

AULAWEB, WEB-BASED LEARNING AS A COMMODITY

The experience of the University of Genova

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Abstract: Starting from the academic year 2005/2006, the University of Genova has foster the use of AulaWeb, a virtual environment based on the open source software Moodle, to promote the introduction of web-based technologies in the traditional educational process. We describe the experience of the past four years presenting the approach we have followed to encourage the use of AulaWeb among faculties, the numbers of users we have reached, an Instructional Design course we have organised to promote educational technology.

1 INTRODUCTION

“Networked collaborative learning is a social oriented e-learning strategy in which collaboration plays the major role. Promoting the social dimension of e-learning means considering the network not only as a mere tool for content distribution but rather as a facilitator for the interaction among all the participants involved in the educational process.”

This statement, taken from (Trentin, 2008), highlights that e-learning strategies have radically changed in the last years, considering collaboration as a central point of the overall learning process. Although we completely agree with this idea, we think that a lot of work still has to be done to implement networked collaborative learning in practice.

This paper describes the experience at the University of Genova, where a web-based portal is offered to the academic staff and the students to support the educational process. AulaWeb¹ is the name of the portal; it is based on the popular open source software Moodle (Cole and Foster, 2007) and started its activity in the academic year 2005/2006.

Since the early stages of its development, AulaWeb has been thought following a user-centered approach (Norman, 1998). Users – students, faculties, staff – have been taken into account in the design phase of the project, by introducing different user profiles. For each profile different communication strategies have been identified to stimulate users’ partici-

pation and to make them feeling as a part of a larger community collaborating in the realisation of such a web-based learning experience.

Despite media insist we live nowadays in the “Web 2.0 era” (O’Reilly, 2005), in our experience this is true only in part. When dealing with large numbers of etherogenous users like ours, coming from different backgrounds, the situations is indeed different. We have in fact encountered (and we still encounter) some resistance when promoting the introduction of web-based technologies in the educational process as we will discuss in one of the next section.

Although only a small part of our users is aware of Web 2.0 techonologies such as social-networking sites, video sharing sites, wikis, blogs, ... we claim that the approach we have followed to create the user community around AulaWeb is somehow in the spirit of Web 2.0. The concept of “Web-as-participation-platform” has been applied at least in the strategy we adopted for attracting participants which has been based exclusively on voluntary adhesion. Public “calls for volunteers” have been launched to propose meetings with faculties, to offer technical courses on the use of the software and, more recently, to promote an Instructional Design (Trentin, 2007; Dick and Carey, 1996) course to educate the educators. The “word of mouth” and the the “push from the bottom” – i.e. students asking for more online courses – have done the rest thus promoting the increase and the acceptance of AulaWeb.

The balance of this paper is as follows. Section 2 briefly introduces AulaWeb showing some of the numbers we have reached. Section 3 describes the

¹<http://www.aulaweb.unige.it/>

different types of users we deal with and discusses some of the support we can provide them. Section 4 presents a project-based formative model on Instructional Design methodologies we have offered to a sample of fifty teachers. Finally, Section 5 provocatively concludes this work, motivating the title of the paper, discussing some of the difficulties we have encountered and some open problems.

2 THE SERVICE AULAWEB

The University of Genova is a medium-size traditional university offering face-to-face courses. However, in the late nineties individual e-learning and blended learning experiences have been carried out, generally involving two types of users:

1. *Early adopters*, i.e. mainly experts in educational processes, teachers and students interested into new educational models also for their research activities.
2. *Technology addicted*, i.e. mainly faculties and students in computer science or engineering fields, who are interested in building software platforms and rarely suffer from the well known digital divide problem.

Although the University of Genova, in its policy, still does not consider the investments on e-learning as a priority, starting from the beginning of 2005, an official Committee has been formed to introduce faculty members to the potential of the use of ICT in the educational process. At that time, a crucial task was considered the selection of a Learning Management System to be offered as a *centralised service* at the university level. After taking into account both proprietary and open source softwares, the Committee selected Moodle (Cole and Foster, 2007), an open source solution. The reasons for this choice were manifold, some of them are listed below:

- *Financial*. We decided to invest (the small amount of) financial resources on the *service*, not on the cost of software licences, and therefore we opted for an open source solution².
- *Functionalities*. Moodle provides a rich array of tools to support online teaching and learning.
- *Size of the Community*. Among the available softwares, Moodle seemed the best candidate since it had (and still has) the widest community of users and the more active community of developers.

²Moodle is free software under the terms of the GNU General Public License.

- *Skills*. Moodle is based on the Linux / Apache / MySQL / PHP suite, a technology already well known among some members of the Committee.

As a consequence, after a few man-months, the first prototype was ready and launched as a *centralised service* for the whole university.

2.1 The Architecture of AulaWeb

AulaWeb is organised into many different Moodle instances, one for each program degree participating to the project.

Technically, each instance runs on a separate virtual host and authentication is obtained using the LDAP³ university service. Students, faculties, and staff can access to AulaWeb using the same credentials they already use for other central services the university provides (e.g. e-mail, library catalogue, intranet functions).

All the eleven Faculties of the university are present on the portal, although with different numbers of online courses and active users.

The only constraint we put for opening a new instance was that of having a “contact person” officially designated as the responsible for it. She is the person that acts as the administrator of the instance and she is also the intermediary between the technical staff of AulaWeb and the users of the instance. When possible, she also acts as a first help to solve (simple) technical problems posed by “her” users. The decision of requiring a responsible for each new instance was the only possibility for the Committee to manage the heterogeneity of the users (coming from very different fields, each one with its own peculiarities) and the large population we have reached with a numerically limited technical staff.

Nowadays (February 2009) AulaWeb hosts 119 sites of program degrees, for 2242 different subjects, with 1058 teachers, considering faculties and also some administrative/technical staff and some external teachers. 27641 students are enrolled and we experience more than 3000 unique users connecting every day during the week, becoming around 2000 at the weekend⁴. Since the University of Genova counts 41000 students, these numbers say that slightly less than 2/3 of the students are currently registered.

It is worth noticing that the adhesion to the project has been exclusively on voluntary base, in a pure bottom-up approach: no one has been forced to open

³http://www.sun.com/software/products/directory_svrr_ee/dir_svr/index.xml

⁴According to Moodle online statistics AulaWeb is in the group of the largest Moodle installations (<http://moodle.org/stats/>).

her subject online, the ultimate decision has always been left to teachers. In this sense we claim we have followed Web 2.0 suggestions by promoting the idea of “(Aula)Web-as-participation-platform.”

It must be recognised, however, that the university, for the simple fact of identifying AulaWeb as the centralised platform in support to teaching activities, has strongly facilitated the growth of the *service*.

3 OUR USERS

Following a user-centered approach we have identified from the early stages of the design four different users’ profiles: students, teachers, the responsible of each Moodle instance (also called the *referent*), and the technical staff. For each profile, different activities have been carried out.

Technical staff. Responsible of the overall software system, the technical staff keeps the contacts with the Moodle developers community.

The technical staff periodically organises specific Moodle technical seminars for faculty members and for referents. The technical staff, together with the Committee, form the (small) group of persons offering the *service*.

Referent. “Customer” of the *service*, each referent is responsible of a Moodle instance. She can contact the technical staff for any problem and she is also the intermediary between the staff and the users of the program degree she represents.

Teacher. “Customer” of the *service*, the teacher individually decides if she is willing to couple her traditional lectures with online support. She can contact the referent or the staff in case of need.

More recently, a methodological course on the use of ICT technologies for university teachers has been launched, as we will discuss in Section 4.

Student. The major “customer” of the *service*, the student can access his Moodle instance using the university credential and he can also call the HekpDesk service to solve first access problems. Students can contact their teachers and the referent for any questions concerning Moodle and especially for questions concerning educational problems the technical staff cannot solve. At the beginning of the project, basic courses on the use of Moodle have been offered to groups of students from each Faculty.

In June 2006 and July 2007 anonymous questionnaires have been distributed (via AulaWeb) to have some feedbacks. Some results will be briefly discussed in Section 3.1.

The reader will note that an important role of e-learning, the *online tutor*, is missing in our organisation. Indeed, the *service* cannot offer online tutoring to academic staff and students. The choice of having online tutors is demanded to the internal organisation of each course degree and not to the central staff that can provide technical support “only”. Of course, in case of large numbers like ours, this is anyhow a hard task.

3.1 Students’ Feedbacks

Anonymous questionnaires have been distributed to all the students enrolled in AulaWeb proposing general questions such as (a) “How far do you live from the University?”, and other questions related to the use of Moodle, for example (b) “Which is your prevalent activity on AulaWeb?”, (c) “How was your interaction with the teacher/tutor/etc. through Moodle tools?” We also asked for general comments and suggestions.

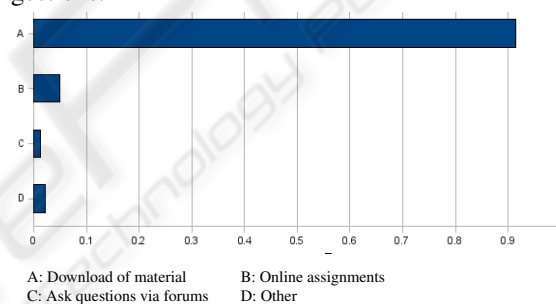


Figure 1: Prevalent activity on AulaWeb.

Figure 1 shows the answers to question (b). As it can be observed, the download of material (slides, papers, lecture notes) is the prevalent activity (91.5%), followed by the online assignment activity (5%). This was not unexpected since we are a traditional university trying to promote web-based technologies in the educational process, until now mostly based on lecturing and information giving.

Figure 2 shows the answers to question (c). Only 38.78% of the students said that online interaction was frequent and without any problem, while the other cases show that the interaction was scarce (24.05%) or nonexistent (26.17%) thus pointing out a lack of online communication for half of the interviewed.

Particularly interesting have been some comments we received. Among them, we recall the suggestion of unifying AulaWeb with the various web sites of the different program degrees and departments in order to facilitate the retrieval of all the didactic information, the request of learning material open and accessible to everyone, the request of video lessons for those

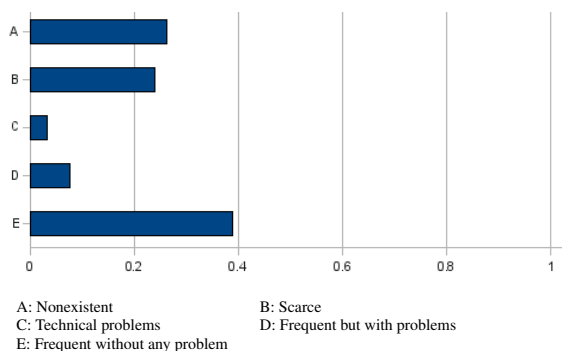


Figure 2: Quality of the interaction on AulaWeb.

students that cannot attend in-presence classes. We end this brief discussion of the results with one of the provocative comments we received: *“Please tell our teachers that Internet is not the future, Internet is today!”*

(Yueh and Hsu, 2008) presents the results of a questionnaire distributed to the “other side of the users”, the professors, obtaining similar results. They observe that *“one of the barriers limiting LMS use at the universities is the fear of technology.”* Thanks to the introduction of a team of instructional specialists supporting faculty members, *“many professors indicated their instructional strategies and teaching styles had changed.”* This will be the subject of next section.

4 WEB ENHANCED LEARNING

The number of users enrolled to AulaWeb has been encouraging, thus showing the interest of our community in the use of educational technology to improve the teaching/learning process. However, in the first years of activity, most of the work has been mainly technical, being related to the setting up of Moodle instances and to the training on the use of the different features offered by the Moodle platform. Fortunately, a part of the European Social Fund 2007/2008 has been invested into a new project, whose aim was that of increasing the offer of courses with online support, not only from a numerical point of view but also from a “qualitative” point of view.

Following the usual approach already experienced in the past, we launched a new public “call for volunteers” willing to become students of an Instructional Design course and to acquire new skills in the methodological aspects of online education, thus starting to fill a gap we were aware of. University teachers in fact rarely come into contact with Instructional Design. Up to now each one refines a personal style in the design and the management of the teaching/learning process mainly based on in-presence lessons. However, such spontaneousness

could work in classroom teaching but is not advisable in technology enhanced learning which depends on instructional design no matter which is the chosen learning approach – content driven learning, collaborative learning, blended learning.

Of course this does not mean that teachers should become instructional designers – they should play the main role of subject matter experts and educators. Nevertheless, the more they are involved in the design, development and management of online activities the higher the quality of the teaching/learning process will be.

Having in mind the previous considerations, the action called *Web Enhanced Learning* (WEL) has been launched, with the specific objectives of devising and experimenting a model for the transfer of instructional design knowledge and skills to subject-oriented university teachers.

4.1 Organisation of Wel

The WEL course⁵, delivered by ITD (the Institute for Didactic Technologies of CNR) experts, has been organised into three distinct moments.

1. In the first phase (May 2008) two **plenary lectures** have been organised to present university teachers (1) an overview on the use of ICT technologies for educational methods at the university level and (2) the Instructional Design methodology (Trentin, 2001) they were going to follow to redesign their teaching strategies.
- At the end of the second plenary lecture all those teachers willing to continue the project have been asked to commit themselves to actively participate in the next phases.
2. In the second phase (May-June 2008) **two individual face-to-face meetings** with CNR co-designers have been organised. Each participant has been asked to think her course in terms of **macro-design** (i.e. goals and objectives definition, evaluation criteria, types of activities, first version of the course guide) and **micro-design** (i.e. providing a detailed storyboard of the course with a description of the organisation of the modules, planned activities, initial messages for the virtual class, activities scheduling). In parallel, **on demand technical courses** have also been organised for small groups of participants. Several softwares have been presented, including softwares for content production, graphic and video editors. Moodle modules have been introduced as well.

⁵<http://elearning.aulaweb.unige.it/>

3. The third and last phase started in September 2008 with the **last face-to-face meeting** with CNR co-designers: A sort of **auditing** to check the work done. The third step ended with the **launch of first semester courses**, revisited.

A final plenary meeting has been scheduled for February 2009, before the beginning of the second semester, to discuss the experiences of those colleagues who have been online with first semester subjects.

4.2 Users' Participation

Around 100 employees of the university (faculties and staff) attended the two plenary sessions and, among them, 46 accepted – on a voluntary base – to actively continue the project for a total of 30 different projects (14 for the first semester). There is a high variety of subjects, since disciplines in umanistic and scientific fields have been proposed. The majority of the projects (still) use a blended approach (online/onsite), 13 will add collaborative strategies to traditional teaching, 12 will use AulaWeb for content driven learning, 5 will use both strategies.

This project is still underway and therefore detailed results will be available only at the end of this academic year. However, we have collected some preliminary feedbacks from the educators that witness their level of satisfaction. Due to the lack of space we mention only two of the responses we had. The second, in particular, highlights that WEL has been the occasion to rethink the traditional teaching as well.

1. *“I admit I have attended the WEL course with enthusiasm, trying to do my best to develop an innovative didactic module to be offered entirely online in the Faculty of Pharmacy in the second semester. I know several students have already chosen the module, including some students coming from another Faculty and two students that will spend the whole year abroad with the Erasmus mobility project. This gives me a strong sense of gratification and further stimulates my engagement in this experimentation.”*
2. *“The model proposed during WEL pointed out that I was wrong in my naïve teaching approach. I have always been working starting from the obvious/natural/interesting topics and then trying to compact them to fit in the time schedule of the course. Now I have understood that I should start from the competences students should acquire during the course and then making the right plan to guarantee the final result. Posed in this terms, the design of a course seems very similar*

to the development of a software system (or to any other type of system, I suppose) since we can identify several steps:

- (a) *Requirements analysis (also in WEL)*
- (b) *Design (micro and macro-design in WEL)*
- (c) *Coding (content production in WEL)*
- (d) *Testing (students' evaluation)⁶*
- (e) *Delivery (the course passes to teachers)*
- (f) *Operation (the course in online)”*

One of the author of this paper is currently online with an advanced course offered in last year of the Computer Science curriculum. The course mixes in-presence lectures with online activities. Students, split into small groups, are asked to collaboratively write a *cookbook* of software examples using a wiki. All the decisions are taken by sending posts to a technical forum associated with the wiki or by communicating via Skype. This example constitutes a privileged point of view: the course is on Network Technologies, it has only 13 participants, students and teachers are expert in the use of software tools. Moreover, the subject is somehow auto-referential: teaching network technologies with the help of network technologies seems straightforward. We think these are crucial points for the success of the virtual class as we will discuss in the next section.

5 CONCLUSIONS

We have presented the project AulaWeb, discussing its evolution during the last four years. Many important details have been necessarily omitted since the set up of AulaWeb has been a long process and we cannot include everything here. But we cannot claim we are experimenting e-learning. AulaWeb, in fact, is mostly used as (1) a repository for learning material (mostly PDF or PowerPoint files); (2) a communication tool (mainly through forums); (3) an assessment tool (mainly through quizzes and assignments).

However, according to Martin Dougiamas⁷ talk in Rome in October 2008, we are part of a large community since these are the features used by 80% of the users of Moodle, although the software platform offers many other functionalities. This fact makes us sharing the same “problem” that we can state as follows: *“Why our users cannot exploit all the available Moodle functionalities?”*

⁶There is an important difference here since software testing is usually done before delivering while students evaluation is done in the last phase of WEL.

⁷M. Dougiamas is the principal developer of Moodle.

Personally, we think that the technology is extremely in advance with respect to the competences of the *average user*, specially when thinking to educators at the university or at any school level. Indeed, sophisticated e-learning experiences do exist but these are mostly provided by *early adopters*, *technology addicted*, online universities, or by companies that have professional training in their core business.

In our case, for example, the Faculty of Foreign Languages plays the role of an *early adopter* since it already delivers two online Masters but, on the large scale, AulaWeb is a *service* offered to an heterogeneous population with different backgrounds, different ages, different attitudes (or fear) towards ICT technologies. Therefore we thought it was not reasonable to introduce from the beginning Web 2.0 technologies to users that hardly produce PDF files, send empty e-mails with Word attachments or are not aware of the fact that, since bandwidth is large but finite, collections of images should be resized before being uploaded on a server, to make a few examples.

We decided to start with a *low profile* approach, gradually introducing the software platform and its basic functionalities without imposing any advanced solution or asking any extreme effort. The original idea was that of proposing AulaWeb as a software tool available on demand and we think we have reached our goal. Nowadays AulaWeb starts to be considered a *commodity*, like the file system or the e-mail service, something we can trust on since it is available by default. Time is now mature to offer advanced experimentations, like the WEL action, to those colleagues willing to improve their skills, but several problems still remain open.

1. Online activities strongly depend on the availability of online tutors, specially when dealing with courses with large numbers of students. A single teacher, in fact, can deal with small virtual classes while the amount of work becomes unmanageable with large ones.
2. Universities should define shared rules to acknowledge online activities. Up to now, we are not ready to account the time spent by the teachers for the preparation of digital material and the time spent online. The same situation holds for students and we need to define a policy to evaluate their online activities. At the moment, the type of evaluation is not shared but it is a choice left to the individual teacher.
3. Teaching models for subjects rather than Online Communication Strategies, Computer Science subjects, E-learning subjects, Foreign Languages, ... should be refined. Consider the case of subjects like Thermodynamics, Ancient History or

Urban Sociology. Are there any available records of best practices in these cases?

4. Educating the educators is fundamental. Probably nowadays many of them do not have any difficulties in using web-based technologies but the majority is not aware of Web 2.0 opportunities.
5. Last but not least, technical staff should be properly trained since the technology evolves too fast.

We end this work by observing that many definitions exist to indicate the process of learning coupled with ICT: blended learning, e-learning, web-based learning, technology enhanced learning, networked collaborative learning, i-learning (where "i" stands for Internet), l-learning (where "l" denotes collaborative learning in the Web 2.0 spirit). We think that educational technologies cannot be considered any longer as *new* technologies and when they will truly become a *commodity*, then the term *Learning* should be enough.

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