

## A statistics tool to get quantitative and qualitative data in order to improve teaching in the University of Lleida.

J.A. Mur Escobar, N. Verdú Surroca, E. Brescó Baiges and O. Flores Alarcia

Unitat de Docència Virtual, Institut de Ciències de l'Educació, Universitat de Lleida, C/Jaume II, 71, 25001, Lleida, Spain

This document contains a short summary about a research which is done in the Unit of Virtual Teaching of the Educational Science Institute in the University of Lleida (UdL). The study consists in the creation of an applicative from the data base of virtual campus of our university (Sakai) and it is also complementary with the statistics tool which already exists inside this platform.

The tool lets us obtain data and statistic of each subject about the different spaces in the virtual campus (syllabus, contents, activities, mail, forum, schedule and advertisements ). We complement these results with pedagogical and qualitative advices; the objective is to offer improvement and innovation ideas to university teachers.

Finally we show the teachers' opinions about the utility of the information which is offered in the report about their subjects.

**Keywords:** Statistics, innovation, teaching, Sakai

### 1. Introduction

The emergence of computer-mediated worldwide networks or virtual campus has been very important in the last years, not only in the social communication, but also in the educational field. Is precisely in learning processes where we have based our research. There are many advantages that virtual campus offers in learning processes and according to (Méndez, Rivas and del Toro, 2007) a very important one is that students have the feeling of being involved in their own learning. It is thought that informational and communicational technologies (ICT) have opened a broad range of resources and tools for applying more active learning methodologies in which students are the main subject, as Garcia Aretio (2005) explained: *thanks to ICT it is possible the emergence of new ways of learning which need different teaching strategies and new methods to improve the quality of learning.*

Although rich technological virtual environments have the potential of letting significant changes in learning-teaching processes, Ferguson (2001), we are aware that technology itself does not guarantee a successful learning. It is important to bear in mind some pedagogical aspects so that students can learn new knowledge in a significant way. And it is for this reason that from the Virtual Teaching Unit we have done both the statistic tool and the pedagogical inform. We are a multidisciplinary group, some of us are computer professionals, and the rest of us psychopedagogues who work together to offer to the university community support in the use of information and communication technologies, innovation development, interactive multimedia materials creation, virtual campus comprehensive utilization and others technological tools, etc. When university teachers want to receive advice about teaching and learning processes and ICT they can contact us via email, phone or coming to our office. The first step is doing an introductory interview with teachers, in a personalized way, so that both we can know what are the teacher's questions, problems, needs, and so on, and teachers know the way we are going to work in order to create and develop new contents, methodologies, resources, materials. The psychopedagogues are who do this job of speaking with teachers and knowing what they want. Once done, psychopedagogues coordinate with computer professionals and all together work to conduct the project, in Figure 1 can be seen this process.

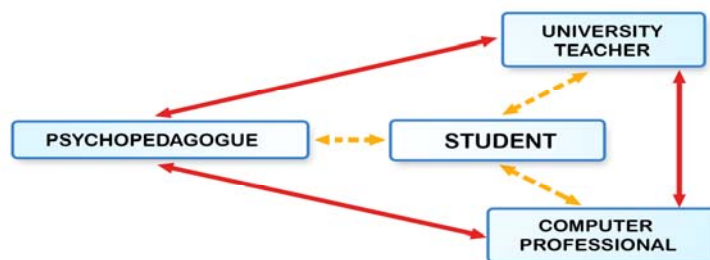


Figure 1

The virtual campus of the University of Lleida is named Sakai and it is a free software environment which offers different spaces. From a pedagogical point of view there are four elements which are considered as something indispensable: the syllabus, contents, activities and communication tools. It is in all these elements that we have based the statistic tool and the pedagogical report.

What we intend in our research is to offer information to university of Lleida teachers' in order they can get data from their subjects once they have ended them and improve their teaching methodologies for the next year. Sometimes we have noticed a certain uncertainty when university teachers want to assess their student's learning process or works, especially when they have been using the virtual campus. The reason given by many teachers is that as students have done virtual activities and have exchanged communication through the virtual campus, they do not know either how to collect and interpret data or how to establish new patterns for the assessment.

## 2. Aims

- Complement the statistics tool of the virtual campus Sakai in order to offer more detailed and concrete information to university teachers.
- Give both quantitative and qualitative information to university teachers in order to help them to collect data about their subjects and in this way they can assess their students easier.

## 3. Procedure

First of all we have done an analysis of campus virtual's database to know what kind of information it stores and its own structure. Once known it, we have decided the information that should be shown and the way we will do it.

Besides, in the first programme's version doc documents were generated in a dynamic way, but due to the way the information was shown, there were some compatibility drawbacks between different versions of Word and Open office.

Secondly, as we are in a bilingual place, we have considered very important to offer the information not only in both official languages, Catalan and Spanish, but also in some more.

In order to solve these compatibility and linguistic problems, it was decided to change the way of generate these documents:

- In order to internationalize the application we made a xml file, for the language, with all the program's text chains. This made translate tasks between one language to other easier. The user of the application has only to select the language and the program itself, in a transparent way, takes text chains from the correct file.
- We have realized that many users do not have Word or they want to get the information in a non editable format. We have studied the possibility of generating documents in rtf format, because as it is an open format does not bring compatibility problems. But at the end we have decided to offer the option of choosing the kind of format that every user wants to obtain. So there are different formats available: rtf, doc, HTML, pdf and others.

In order to make easier programation tasks, we have decided to generate the documents in xml and use converters with the same format as we have mentioned.

- There have been other secondary drawbacks found during the application's development which have been related with the way the information was shown. The reason why these problems appeared was because tables and graphics that we thought in a first moment they could offer an understandable information, it turned out that in subjects with many contents they made difficult the comprehension of the informs and we had to design again some of them.

At the beginning quantitative data were shown in a written way with the results of a report with a lack of understanding and attraction. Is for that reason that we concluded that it was necessary to integrate some graphics and tables to show data more clearly. Taking into account Coll et al (2008), visual representations are fundamental in order to offer information in an structured way and thus make easier user's comprehension.

Thanks to this new design with graphics and tables a new project has arisen to analyse virtual forums by using graphs.

Once the report is done, a psychopedagogue writes some pedagogic advices so that teachers can have also qualitative data and they could use it for a future innovation and improvement of their subjects.

### 4. Results

Once collected the data we are going to show some examples of different subjects in the virtual spaces of Contents, Activities and Schedule.

The graph of Figure 2 shows a subject with a lot of different kinds of files in its content space in the virtual campus. Teachers can see in a graphic way how many files they have used and their typology.

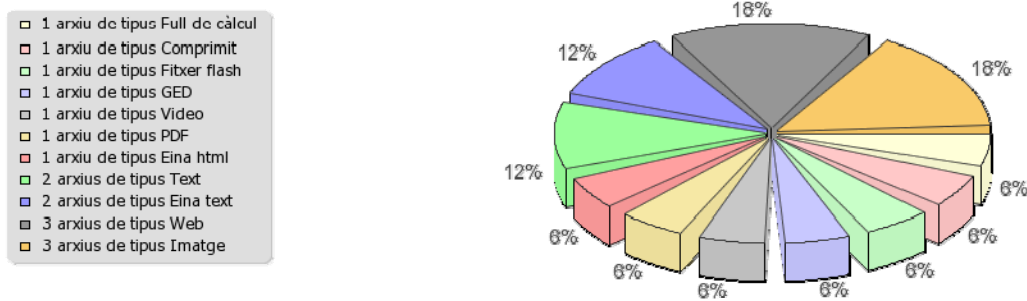


Figure 2

In Figure 3 it can be observed the different activities that have been done during the learning process. Graphs shows the number of activities that have been opened weekly.

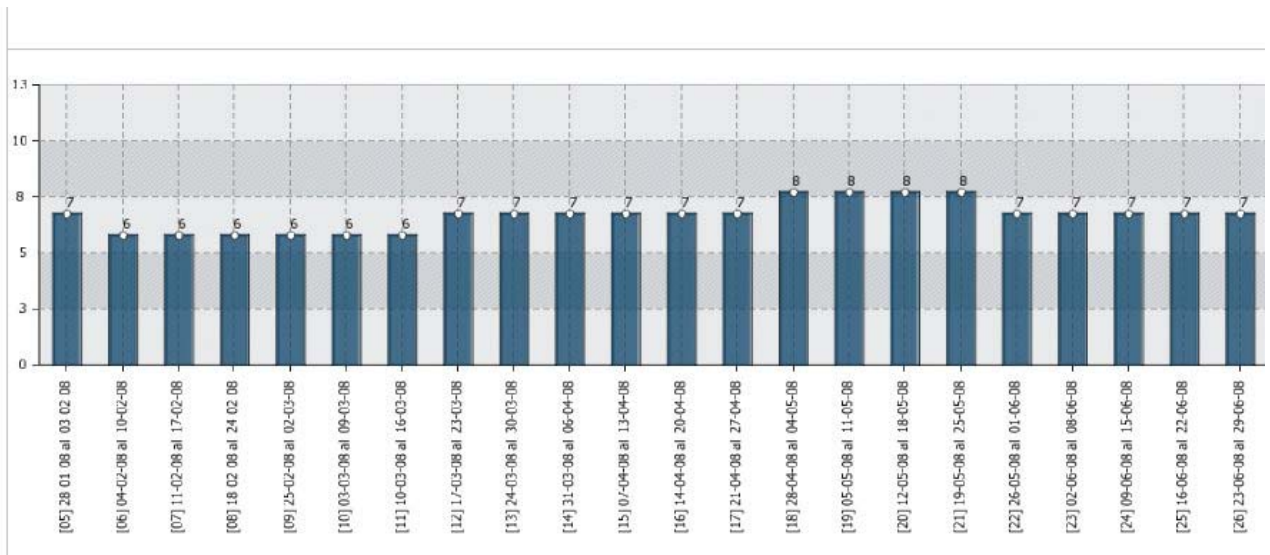


Figure 3

In Figure 4 there is a graph from the schedule space and it can be observed that there are several kinds of messages.

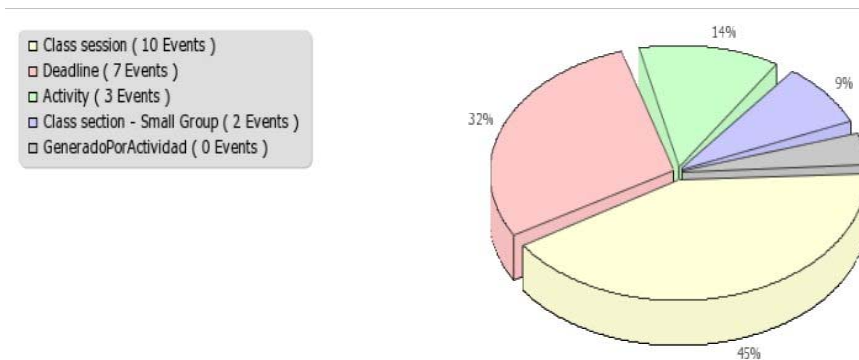


Figure 4

These three examples are only a small part of the report, because every space has its own table and/or graph/s.

## 5. Discussion

The goal of this study is to be a starting point for a larger future project. According to this we have attempted three tasks. First, we have collected quantitative data from several subjects. Second, we have elaborated qualitative and pedagogical data of these subjects. And finally we have aimed to investigate if this information is useful for university teachers, or not.

So, this research is only the first step of a more elaborated future work. Taking into account the results we have obtained in this pilot research we can identify advantages and constraints which will be considered in our future study. On the one hand, university teachers who have assessed the pilot report have a positive opinion of both qualitative and quantitative information. They have found very useful these data from their subjects and they will take advantage of this report when they will prepare and improve their teaching for next year. On the other hand we are aware that there are several things to be improved. For example it is necessary to get more detailed information of each space and it is necessary to restrict the entrance to get data with the username of each user.

The final aim of this work is that university teachers can get information from their subjects in an autonomic way. So this statistic tool will be available for all teachers and they will be able to know data whenever they want. Of course the data will be quantitative, but if they ask us advice we will offer them qualitative information and support from a pedagogical point of view.

Furthermore, forum's data will be complemented by graphs which will show all the interactivity and communication among the members of the teaching/learning processes. It can be stated that learning does not exist in isolated environments, but it is built and shared in learning communities. Knowledge building not only implies a social and cognitive construction of knowledge, but also a predisposition for trying, increasing and improving ideas to produce a significant knowledge, Strijbos et al, 2006.

Besides, it is necessary to bear in mind different kinds of assessment. It is crucial teachers know what and how students are learning during the teaching/learning processes. So, although they can assess students results', they can also obtain students data's during this mentioned process. If teachers know, during the teaching process, what is happening they have the opportunity of thinking again the methodology and incorporate changes if they believe they are necessary.

To sum up, Information and Communication Technologies are an important and very useful learning resources, because they make easier the exchange of learning contents and the feedback, Neo (2003); however technologies themselves do not guarantee either quality learning processes or educative innovation. Teachers should take care of teaching/learning processes in order to have a look, detect necessities and guide students. Thus, both students and teachers roles have changed. So, it is necessary to bear in mind all changes that ICT bring in order to use them in the most possible and correct way.

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