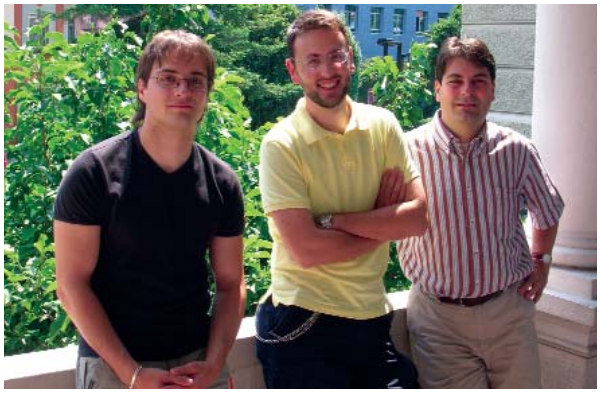
‘Libre’ teaching material with Edukalibre

Edukalibre is the name of a project undertaken by the Institute for Communication Technologies at the University of Lugano (USI), which seeks to develop an educational platform based on the Internet. The point is to enable different users scattered around the world to create educational material, inspired by the guiding principles of ‘free’ software. Grown out of an initiative launched by a consortium of European partners, Edukalibre is funded by the EU’s Socrates programme. In addition to conducting usability studies on the software modules produced by its team partners, USI’s research group has also designed a software module for teachers (GISMO), to help them monitor students’ progress from a distance.

Educational institutions - and the universities primarily - are exploring new opportunities to apply web-based information systems to education, used to bolster or supplement more traditional teaching methods. To this end, new methodologies and architectures must be devised to facilitate the creation, sharing and re-use of teaching resources. Good-quality contents are necessary; but so is a software infrastructure (the so-called platform) able to harness advanced technologies and manage at best the very complex interactions between users and contents.

The Edukalibre project, of which the Institute for Communication Technologies (ITC) of the University of Lugano (USI) is a member, is aiming to set up an Internet-based platform, designed to facilitate as much as possible the creation of teaching materials, by means of open source software. Here is how Dr Riccardo Mazza, co-ordinator of Edukalibre at USI explains it: *“The idea for this project sprang from the demand for a platform allowing a number of people located in separate parts of the world to produce study material apt to be used, but also modified, without having to pay copyright fees to the producers. Basically, our inspiration was the philosophy of the open source movement”*.

Supported by Moodle, an eLearning software available at USI for the fruition of teaching material, the platform has a modular structure; it allows the addition of other software (known as plug-ins), such as COLLAB, ConDOR and GISMO,



The USI team co-operating on the Edukalibre research project. Left to right: Christian Milani, Luca Botturi, and Riccardo Mazza (co-ordinator).

relying on open source software. COLLAB and ConDOR, designed by project partners, enable users (say two teachers sitting thousands of miles apart) to create teaching resources by sharing Internet-based technologies. This, in turn, can be achieved thanks to some specific functionalities modelled on the Open Source software, as for example the version control facility, the automatic conversion into several formats (html, pdf, postscript, etc.) and the opportunity to resort to different methods for drafting a text (a textual editor, a web interface or an ordinary word processing instrument). Students, too, can take part in this process, supplying further examples to illustrate the notions explained, and promoting a better student-teacher interaction. The GISMO software, on the other hand, was developed by USI as a tool allowing teachers to monitor students’ activities from afar.

Completed in December 2005, Edukalibre (funded by the EU Socrates programme) was the brainchild of a consortium of several European partners. Besides USI’s ITC, the international project team includes the Rey Juan Carlos University of Madrid (URJC, project leader), the School of Computing, Leeds University (SOC/LU), the Faculty of Engineering of Porto University (FEUP), the Institute of Information and Automation Theory of Prague University (UTIA) and the Institute for Industrial Production, Karlsruhe University (IIP).

What is ‘free software’?

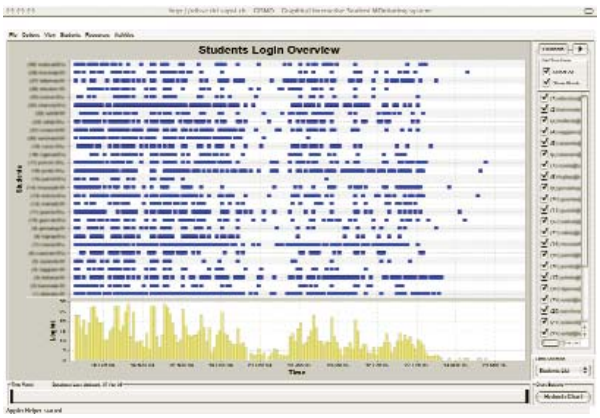
The phrase ‘free software’ refers to the user’s unimpeded ability to execute a programme, copy it, study and adapt it to his/her needs, to improve it and re-distribute it freely, i.e. without copyright restrictions, for everybody’s benefit. ‘Free’ therefore does not mean cost-free or free of charge; it means ‘libre’. To be at liberty to make changes, correct possible mistakes or add new functionalities, and to publish or release improved versions, implies the right to access the programme’s source code. The latter is a necessary condition for free software, founded on a philosophy of openness. Examples of free software are: Moodle itself, the Linux operating system, the OpenOffice text editor and the web browser Mozilla Firefox.

GISMO: visual tracking of students through Moodle

In the framework of Edukalibre, the research team based at USI has developed a software model that fits in perfectly with Moodle; it is called GISMO (*Graphical Interactive Student MOnitoring system*). The software, produced with the contribution of Christian Milani of eLab, the joint USI-SUPSI Laboratory for eLearning applications, is intended to meet teachers' needs, and aims to create a visual environment for student tracking. In other words, it is a way of monitoring the progress of students within the limits of the eLearning Moodle platform. From tracking data recorded by Moodle (i.e. date, time and URL of the page accessed by the student), GISMO generates a series of graphical visualisations whereby the teacher can obtain information on the work done by each student, in particular the discussions, assignments submitted, the pages read by the student, the number of times a student has accessed the site. If the teaching contents have been connected to an evaluation test, then one can also view the level of learning achieved through the quiz results.

Simple to use and interpret, GISMO is an excellent tool in the hands of a teacher wishing to detect possible difficulties in understanding the topics and to identify any students requiring more support.

USI's researchers have also turned their attention to usability and functionality studies conducted on the software modules developed by project partners as well as by GISMO, but also to the evaluation of these two aspects. On the basis of the tests carried out on the 'beta' version (with Luca Botturi's contribution), the software was improved, and the upgrades taken into account in producing the final version.



Graphical screen display generated by GISMO, showing students' access to a course.

GISMO was developed as free software, in other words it is available to all users and may be downloaded from the web site at no cost. The tool is already being used productively not only at USI and SUPSI, but also on many Moodle installations elsewhere in the world. For instance, GISMO was used by the University of Leeds (UK), a project partner, in upper secondary schools for another research project.

"We have been contacted by the University of Pittsburgh (US), which has decided to adopt GISMO for other purposes. Since the time we released version 1, in January 2005 up to June 2006, our software was downloaded from our website more than a thousand times. And there's more, we have been contacted by several people, requesting our assistance in installing the software, and by others with useful suggestions on how to develop the software further. GISMO has been remarkably popular", concludes Riccardo Mazza.

ITC

The Institute for Communication Technologies (ITC) of the Faculty of Communication Sciences, USI, is engaged in research on the interaction between the development of the latest technologies of communication and the emergence of new communication processes. The Institute promotes the study and use of technologies as a prime educational tool. Main areas of scientific inquiry include communication in multi-agent systems and in artificial institutions, the end-user's behaviour with web application and the visualization of information. The Institute co-operates with other research centres, both nationally (especially in Canton Ticino, e.g. SUPSI, CSCS, and IDSIA), and internationally.

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