

DG Report "Internet Resources: Virtual Libraries"

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Introduction

Most European universities today, offer a wide range of on-line services to students. But now that the internet is well inside a student's life, it is time for the technical university to develop its on-line presence in order to further facilitate and enrich the educational process.

The idea of this workshop was to discuss matters concerning the use of Electronic Tools or e-Tools for short. The question is how to make a learning process more effective and interesting through their use. Among the discussions we also had the opportunity to approach the matters of enhancing the existing teaching methods and of motivating professors into the use of e-tools. The basic matters that were sought to be answered from the group were among others the following: "How to support a technical university course by using e-Tools" and "How to support an entire learning process."

In the following pages the reader will have the opportunity to read-through the responses that were provided during the meeting. In the very beginning we watch the identification of an internet culture. A phenomenon that includes internet access frequency, habitual usage, etc. Following this key aspect, one can find a section devoted to the electronic tools available today and the practices applied throughout Europe. The report would never be complete if it did not have anything to suggest. Therefore one can find a proposal for an ideal technical University Course. Last but not least, there is a paragraph emphasizing the need to motivate the parties involved in the e-learning process.

Internet Culture

Definition of Internet culture

From the very beginning of the discussion group, we recognized that in order for e-tools to have any chances of being implemented in the educational process, they have to be operated by professors and used by the students. This logical assumption led us to the introduction of the internet culture.

With the term "Internet culture" we seek to define the habit of using and taking advantage of the Internet for various purposes. We quickly realized that the use of the internet varies a lot depending on the country as well as the university. We start this report by giving an overview of the situation in different countries presented during the workshop.

Overview of the different countries

Italy:

In Italy, the Internet is not broadly available to the students. The turn of the century has led existing systems to certain problems, as many Italian computers were hit by the millennium bug. As a result someone can no longer register in exams through the internet anymore.

At the University of Rome, it is recognized that professors have the possibility to use Web pages and other e-Tools, but most of them still choose to rely on old-fashioned techniques. One of the reasons for this might be the lack of motivation.

At the University of Catania, some of the professors use PowerPoint presentations and make them available in Internet. PowerPoint slides can be also available in Compact Disks in the university's libraries. E-mail is being used and it is considered to be an easier way to contact professors. The University of Catania wants to improve education by using e-Tools, but some of the older professors are not flexible enough to follow through the needed changes. The professors whose courses are more directly related to the Internet are using more e-Tools and they are ready to develop their teaching methods accordingly.

Greece:

With funding deriving from sources such as the European Union, as well as the Ministry of Education, new projects aiming at the development of e-learning environments see the face of light

The majority of the courses at the Technical University of Crete have Internet web sites, which contain useful links and important announcements. Also some discussion groups are readily available with the use of e-mails whereas no forums have yet been activated. Many courses provide the possibility to e-mail the course responsible and ask questions about the course. Greek students also tend to check their e-mails regularly.

- Students already take advantage of the internet in a number of ways, including a lot of surfing and materials downloading.
- The content of University libraries from all over the country is available on the internet. It is quite often to have e-Notes available to be downloaded from the internet. Often in PDF format. It is also worth mentioning that normal text books are handed out to students for free.

The Technical University of Crete does not have to face the added burden of restraining traditions as the university is quite young (established in 1977). The professors are young and able to adapt to new Software packages in an easy way. The introduction of new courses such as E-commerce only last year bears witness to it. The National Technical University of Athens is also really advanced in these sectors.

The T.U.C has a modern atmosphere motivating changes. With almost 2200 students and an advanced architectural image the university sports professors highly motivated to continuous improvement. Impressive is the effort of Dr. Kostas Providakis who deployed all of the course material on-line while maintaining a packed auditorium. Nevertheless more computer laboratories are needed. Postgraduate students often have to rely on their own powerful workstations to cope with the burden of their projects.

Romania:

At the campus area almost everyone has access to a personal computer. There is a fast internal network at the university and the surrounding campus. Every department has its own dedicated server, while professors can be reached through e-mail with the help of these servers. However still, it is only the younger teachers that have adopted a more advanced Internet culture and they are the only ones trying to enhance their teaching process. The problem is that professors in Romania may be employed at the university till the day they die, thus the age average rises dramatically. The oldest professors are not very enthusiastic to learn new ways of teaching.

France:

In the engineering school, at the department of production management there are not enough computers to go around. The students use computers only to make reports, and to participate in exercises. Students use mathematical programs for demanding exercises and regularly read their e-mail. There is no use of the Internet however in teaching or communicating with the teachers. Students think that they don't need e-Tools to improve their learning and the teachers agree. There is a very traditionally oriented atmosphere.

The situation varies a lot though depending of the University. The Computer Engineering departments in France always operate terminals connected to servers. There are good connections to the Internet and a kind of intranet is used at the university, for internal communication. Some forums are already being introduced as well as e-Notes, but they are not very widespread. Emails are used frequently, but the basic teaching about the use and the advantages of Internet is lacking.

Sweden:

In Sweden the Internet is an essential part of studies. All the schedules for the exams and courses, as well as the home pages of the teachers can be found on the Internet. The portals for students and teachers are used in everyday life. You have the ability to personalise your control over the curricula and the general matters that concern the University. In some courses you can find the Presentation slides on the Internet. There is no lack of computers while there is also a small library course dedicated on the use of the Internet. Still longer courses concerning the effective use of the Internet are needed.

Finland:

E-situation is fast evolving in Finland

A big national virtual university project was recently launched by the Finnish Educational ministry. It aims at providing new opportunities to study through the net, digital learning materials and access to the most modern electronic learning tools aimed at supporting studies. All the universities in Finland are now taking some action to carry out Sub-Projects, which take care of very different initiatives. It's still voluntary for the teachers to take part into these actions thus this project is aiming at developing the ways to support virtual and electronic learning with new teaching methods and tools. Some virtual courses with some material in the web and contact to the teacher via internet are now in a pilot phase. Particularly, some open university courses (open for large public) and some language courses for the regular university students have been run in the virtual environment as pilot projects. Evaluation of virtual exams is a very problematic thing and it has still remained as an unsolved issue so far. That is why traditional ways to have exams are still used even in all the "virtual" courses.

Quite many Finnish teachers are putting PowerPoint slides to internet and some of them are even putting their own lecture notes available to be used afterwards. PDF format is very used to publish e-notes material. Generally, internet is - though - used more to support functions, like to offer help for the curricula choices in order to plan your 'study career' than to support the actual learning process. Also lots of general 'meta information' about the courses and studies is provided. Some courses are using virtual notice-boards and e-mailing lists for course arrangement announcements. Discussion groups and forums often exist but they are very rarely used. E-mail is parallel to regular mail (it is obligatory for teachers to answer to them, although some of them are still not using it). Thematic web portals, search engines and e-libraries are under heavy development. The amount of computers is spectacularly high, broad band internet connections are made available to the large audience and excitement of using the new technology is quite enormous. Expectations are also set high by government and industry. The situation in Finland is generally quite the same as in Sweden.

General discussion about Internet culture

Nowadays computers and Internet are considered as a new Swiss army knife, useful and essential. The Internet is not necessarily our best friend, but it is a tool for efficient and productive learning and teaching. It is a major source of finding information.

To achieve the best results from the use of the Internet, the computer literacy education should be started at an earlier age than in university life. Lots of people are surfing the Internet without any clue on how to do it efficiently. Lots of them do not know how much information can be retrieved from the Internet and how to use the information properly. The problem exists also in technical universities. Students do not have the required mentality of using Internet and the universities are not helping either in fighting this issue. A course based in the effective use of the Internet should be provided complementary for all technical university students, not only for computer scientists.

During the workshop the both extreme situations were discussed: all teaching to be conducted over the Internet and no teaching in the Internet. Both alternatives were not welcome. Everybody agreed on the importance of normal classroom teaching. The Internet based teaching was considered as a good implement for classical teaching methods. As it was referred to wisely in ancient Greece "everything is good in medium".

We also discussed about the social attitude. There will be and already exists a certain lack of communication skills and lack of physical contact because of isolation that the Internet implies. Along with the more intensive use of the Internet the human contacts have abetted, misunderstandings between the parties have increased. This problem should be taken into account while discussion about Internet culture.

Some good examples came from Chania where a platform of life long learning is already implemented and from Patras where a platform of open and distance learning is used. Generally we thought that the universities are not really supporting distance learning but trying to make the Virtual universities as a separate project.

Proposal

What kind of skills should be taught?

How to learn the culture of using Internet?

One good way to teach students the advantages of using the Internet would be a project work where students should plan what kind of material would be useful to find on the Internet and then carry out their own plans by putting the useful material to Internet. The course could be technical course and the aims should be learning the subject and the use of Internet. It should be done as a team and it could be part of your curricula.

What should be known about the Internet?

Probably the most useful skill for all students would be the efficient search of documents and the effective use of specialised search engines. Also the proper use of email groups and forums should be taught.

Teachers training

Also teachers should be educated to proper use of Internet. They are the models for the students and can affect strongly the habit of using the Internet. The Internet should be a part of our education by now. It will never happen if all the teachers are not trained for that. Young and innovative teachers are already trying different kinds of teaching and learning methods, but some elder traditional teachers do not recognize the advantages of the Internet or are not willing to learn it either.

E-Tools

Introduction

In this part, we examine some of the electronic tools that can be successfully implemented in the educational process.

Discussion groups, forums, emails

E-mail groups

For example a group for students interested in specialised areas such as mechanics.
(Smart agents to prevent spam are being developed to prevent spamming).

Advantages

- Good way to communicate, cheaper than phone
- Available at all times
- E-mail is more personal than newsgroups
- Students do not want to ask stupid question publicly

Disadvantages

- Difficulty with the synchronous communication
- You are not sure if you are going to get any answers

Forums

Advantages

- You can create an archive from frequently asked questions
- Answers are publicly shown

Proposal: In such forums alumni students who are working could provide an actual insight from within the work market.

Comment: Newsgroups are working in Finland

Disadvantages

- This is only a supplement
- You have to check forums regularly and you are not sure if there is anything new

E-Books and Virtual libraries**E-Books****Advantages**

- You can achieve easy access and distribution
- It would be nice to have fewer books, increased mobility

Disadvantages

- Not everybody has a computer
 - There is a number of technical limitations
 - It is hard to read hours after hours from the screen
 - There are a lot of copyright issues involved
- Problems (copyright, Professors not willing to put their material to internet, still printing everything, people are old-fashioned, do not want read from the screen)

Virtual library

Including thesis works, volumes and articles.

Advantages

- Easy access
 - Publications, thesis projects/works are open to everybody
 - Scientific journals from all over the world are accessible
- Proposal: More cooperation between universities can be achieved
- Comment: Everything should be linked to more efficient search engines

Disadvantages

- Copyright problems that can be overcome by limiting access
- Too much information

E-Notes,

Slides in the internet, PowerPoint presentations

Advantages

- Easy access
- Do not have to copy them from the blackboard
- Easier distribution for professors
- Better outlook and better structure.
- You can get the notes although you have been missing the classes
- When as a professor you once make the slides you do not have to redo them from the beginning, you can merely modify them on demand.

Disadvantages

- Technical problems
- When one writes things down by himself, (s)he learns

Solutions: Hands-on examples on subject
 Notes with much-needed clarifications may be added to the printouts

- There is the risk of giving too much information
- Notes should not be modified structurally in the middle of a course
- Students do not have enough computers – issues of possible discrimination may rise

- Students do not come to classes if everything is reported and will miss some parts of the lectures
- Everybody has their own way to learn. There are people who gain less from attending lectures and others that gain more.
- Lectures are useful by any means necessary and should not be removed from the Universities.

Web pages, web sites, Thematic web portals, educational search engines

XML (=eXtended Marked-up Language) is giving lots of possibilities for websites dedicated to a course or laboratory.

Good practices

There should be a basic website for every course, which would be updated regularly, not 2 weeks before the course exams.

Solution: Web developers can form standard templates for university course websites.

Dedicated web pages for discussion groups of all courses may be implemented

An ideal Website:

- Should be navigated easily
- Should provide additional information sources other than textbooks
- Should hold an archive of past papers, e.g. last year exams
- Should provide examples, annotations
- Should be able to link to the teachers personal pages if any
- Should provide practices of the course

A mistake would be:

The creation of dedicated scientific – educational web portals containing as much science as possible

An ideal Technical University Course

What would be the ideal course?

It is understood that during the attendance of a course one should learn and understand all the basic things while still involving a lot of interesting questions to be asked so that the interest does not lower during the course. The best way to learn would be to get actively involved to the teaching process by interacting, and not only listening. A good professor is able to transmit his knowledge with enthusiasm. An ideal course would be divided in theory and in practise.

Lectures:

During the first lecture you should be able to have all the contact information of professor and assistants as well as URLs and possible forum addresses. You should also have a curricula overview and the most important parts of the course should be announced. During the course all information would be delivered via email. In the beginning the course students would hear and solve some case examples from the real life to get interested in subject.

The course could use one good textbook, which is not too large. It can also be replaced with e-Notes. There could be an automatic system for sending e-Notes before or after each lecture to students. Students could come to the lectures with these e-Notes and make their own notes next to e-Notes. Also all the e-Notes should be available in the Internet.

If you are not able to participate to lectures you should find the lectures from Internet. Text and sound should all be combined in the Internet. Animated pictures of the professor talks would help to understand difficult things. One possibility would be to take all the lectures to video material or do the complementary disk of the course.

Practise

Right after first lecture there should be a laboratory work so that theory and practice may be combined. This should be going on all the time during the course. Most of us learn by applying what we have been taught. That is the major privilege of laboratories. On the Internet one should be able to find the theory behind the practices of the laboratories. Results intended to be processed further may also be posted on the internet.

Motivation

How to motivate professors?

Professors should be motivated to improve their teaching all the time. Unfortunately this is not the case in general practice. The problem was discussed and certain suggestions that met the common point of view are mentioned here. Crucial things are normally the lack of time and money. More help and education should be provided to professors. They should be supported constantly in order to use new teaching methods. Motivated students will also have a positive influence to the professor and vice versa. Also one more motivating factor could be a laboratory's good reputation among students. Giving a chance to co-operate with colleagues, for example in EU projects can motivate teachers. Financial help is always a good way to motivate laboratories to enhance their education.

How do motivate students?

It must be really frustrating to teach students which are not motivated at all. One good way to motivate students is to be interested in their learning. Also, interesting teaching methods, good material used in the course, and the teachers own enthusiasm, are very important factors in student motivation. Motivated students will achieve better comprehension and understanding of the subject.

Conclusions

A hand-full of students from all over Europe got together to discuss matters concerning the use of Electronic Tools in the modern academic educational world. The question is how to make a learning process more effective and interesting through their use. The discussions were vivid and diverse. The key questions seemed to have been answered. However, during the workshop we noticed the huge difference between the countries and universities. We discussed a lot and had a lot of different opinions about our subject. The discussion was fruitful and all this report is a result of it. We found out that e-Tools are a good supplement to traditional teaching methods. They will not replace the classroom teaching but improve it. Lots of work is still needed for intensify the use of Internet and improve the motivation of teachers and students. Also the evaluation of Internet culture is needed. We recommend this kind of discussions to all parties of learning and teaching process.