "Social Education" of the University of Murcia (Spain) in the first part of the period 2009-2010. The course is called "Information and Communication Technologies (from here to now ICT) in Social Education". This course tries to be an introduction to the use of ICT in non formal and informal education, for the educational processes as well as for the management process around social education institutions.

In total we were working with 150 students (from 18 to 49 years old), and they were working with two teachers complementary (not in parallel). The main goals of the course from the teachers' point of view were two:

- Giving the students a first overview about how ICT could be used effectively to enhance the non formal educational process, not only to become it more complicated or modern.
- Provide the students opportunities to develop their knowledge of the ICT tools and applications, in order to offer them a first panoramic about the evolution and current situation of ICT. As well as to help them to build a first catalogue of tools, useful to start to work in their degree, as well as useful to be used as work tools catalogue, and of course, useful to provide them good opportunities of professional learning.

In order to achieve both objectives we have designed a methodology of teaching and learning, based in a student centered work proposal. Students in groups, had to build and develop during the whole course, a creation proposal of a non-profit organization dedicated to the attention of a exclusion risk group of population (previously selected from a list). This organization had to have at least 3 lines of technology enhanced education approaches, specially centered on the elected collective.

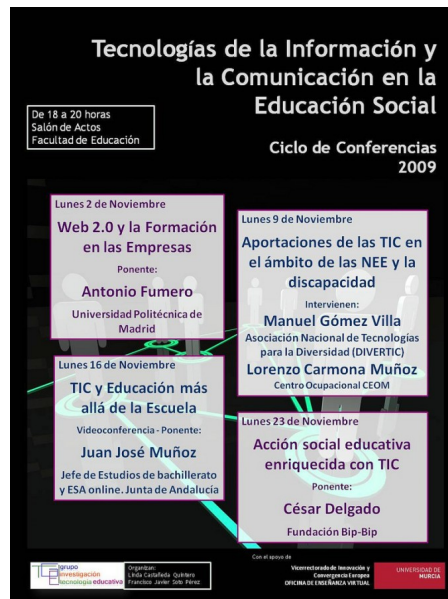
The proposal presented by students in the end must include at least:

- A first approach to the work with this group of population. Social and legal framework.
- Characterization of the collective
- Principal educational needs
- Educational alternatives to these needs (3 minimum)

As colophon, the proposal couldn't be presented in any physical support, it had to be supported electronically, and had to include the exclusive use of Free Software, and preferable Web based applications.

In order to help students to do it, teachers have organized the work course dynamic around three principal strategies:

- **Lectures and conferences**, where one of the teachers or an invited expert, explores possibilities of ICT in non formal education processes. Each lecture/keynote include the approach to an specific collective (p.e. drug addicts, battered women, youth services, and so on), or from a special kind of organization (university, non-governmental organization (NGO), associations, and so on.), always taking as principal focus, the contents of the course included in curriculums of it.



Poster announcing keynotes of external experts.

- **Collaborative work-group**, each week students had to making grown the proposal, and for it, the central base of work were a community created in NING. In order to complete the final proposal, each member of the group had a different role each week (*strategy, practice, exploration, communication, diffusion, analysis of the work, historical registration*), and periodically the whole group had meetings with the teachers to analyze how the work were it gone. This work had to be the link between both main objectives of the course, the understanding of how ICT tools works in Social Education, as well as how ICT tools could be used as learning and working tools.



NING Community <http://esytic0910.ning.com>

- **Individual Hands-on workshops**, twice a week students participated in a hands-on session centered in a specific kind of tool or application. Work in this hands-on sessions were individual, student had to explore the tool, make a special work with this one, and the group members with the role of “practice” each week (as we have said previously, one different each week) had to apply the possibilities of this tool to the group proposal and to discuss the usefulness of it in the big project.

In order to understand better the dynamics which take place during the semester, plan more closely the practices, hands on sessions, as well as to organize the group work, we have explored in the beginning of the course the students’ level and frequency of use of web 2.0 tools. The main function of this exploration was to show us the best way to initiate the students’ use and exploration of ICT tools for learning and working.

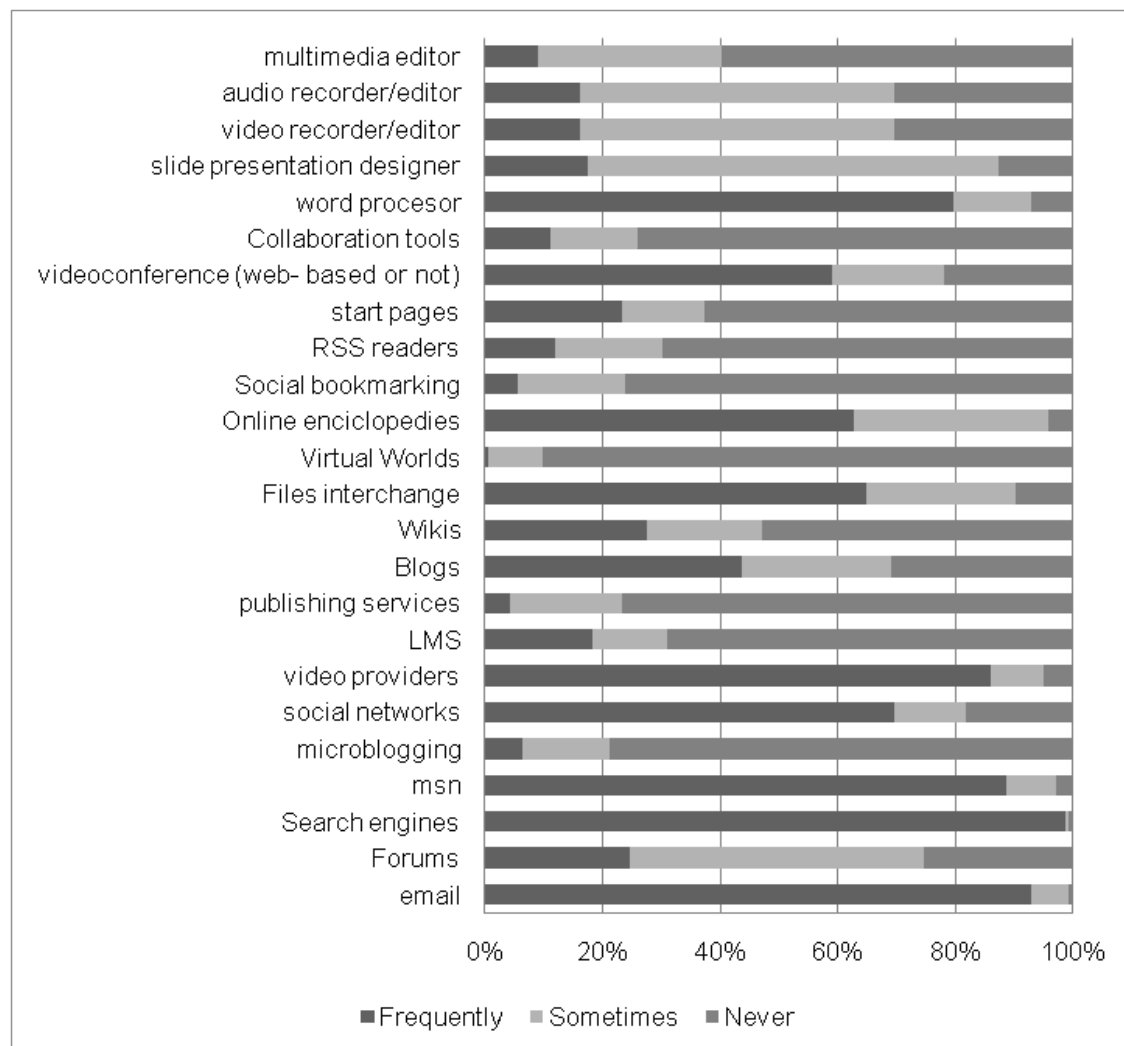
Nevertheless, there was an activity planned before this first exploration, the last one. In the activity planned for the end of the course we wanted to explore the students awareness about their Personal Learning Environments, their attitudes towards the ICT tools explored, as well as how these tools have changed or not their work. Therefore, we have two sub-activities: a hands-on session, and a questionnaire.

In this last hands-on session, students had to draw their Personal Learning Environment using a map mapping tool (in this case we used Gliffy, <http://www.gliffy.com>), and including on it every online tool it use for its learning, in other words, tools to read (in the most wide open sense of the word), write (and reflecting) and share. The tools had to be not only related to the present course. In the draw, the student had to include a representation of itself, and the tools, and had to include using arrows the direction of its relationship with the tool (unidirectional or bidirectional).

2. Participants, the initial situation:

For this initial exploration about the situation about use of technologies in our students we have asked them for their level of knowledge and use of some kind of web services and tools, always putting some common examples to illustrate each category (p.e. social networks as tuenti, facebook, ning, etc.). We have asked if they use the tool every day, more than twice at week, once at week, more than twice at month, once at month, almost never, never but know what is this or Don't know what is this.

From this exploration first exploration we know than our students don't use very much ICT before this course. Use of ICT tools for them is almost anecdotic, but is not a normal habit. In order to show the more relevant data we have collected on this first approach, we have reorganized the categories used in the questionnaire in only three to try to see it more clearly in a graphic, where "frequently" includes every day, more than twice at week and once at week; "Sometimes" includes more than twice at month, once at month and almost never; finally "Never" includes the answers for the category Never but know what is this and Don't know what is this.



Students' frequency of use of some ICT tools

As is evident from the graphic, only some of the tools are used frequently, indeed if we analyze the data closer, we observe than our students only used some tools

daily. Indeed, from our data we know that Email, Search Engines, Messenger and Social Networks are the only services that more than 40% of our students use every day.

On the other hand, there are many tools which they didn't use ever. Even, more, from the 24 kind of Web services/tools we asked for our students, more than 40% of them didn't have hear before about 7 of them: collaboration tools. Start pages, RSS readers, Social Bookmarking, Virtual worlds, publishing services and LMS.

With these data we had a first overview about our students, so taking this in mind we planned the hands on sessions.

3. Hands-on sessions, sewing smalls parts of a whole

Having in mind the course schedule, as well as the course unforeseen, and with the overview about the starting situation of our students about ICT tools, we have planned and implemented sixteen hands-on sessions using as well the following basic criteria:

- Every activity had to include a specific task related to the field of social education, and could be related to the collaborative work-group the students were working on.
- Students were working individually in the hands-on session, BUT each week one member of each group of work had to use the tool explored in the hands-on session in a specific way.
- We prioritized activities which promote online collaborative work.
- ICT tools used in the hands-on session had to be free and web based.
- Hands on sessions taken place in a special class room with PCs, and teachers used a few directive dynamic of working. Teachers showed them only few basic guidelines about the tools and its use, BUT each student has to make the task discovering the tools features by itself. Also, students could help each other when one of them discovered a feature or application.
- Students couldn't include resources or information used by other students without justify it.

Following these criteria we implemented the following hands on workshops:

3.1. Session 1: Blogs, expressing myself:

In order to guarantee a tool useful for students to publish their work, and at the same time a useful tool to facilitate the assessment from their teachers, in the first hands-on students discovered blogs. They could create a blog in one of the tools presented (the teacher only shows the web page of each service): WordPress, Edublogs or Blogger (<http://www.blogger.com>). Once presented, students had to personalize it (avatar, skin, colors, widgets, and so on) and start to publish on it about the course. This blog was the base of their practices, so students maintain it, at least, during the whole course.

In the first post students had to include their expectations about the course and what they have learnt from the hands-on session, not only technologically, but personally and professionally. It would be a constant part of every hands-on practice, and therefore of each new post in the blog.

3.2. Session 2: Wiki, building something together:

In the second hands-on session, students were included in the world of wikis. Firstly, they completed a wiki with their data and for choosing group for the collaborative work-group. Also, they have to create a wiki about their collective. The service chosen to do this was PbWorks (<http://www.pbworks.com>).

3.3. Sessions 3 and 4: Private social networking, building a network:

Once created the groups to work together, we started to create online communities to include the interchanges for every group. For it, teachers created a Social Networking Site for the course based on NING.

We used two hands-on session to introduce students in NING. First one to meet the tool, personalize the profile, and the second one to create their own groups and initiate and continue at least a discussion line.

3.4. Session 5: social bookmarking, recommendations everywhere:

In the 5th hands-on (from here to now HoS) they had to met social bookmarking use. We have used for it the tool Mister Wong (<http://www.mister-wong.es>) because is in Spanish. So, each student had to include at least 6 links interesting for him justifying its interest, and, every week, the Mr. Wong of the group had to grow up with the links used to complete the collaborative work.

3.5. Session 6: RSS, the dynamic web under control

In this new HoS the main objective was explain to students the mechanisms of RSS, and introduce them to the use of a RSS Reader. In this case we choose GReader (<http://www.google.es/reader>).

3.6. Session 7: Creative Commons and Open Source, sharing free knowledge

This and session N. 11, are the only sessions which was not based in a specific tool. Previous to this HoS, students had to read some online documents about Creative-commons licenses, licenses for open resources, open source and so on. Once they have read it, they have to include in their blog a post including some correctly referenced free resources (one picture, one video, one document, one multimedia cast). For each resource, the students had to include as well the kind of license.

3.7. Session 8: Multimedia and Videocast, publicity and multimedia expression

Using the tool animoto (<http://animoto.com/>), students had to design and produce a advertising spot (30 seconds max.) about their NGO or association (group- work). This must only include free or licensed pictures, videos and music. Once finished the spot everybody had to include it into their blog and in each group they would choose the best to include it into the NGO Web Page.

3.8. Session 9 and 10: Desktop suites online: working in our online office:

For HoS 9 and 10 the idea was explore the possibility to work in usual documents BUT using web based tools. Consequently, and taking in mind students had at this point a Google account, we decided to explore Google Docs (<http://docs.google.com/>). The final idea was students create, share and build together a specific document (specifications given by teachers), a folder with documents about the group-work, and some of them open that documents to publics.

3.9. Session 11: Digital divide, a treasure hunt to analyze better the digital world

As we have said previously, this session was not based in a specific tool, nevertheless it was based in a specific methodology: A treasure hunt.

Using a treasure hunt, students had to explore the concepts of Digital Divide, Universal Accessibility, Equal opportunities and Digital Inclusion. All of them had to include the answers in their blogs and finally they had to answer to the final question: How we can contribute to equal opportunities for everybody in a digital world?

Answers had to be posted in their blog and Final question had to be included and discussed in the NING's forum.

3.10. Session 12: ICT for special needs.

In this session, the principal aim was explore some catalogues of supporting tools for people with disabilities and from them, students had to select an ICT solution indicating the product name, type (software, hardware,...), a description, author /distributor, product web site, purpose and educational stage / field. This information had to be included in a post in their personal blogs, and they couldn't repeat solution or product.

3.11. Session 13: Time lines: looking in the temporal development

In the HoS Number 13 we wanted to explore timelines as expression and synthesis of processes. For this HoS, we used Dipity (<http://www.dipity.com/>), nevertheless, we open the possibility for students to use other timeline tools. In the session students had to register themselves into the tool, personalize the profile and create a timeline about their history at the university from the beginning of the course. The timeline had to include at least 6 events and on it they have to include also at least a video, three pictures and two related links. Also we asked them to include the RSS feed of their blogs. Finally they had to embed it in a post of their blogs.

3.12. Session 14: online diary, organizing the schedule online

In this hands-on session we wanted to start to use the Web with students to organize their schedule, personal professional, and the schedule of their NGOs. For this purpose we used Google Calendar (<http://www.google.com/calendar/>).

3.13. Session 15: Visual presentations; using slides efficiently

Final evaluation fo the course included an oral presentation, so this HoS had as main objective, explore the possibilities of Slides to support a speech, how to design and

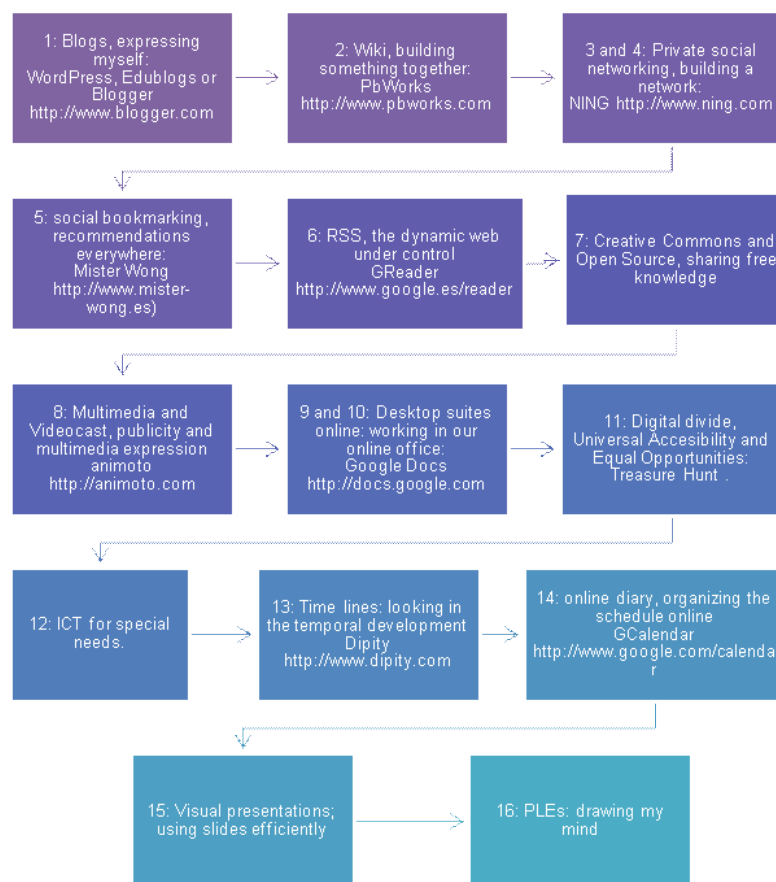
publish it online. Continuing with the criteria used in other HoS, we use GDocs to design it and slideshare (<http://www.slideshare.net>) to publish it; we know we could do this with GDocs, BUT it was an opportunity to explore a different tool.

In spite of students had liberty to include other tools or resources they wanted, they were forced to use always open resources (creative commons licensed or open source).

3.14. Session 16: PLEs: drawing my mind

Arrived this point, during the course, in a lecture made before the HoS, we introduce for the first time the concept of Personal Learning Environment and some of its implications to learning in particular, and to education in general.

The final proposal we have implemented in the hands –on session was developed as bellow:



Hand-on sessions sequence

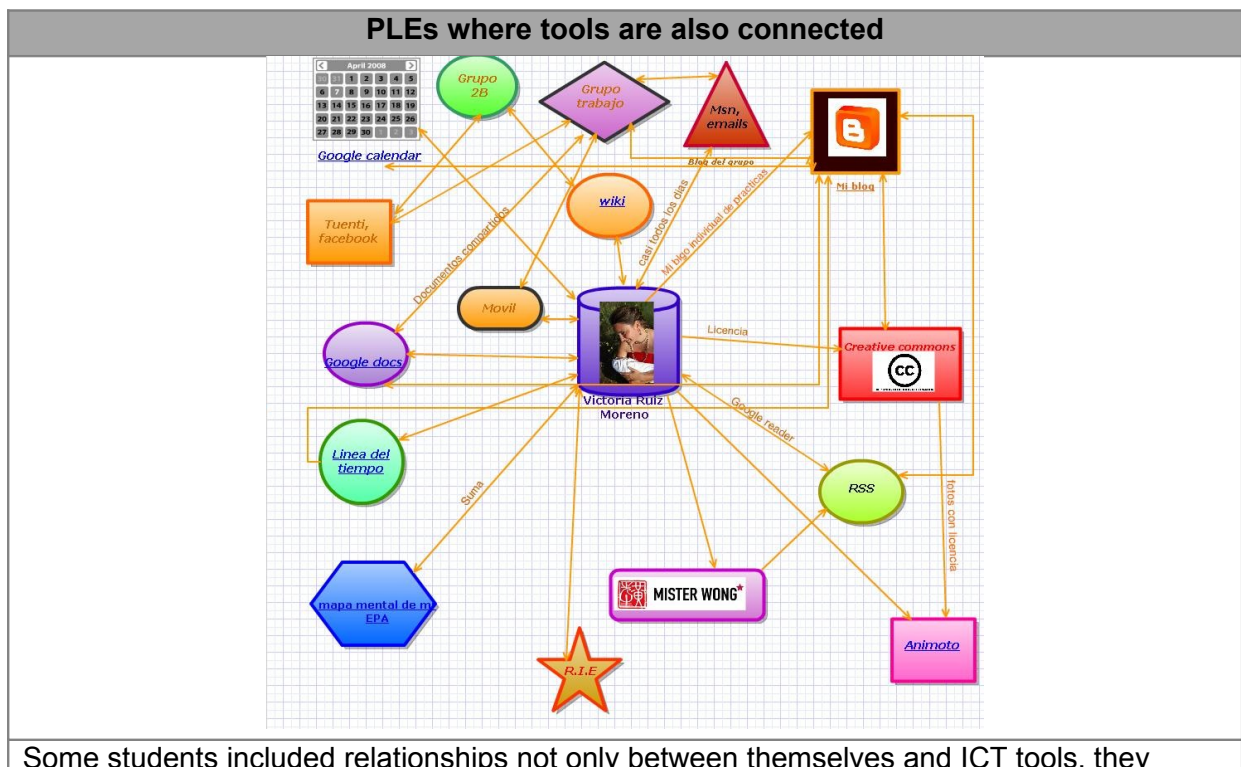
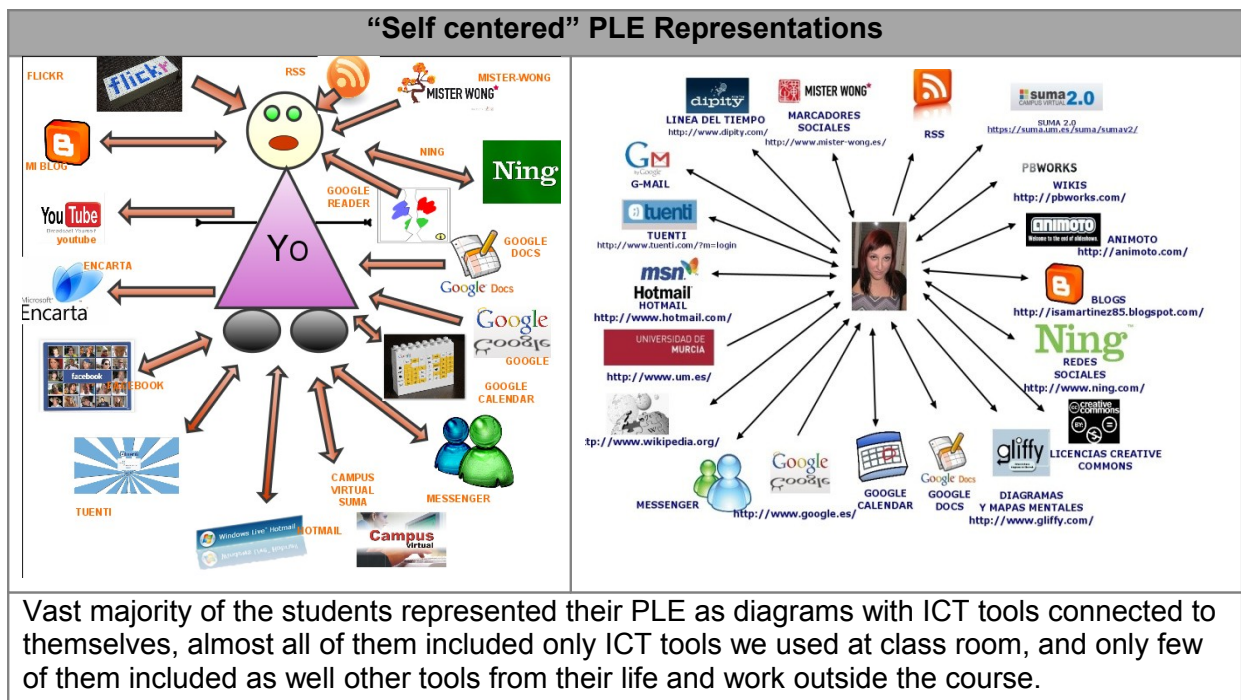
The idea was not only explore individually all this tools in specific tasks, but integrate them into the normal work dynamic of students, and find each week ways to use them in the group-work proposal. In few words, integrate them into their Personal Learning Environments.

4. A Patchwork for learning and working

Once we have asked to our students to draw their PLE, two sewing the patchwork with the different pieces, and –as in patchworking- our impression is that the

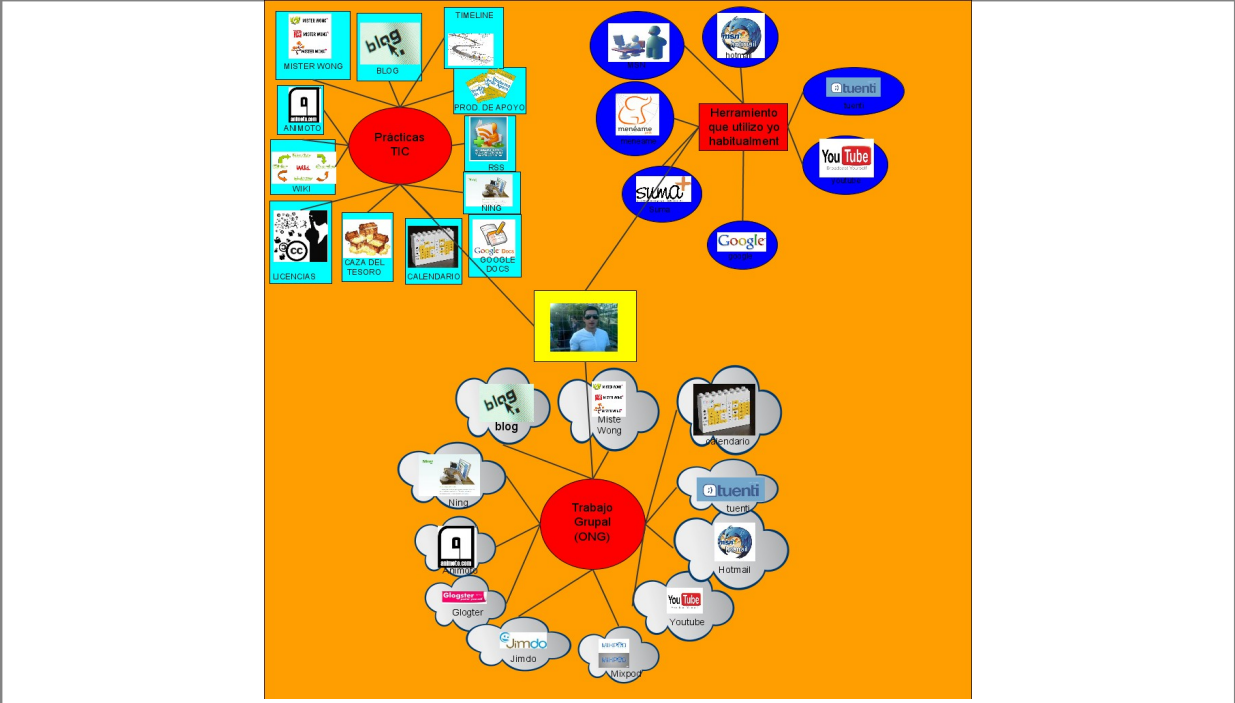
following steps were more “artistic” than reflective (they love drawing, even in this unknown web tool).

From our point of view in the current literature about PLEs and in the “cyber-sphere” there is a quite big sample of PLE diagrams, so in consequence we are not interested into analyse profoundly theirs. Nevertheless, taking in mind our students never had seen before a PLE diagram, if we see closer some of their drawings there are some kinds of PLE schemas, with some interesting elements to remark:



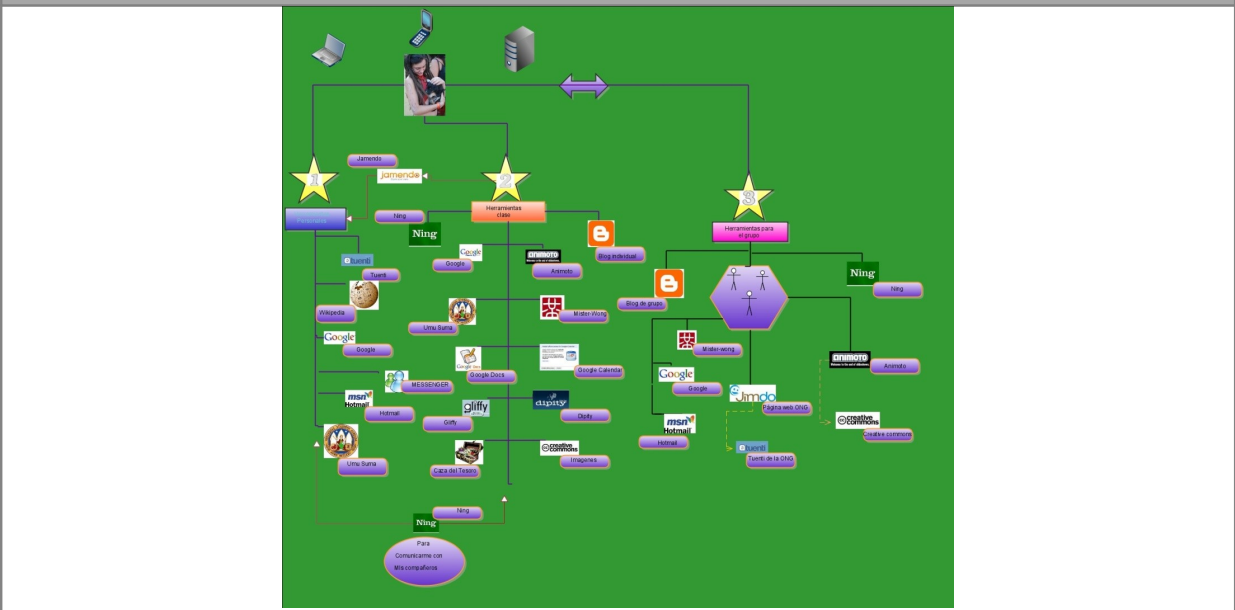
include also relationships between contents and actions in different tools analyzing how they interact and enrich each other and enrich also the groupwork.

Different PLEs for the same person?



Some students –few of them- have divided their PLEs into three big parts: tools from the hands on sessions, tools used habitually, and tools for doing the group-work. Indeed, as you can see in the diagram, they are in the middle of the activities, BUT tools are not working directly with them are not integrated with them, are working around activities, tasks.

Different levels of the same PLE?



Moreover than divide the PLE into relation of the tools with specific tasks, some students include a kind of hierarchy putting the most important of the tools used in the high part of the

5. The students vision about the work consequences

Once finished the course, we ask to the students to fill an anonym questionnaire centered on their impressions and attitudes about ICT tools, for the course and for their learning. For it we include on this questionnaire only four content items (apart from ethnographic ones). The questionnaire was implemented and answered in Spanish but we translated directly the question to facilitate the analysis.

In the first item we wanted to explore their attitude to ICT tools introduction and also their learning approach. We ask them:

In the last months you have meet new ICT tools to use. Do you think these tools could improve the way you learn? Why?

The vast majority of students (132 from 135; 97.77%) answer yes to this question When they justify their answers, the majority of them use expressions as “New ways to work”, “I can think differently”, “It facilitates my work”, and finally some said “Thanks to this I can access to more information”.

Student who said *not* affirm they have learn many new things but they think this couldn’t change the way they learn; concretely there is a very interesting answer in one of this three cases which says:

“it would be very helpful, specially to do my Works, but I don’t see they give me more information neither help me to memorize” (Student N. 76)

For the second item we ask them

*There is in the ICT tools explored in this course, any of them which have radically changed the way you do something or access to something?
Choose a maximum of 3 and justify your election.*

As in the previous item, the huge majority choose three tools wich have changed radically their access or way to do something. Only two students (1.5%) didn’t choose any of them, four (3%) chose only one, and fifteen (11.11%) choose only two.

The most common chosen tools are included in the following table, and we have also include the most common reasons argued by students to justify its election:

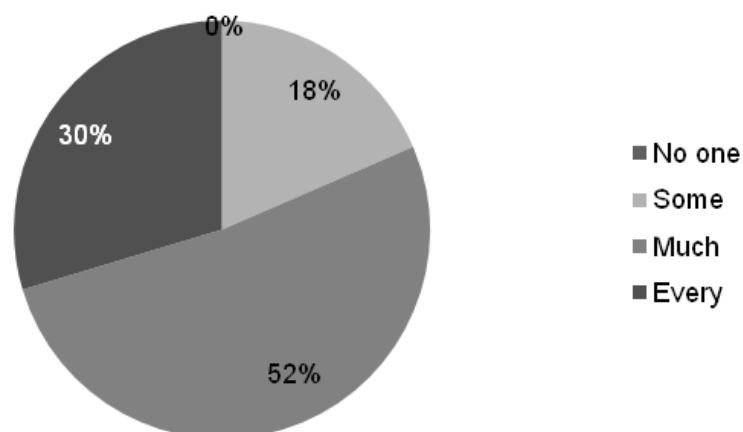
Application	Tool	Justify
Blogs	Blogger	<ul style="list-style-type: none"> “It is a way to express myself freely” “I have a corner only for me in the Internet” “I can share my activities, feelings and thoughts with more people”
Online office suite	Google Docs	<ul style="list-style-type: none"> “The possibility to edit documents

		<p><i>collaboratively is impressive!"</i></p> <ul style="list-style-type: none"> • <i>"It is good to change documents to other formats easily (p.e. .pdf)"</i> • <i>"It help us to save time sharing documents and editing in almost real time"</i>
Schedule and online diary	Google Calendar	<ul style="list-style-type: none"> • <i>"I have a way to remember everything"</i> • <i>It helps me a lot sending me messages about my appointments to my email"</i> • <i>"Now I have a useful tool to plan my day"</i>
Social Bookmarking	Mr. Wong	<ul style="list-style-type: none"> • <i>"It is quite useful having Access to all my bookmarks everywhere"</i> • <i>"I wouldn't lose anymore my searches because of I always have where take notes about them"</i> • <i>"It help me to share my findings to my friends and classmates"</i>
Multimedia producer	Animoto	<ul style="list-style-type: none"> • <i>The mediacast we made are very attractive and easy to use"</i> • <i>"It is fun"</i>

In the third item we asked them:

Try to imagine your life five years later, you are graduated and are working in the "real world". How many of these tools you have met in this course do you think it will be part of your PLE then?

We give them four possibilities to answer: None of them, some of them, much of them and every one.



How many of the tools met in the course will be in your PLE in 5 years?

In this case, the optimism of students about the role of ICT tools in their life is also evident. A big amount of them (82%) think they will use much or every ICT tool they have met in this course in five years, and the most important they think they will use included into their future PLE.

Reasons to justify this answer were very similar to other argued in previous items. These included expressions as: *“they are very useful”, “I’m already using them and I think they will be basic to be a reliable professional”, “they help me a lot and makes me easier the paperwork”, “I can access always to very good information with them”, “I don’t need to memorize everything, I can access to all my documents online”, “They have change completely my way to work and now I don’t imagine working without them”.*

The majority of students who don’t think these tools will be part of their PLE or think only part of them will do, justify their election arguing about the fast development of technology *“we don’t know what tools we will have in five years, there will be more and better ones for sure”.*

Finally we have asked to our students in the fourth item about the ICT tools which take part their PLE with the following question:

From the tools you have included in your PLE, please enumerate the three most important to your learning and describe what you do with this

In this case answers were concentrated in some tools, emphasizing in five of them, associated in most of cases to one specific function:

PLE Tool	Function
Google Search	Searching information and useful tools
Google Calendar	Organizing the timetable and remembering important events or tasks
NING	Sharing information and debate about tasks with colleagues
Google Docs	Editing documents collaboratively with colleagues and having personal documents always available online
Mr. Wong	Organizing interests and important findings on the Web

6. Some conclusions and lot of questions for the future

From the data we have collected and from our experience doing this work we assume some facts:

- Spanish freshmen, when arrive to university, have not experience –even knowledge- of ICT tools use, apart from communication tools (social networking, email and instant messages) and almost always associated to leisure time.
- Students from first year of degree don't think they use Web 2.0 (awareness), and even more, they don't believe they use ICT tools for learning, even if they actually do.
- Students appreciate very much new ways to develop their tasks and their course work.
- A wide majority of students associates learning to acquiring information and some of them associate learning to memorizing.
- They value very much from ICT tools they discovered opportunities for Independency, collaboration, importance of them-selves in the learning process.
- They also value extremely, useful tools which help them to plan their tasks, save time, easy ways to do complicated tasks and, definitively, have fun.
- The vast majority of them have a basic perception about their PLE, few of them don't relate tools with themselves only with their tasks, and only some of them go ahead one step more establishing more complex relationships between tools, contents, tasks and themselves enriching each other.

Nevertheless, these facts have some nuances we have to precise and some thoughts about the experience itself.

Firstly, is evident that every group of students is different, are too many variables related to them and associated to their context, environment, course, faculty, age, and a long etc.

Secondly, when they said they like very much the opportunity to be independent, collaborate each other and become important in the learning process, they associate it to the tool. It is quite evident that is not a question about the tool; actually this tools would be used to do directive and individual or isolate tasks; nonetheless web 2.0 tools affordances are centered in collaboration and personalization and teachers, from the teaching and learning point of view, couldn't avoid them. Definitively, experiences of success related to the use of these tools in learning processes are associated to a mix between a strong learner centered methodology (vital) and a good catalogue of tools to use.

In the same way of thinking, we cannot forget the Novelty Factor influence. Students love these tools also because they are new, so, if we work in an introducing dynamic like this, it is crucial impressing a heavy charge of significance to the tasks they

make with the tools. It is not only a question of attracting our students to use ICT tools, it is a question of using these significantly.

At the end we tried to give to our students some mechanisms and tools to develop their own PLE in the future, this is only a previous step. We think they already have a PLE –actually everybody connected has one-; nevertheless in order to manage it efficiently and to enrich it, it is vital to be aware about it and start to build it consciously.

This has been only a course work, hopefully it would be the first step in the way to improve the professional learning of our students based on their building of their own PLE.

7. Acknowledgements

Thank you to our students for sharing the enthusiasm of this work with us. Without them nothing would have sense; and thanks to them, thinking and discussing about PLEs, learning, teaching and how it works –or doesn't-, becomes really important.

And thanks as well to our institution –The University of Murcia-, the vice-chancellor of European Convergence and the e-learning coordination, to support a part of this project as an innovation teaching project.