IS THERE ANY SPACE FOR PRESENCE TEACHING IN A DIGITAL WORLD? A PROPOSED FRAMEWORK FOR WEB USAGE

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This paper proposes an empirical framework for integrate the Web as a local resource to support teaching activity. The roadmap presented is based on the author's experience resulting from a three years use of a personal homepage authored by him within the Intranet University system with outside Internet access.

The potential of digital information to enhance students performance is discussed and some guidelines are presented to improve what the author calls "live experience" of class content themes. The paper ends with a question section to promote discussion about *in site* teaching, his shape and functionality for the next few years.

1. The NetLab environment

University Fernando Pessoa has set as a freshmen requirement, that every student must have a laptop computer. This requirement makes the university a very rich computer environment where any student has its own laptop computer to use and care (there is also 50% of the teaching staff with computers too) (Gouveia, 1998c).

One of the most important goals of this project is to give to all students, from any major, a technological experience in order to start using computers in everyday tasks as students, and later, as professionals. The motivation is to introduce laptops as the next multipurpose tools and turn them an evolving substitute for the traditional "pen and paper" paradigm. From the current project we intend to gather as much information as possible to migrate, in a later phase, to the use of PADs (Personal Access Devices), described by (Downes, 1998) as tools for on line education that combine the function of a book, a notebook, and a pen.

To offer more communication facilities between students, the university started a local area network with entry points in classrooms and other locations in campus. Also, the university offers free access to Internet. These actions turn possible the use of Internet as a huge digital information resource for student's activities, and a preferred way to interchange information, using some of the available Internet services provided by the university like the Web, electronic mail, news, and Internet Relay Chat.

The infrastructure was made possible by a LAN and Web (HTTP) Intranet servers that the author uses to develop the materials for support his teaching activity. The relocation of course materials was made possible because students have their own laptops, a near access point to the network and an unified interface to access information (the HTML browser). This way, all the success conditions are available, for

creating a high potential learning environment, rich in technology. The environment resulting of simultaneous presence of laptops, network entry points in multiple campus locations, and Internet facilities, is coined by the author as NetLab (Gouveia, 1998c).

1.1 References

The NetLab merits its original perspectives and foundations are presented in (Gouveia, 1996), and (Gouveia, 1998). Some material is also available on line at *http://www.cerem.ufp.pt*, including official data about the NetLab and at *http://www.ufp.pt/staf/lmbg/*, where a list of available papers from the author can be retrieved.

2. The evolving use of NetLab

In a perspective of evolution in using Web facilities in better ways, we describe a usage path that start as an alternative way to spread information for students for dealing with scale and time restrictions. This means that a Web page can simple be seen as an opportunity to reach a higher number of students. It also is an opportunity to distribute information in an easy way where each student get it when he wants from the network in campus (with its laptop or in Intranet), or from outside campus, using an ISP (Internet Service Provider).

As a result of student's interaction and of using the Web facilities for different classes contents, it is possible to specify the Web pages as a growing set of functionality, as the ones listed bellow:

- use of Web pages as an alternative communication channel
- use of Web pages for class support material
- use of Web pages for organising the interaction rules between class, teacher and students
- use of Web pages to maintain a diary of the students/teacher relationship
- use of Web pages to maintain the class materials
- use of Web pages to built an historic log of each discipline
- use of Web pages to built case studies and practice exercises
- use of the Web pages to support assessment and even exams
- use of the Web pages to integrate each discipline within the group of disciplines that the author is responsible for, sharing available resources
- use of the Web pages to integrate students contributions
- start supporting interested people outside the class and even the school (from the net)

A discussion of the impact of using Web pages in classroom activity is given by (Gouveia, 1998a). The experience gathered in supporting these facilities introduces the need to discuss a roadmap where the use of Web pages can be integrated in a traditional class environment. The opportunity to make innovative use of these technologies and regain student's motivation is higher and we may not loose it! Based on author's experience we can risk that it has more to do with people than with technology, and even more with the traditional teacher role of simultaneous be a coach, a facilitator, an actor, and a friend.

The teacher as a person who gives the direction, orientation and rhythm in class and offers appropriate feedback is more important than the technology skills that students can develop in an independent way of the ones that the teacher really have. This way, the author strong believes on the need of presence teaching but just for

excellent performances in less time that it now spends with students in face-to-face situations.

We think that in near future, most of the teacher work will be preparing its materials and supporting studying activities before and after his appearance; the work time for teachers still will be the same, but spend (distributed) in a different way. For a more complete discussion of the impact of Web facilities on teacher's role see (Gouveia, 1998a), and (Gouveia, 1998b).

3. A framework proposal

There are three main reasons to present a framework to plan digital resources in the Web:

- promote the discussion of better practices using Web facilities to support teaching;
- offer an initial roadmap to involve students within class contents, case studies and problems;
- organise the electronic material resources produced or linked by teachers and students in a way that can be useful and understandable by all its users (teacher, students, and outside observers, that can be other potential users from the same or different schools).

3.1 Framework steps

The framework is based on a small group of eight sequential steps designed to involve students both with reflective and experiential bias to the class contents, as described in (Norman, 1993). The steps are:

- *disseminate the technology*: turning its use fun and introducing the Internet as an information resource. The introduction of Internet Relay Chat (IRC) gives an "human touch" to laptops and network use. However, IRC use must be controlled in order to avoid a massive waste of time to each student and a resulting overhead for the network. The IRC attract many students to configure their own laptops and get its first contact with computers as a communication tool. It can be for many, the smallest path to also starting using an Internet browser. Some games produce the same effect for the introduction of computer use.
- *stimulate the need*: once the technology is introduced, another step is to provide situations where the Internet can be an obvious advantage. These can be done proposing the access to remote institutions Web sites or specific information that can be harder to find in other ways. Two of the more important conclusions, for many students, are the fast way in which information can be gathered and its availability in electronic format. The electronic format can potentially be used to integrate work and reports, using laptop applications without the need to spend large amount of time entering text and making graphics. It also modifies the way people learn how to operate with applications, getting results by examining examples and not reading manuals.
- *provide tools to feel and use*: give clues to take advantage of Internet facilities like the electronic mail to communicate, and Web searchers to gather information. These tools stimulate each student to use the Web as an information resource and augment their autonomy as information collectors and report generators.

- *introducing how to do and associated tools*: to each student built its own Web pages. For that, a basic understanding of the html standard is needed and some tools available as freeware and/or shareware can be used to create more complete versions of these pages (including image maps, animated *gifs*, frames, and many other facilities including Javascript and Java). Again, the use of other pages from Web as examples can enhance the capacity of each student to get a fast start in Web design, with concrete results.

- *validate the environment*: this means starting getting more and more information about class into the class Web pages in first hand (first then its class physical distribution). The Web pages get more importance if they are used as the exclusive media to distribute relevant information, like work proposals descriptions, collection of past exams, detailed remarks about tests and works (not just the final marks) and other items that justify a regular visit to the Web pages.

- *starting to spread the values that know how to use and how to create has*: involve students in helping another students from other classes or students with difficulties from the same class. This way, the knowledge and share of techniques is proven to be going for everyone in a way that the student who shares new information is recognised and the entire group gets richer, allowing more advances and new techniques inside the group. These values are difficult to implement but the author's experience demonstrate that most students recognise who's who is good on same topic and who really did one thing in first place. Anyway, some cultural factors apply here!

- *involve the students to create their own Web services*: once students start creating their own pages and use internet facilities to gather information for their needs, they tend to be grouped outside class topics into topics that are more relevant to them. As examples, we have a comic hero; a rock band, a TV program or any other subjects like a sport, an event or even a more precise discipline topic like astronomy. Same examples of students that organise themselves into a group outside class is the ecology related group *Geonúcleo*, that have their own independent Web pages run by students (*http://www.ufp.pt/units/geonucleo/*).

- *create a rhythm usage pattern*: the teacher must have a several repeated runs of using the home pages for supporting the same information about a specific class discipline. This means that it also have a growing collection of electronic resources to support its students with contributions from past students. The result collection tends to be improved and used by actual students and, in turn, also used to improve the overall topics offer in class. This can free each student of been stuck of studying just what is strictly given in class which means that, with the available material, it is possible to allow each student to develop some topic in greater detail based on their own interest. This new kind of interaction between students and the class contents give a better idea of what are the most study topics and which ones are the more interesting for students, providing value information about students motivation.

3.2 Framework considerations

The proposed roadmap is a difficult one. It assumes the availability of computers and network for student's use. It is also important to consider their motivation that is

greater when they are the computers owners. This roadmap represents hard work for the teacher. Its payoff takes time, and several runs of a given discipline are needed to get into the three last framework steps. But once there, the material production and its organisation by the teacher are much easier, giving opportunity to a more flexible and innovative discipline structure. Also, the remaining memory (what stays as knowledge after the class…) about class contents by the students are greater, just because they have been more active in using their skills and work to help in the creation of an discipline electronic image.

4. Present and future work

Several development orientations can be considered with a high research potential. From these alternatives three are the most interesting and deserve further study in the NetLab context. They are:

- making the transition from an individual learning system to a collaborative system, mediated by automatic assessment facilities;
- creation of a local collaborative system to make collections of related url's and maintain them updated (with appropriate systems like BSCW);
- use of 3D facilities to represent information structures resulting from both individual and group contributions

The last proposal, a collaborative 3D-information space was described in (Camacho, 1998). We must take into account that there are already some available systems for each of the proposed research areas, but lacks field studies about their impact into real learning environments.

5. Questions arise

Based on the experience gathered in the last three years, several questions may arise. However, each possible answer is still far beyond from been consensual. As traditional systems for teaching like presence classes, long-term courses and theoretical education fall in student involvement and results for professional life, the environment outside school start to enter the "education market".

This happens with more and more enterprises involved in education programs not certified by traditional education institutions but from the market itself or from the more important trademarks like the big economical organisations where education begins to be structured into more traditional forms with names like institute, school or even university. Formal education gets a growing notion of product, resulting in new systems that deal with education in a more closely business perspective way.

With the shortage of specialists and the cost for maintain know how in a grown number of highly technical areas, the scale demands for diffusion systems and more efficient ways to use teachers and materials. This need makes wonders to foster the technology development. Technology itself has an important role with the Web, television, cable TV, satellites and videoconference systems which turn possible to bring education to the professional's localisation and to reshape distance education. Will education based on technology delivery systems become a commodity?

In this context some questions arise like where will it be the tomorrow school? Is there a need for a physical location or just a organisation and groups of human resources are sufficient to make a school and even a university? These questions are concerned with the need for a physical space for a school. Why? Mainly, because we have reinvented the people presence with new technological gadgets (probably the right

question for the end of the century is that it will be a need for a human presence to teach in education systems).

Other questions are important to the education system itself, like what will be the major education system; the old traditional one or the continuum education programs made by some professional profiler organisation (like IEEE or other)? How it is possible to cope with scale for educate the third world, with innovative systems required by developed countries? Or, in alternative, recurring to TV and Satellite systems, more common in non-industrialised countries?

More mundane questions related with the professors role arise like if still will be a need for marks and assessment like we know them today or it will be better to have some sort of professional credits to be awarded in an ongoing way? And how to invert the today phenomena that young people have a great ability to work with machines that their teachers have? Is this really important to care about?

Above all, maybe that the right questions to put is: what will be the values of tomorrow's school and how will them be put in practice. We believe that experiences like the use of Web facilities to share the class materials with the students and make some partnerships to create and develop their contents can be a good starting point.

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