

# Moodle as a central platform for the Virtual Campus

Michael Kaufmann michael@esepef.pt

## Introduction

The Moodle technology served as base for the creation and implementation of the eCampus, a simple system, that integrates all digital services of the school and that, at the same time, gives the professors access to some e-learning resources. Pre-existing digital resources were adapted and combined with new functionalities on top of a Moodle base.

These resources and the context of their use will be presented, as well as some of the necessary technical efforts to implement a useful e-learning platform, while keeping it as easy-to-use as possible. This is why this paper can also be described as a hands-on case study of the implementation of a holistic e-learning strategy, with the help of Moodle.

## Background

The “Escola Superior de Educação de Paula Frassinetti (ESEPF)” is a Superior School of Education located in the centre of Oporto, the second largest town of Portugal. This private Institution, founded in 1963 by the Santa Doroteia Order, offers undergraduate and graduate courses for preschool teachers, primary school teachers and social workers. There are about 1000 students enrolled, which can count on 80 professors.

At the beginning of the project, in the middle of 2004, there were already several digital services in use at the ESEPF, among them the email service and personal home pages, the access to the institution’s Windows Computers, a school management system (Sophia) and an e-learning platform (TelEduc).

While many professors already used the Internet, namely, e-mail, the TelEduc platform was only used by a small minority of the professors, being most of them professors of educational computer science classes. One of the possible arguments to explain this type of situation could be the lack of computer skills. But the inertia of the habits seems to be stronger!...

“Very often, the bureaucratic or technical constraints do not matter in such a way those internal problems do, resultant of the proper inertia to change, well known in the human being and, particularly, in the professors”  
(Paiva, Figueira, Brás, & Sá, 2004, p. 49).

Between May and June of 2004, there was carried out a pre-intervention inquiry among the 80 professors of the school to discover the causes for the low use of e-learning tools.

One of the conclusions was that neither the quality of the professors’ computer literacy, nor their using habits of the new technologies, justified the low use of an e-learning platform in their lessons. The great majority of the professors of the ESEPF had access to computers with an Internet connection, knew how to use text processing and presentation programs and actively used the e-mail for correspondence. There was no evidence of any strong technical reason, which would prevent the use of an e-learning platform.

The second conclusion was that, even so there didn't exist practice nor demand for it, there existed some interest in the use of e-learning tools, at least, as a means of support for face to face lessons (b-learning), namely, for the publication of didactic material, the announcement of events and the debate of questions and clarification of doubts.

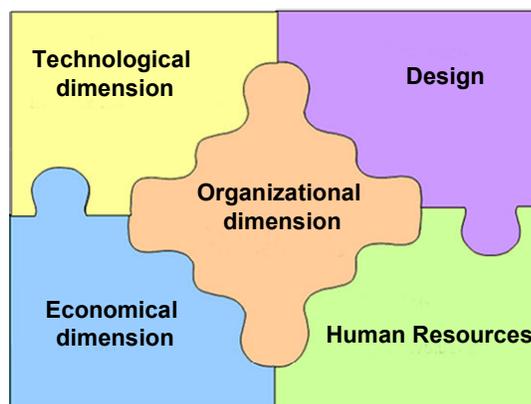
Quickly, it was perceived that the intervention could not limit itself on the simple installation of another information system, such as, for example, Moodle. The past has shown that this measure is not enough to modify the habits of the involved people (Cuban, Kirkpatrick, & Peck, 2001). Only an implementation strategy, that is based on a widened perspective to all the aspects of school life, can result in a successful and enduring solution (Epper & Bates, 2001).

Thus, there was born the idea of the creation of a system that integrated an e-learning platform with all the other digital services (future and existing ones) of the School. Such a system had to facilitate the access for professors and students, to the school management system, information systems and e-learning resources (cf. Kaufmann, 2004). At the same time, the resources had to be of simple use, robust and easily expandable, to allow the integration with other systems. The homologation of the Campus Virtual Project (UMIC, 2003) at the ESEPF, in July of 2004, served as an additional motivation, since one of the central requirements of this initiative is the "Creation of services and contents, available at any time, in any place" (E-U, 2004).

## Preliminary considerations

The implementation of a new platform, that takes existing services into consideration, requires a deep knowledge of the first one, the systems to integrate, and the involved processes. The new capacities offer chances to improve the communication in the school, but the integration is likely to constitute a complex challenge.

Before proceeding to the implementation, we contemplated widely on the imposed challenges for the conception and the implementation. In the scope of this project, the planning phase extended to various dimensions (see Fig. 1) and, finally, led to the decision in favor of the Moodle system.



**Fig. 1: Project Dimensions**

## Integration and Uniformization

One of the most important properties of the eCampus is its integrator role for all of the existing services in the ESEPF. It is common practice, in other e-learning implementation projects, that the subject spaces are created only “by the order” of the responsible professor, or that these subjects are “chosen”, after speaking with the docent (Amaral, Martins, & Ribeiro, 2004). In both cases, the main initiative has to come from the professor.

At ESEPF, we opted for a different strategy, relying on an automatization of the creation of subject spaces, and of the registration of students and professors, in the areas of their subject. The current aspect of the main page of the eCampus is illustrated in Fig. 2.

The screenshot shows the main page of the eCampus for ESE de Paula Frassinetti. The browser address bar shows the URL <http://ecampus.esepf.pt/moodle/>. The user is identified as Michael Kaufmann (Sair) and the language is set to Portuguese - Portugal (pt). There is a button to "Activar modo edição".

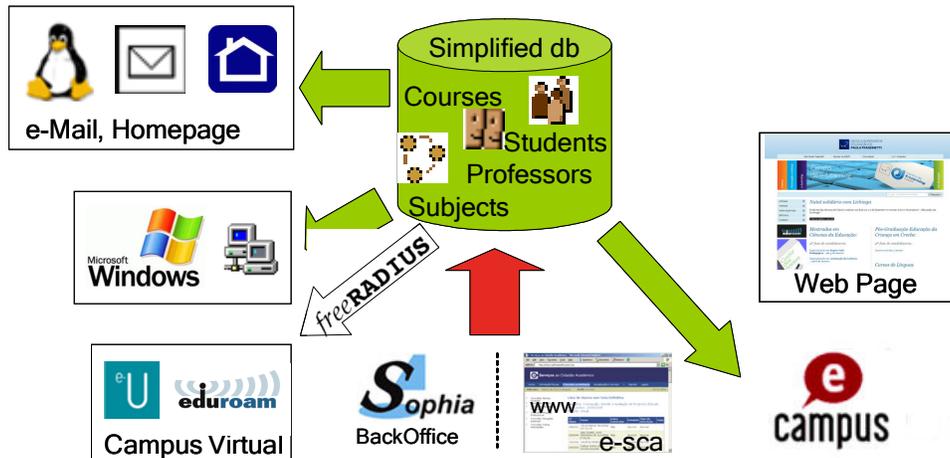
The page is divided into several sections:

- Menu principal:** Serviços Académicos, e-Portfolios, Moodle APC, Activ Prof Complementar, Apoio técnico, Notícias.
- Administração do Sítio:** (Empty)
- Documentos Importantes:** Horários 2009/2010, Guia Trabalhos Académicos, Modelos Powerpoint, Calendário Escolar, E-mails Docentes, Regulamento da Avaliação, Política Lic.º de Software, Projecto Educativo, Guia de Estudante, Horário de Atendimento, Software Livre, Cartão Universitário, Alteração config. e-Mail.
- Só para Professores:** Telefones Docentes, Imagens de Lichinga, Informação Projectos, Manual Moodle, Estatuto Carreira Docente.
- Grupos de disciplinas:** 2009/2010. Licenciaturas: Lic. Em Educação Social (1º ano: 12, 2º ano: 11, 3º ano: 9), Lic. Em Educação Básica (1º ano: 14, 2º ano: 13, 3º ano: 7), Lic. Em Educação De Infância (3º ano: 6, 4º ano: 3), Lic. Em Ensino Básico - 1º Ciclo (3º ano: 6, 4º ano: 6), Lic. Em Ciências Psicológicas (1º ano: 6, 2º ano: 6). Mestrados, Pós-Graduação, Mais, Anos anteriores (2004..2007, 2008/2009).
- Mensagens:** Daniela Alexandra Ramos Gonçalves, Ana Benedita Carvalho de Sampaio Teles. Mensagens...
- Últimas notícias:** Começar um novo tema...
- Calendário:** Dezembro 2009. Grid showing dates from 1 to 31.
- Utilizadores activos:** Michael Kaufmann, Ana Sofia Salazar de Sousa Rib..

At the bottom, there is a search box for disciplines: "Procurar disciplinas:  Executar".

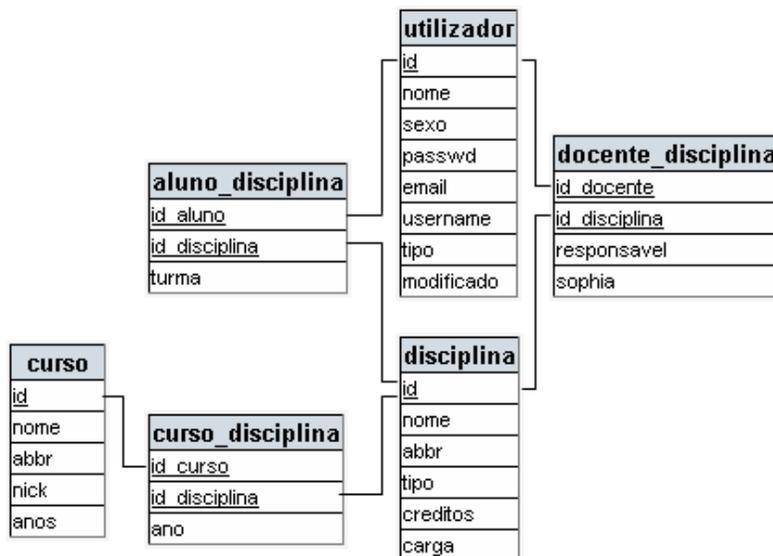
Fig. 2: Main page of the eCampus

As a reliable data source, giving information about students, professors, courses and their subjects, we selected the school management system Sophia. To increase the independence from future alterations of this system, an independent database was created, with interfaces to all existing services.



**Fig. 3: Data-base interfaces**

Although the Sophia system is closed code, there is a Programming Interface available, the *Sophia Application Programming Interface*, SAPI (GIPSI, 2004). Using the technology SOAP (W3C, 2003) there are functionalities provided which permit the information extraction (listings of students per subject, courses etc.). With the aid of the SAPI, the creation of a simplified database was made possible (Fig. 4).



**Fig. 4: Schema of the central Database**

Starting from this compact and handy database, the following interfaces for the actualization of the existing services had to be created:

- E-mail and Homepage on the Linux server:
  - Creation of bash scripts, using the command “useradd”
- Login and profile on the Windows server:
  - Creation of command line scripts, using “net user”
- Moodle:
  - Use of “Reverse Engineering” methods (Ingle, 1994)
  - Monitorization and analysis of the commands, emitted at execution of administration tasks, namely during the creation of a subject area and the participants' registration
  - Creation of SQL scripts, for data actualization
- Wireless Network (authentication at Access Points):
  - Replication of a part of the data base, for the utilization within the Software FreeRADIUS (2004)
- Web Page:
  - A partial integration (plug-in or RSS) of content from the eCampus into the School's Web Page. Besides that there doesn't exist any personalized content. Therefore, there is no need for an interface to the data base.

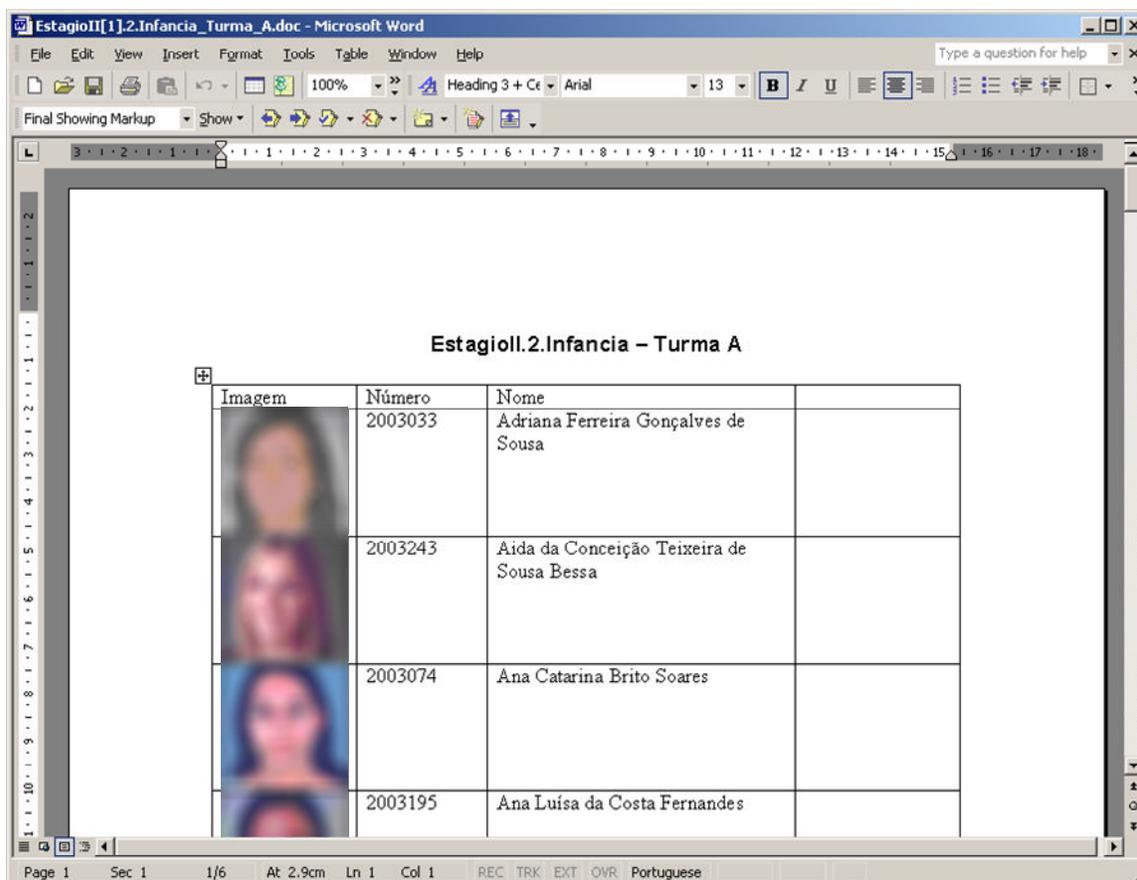
## **Creation of routine tasks and additional utilities**

As a consequence of the homologation of Campus Virtual project, at the ESEPF, there was born the necessity to create a mechanism for the publication of the summaries of all lessons. The creation and update of the summaries continues to be within the responsibility of the professors. At the same time, this information has to be accessible to the students, through the Internet. The summaries module was integrated into the eCampus, having in mind that it could be a Killer Application (Downes & Mui, 1998). The summaries module does not only serve to prove the stability and the good functioning of the platform, but it has also got an important paper in the adoption of the system, by the professors.

The summaries module is based on the optional module “book” of the Moodle system and was adapted to serve, solely, the creation, update and visualization of subject summaries. In each subject space, there is one pre-configured summary container, for each group. The navigation elements are placed, well visibly, in the Activities section in the center of the page.

This way, the routine task of the summaries update was integrated in the area of the subject. Executed, usually, a few times per week, it compels the professor to return regularly to the platform. Although the remaining functionalities of the platform are facultative, they are, only one click away and just ask to be tried out.

There are two more functionalities, which have revealed themselves as killer applications for the daily use of the eCampus. First of all, the Students' list in Microsoft Word format; although a rather technically simple invention, consisting of a dynamically created Rich Text Document, this add-on is seen as a very useful Goodie, especially during the first weeks of the semester, when the Professors don't know their Students yet (see Fig. 5).



**Fig. 5: List of Students in Microsoft Word**

Secondly and yet another strong reason to use the system is the integration with DimDim (2009), which allows every Professor to schedule and to conduct a Video-Conference, just by adding the activity to its Moodle Course and by allowing all Students enrolled in the subject, to enter the discussion with a simple click – no worrying about meeting codes or personal passwords.

Last, but not least, we implemented recently an electronic portfolio module (Kaufmann, 2008), permitting course students the selective sharing of their ongoing work. Several professors are using this tool, which allows the students to share their documents, using the traffic-light analogy. Students can keep their private, still unpublished documents (red), share documents with a selected group of people (yellow) or make documents available to the whole course (green).

## Future Trends

The successful implementation of the eCampus was a mile stone for the ongoing webization of educational content and presumably education itself at the ESEPF. In our view, in the mid-term, increased use of online components will mean changes in the pattern of campus classrooms.

The continued use of the eCampus by the majority of professors and students is causing us to rethink all of our processes to see what we can provide without having people actually being at the ESEPF campus. Our perspective is that, step by step, our institution will be moving towards a 24x7 service provider, available through the Internet, with rich on-line materials and tools like discussion forums and chats, facilitating the creation and fortification of learning communities.

We can see an increase of the demand for digital educational content, both by professors and by students. The production of quality educational content is a time- and money-consuming enterprise, regardless, if the content is produced by an outer entity or directly by the professor.

One of the biggest challenges for the future is the reutilization of educational content. The first major task is to find ways to make educational content (or parts of it) reusable. As all indicates, this shall not be a technique, which is applied to content after its creation. Therefore, material has to be redesigned to be deliverable and divisible, for instance, using the SCORM 2004 model from the ADL initiative (ADL, 2006). In consequence, we foresee that, eventually, whole courses have to be rethought. The second task is to create a flexible digital educational repository, which permits the discovery and the reuse of existing content. Ideally, such a repository should be integrable with the eCampus Moodle technology.

## **Conclusion**

The eCampus at the ESEPF is a practicable example on how to initiate and impel the broad use of an e-Learning platform within faculty.

At the organizational level, it was possible to gather all people and all the necessary efforts, to accomplish the planning and the implementation of the platform, following a holistic strategy. The essential monetary resources for the acquisition of the necessary hardware and the human resources to assure the support were obtained.

On the technical level, most of the objectives were reached. The acquired knowledge and the experience, gained through the application of this knowledge in a real system and in real situations, will serve as solid foundation, for future enterprises in this area.

The scaffolding is now put up for a better and more generalized use of information and communication technology in education. Although the technical solutions are almost optimized, there is always room for improvement. Still, there are “inertias” to be overcome and people to be argued into using technology. Successive best practices will be the best form of promotion!

## References

- ADL (2006). SCORM 2004 3rd Edition Documentation Retrieved 26.02.2006, from <http://www.adlnet.gov/scorm/20043ED/Documentation.cfm>
- Amaral, M., Martins, I., & Ribeiro, L. (2004). *E-learningUP|2003: projecto piloto para implementação do e-learning na Universidade do Porto*. Paper presented at the eLES'04 - eLearning no Ensino Superior, Aveiro.
- Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technology in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal*, 38(4), 813-834.
- DimDim (2009). Web Conferencing that just works Retrieved 1.12.2009, from <http://www.dimdim.com/>
- Downes, L., & Mui, C. (1998). *Unleashing the killer app : digital strategies for market dominance*. Boston, Mass.: Harvard Business School Press.
- E-U (2004). A Universidade está a mexer Retrieved 28.11.2004, from <http://www.e-u.pt/conceito/conceito.asp?areaid=3>
- Epper, R., & Bates, T. (2001). *Teaching faculty how to use technology : best practices from leading institutions*. Westport, CT: Oryx Press.
- FreeRADIUS (2004). Building the perfect RADIUS server Retrieved 04.12.2004, from <http://www.freeradius.org/>
- GIPSI (2004). *SAPI - Sophia Application Programming Interface: Gabinete de Investigação Projectos em Sistemas de Informação*. Universidade Católica.
- Ingle, K. A. (1994). *Reverse engineering*. New York: McGraw-Hill.
- Kaufmann, M. (2004). *O que faz os professores utilizarem e-learning?* Paper presented at the Conferência eLearning no Ensino Superior (eLES'04), Aveiro.
- Kaufmann, M. (2008). *A Portfolio Module for Moodle*. Paper presented at the MoodleMoot Barcelona. from <http://www.moodlemoot.net/2008/file.php/1/abstracts/119-328-1-PB.pdf>
- Paiva, J., Figueira, C., Brás, C., & Sá, R. (2004). *e-learning: o estado da arte*. Coimbra: Sociedade Portuguesa de Física - SoftCiências.
- UMIC (2003). Uma Nova Dimensão de Oportunidades. Plano de Acção para a Sociedade da Informação. Retrieved 24.11.2004, from <http://www.portaldocidadao.pt/NR/rdonlyres/FCDD4927-3150-4686-8BE9-A6B5F870B055/0/PlanodeAccaoparaaSI.pdf>
- W3C (2003). SOAP - Simple Object Access Protocol. Version 1.2 Part 1: Messaging Framework Retrieved 01.12.2004, from <http://www.w3.org/TR/soap12-part1/>