The Challenge of Teacher Training through the Internet
A Portuguese example and international reflection

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Abstract: As the twentieth century draws to a close there appears to be a consensus that teacher training can be delivered virtually using the Internet. Three EC funded international projects (T3, REM and TRENDS) have demonstrated that this is practical and there are other examples around the world. However, such- modes of teacher training are challenging and appear to require considerable re-engineering of educational processes as well as information and communication technologies. This paper discusses these challenges by focussing on the experience of a group of Portuguese student teachers and their tutor within the multinational EUMedea course.

The EUMedea Project was a teacher training on-line course of the T3 Project Telematics for Teacher Training about 'Environmental Education'. It involved 11 groups of teachers/student teachers from five European countries: United Kingdom, Portugal, Italy, Finland and Holland. The aims of the course were: to design an environmental education project; use Internet to find information, share knowledge and co-operate in designing environmental education projects; use a Computer Mediated Communication (CMC) environment to work with other teachers co- operatively. This paper will present the results, discussions and reflections of the group of Castelo Branco (Portugal). The results of this experimental course will be an opportunity to reflect and propose several insights and clues for the future use of Internet on teacher training.

Keywords: teacher training; environmental education; international insight

Internet within educational context: brief references

Nowadays Internet has conquered, in a gradual and fast way, an enormous implantation both in the world and within the Portuguese society. In spite of Internet being used, in the domestic environment, recently its reference promotes several questions as well curiosity by whom never had a close contact. In education the first steps are being done in the cyberspace...

There are several advantages of the use of Internet at educational context. Besides the large amount of data/information which offers, as well as a continuos and permanent actualisation of data/information it also allows the possibility to communicate either with colleagues or experts, it is really facilitated with this mean of communication (CMC – Computer Mediate Communication). This communication may be done in two different ways: asynchronous or synchronous. The asynchronous via is the most popular and corresponds to the use of e-mail, which allows besides the sending of messages the attachment of different type of files (texts, graphs, and images). The synchronous via is normally used with audio and video support and also by discussion groups/chat. This last one may be really considered an on-line via because it allows a feedback or answer in real time.

Calvani et al. (1997) argued that to develop a real co-operative work it will be necessary to be present a large interactivity due to the necessity of the reformulation and adaptations of the projects that are in execution. Within this context the use of asynchronous communication may promote some problems because discussion is mainly an «on-line» process. However, in general terms, both via represent an excellent means of communication independent of geographical and temporal limitations. As Briano et al. (1997), Montgomerie e Harapnuik (1997) e McAteer et al. (1997) stated, several problems related to the inflexibility of timetables and using CMC may easily solve other school activities. On the other hand, it promotes the direct contact with different national and/or international people sharing and discussing different cultures, knowledge and experiments. However one of the most important feature is the

possibility to establish and facilitate a close contact with experts/scientists what will allow doing deeper discussions and also get closer the citizen, the teacher and the students with the scientific society which is normally very distant or inaccessible.

According to the previous statements, the large amount of data/information that is available demands, in the opinion of McAteer et al. (1997), its analysis and organisation. Briano et al. (1997), supported by several studies, argued that asynchronous communication promotes a better level of synthesis and clarification in comparison with oral and face to face communication. As Abi-Raad (1997), pointed out the use of such technologies should go more further: 'We don't want to use the new technologies to do just quicker what we have done in the past.' To achieve this aim, Montgomerie e Harapnuik (1997, pp. 198), referred that 'Internet courses must prepare students to accept the responsibility of learning and help then establish patterns of searching out new information on their own.' Another aspect argued by Light et al (1997), is the possibility that e-mail may offer mailing lists allowing the share of information by different people simultaneously. In consequence one «talk» between two people may be transformed in a large forum of discussion.

Therefore, this technology will allow that new problems may arise in another level of complexity that will demand new tools different from sheet and pencil, which are adequate to give a right answer. These new challenges will promote changes in the curricula, which were designed based in the assumption, that both teachers and students only will need sheet and pencil to solve problems that became insufficient.

Calvani et al. (1997) stated that Internet may be used according to four different categories:

- as tool to motivate users;
- as a study or research environment;
- as a forum to share, elaborate, plan, communicate, criticise and revise the products of such activity;
- as privileged place to publish and/or show the final product.

EuMedea Course (Europe - Metodologia Didactica per l'Educazione Ambientale):

a) **Context:** EuMedea was a teacher training on-line course; Workpackage 10 of the T3 Project «T3 – Telematics for Teacher Training»; Co-ordinated by the *Istituto per le Tecnologie Didattiche (ITD) from Genoa (Italy).*

b) **Participants:** Student Teachers and Teachers. Five European countries were involve: 6 groups from Holland (Uthrech, Rotherdam, Eindhoven and Amsterdam), 2 groups from Italy (Genoa and Gorizia), 2 groups from the United Kingdom (Exeter), 1 group from Finland (Oulu) and 1 group from Portugal (Castelo Branco). In each group there was a Local Tutor responsible for the organisation and dynamics of the group. Each group also had the support from Tutors and Experts whenever they had doubts, problems or suggestions. There were also Observers and Collaborators of the T3.

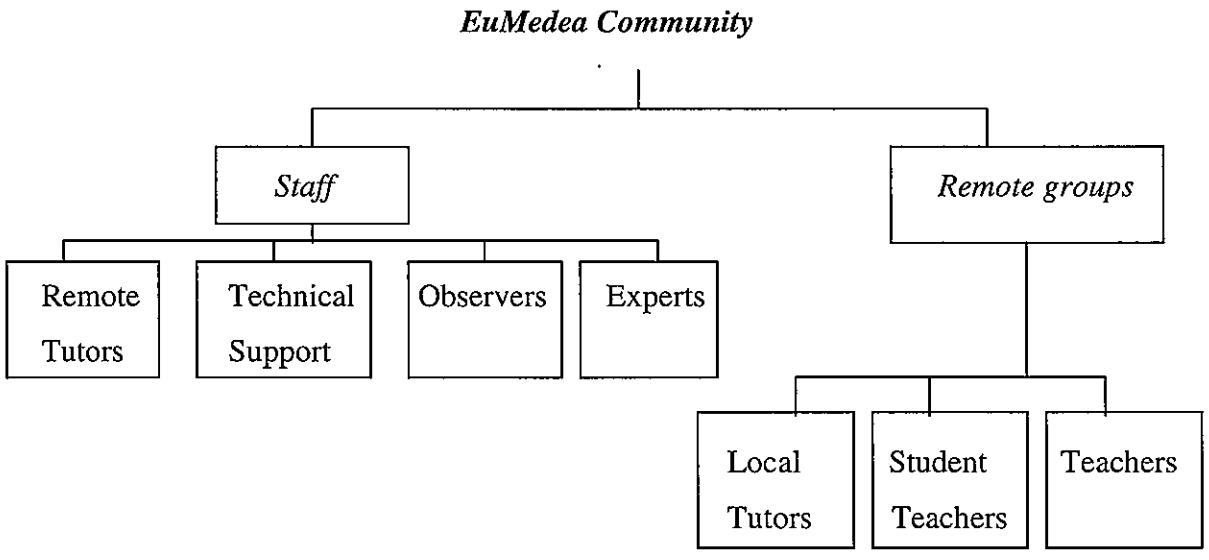


Diagram 1: Organisation of EuMedea Project (Briano et al, 1997)

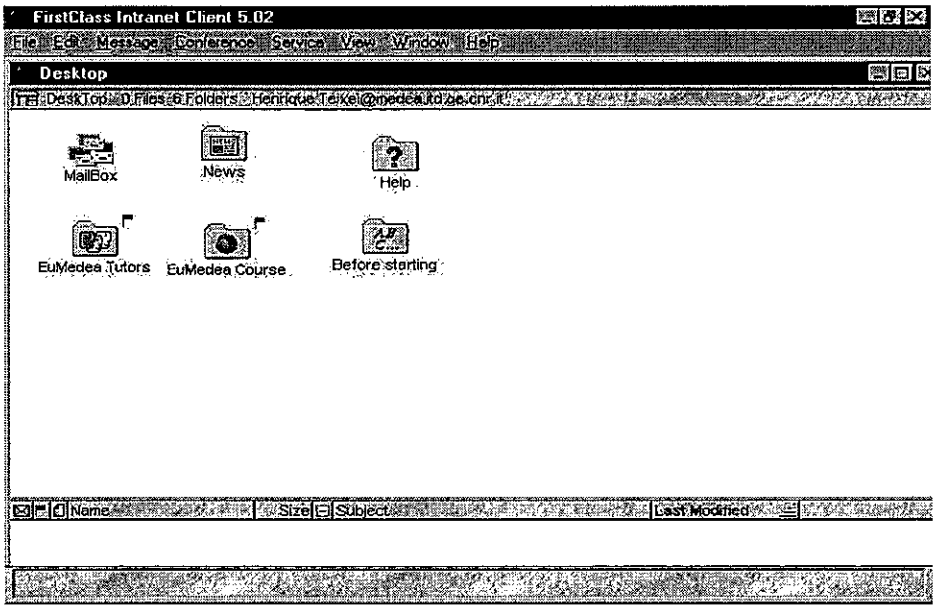
c) **Main aims of the course:**

- Design an environmental education project.
- Use Internet to find information, share knowledge and co-operate in designing environmental education projects.
- Use a Computer mediated Communication (CMC) environment to work with other teachers co-operatively.

d) **Learning environment:**

- Use of specific software delivered by ITD (First Class Intranet Client 5.02).
- Printed and video material provided by ITD.
- Documents on Internet suggested by the participants.
- European groups, the local and remote tutors and experts, which may be consulted at distance.

- Interface of the First Class Intranet can be observed in Picture 1:



Picture 1: Interface of the First Class Intranet

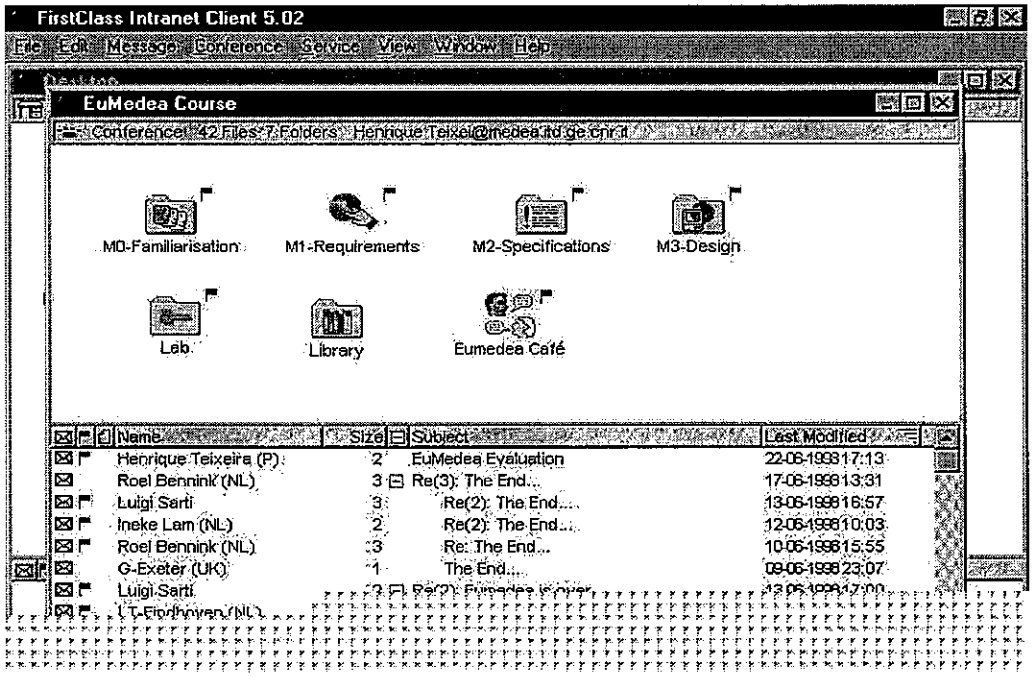
i) Three different icons for the three modules that composed the course: 1) How to define the requirements of the learning environment for

environmental education; 2) How to define the specifications of the learning environment; 3) How to design the learning environment.

ii) Lab: related to technological aspects where the participants can get assistance for technical problems.

iii) Library: Participants can get and consult useful documents.

iv) Café: Created for socialisation purposes.



Picture 2: EuMedea Course (Modules 0, 1, 2 e 3;
Lab; Library; Eumedea Café; List of e-mail)

e) **Course Plan:** Modular organisation composed by four modules in a total of twelve weeks:

- Module 0: Familiarisation (March 2nd-6th: 1 week): The main purpose was to help participants get acquainted with the CMC system and introduce each other. Tutors made sure that participants could log on First Class and the ITD server as well provided technical support. Participants trained and learned how to receive and send messages and, attach files.

- Module 1: How to define the requirements of the learning environment: (March 9th-27th: 3 weeks): Discussion about learning-trough-projects approach to environmental education. Participants started to study the material and actively participation in local and remote group discussions: choosing an environmental issue; defining the aims; choosing a physical environment.
- Module 2: How to define specifications of the learning environment (March 30th – April 3rd; April 20th-May 8th: 4 weeks): Here each group defined a model of a selected environment and discussed it with the other groups. Then it was discussed how to link the subject areas to an environmental education project.
- Module 3: How to design the learning environment (May 11th – June 5th: 4 weeks): Participants discussed how to create conditions in which children could learn co-operatively and how to choose activities for the students to perform when interacting with the environment and how to evaluate the results of this interaction.

Table 1 resumes the course plan:

Table 1: Timetable of the EuMedea Course

Module	**Aims**	**Period of work (1998)**	**Duration**
Module 0	Familiarisation	March 2nd – 8th	1 week
Module 1	How to define the requirments of the learning environments	March 9th – 27th	3 weeks
Module 2	How to define specifications of the learning environment	March 30th – April 3rd April 20th – May 8th	4 weeks
Module 3	*How to design the learning environment*	May 11th – June 5th	4 weeks

Description and organisation of the work group:

It was created a group composed by 10 Science Student Teachers from the School of Education of Castelo Branco (Portugal). At the beginning it was supposed to join the EuMedea being an active group according to the initial timetable: January - March. But the status should be changed because there was a delay on the beginning of the course. According to the new schedule (98.03.02 – 98.06.05) there were some problems within the Portuguese group because they will have a lot of work (assignments; seminars) since the beginning of May till the end of June. Therefore it was asked at the responsible of the EuMedea to join as Observers after explained the reasons for this change. This was the first opportunity, for these Portuguese Science Student Teachers to join and participate in an international project and also a project related to the use of Telematics. For them it was a wonderful opportunity to be involved in a novelty.

According to their availability and timetable, it was necessary to divide the Portuguese Science Student Teachers in two groups: one of them, from Castelo Branco (8 elements) and the another from Alcains (2 elements). The schedule was the followed: a) Castelo Branco: Mondays (16 p.m. – 17 p.m.); b) Alcains: Thursdays (10 a.m. – 11 a.m.). There was a consensus that all the sessions will take place at the Resources Centre of the School of Education of Castelo Branco to use the connection via Internet in a free way and also for technical support. After each session there were a discussion among the elements of the group about the work done, as well as problems, advantages, disadvantages and suggestions for further sessions.

Work done:

The activities took place since March till June of 1998. Table 2 shows the monthly sessions as well the time spent:

Table 2: Activities done by the Portuguese group

Month	Number of work sessions	Time spent using CMC (minutes)
March	9	425
April	5	238
May	5	276
June	2	110
Total	**21**	**1049**

In each session there was counted all the actions and activities that there was developed to further discussion. Within the group reflection it was tried to make an enquiry about the difficulties, the new aspects those were observed, the number and quality of the e-mails and also the discussion of further proposals. There was a worry in promoting a critical analysis about the documents shared by the different group work (active groups). In general, the discussion established had always the worry to integrate those materials in the process of teaching and learning.

During the implementation of the course, in spite the status of Observers there was a priority within this group to be available to give information as well as active supporters to collaborate to find solutions to problems that were suggested by the other groups (active groups).

Observations and critics from the participants:

At the beginning, during March, it was verified a great enthusiasm and curiosity about this new experience of Teacher Training through CMC. The first session was the most enthusiastic and motivated. This fact was mainly due because it was the first time the

elements used Internet and e-mail. Unhappily, the next sessions were very disappointed due to several technical problems that enable most of the times to get a connection. However, these problems were easily solved by itself through e-mails between the local group and the responsible of EuMedea. This problematic situation offered an opportunity to show that a teacher wherever he/she is (geographic barrier) by using CMC can easily find a way to solve his/her local problems.

During April there were some quits from some of the elements of the group. This was mainly due to the several technical problems that occurred during the first and the beginning of the second modules. The level of motivation decreased a lot due to two main problems: the fragility of communications and also its slowness.

One rule of the group was the reading of all the e-mails to be well informed about what happened during the week within the EuMedea Community. In each work session the group of Castelo Branco always sent, at least one e-mail commenting the activities done as well asking for explanations or given suggestions. In this particular, the Portuguese elements started to overtaken the difficulties to write in English. This was one of the first problems they faced but acting co-operatively within the group it was possible to write, at least one e-mail per session.

In spite of the functioning of the course being asynchronous there also was the possibility to make on-line connections through the function: «chat». The discovery of this possibility generated a new wave of motivation and satisfaction among the elements. However, they verified that the majority of the EuMedea community underused this via. But when it was possible to promote a direct contact the Portuguese group increased their involvement on discussions. Because, according to their viewpoint this allowed a really interaction among the groups because it was more «visible/touchable».

During the course the technical problems gradually disappeared and there was an enhancement of quality of the participants due to their more involvement. In spite of the quality enhancement there was some kind of frustration within the group because they

did not receive any feedback from the other groups. This problematic situation was deeply discussed inside the Portuguese group and the reason for the fact was maybe because of the status of «observer» they played.

Another important aspect was the great importance that all the members of the Portuguese group gave to the attached documents from the other groups. All the documents were deeply discussed and there was ever an attempt to use them with their pupils.

The assiduity of the participants was very variable. The major stability was found in the group of Alcains composed by two members. The Castelo Branco group showed a great variability, from one to eight members per session.

Another fact was related to the interest of the members in relation to the contents of the e-mails they received. They found that the e-mails with scientific contents were much more important than the informal ones. They stated that they were a waste of time.

Some clues and previous conclusions:

The duration and involvement of the elements of the group and its status as «Observers» only allows presenting some clues and/or conclusions about the work and activities done:

- More assiduity and continuity will be developed with small groups.
- More value and preference for formal contents (scientific and didactic).
- During the sessions the motivation and involvement increased.

- There was a decrease of quantity and an increase of quality of the e-mails along the course.
- In spite of the status of «Observer» it was done a co-operative work within the elements of the Portuguese group. It was also to possible observe co-operative work among the other groups (active groups). In this context, CMC allowed this approach successfully.
- In spite of the decrease of the technical problems the elements of the group always seemed anxious about the success or not of the connection. One aspect that needs a great and real improvement is the quality of the connections. The lack of quality was the main worry related to the motivation within the group in order to promote CMC in the future. The warranty of good quality in communications was deeply discussed among the elements of the Portuguese group as a crucial element for the further use of CMC.
- In this kind of projects all the participants will participate as active members. The experience as «Observer» was quite negative because it seemed that the other groups did not understand/recognise the Portuguese group as a peer. There was some kind of frustration inside the Portuguese group because they were most of the times ignored by the others, the so called «Active groups».
- Two aspects were well clarified within the Portuguese group: besides the access of lots of actualised information they really felt that there were not geographical or temporal barriers for its access.
- It was very easy to communicate with international experts.
- In spite of considering telematics as an on-line communication it was possible to verify a major motivation and appreciation when the communication was really on-line: chat.
- The participation in this project was very positive not only due to its novelty but because it allowed and promoted more experience with a technical support that they ignored. The fact that they experienced educational examples of the use of ICT in educational context promote conditions to develop for themselves further applications along their professional development.

It should not be forgotten that technology changes much more quickly than it can be predicted and people change much more slowly. Most of cases teachers tend to use technology adapting at their traditional way of working only with of the advantages that it is more quicker and cheaper. However, teachers should not be recognised as the only responsible for the under use of computers in the classroom because the majority of the software was designed for commercial purposes and most of the times its educational use is not the most adequate.

In resume, the next statement may reflect the present situation in a practical and realistic way:

> "We are only beginning the task of learning how to use telecommunications technologies in education. I worry greatly about teachers who feel they already know all the answers. We have a long way to go, and theoretical analysis will not tell us how to employ the Internet effectively. Hence, we want to maintain flexibility and we should be prepared for years of trial and error while using the Internet in learning."(Abi-Raad, 1997, pp.208)

References:

ABI-RAAD, M. 1997. Rethinking Approaches to Teaching with Telecommunications Technologies. *Journal of Information Technology for Teacher Education*, Vol. 6, No 2, pp. 205-214.

BRIANO, R. et al. 1997. Computer Mediated Communication and Online Teacher Training in Environmental Education, *Journal of Information Technology for Teacher Education*, Vol. 6, No 2, pp. 127-145.

CALVANI, A. et al. 1997. Inter-university cooperative learning: na exploratory study. *Journal of Computer Assisted Learning*, 13, pp. 271-280.

LIGHT, P. et al. 1997. Computer mediated tutorial support for conventional university courses. *Journal of Computer Assisted Learning*, 13, pp. 228-235.

McATEER, E. et al 1997. Computer-mediated communication as a learning resource. *Journal of Computer Assisted Learning.* 13, pp 219-227.

MONTGOMERY, T. & HARAPNUIK, Dwayne 1997. Observations on Web-Based Course, Development and Delivery. *International Journal of Educational Telecommunications*, 3 (2/3), pp. 181-203.