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COMPARISON OF THE ELEARNING SOLUTION AT MUAF IN BRNO AND POLYTECHNIC UNIVERSITY IN MADRID

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Abstract

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The necessity of eLearning support of the university studies is setting up (or was setting up) at the universities all over the world. This paper compares the eLearning technologies available at Mendel University in Brno (MUAF), Czech Republic, and Polytechnic University in Madrid (UPM), Spain, in the context of different conditions at both universities. The level of using of these technologies and practical experiences with them are evaluated too.
In concrete this paper deals with the systems GATE (GAbinete de TeleEducación) and AulaWeb, used at the UPM and system ELIS, used at MUAF. The fifteen-year experiences with development of eLearning at UPM are very valuable study material for the developers of the ELIS system. Some, especially conception properties of the ELIS system, can be, on the other hand, useful for inspiration vice versa.

E-learning, MUAF in Brno, ELIS, Universidad Politécnica de Madrid, GATE, AulaWeb, comparison of eLearning technologies

This paper came into existence as the final work of the author's study stay at UPM. The author, working at MUAF in Brno as the developer of eLearning system ELIS (Malo, 2003), was dealing with the experiences with the development and practical using of eLearning at UPM during his three-month study stay. The main goal was to compare both systems with view to various conditions (esp. size) of both universities. The main purpose of this paper is to contribute to the practical experiences interchange between both mentioned institutions.

With respect to the development of eLearning technologies a UPM, which has more than ten-year lead in front of the MUAF, is obvious, that the experiences can be profited mainly by MUAF. Nevertheless, how we are going to show later, there are some experiences to flow the opposite direction.

The author has gained the information of the eLearning solution at MUAF in Brno during his Ph.D. studies at the Faculty of Business and Economy (FBE) and during the development of the mentioned system. Information about the eLearning solution at UPM was gained during the consultations with teachers at Faculty of Informatics and Faculty of Agriculture (Escuela Técnica Superior de Ingenieros Agrónomos – ETSIA), during interviews with students of these faculties and studying the materials on the web pages of eLearning portals.

MATERIALS AND METHODS

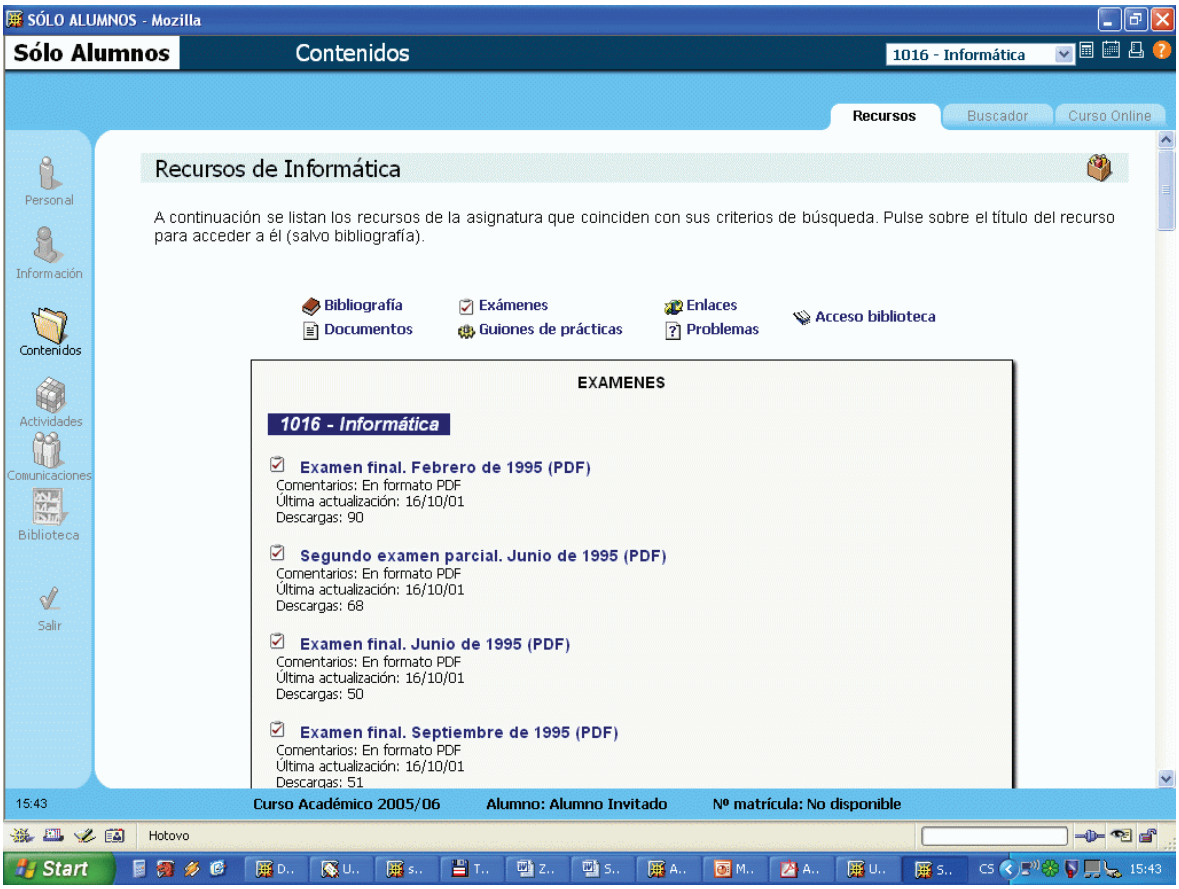
At first, let's describe the history of eLearning solutions of both universities briefly. Due to the length of author's stay at both universities, this chapter doesn't have claimed to be complete. Describes the development leading to the means used nowadays, eventually development which influenced these means importantly.

The Development of eLearning at UPM

How we can find at (Gate), the GATE project was born on 1st of April 1991. The introduction of information and communication technologies into the education at UPM, and setting up eLearning for all, was the main goal of this project. The developers have succeeded with this goal. Nowadays, not only university library electronic catalogs and numerous links to similar portals, but mainly multimedia support of the existing subjects can be found at the project GATE portal (Martínez). More than 60 of common subjects can be realized with the help of videoconference through the Internet. For those, who have already finished their studies, but want to learn on, the GATE offers more than 40 subjects and 10 e-conferences.

Approximately 8 years later was set up eLearning system AulaWeb (García-Beltrán, Martínez-Fernández, 2004) at the Faculty of Industry (Escuela Técnica Superior de Ingenieros Industriales – ETSII). This system is not only the support of multimedia and videoconferences, but offers a portal with complex services for the realization of eLearning as a support of common subjects and for realization of distance studied subjects.

In these circumstances, we should mention, that there is officially no distance form of studying at the public universities in Spain, which is the difference to the Czech Republic. Although students pay fees which have two components – teaching and exams, we can say that students paying for exams only, in fact realize the distance form of studying.



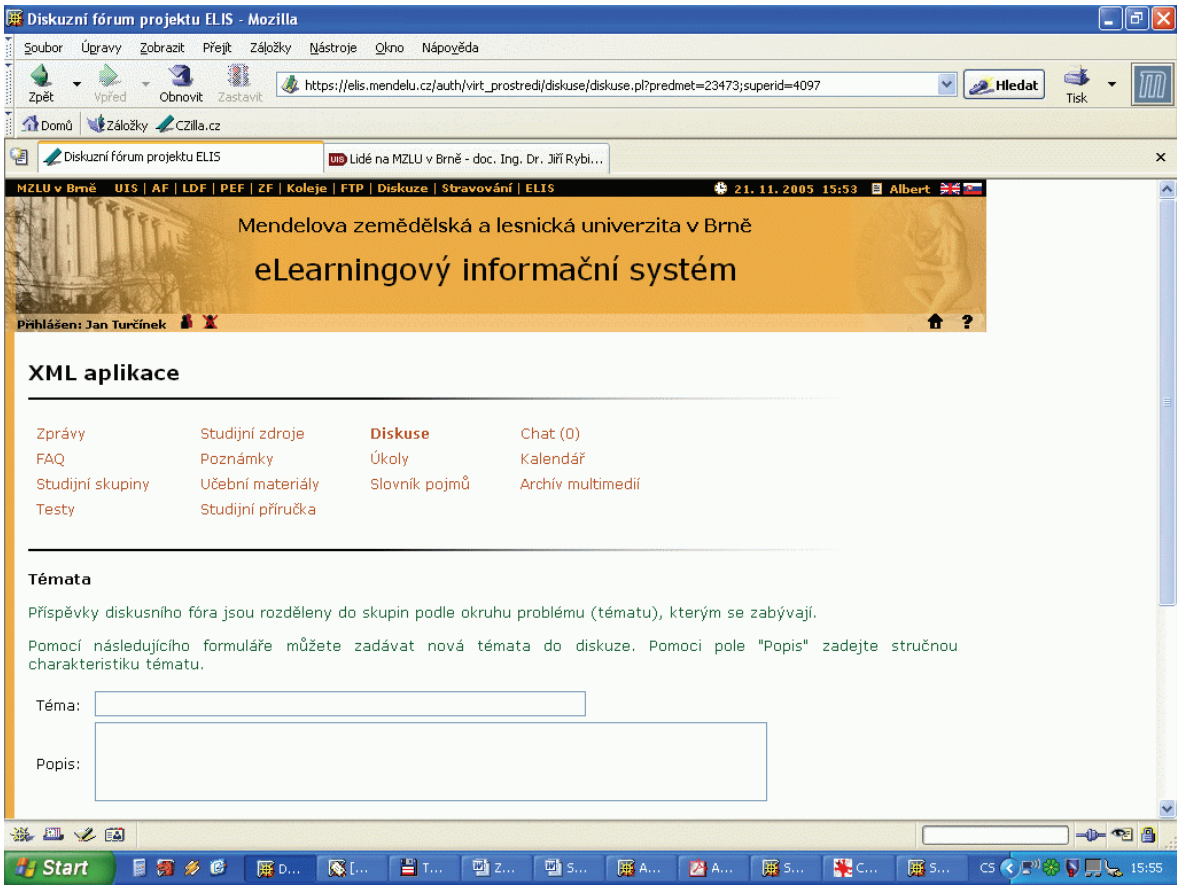
1: *AulaWeb system screenshot*

As early as after two years, more then thousand students of ETSII were using the AulaWeb system and in the same time the expansion of AulaWeb to other faculties of UPM began (García-Beltrán, Martínez-Fernández, 2005). We have to say that this expansion was in progress without any coordination of principality, which was occupied by the GATE development. The spread of the AulaWeb system, equally to the spread of experiences with its using, passed relatively rapidly. Nowadays, 22 installations of AulaWeb exist covering almost all faculties of the UPM. Additionally, the system succeeded spreading out of the UPM.

Although, according to the web pages information, the development of AulaWeb is still being in progress, we can say that this system serves up the complete eLearning support for practically all university students and is used by the very majority of students too. The rate of using is, naturally, different at various faculties, and at various subjects. According to the interviews with students, we can say that eLearning is used in every places, where is useful (see the inquiry results bellow).

The Development of eLearning at MUAF in Brno

Independently to the necessity of eLearning support, the Faculty information system of FBE was set up firstly. In 2000 this system spread to whole university as the University information system (UIS) (Malo, Motyčka, 2004). It was used in front of all for the operations related with the study agenda (matriculation, etc.). Others applications have been developed (and up to the present day are being developed) gradually, with goal to realize the maximum of administration operations electronically with the help of UIS.



2: *ELIS system screenshot*

But the necessity of the pure eLearning system remained. The decision process if to use some of free eLearning systems, buy any commercial one or develop an in-house system, resulted in 2003 to the in-house system development. The name of this system is ELIS (ELearning Information System) and is developed mainly by the employees of the Department of Informatics at FBE. ELIS is based on the same model as UIS, because further fusion of both systems is expected. During more than two years of work, the development team made the system which works for the support of common subjects and for the distance study form realization. Besides the learning materials and organizational study support applications, ELIS offers the electronic test realization.

How we can see, the eLearning solution of MUAF is much younger.

The Usage of eLearning at UPM; Inquiry among Students

With the goal to know how the eLearning is *really* used at UPM, the author made an inquiry among the students. Sixty five students of the Faculty of

Agriculture participated. This inquiry took place at the English lesson attended by the students of various study fields.

The students had to answer 5 questions "yes" or "no" and then have got opportunity to express their opinions about eLearning orally. The results are shown at following table:

RESULTS

The inquiry results are showed in the following table:

I: *The inquiry results*

Question Who can say that:	**Number of answers. "yes"**	**Percentage**
the majority of subjects have the organizational information on the Internet	32	49%
the majority of subjects have study materials(at least slides) on the Internet	21	32%
have any subject which can be studied *only* through Internet	5	8%
have any subject in which the Internet is *necessary* mean of teaching	31	48%
have any subject in which AulaWeb is used	65	100%

In concrete, subjects that could be studied *only* through Internet are GIS, The chaos theory and Intelligent systems. Teaching of these subjects is merely surprising at the Faculty of Agriculture.

In the oral part of the inquiry, the most mentioned opinions was: The studying from everywhere at any time is the advantage of eLearning, although the personal attendance of seminars is irreplaceable. The classic teaching with the eLearning support is considered to be the best model.

The Usage of eLearning at MUAF

In comparison with UPM, the eLearning is used much less at MUAF. Let's don't deal with the causes of this state, which would surely include the youth of the ELIS system and the conservatism of teachers. Nevertheless due to the advanced development of the UIS, which is without doubt the integral part of the university life, this system covers the important part of eLearning system tasks. Especially the organizational information could be reached by 100% of students.

The study materials are available more likely through the teachers' personal web pages (this occurs at UPM too) and we can say that in case of similar inquiry at MUAF, the percentage of the positive answers for the second question would be approximately the same. The subject that could be studied *only* through the Internet doesn't exist at MUAF. The subjects using the ELIS system are nowadays very rare. The available technologic infrastructure promises improvement of this state.

DISCUSSION

The comparison of eLearning systems ELIS and AulaWeb

First of all, let's compare both universities. It is not difficult to find that UPM is much larger than MUAF. Let's consider this fact just in the beginning of this chapter. UPM is approximately 350 years older and many times bigger, considering the number of faculties and the number of students and teachers. Let's look at the precious numbers:

II: *Some quantitative criteria of comparison UPM and MUAF*

Criteria	**UPM**	**MZLU**
Year of foundation	1582[1]	1919
Number of students	36197	8165
Number of faculties	21	4
Year of eLearning system development beginning	1991	2003

1 In fact, the UPM was founded in 1971. In 1582 was founded first antecedent of the UPM – Real Academia de Matemáticas de Marid.

Now, finally, let's compare both systems – AulaWeb and ELIS. We are not going to deal with hardware and software sources; we are only interested in the functionality from the user's (teachers and students) point of view.

Binds to Other Systems

AulaWeb is independent system. Information of every user, subjects and bindings between users and subjects have to be introduced manually into the system. The truth is that the system supports mass data import from Excel and Agora, nevertheless, this import have to be done at every faculty to respect the situation of matriculation. After this, AulaWeb works as the only eLearning system including the organizational information about teachers, timetable, etc.

There is only one database of users (students and teachers), subjects and bindings between them depended to the study period. The important part of eLearning agenda is realized by UIS directly. In concrete we talk about the mentioned organizational information: teachers of the subjects, timetable, dates of exams, evaluation, etc. Until ELIS is not integrated with UIS, after the matriculation finishes, the export of data is realized at the database level. The ELIS system has the same graphic interface as UIS and users have the same login and password.

ELearning systems applications

Let's look now at the list of the applications with information about availability of these applications in compared systems. We are going to deal with differently implemented applications later.

Both systems provide a document server, which is the system for administration of documents in any format. If any application is not implemented directly in the system, but can be supplied by the document server, the letter "D" is put in the table. In the case of MUAF, many functions are provided by UIS. In this case, instead of "yes", "UIS" is put in the table.

III: *Applications in eLearning systems AulaWeb and ELIS*

Criteria	**AulaWeb**	**ELIS**
Organizational information		
Information about teachers	yes	UIS
Timetable	yes	UIS
Syllabus of the subject	D	UIS
Lists of students	yes	UIS
Calendar	yes	yes
Classifications		
Attendance register	no	UIS
Continuous evaluation	yes	yes
Dates of exams	yes	UIS
Final evaluation	no	UIS
Documents		
Document server	yes	UIS
Notices for students	yes	yes
Notepad	D	yes
Study materials		
List of bibliography	yes	yes
List of WWW sources	yes	yes
Access to the list of university library	yes	no
On-line courses	yes	yes
Personalized on-line course	no	yes
Homework	yes	yes
Dictionary of important terms	no	yes
Library of multimedia objects	no	yes
Models of tests	yes	D

Communication		
FAQ	yes	yes
Chat	yes	yes
Discussion	yes	yes
Searching the Internet	yes	no
Tests		
Training tests	yes	yes
On-line tests	no	yes
Evaluation		
Evaluation of the subject by the students	no	UIS
Statistics	yes	UIS

The way of the organizational information implementation is very similar at both universities. In the case of classification, the ways of implementation are different. At MUAF, the classification is realized directly in UIS. AulaWeb as the independent module doesn't support bindings to the classifications register. The implementation of the document server for the study materials presentation is very similar again. Both systems provide sorting of documents into folders and making them available for the students.

In the case of study materials availability, both systems provide sufficient means for the supporting data, e.g. the list of study resources. The key application, view of the on-line course, is provided by both courses too. There is moreover the possibility of an export into PDF in the ELIS system. Over and above, in ELIS is available the dictionary of important terms. The communication tools implementation quality is comparable again. Moreover, AulaWeb contains a tool for searching the Internet.

We are going to deal with tests in an individual chapter. UIS MUAF provides the evaluation of subjects by the students, but there is nothing similar, usable for whole university, at the UPM. Although the statistics can be viewed in both systems, the implementation of this feature is better in AulaWeb. For example, the comparison among subjects is available.

Electronic tests

The last theme we are going to deal with during our comparison of eLearning technologies at both universities is their using for exams and students testing. The on-line tests support is implemented directly in ELIS; therefore on-line testing is available. AulaWeb provides on-line testing for training purposes only. In AulaWeb, student can choose the chapters and the number of questions and make the system generate the test according to the student's wishes. In ELIS, the number of questions and chapters to draw from is chosen by the teacher always.

The field, where UPM (in concrete the Faculty of informatics) leads, is automated generation of paper tests. The printing of tests is available in ELIS too; nevertheless the very important feature – questions with numeric parameters – misses. Automated evaluation of scanned forms works at UPM, but doesn't work at MUAF.

The specific part of students' testing is passing of the homework. Application for its realization is not implemented at MUAF neither in ELIS nor in UIS. There exists a system for homework evaluation at FI UPM, but is suitable for one subject only. Nevertheless, it provides the complex service to this subject – from the programs functionality evaluation to the plagiarism detection. The details of these applications exceed the frame of this paper.

SUMMARY

Although both universities are incomparable dealing with the size and tradition, we can say that the development of eLearning system is at the similar quality level. Unfortunately for MUAF, its system is being used very rarely. Therefore the developers didn't have opportunity to react to the users' requests and demands to customize the system to the necessities of users. The control of some applications is in comparison of AulaWeb heavy-handed.

In which features is AulaWeb better in comparison to ELIS? In front of all it is its user-friendliness and graphic interface improved by the icons making the work more pleasant. Next, it is the flexibility to the concrete subject demand. Teacher can choose which of the applications is going to avail; the system hides the items not containing data.

On the other hand, the advantage of ELIS/UIS is their shared data base with the study agenda. Administrators don't have to carry the data to and fro, all agenda is say about in one place. The next advantage of ELIS is the implementation of electronic tests. The number of test item types and the possibility of on-

line exams realization are very useful mean saving the work of teachers and making the life more pleasant for students.

We can hope that after the ELIS penetrates into the university life, at least in the level of the penetration of UIS or of the penetration of AulaWeb into the UPM life, the level of using of this system will increase. Teachers at MUAF aren't used to eLearning and we can think that especially the elder generation is not going to use to it ever. In this area, UPM have really big (ten-year) lead.

SOUHRN

Srovnání eLearningového řešení MZLU v Brně a Polytechnické univerzity v Madridu

Potřeba eLearningové podpory univerzitního studia vzniká nebo vznikala na univerzitách po celém světě. Tento článek srovnává eLearningové technologie dostupné na MZLU v Brně v České republice a Polytechnické univerzitě v Madridu (UPM) ve Španělsku v kontextu rozdílných podmínek na obou univerzitách. Hodnotí také míru využití těchto technologií a praktické zkušenosti s nimi.

Konkrétně se jedná o systémy GATE (GAbinete de TeleEducación) a AulaWeb používané na UPM a systém ELIS používaný na MZLU. Patnáctileté zkušenosti s vývojem eLearningu na UPM jsou velmi cenným studijním materiálem pro pracovníky vyvíjející systém ELIS. Některé, zejména koncepční vlastnosti systému ELIS, mohou být naopak užitečné i pro inspiraci opačným směrem.

Ačkoliv se obě univerzity nemohou srovnávat co do velikosti a tradice, lze říci, že ve vývoji eLearningového systému jsou na podobné kvalitativní úrovni. Bohužel pro MZLU, její systém se zatím skoro nevyužívá a tak dosud nebyla ani možnost reagovat na požadavky uživatelů a přizpůsobit systém v maximální míře jejich potřebám. Ovládání některých prvků je proto ve srovnání s AulaWeb poměrně těžkopádné.

Co je výrazně lepší na AulaWeb ve srovnání s ELISem? Především je to jeho uživatelská přívětivost a grafické rozhraní vylepšené ikonami, které zpříjemňují práci. Dále je to jeho značná přizpůsobivost potřebám konkrétního předmětu. Učitel může sám zvolit, které prvky bude využívat a které ne, a systém studentům nezobrazuje položky, které neobsahují žádná data.

Naproti tomu výhodou ELISu/UISu je jeho společná datová základna se studijním systémem. Administrátoři tak nemusí přenášet data tam a zpět, veškerá agenda je více méně na jednom místě. Další výhodou, kterou se může ELIS pochlubit, jsou elektronické testy, které množstvím typů otázek a možností realizace on-line testů představují velmi užitečný prostředek šetřící práci učitelům a zpříjemňující život studentům.

Zbývá tedy doufat, že poté, co pronikne ELIS do života univerzity v takové míře, v jaké již pronikl UIS a v jaké pronikl AulaWeb do života UPM, vzroste i míra jeho využití. Učitelé na MZLU dosud nejsou na eLearning zvyklí a lze se domnívat, že zejména starší generace si na něj nezvykne nikdy. V této oblasti má UPM před MZLU opravdu velký (desetiletý) náskok.

E-learning, MZLU v Brně, ELIS, Polytechnická univerzita v Madridu

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