

uncertainty as to the reliability of the information, irrelevance of the data, poor screen reading habits, and the lack of resources in the organisation of digital information.

Moreover, apart from the search for information, one can also create and publish a web because this can save hours in the localisation of information. However, one must remember that an educational web needs constantly to be brought up to date.

The second block includes a list of addresses which does not seek to be exhaustive, but which provides an approach to the topic. It arranges the resources under different headings, starting with institutions, followed by organisations and companies, and then referring to more specific resources such as data bases, older people, public forums, icon stores, free electronic mailboxes, free hosting of web pages, web design courses, school web sites, school magazines, telematic projects, etc. All this is in the form of annotated hyperlinks. (Rovira, C. 1997)

The third block involves the construction of a web page, which is now possible. It is a very useful strategy when we are seeking to round off the teaching-learning process whether this takes place in a presential mode or in a virtual, distance mode. The web thus becomes a tool that allows the teachers to achieve the goals that they have set in relation to the learning of each student.

A well-structured web allows a clear layout of the contents. It makes the work of the teacher more effective and facilitates the learning. Obviously, the design of the web has to take into account the contents that are to be dealt with and how they are organised as well as the characteristics of the group, the available technological resources, the length of the course, etc. It is also important to bear in mind the ways that presential and distance strategies complement each other.

In the first place, it is important to decide the type of support that is suitable for a distance project or what we need in order to complement a non-distance mode. In other words, what is the purpose of the creation of the web? There is a large number of possibilities; here are some of them:

- Knowledge of a wide range of subjects
- Resources (documents, data bases, programs, etc)
- Access to other web sites
- The results of studies and research
- Project work or exercises
- Spaces for reflection and discussion
- Spaces for work in groups
- Resolution of doubts
- Notices

The material is completed by a practical guide with an explanation of the steps to be followed to construct and publish a web page using only these network resources and a web editor.

### **Assessment of the contents**

The students are at present teachers but are studying to be educational psychologists. In order to ensure the efficiency of the teaching-learning process and so as to assess the contents dealt with in this subject, we expect these students to reflect on the creation and design of educational Internet resources. To this end we suggest that they design a web site that allows them to become familiar with all the elements that can make up a web site, from both the technical and the educational point of view. Most of these educational webs are designed in a interdisciplinary team and this is the reason why we recommend that they carry out the task in groups.

Working in groups has two positive aspects: first, they learn to work cooperatively in a virtual environment, and second, they come to appreciate the need to draw on different disciplines in the creation of the web. The Internet can currently offer them many ways to enrich their daily practice as professionals in the world of education.

At present we are in the implementation phase, and this is why this presentation has taken the form of a description and a justification of the material itself. At the end of the semester we will have feedback on the validity of the material as a teaching tool and a means of training.

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Programa de nuevas tecnologías de la información y de la comunicación [www.pntic.mec.es](http://www.pntic.mec.es)

Educ@lia.Comunitat Educativa Virtual de Catalunya [www.educalia.org/](http://www.educalia.org/)

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# REACHING THE MASSES – USING DIGITAL INTERACTIVE TELEVISION TO CAPTURE THE INTEREST OF BASIC SKILLS LEARNERS

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## Introduction

Over one in five of British 16 year-olds leave school without having achieved the levels of literacy, numeracy or communications achieved by the average 11-year old. They face a bleak future: they are five times more likely to be unemployed as adults, the employment they do find is twice as likely to be officially classified as lowly paid, and few will return to the education system. At any time only 5% of adults with basic skills problems receive formal assistance (All figures from Moser, 1999).

The UK government has launched a national strategy, the Adult Basic Skills Strategy, to establish a national core curriculum, assessment standards, and training programmes for teachers. It will also oversee a significant expansion in the number and type of basic skills programmes for adults and in non-traditional methods of delivering such programmes (BSA).

The Upgrade2000 project was lead by the Basic Skills Agency and funded under the Objective 4 Priority 3 Strand 1 (Development of New Training Systems), to produce a series of interactive digital television programmes for use in the home, workplace and training environments, together with a supportive learning surround. The project completed its work in June 2000.

This paper describes the reasons why the project chose to adopt interactive digital television and reviews the general types of interaction available to authors of educational ICT packages. It then outlines the major methods of broadcasting digital television signals and matches these against the classification of interactivity. The finding is that currently only some forms of interactivity can be supported, but two types of technical development may enlarge this range. The materials themselves were trialed on digital video disks. The paper outlines the learning model and pedagogic framework for the programmes and their support materials, and presents a number of general conclusions about the potential for using digital interactive television in education.

## What is digital television?

Most television today is broadcast using 'analogue' systems where the colour and audio signals are transmitted more-or-less in proportion to the levels they are to be displayed/played on the receiver sets. However, if the signal transmission companies add hardware to encode and consumers install hardware (usually Set Top Boxes, or STBs) to decode, the signals can be sent as digits. Digital transmission usually gives better picture quality, but perhaps more importantly each channel takes less spectrum space, which will allow more channels to be broadcast.

At present both analogue and digital formats are broadcast for 'through the air' (satellite and terrestrial aerial) systems, which is increasing the use of a finite space, but as soon as sufficient numbers of households have suitable receivers governments can raise huge revenues (billions of Euros) by selling off the analogue channel space for further tv channels, mobile phones and other wireless applications. Many European governments intend to terminate analogue broadcasts within six to ten years, as soon as sufficient numbers of viewers have digital receiver equipment. In the UK the barriers to reception were lowered significantly when the main rival broadcasters, Open and ONdigital started to distribute their Set Top Boxes at zero-price rental. Cable systems will convert depending on market forces, but in most European countries are ahead of terrestrial conversions.

## Why use interactive digital television for education?

It is already well established that television is a powerful means of delivering learning to basic skills viewers. If links are made with made with learning centres, large numbers of viewers can be attracted back to learning:- in 1999 Learning Direct took over 10,000 enquiries after the Channel 4 programme "Brookside" showed characters facing and overcoming basic skills problems, for example.

It is also noted that 16-18 year-old viewers with basic skill problems watch more hours of television than the average viewer and that their households have been amongst the early adopters of subscription-based multi-channel satellite and cable services. It is to be expected that digital television will become equally accessible to the target learner group.

From a logistics point of view, distributing learning materials through the television rather than via CD-ROMS or other media is relatively simple. There is no need to register to receive materials, and no need to follow complex instructions to install them on PCs (which can be chicken-and-egg problem for basic skills learners). Tracking the progress of learners remains a problem, and is discussed later.

### Types of Interactivity

Authors have been proposing definitions of the term "interactive" in terms of electronic learning materials since laser disks were introduced some twenty years ago. Goodyear (1999) has now developed a framework for categorising those definitions. In the current section we present a categorisation from a content-control perspective, loosely based on Fenrich (1997). Later we shall broaden the discussion include a physiological perspective.

TYPE OF CONTENT CONTROL	COMMENT
Post-programme enhancements	<p>References to other sources of information (eg telephone support lines, teletext, web sites) are made either during or at the end of the programme, but the programme itself is designed to be watched in an uninterrupted manner.</p> <p>Post-programme enhancement should not be dismissed as inferior. Many producers believe that a well structured documentary should build up an emotional desire in the viewer for a solution to be found. Interactivity during the programme would interrupt and harm this narrative flow.</p>
Multi-channel	<p>An advantage of digital tv is that several channels can be broadcast in the electronic space needed for one analogue channel. A number of broadcasters (eg Sky) use this to output different views of an event in parallel. Viewers can switch between them to get their own "angle" on events. In a sports match one channel could repeatedly reshoot a particular goal. Another could give a match report so far. For educational purposes, multi-channel coverage could allow the viewer to concentrate on one instrument in an orchestral performance, for example.</p> <p>The expense to the broadcaster of multi-channel programmes rises in line with the number of channels used, so it is only economically viable for large audience events such as sports. Also, the choice of channel has to be made at the time of broadcast as video cassette recorders are not designed to capture multiple channel inputs. This constrains the format's use for education</p>

<p>Navigational</p>	<p>The viewer can select their route through pre-designed components of the programme content. If the content designers allow it, a viewer may repeat an item, get an alternative explanation, study to a deeper level etc.</p> <p>It is not just the viewer who can affect the route taken though the programme. "Intelligent" systems can self-adapt based on histories of previous answers (Barrett, 1990). Technology for selecting which adverts to show selected viewers is already developing and could be modified for the purposes of education.</p> <p>If the viewer is taking control over the pace and route of their progress through the material it is essential that the programme elements are somehow available "on demand". The technical section, next, will describe how this can be achieved.</p>
<p>Content assembly</p>	<p>At this level of interactivity the viewer is given a set of electronic items – video clips, audio clips, still photos, text, or can insert their own – to assemble their own materials. This could be for formative learning. It could also contribute towards a portfolio entry for summative assessment.</p> <p>Content assembly requires that the host hardware has some ability to record the sequence of assembly that the viewer is choosing. Currently this form of interactivity is limited to computer-based devices. However, the technical section next describes a trend towards convergence between tv sets and computer machines.</p>
<p>Collaborative assembly</p>	<p>Many teachers see constructivist problem solving through collaborative work as a productive style of learning (Sims, 1997). Video conferencing is the most tv-related tool in this area. Effective video conference systems require multi-way video pictures, a whiteboard area for shared notes (perhaps overlaying a main set of presentation notes) and a text area for typed discussion. Some companies (eg Fantastic Corporation) are finding ways of reusing technology developed for digital satellite broadcasting to deliver closed user group interactive television-like channels. However, it usually takes hardware of the complexity of a multimedia PC at the receiver end to handle the interfaces.</p>

### Types of transmission for digital television

There are three main ways of conveying television signals: satellite, aerial transmission ("terrestrial") and cable. Each type can be used to broadcast analogue signals, but with modification can instead carry digital channels. Usually a Set Top Box (STB) is used in the home to convert the digital signals back to the format used by the consumer's current tv set.

If consumers are to pay for watching channels some system for billing is necessary. Some satellite and terrestrial transmission companies sell cards that enable the STB to function. An alternative is to require the STB to be linked to the consumer's telephone wire, and let the STB make occasional phone call back to a monitoring centre. From 1999 OpenTV and ONdigital started to make further use of this wire to offer personalised on-demand services such as email, home banking and information services to the tv. However, as the link is based on only a standard telephone line, the interactive facilities are limited text, still images and audio. Full video-on-demand services are not possible over the standard telephone line.

Current video cassette recorder machines can be connected to the STBs, but they lose the extra picture quality (including wide-screen effects) and cannot record any interactivity. STB manufacturers are beginning to market boxes with built-in storage. This could allow the components of an interactive programme to be "downloaded" by broadcast during the night for later viewing. Significantly, viewers

could then take as long or as little time as they needed to navigate through the contents. A 'problem' with these boxes is that they can equally be used to skip over advertisements, so they are unlikely to be subsidised to the point of being free as per current STBs. Without a critical mass interactive programmes are unlikely to be made for them.

Cable systems offer a different technical model. Part of the capacity of the cable itself is used as the message channel. The change to digital transmission leaves enough capacity to offer full internet access to viewer. This is certainly sufficient to offer interactive web sites as post-programme support (although only web sites specifically designed for tv-viewing show well on tv screens).

A variant of cable is the Asynchronous Digital Subscriber Line (ADSL). Rather than having a very high capacity cable carrying perhaps one hundred channels into all the homes in an area and each STB extracting the channel to watch, STBs use a medium-capacity line in its small "up" direction to request to the transmission company to place just a single tv channel in the larger "down" direction. A few companies, (eg KIT, YesTV) are experimenting with placing large server machines at the broadcaster's end of the ADSL line, and allowing viewers to receive services on demand.

ADSL allows a "store and transmit" rather than "download and store" model of broadcasting. This could be very attractive to education, as each user can pull just the content they wish to use, at the time they wish to use it. The system does not rely on broadcasters to schedule the content. (Of course, there still has to be a financial case for the broadcaster to store and serve the programme. This is outside the scope of this paper).

How would viewers find out about the existence of educational products? Newspapers are already selective in the number of channels they list. With 100+ channels available on-screen guides to what is showing "now and next" already overload the viewer - seven-day guides would be next to impossible to use. Some companies are addressing this problem by making the electronic programme guides (EPGs) adaptive. Viewers of FutureTV systems slip a card into the STB, which stores which channels and programmes they watch most and / or choose to bookmark. It's seven-day schedules are displayed tailored to that individual's preferences. There is also a "search" facility for other programmes, based on descriptors provided by the channel operators. In a completely separate development, the IMS Project is developing international standards for labelling ("metatagging") on-line educational resources. It would seem to be a feasible step for the EPGs to pick up on IMS metatags to help viewers locate tv programmes of the requested content type and level for on-demand educational viewing.

### **The Upgrade2000 project<sup>1</sup>**

The Upgrade2000 project created ten interactive digital television programmes in the area of basic skills practice. At the time of the project no commercial interactive digital tv services were operational in our user test region, so we trialed the programmes using Digital Versatile Disk (alternatively called Digital Video Disk, DVD) watched through players connected directly into the viewers' tv sets. Once running the viewer would interact with the programme as if it was being broadcast. We are cautious when discussing viewer reactions, as our mere presence in connecting up the hardware might have introduced a "Hawthorne" effect of stimulating the viewers' interest. The discussion in this paper, though, is about the design principles of the interaction and the educational learning surround, and should be free of this effect.

Each programme has an introduction that explains the purpose of the programme and shows how the user interacts with the remote control. The main programme then starts. Basic Skills learners are motivated by strong contextualisation of problems (BSA), so the content is a highly vocational approach to illustrating practical work skills. At appropriate points in the film an icon appears to indicate that the viewer may choose to enter what we term a "learning encounter". Each learning encounter starts with a bridge to explain its purpose, outlines a problem and asks if the viewer thinks that they can solve it or whether they would prefer to be helped towards the answer. It was an educational design principle to not require viewers to answer problem questions they judged too hard. The help offered might itself have interim questions to encourage frequent engagement with the material. Within the help areas wrong responses were usually explained and the viewer was invited to try again.

Even where the viewer said that they could solve the problem and then succeeded in doing so they were offered the chance to follow the detailed helping explanation. They may have been lucky in their guess or may be interested in following how we tackled the problem.

The materials were partly designed to tempt otherwise passive viewers back into a more formal learning process. We designed the programmes so that they could be followed by the individual at home (Horsburgh (1999) reports that basic skills students are quite content to taking instructions about using ICT from ICT devices themselves) but we also included on-screen links to further resources, including a supportive web surround. The web surround gave the opportunity for reinforcement practice, and also allowed the viewer to move context from the vocation where they had entered into another vocation using the same concepts (basic skills students often have particular problems in applying acquired skills in new situations (BSA)). However, the lack (at the time) of available systems for connecting to the Internet from tv screens meant that we could not evaluate the smoothness of the tv to web-for-tv links.

The project also explored the use of constructivist forms of computer-based learning, for example by allowing learners to assemble their own tv "programmes" from supplied audio, visual and text material, or by creating and entering their own materials. As discussed above, if Set Top Boxes are given disk storage and are enabled to run computer languages (probably Java) then computer programmes can be downloaded for home use.

Home users were not the only intended target. A secondary source of referrals to the programmes is likely to be employers. Not all employers are sympathetic to employees that admit to having basic skills needs, or would know how to address their problems they present. We developed guidance packs for employers, including suggestions about mentoring employees, descriptions of our learning model, and pointers to other sources of help.

## Conclusions

The Upgrade2000 project has identified a particular role for interactive digital television to reach the basic skills audience. This group includes significant numbers of those 16-18 year olds who leave school at the first opportunity, but who then struggle to find employment. What employment they do find is more likely to be temporary and with small employers. Both factors mean that they are going to find it hard to access at-work training.

It is the broadcast companies that financing the development of interactive digital television, and their commercial interests are leading them to aim at the revenue-generating markets of blockbuster film rental, shopping channels and advertisement-bearing information services. They are tailoring the hardware they distribute to suite: the STBs are designed to support the above functions but (currently at least) do not have the built-in memory that could hold downloaded programme components to be watched interactively at a later time. The viewer tracking methods can record what programmes were watched, and can even recommend follow-ups in a similar genre, but the systems are orientated towards the needs of billing functions rather than adapting offerings based on learner progress.

Accreditation of home-based learning could be a problem. Tracking for billing works by subscribers slotting identification cards into the STBs. It is a parent's responsibility if they let the child use the card to watch something inappropriate. This level of "security" is inappropriate if tracking is used for accreditation, where it is essential to know who actually answered questions, and whether they were receiving help from others in the room. Perhaps the only answer is to bring people to test centres?

Privacy is also a possible issue. Digital television companies can maximise their advertising revenues by displaying different adverts in breaks between programmes depending upon the individual's profile as recorded by the tracking system. A viewer may be embarrassed by adverts referring to their basic skills needs appearing if their card is in the slot but the whole family is watching. However, this may be more of an issue for health or personal relationship related matters.

Bates (2000) notes the stranglehold that broadcasters have on analogue and existing digital channels. Independent programme makers, including for the education market, need to find broadcasters willing to carry their material, and this depends on the broadcasters gaining sufficient advertising revenues. Of all

the broadcast technologies perhaps ADSL offers the greatest chance of breaking the barriers. Viewers can pull interactive programmes on-demand from a menu of choices rather than waiting for programmes according to the broadcaster's schedule.

The video-on-demand concept depends upon viewers being able to find programmes of interest to them. We have suggested that the electronic programme guides (EPGs) currently being developed could be extended to search for IMS descriptors of educational content.

Our research concludes that interactive digital television can be used to broadcast educational home or work-based learners. It has a particularly strong audiences with 16-18 year old school-leavers and viewers with skills problems in mathematics, literacy or communications. People in both of these groups are especially hard to attract back into training and education. The project has developed a programme content model showing how viewers may be "hooked" towards initial learning and explored an on-line and human surround to take the learner on towards continuing education.

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# CONSTRUCTING INFORMATION SOCIETY IN EDUCATION

## THE MODEL OF ICT LEARNING CENTRE

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### **Introduction**

The aim of this article is to present the model being used in Finland to facilitate changes in school education towards the Information Society. ICT Learning Centre at the University of Helsinki has served the Finnish educational system for over 10 years. The centre conducts research and development projects, organises in-service training and develops new pedagogical models for the use of ICT (Information and Communication Technology). The Finnish schools have now achieved an advanced level in the pedagogical use of computers in a classroom. The ground for this evolution is state-supported computer equipment and in-service teacher training. The Finnish Ministry of Education has devised the Information Strategy for Education and Research for period 2000–2004. The goal is to facilitate in-service training and computerized classroom to meet the needs of teaching and learning. All schools have to plan and implement a strategy for the educational use of ICT by the year 2002. Another aim of the national information strategy is that over half of the personnel working within education will have the knowledge and skills needed to use ICT for pedagogical purpose and that a majority of teachers will have at least basic ICT skills.

### **Early Steps in the Use of ICT in Instruction and Learning**

In the late 1980's and early 1990's computers came in schools and only few teachers had computer skills or pedagogical ideas of using them in education. The first step was to train teachers to have very basic skills to use a computer as a teacher's tool. As a result of training and launching of new applications (e.g. word processing, spread sheet and computer graphics) a part of teachers took computers also in a classroom to use computers with their students.

After teachers had noticed the benefits of computers there were interested teachers who participated in 2 - 3 day ICT courses. On the first Information Strategy Programme for the period of 1995 -1999 devised by the Finnish Ministry of Education it was presumed that about 10 percents of teachers would have reached pedagogical skills to use ICT. After later research and based on our own observations this kind of training had an influence only on the work of an individual teacher, because the personal knowledge of the teacher did not spread to the whole community of teachers in the school.

### **Revolution of the Pedagogical Use of ICT by Influencing the Whole School Community**

The educational system doesn't change as soon as the outside world. A school system is a complex social institution whose practices have developed little by little over a long period of time. In the middle of the first period of the national information strategy, Committee of the Future (established by the Finnish Parliament) started an extensive evaluation project the goal of which was to devise an up-to-date and well-grounded evaluation of the impact of ICT on instruction and learning. The National Fund for Research and Development (Sitra) carried out the evaluation project which was divided into five sub-projects. One of these sub-reports was an evaluation of institutions of general and vocational education and kindergartens. According to the evaluation, only one fifth of the educational staff extensively applies new technology to support teaching. The new Information Strategy for Education and Research for period 2000 -2004 devised by the Finnish Ministry of Education is based largely on the results of this evaluation project and the recommendations made in it. At the same time the city of Helsinki started to equip comprehensive schools and high schools with computers and networks (LAN) and the training ICT for teachers. ICT Learning Centre grounded a research group to study and evaluate the comprehension and ICT skills of teachers, students and parents. One major part of that research was to study teachers' technical skills and pedagogical thinking and relationships between them. In the research it was proved that those teachers who use ICT actively showed to have a more mature insight of the use of ICT in education and generally more sophisticated pedagogical thinking. They also valued ICT more than the

others as a tool for collaborative learning and emphasised the active role of the learner in information constructing process. These teachers also believed that it is possible to develop human intelligence. (Hakkarainen 1998b).

The only way to make changes in the pedagogical practises of teacher's work is to influence the whole school community in collaborative way. Also the background organisations like the whole commune should actively give the frame of reference and financial resources to make it possible to all students to participate in the information society.

Based on these findings ICT Learning Centre has been developing the practises for in-service training that includes methods like collaborative learning, research based learning, computer assisted team work and distance learning on the net. In all our courses we use multiform teaching containing face-to-face lessons, learning tasks and collaborative team work as project work. We use open learning environments so that all teams can access and make comments to others workspaces. In all of our courses we presume that there will be a group of at least two teachers from a single school and they will work together during the course. It is easier to make a change in a school community when there is a team of teachers to adapt new pedagogical skills to use. Learning tasks are done within the whole school community. In this way we try to quarantee that almost the whole school community will be involved in or at least will be conscious of the learning process.

The basis of all our in-service training is that all the methods and models used are transferable to the student level. When teachers learn to use these methods as a student they have a better ability and willingness to implement the methods into practise with their students. Dissemination of these pedagogical practices facilitate to form modern learning culture.

### **Open Learning Environments Support the Modern Model of In-Service Training**

The use of Open Learning Environments (OLE) supports in an excellent way the modern model we are using in teachers' in-service training. As a matter of fact, several applications of learning could not be realised or they would be very difficult to carry out without ICT or open learning environments. The fact is that the demands of teacher's work and the pressing nature of it may often limit the possibilities to attend face-to-face training. OLEs make it possible to study and work with projects without the limitations of the time or the place. The training that is not limited to time nor place is however not the main reason to the use of OLEs. The most important reason is the method of learning, examples being collaborative learning and research based learning which can very easily be implemented with OLEs.

The traditional working model of the school has not supported the demands of the Information Society. It is necessary to move on from the traditional working model towards the culture represented by real world (living life). The construction of new information, the evaluation of information and sources and the use of information as a tool will be the most essential part of education. In several professions the modern expertise and know-how presuppose an ability to use ICT and ability to construct new information and to use information. Open learning environments and proper use of them offer schools very good possibilities to develop the education all-inclusively.

Most of the OLEs have a property to make thinking and the problem solving process visible. Thinking can be made visible by writing texts, drawing schemes or charts. It is possible to present ones ideas and hypothesis and other users can comment on them and ask questions. After that the second version of the text can be written based on the comments, and be published on the OLEs and the writer can have even more comments. The whole developing or problem solving process will become visible and also other users can learn by observing it. Interaction with colleagues, instructors, experts and the whole community of the school plays a significant role in development of education.

The open learning environments and their pedagogically meaningful use are the key factors to the challenges and demands of Information Society and open classroom. The use of OLEs facilitates the transformation of learning (and thinking) into a profound process and to a collaborative activity. The direction is from traditional working models towards research based learning and the real development of dynamical expertise. OLE is not restricted only in the classroom or the school, it openly extends to various fields of science and to the whole society and the world.

## Case: Information Strategy for the Educational Use – Done by Collaborative Work

The Finnish Ministry of Education presumes that every Finnish school creates its own strategy for the educational use of ICT. The National Board of Education is funding training programmes to guide this work. In the ICT Learning Centre we have planned a training programme in which a group of teachers from a school creates the strategy collaboratively with other teachers of their own school and other groups of teachers in the same training programme. It is expected that the head master, IT-teacher and one to three other teachers participate from a single school. The team will work together on face-to-face lessons and during a distance period they are responsible for taking their own school community to work with them by informing and dividing tasks and duties. At the same time there are eight to ten other teams from other schools working on the same subject. There is an open learning environment to use for all those teams. In the open learning environment all the material the instructor has done is available (for example tools for the development process), as well as plans, ideas, learning tasks and etc. from each team. Every participant is able to access all workspaces and comment on the work of other teams. It means that every team can use and improve the ideas of the others and so the teams don't have to invent things that another team has already developed.

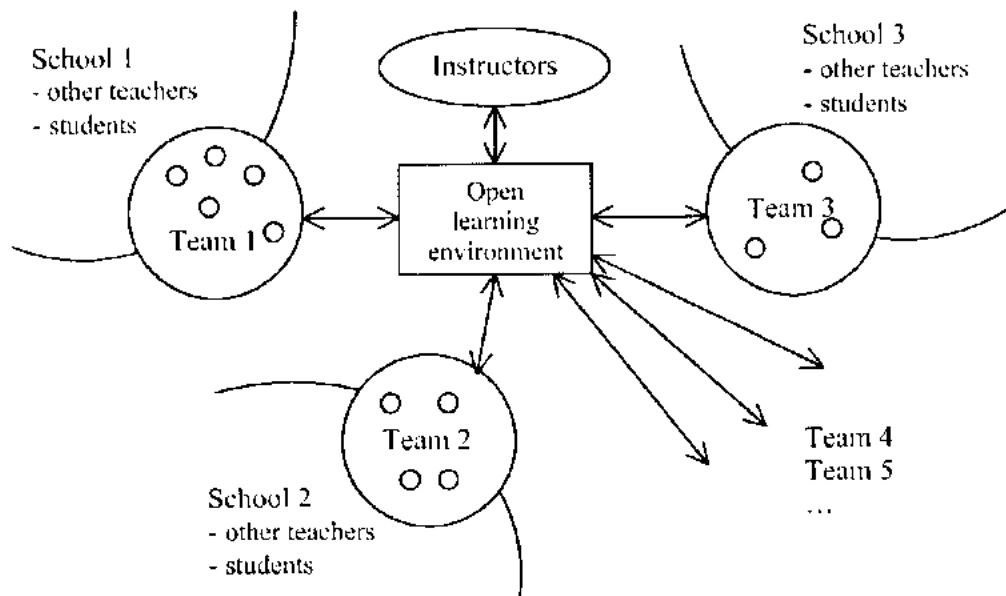


Figure 1. Collaborative model of constructing Pedagogical Information Strategy for the Educational Use

The course of three credit weeks consists of three parts: four day face-to-face lessons, learning tasks done in advance and during the course and the project work: planning of the strategy and its execution plan. All the work is done on the open learning environment by the team. There are no individual tasks; work is done collaboratively and the whole team is responsible for the results. The first task is to map the situation of the school at this particular time. It means that the team or its authorised group at school have to collect the facts about the ICT equipment and personnel's knowledge about software and its use in teaching. Because there are some teachers who wouldn't like to use computer in their teaching, it is important to discuss also about the attitudes, fears and threats and to give everyone a possibility to be heard. That way it is easier to make a big change in working community.

First there must be a discussion of values; what is the information and the skills of ICT the students need in their future. It is also important to discuss and agree on the concepts like ICT, the pedagogical use of ICT, open learning environment etc. that are needed to create the ICT strategy. After the discussion the school community needs to decide what are the visions and the goals of using ICT in education. All this can be done in an open learning environment or as an open discussion. The most important part of this work is to write down all decisions and inform everyone.

To get new ideas of using ICT in education during the course every team plans an ICT project to implement with students, carries out the plan and describes the experiences on the open learning environment. Many of the teams have planned a project where students study some new entity using learning environment. This way teachers also get an idea of how to guide and tutor on an open learning environment when they themselves are students in the course using an open learning environment.

The most essential matter in this kind of training is the collaborative process. When every member of the school community has a possibility to take part in creating the strategy and all work is done together, everyone is motivated to carry out the strategy in their own teaching. In the strategy there must be plans on how to train ICT and its pedagogical use to teachers, how to organise the technical and pedagogical support in a school and how to apply an open learning environment to teaching and learning. It is not so important to emphasise an individual teacher and his knowledge but the knowledge of the whole school community. The point is to facilitate all students to get the ICT skills needed in the future and the possibilities they have in improving their learning.

### **Case: Collegial Teacher ICT Training**

On the Implementation Plan of the Strategy for Education and Research 2000-2004 it is stated that every teacher must master the common uses of computers, word processing, Internet browsers, e-mail, and understand the principles of the educational use of ICT. The second step is to provide advanced skills in using ICT for educational purposes, which at least half of teachers have to master. It includes versatile use of e-mail, the WWW environments and group ware: generic tools, pedagogical applications and digital material available on the subject being taught and the principles of a digital learning material production. The third step includes specialised knowledge, which about 10 percent of teachers must have. The specialised knowledge consists of the use of content-specific and professional applications, the production of digital learning materials, the institutional information management, the ability to assist, support and train colleagues, developing the school community and acting as part of the expert network.

To provide the technical and pedagogical ICT skills to teachers some Finnish communes have started training programmes which are planned to prepare teachers to teach their own colleagues. ICT Learning Centre has developed a model of how to teach ICT for adults. This model has been used successfully in the training programmes. It is important that the one who is teaching ICT skills masters the subject well and understands how human learns complex cognitive skills like using computers. That's why the teachers must have relatively good expertise before they start to train their colleagues.

In the training programme the participants get oriented in the way adults learn computer skills and the model of learning called Why, What and How. First the student has to understand why to learn a particular entity or a piece of entity. To understand the purposes of learning, a firm theoretical ground must be established first. Second part is to explain what is the meaning of the thing to be learned, the principle of the skill and what is the greater entity which it belongs to. What does this skill mean, what components/actions are included. This must be explained with intelligible metaphors and understandable terms using previous knowledge as a basis. Third part is to show how it will be done with a computer step by step with sensible examples. Last part is to practise the skill. The learning tasks must be as authentic as possible and written instructions are needed. The tasks have to start from simple task and to gradually go towards the real problem-solving tasks where students have to apply the new knowledge. The cognitive ground and practising is so divided into clear entities. During the course each participant teaches the other participants. These sample lessons are evaluated by all other participants and instructors. That is the way everyone gets concrete feedback and participants learn more about ICT skills.

How teachers then work after the training? In the city of Espoo there are twenty-one teachers at the first stage who work with their own students four days a week and one day a week they are assisting, supporting and training ICT to other teachers in Espoo. In South Karelian communes sixteen teachers have been trained to train other South Karelian teachers. They work as full-time trainers for at least one year. Both of these groups have an open learning environment to use for collaboratively planning and evaluating the training.

## **Influences, Effects, Impacts and Path to the Future**

As a result of this long term development of the pedagogical practises to imply ICT in education we have gained a lot of facilities to teachers to implement e-learning and collaborative use of computers in teaching and learning. We also now have many new enthusiastic teachers who are ready to get good technical and pedagogical skills in ICT.

Information society is now brought to students and it is the reality today in most schools in Finland. This has been achieved by training teachers and using the modern models in teachers' in-service training which have been developed.

The way computers are nowadays used in education in Finland is pedagogically well-grounded and the use is not centred in training technical skills or drill and practise methods any more. The goal is to provide metacognitive skills to students, like information search, information processing and how to use and create new information. For students it is not any more just for playing games or an external motivator.

Our honest belief is that it would be possible to localise the model of ICT learning centre in other countries to organise and support the educational change. The first steps have already taken in Baltic countries to establish ICT learning centres by starting in-service pedagogical ICT teacher training.

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## SWR SCHOOL-TV = MULTIMEDIA IN CLASSROOMS

*Hanspeter Hauke. Südwestrundfunk Baden-Baden. German Television*

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### Introduction

SWR school television is offering didactic material for teachers and institution of Teacher Training, i.e. films, CD-ROMs, Internet pages, magazines and teacher training courses. Being very flexible, the SWR School-TV can realize productions which meet the actual needs of the addressees best.

Since the early 1970ies, the Südwestrundfunk has been producing programs for schools. Together with the Ministries of Education of Baden-Württemberg, Rhineland-Palatine and Saarland former teachers started to produce curricula based TV series and printed handouts for schools. The close cooperation between "ex-teachers" and actual teachers guaranteed that the programs were fit for being used in classes.

Today School-TV has gone multimedia. Internet, CD-ROMs and DVDs have completed the printed material offered to teachers. In teacher training courses the addressees are informed of how to organise computer based lessons. Teachers are shown how to use films, CD-ROMs, DVDs and Internet in their everyday work. Thus, the SWR School-TV contributes to the development of schools to future-oriented institutions.

Teachers and producers are supported by a network of media-centres and institutions of teacher training all over Germany.

### Multimedia in classrooms

We all know that children and youth use PCs at home. We can regret that they do not work but play and that CD-ROMs with the most terrible content seem to be most attractive. But still, we must bear in mind that even with bad games the kids learn how to handle a computer and computer programs. Their basic computer skills are rather advanced, in comparison to those of teachers light-years ahead. And the gap between kids and teachers in computer skills is widening ever so fast.

"Look, I am 52 now. I'll survive the last 10 years of teaching without computers." And "Before I start using computers in my lessons, I'll shoot myself". Two quotations of teachers who attended teacher training courses in Baden-Baden. They express the opinion of many teachers in regard to new media in classrooms. Teachers are frightened, because they are used to the fact that they know more in classrooms and not the kids. Above, multimedia appears to be rather complicated. Not only the hardware but also software packages are closed books. Not to speak about adequate teaching methods.

So traditional teaching concepts are still dominant. And it seems that the more the pupils advance in their computer skills and the more the teachers are left behind, the more teachers try to stick to what they know and are used to. But if teachers do not move towards their pupils the widening gap between them will lead to an increasing tension which, sooner or later, will end in some sort of break down: the teacher quits his job, either voluntarily or because of illness.

If teachers are expected to change, they need help in

- Developing teamwork
- Fund raising
- Maintenance of PCs
- Software
- Re-organising of their school
- Didactical concepts

Above, with the help of governmental institutions teacher training courses must take up the needs of teachers and offer down to practice courses.

### **Summary**

Multimedia teaching concepts can only be successfully introduced in schools if authorities, schools and teachers change radically. The Local Education Authorities should offer multimedia teacher training courses which teachers attend because they definitely can make good use in class of the information and skills brought to them in these courses. Headmasters should be trained and supported in re-organising schools into efficient institutions of modern teaching. Last but not least teachers should be ready to give up their traditional role of instructors for the one of a mentor for pupils and promoter of learning processes.

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## **AN OPEN LEARNING SYSTEM FOR ADULT TRAINING: LESSON FROM INTERFACCIA SCUOLA PROJECT**

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Alessandro Lovari, University of Siena, Marketing and Communication University Center*

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### **Abstract**

Recently, computer based educational systems have become larger and more diverse, thanks to the diffusion of new information technologies such as the Internet and the World Wide Web. This process is not only changing the industrial and business organisational model but it has an impact on every social and economical structure. From this standpoint *Interfaccia Scuola*, a project promoted by the Italian Education Ministry together with the University of Siena, matches the chances and possibilities offered by ICT with the new Italian education policy program aiming at the development of a more autonomous school system. This project aims to train school top management and teachers on a crucial issue such as the role of communication in the school organisational changes. In order to achieve this goal the project has implemented a learning multimedia system composed by an Internet web site, an interactive CD-Rom and an handbook.

The present paper highlights the main results of the experimental phase of the system realised in 60 Italian secondary schools. Particular attention is dedicated to the impact of this learning system on the top management and teachers involved.

### **Project's Background**

The achievement of the autonomy for the national education system requires, besides the application of the principles and procedures of the school reform, a deep cultural change within the schools and in people who work in them. The relationship with the users' needs, the creation of a wide network with the establishment and the institutions of the territory, the willingness of detecting learning and education solutions necessitate the development of a school culture based on participation, supported by effective and consolidated communication procedures, the exchange of information, know how and objectives.

In this scenario communication plays a key role both in the processes for the achievement of the autonomy and in the processes of the human resources management that require motivations, participation, sharing, circulation of information and continuous dialogue and comparison.

*Interfaccia Scuola* project wanted to answer to these requirements and needs providing a methodology of analysis of the internal and external communication processes and a set of instruments in order to develop the main skills and competencies necessary to improve the efficacy of communication.

The project, started in 1998, aimed to reach the following objectives:

- to spread, the awareness of the importance of the communication processes necessary to realize the school autonomy;
- to develop the school top management's and teachers' ability of analysis and self- evaluation of the competencies required by every communication activity;
- to provide tools to deepen the communication skills;
- to create a communication and exchange network to foster the school best practices and to consolidate the identities of the schools that are correctly applying the reform in order to capitalize the best "know how" for the autonomy;
- to diffuse a formative and communication online system in order to create, in a short time, a "School Intranet".

*Interfaccia Scuola* is articulated through a series of stages, from October 1998 to March 2000:



STAGE 1: a field analysis focused on communication practice developed in the schools in order to define the models of communication, the information processes and their main phases, the need of competence necessary to realize the activities;

STAGE 2: a seminar in which schools' managers and teachers coming from 20 Italian secondary schools analyzed and validated the results of the field analysis in order to realize a preliminary test of the formative models aimed to develop the communicative competencies;

STAGE 3: the edition of a handbook for self-training and evaluation;

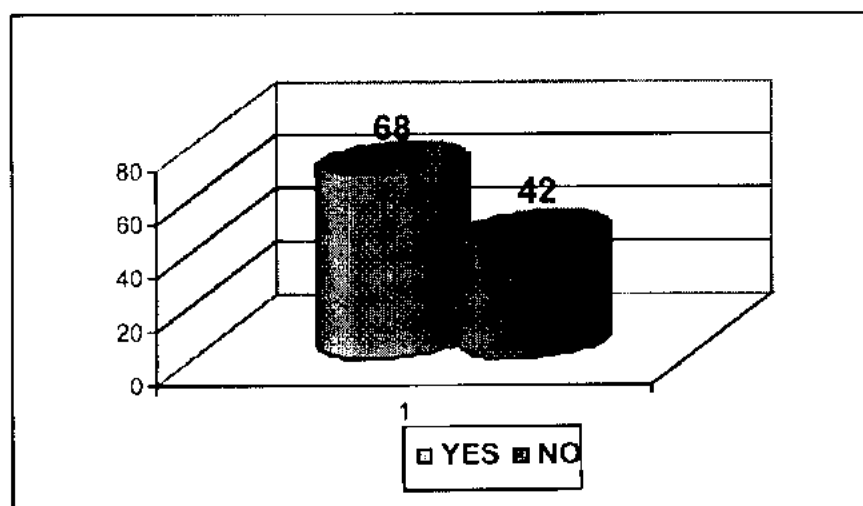
STAGE 4: the realization of a learning and communication online system (composed by a CD-Rom and a Internet website including a tutoring system) to disseminate the contents, to provide a continuous updating of the formative models and to collect the school best practices;

STAGE 5: the experimentation of a distance self-education system in 60 Italian secondary schools (from January to March 2000).

### Experimental phase

The experimental phase dealt only with the evaluation of on-line learning system. Its goal was to test the efficacy of the instruments and services through the learning online system. The website was designed considering the allocation of the users in virtual classes. Each class was composed by 20 learners for a total of 6 different classes. For every learner was planned a password to gain access to the site. The users had at disposal a tutor per class to interact via email in an asynchronous way; a discussion forum, preferential virtual place for exchanging opinions, materials and best practice with the other learners; 5 educational units to use together with deepening readings, biography references and useful Internet website addresses. Each unit was accompanied by a learning self evaluation test. In the following pages are reported some data obtained from the registration of the users' activities inside the website.

Picture 1 shows the percentage of users of the online system. On a total of 110 potential users registered in the virtual classes we can see how 68 learners utilized the site.



Picture 1: Number of users who really utilized the online system

This significant data loses its importance if it is compared with the analysis of the times of connection to the learning system.

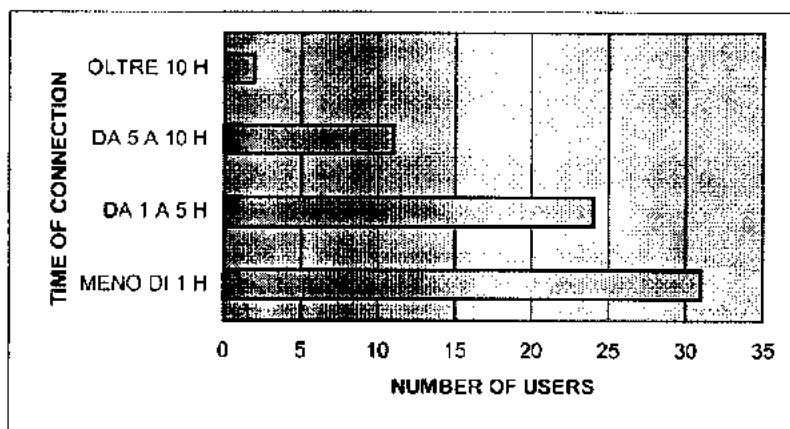
The average duration of the connection was not very long:

46% of the users connected for less than 1 hour;

35% for a period included from 1 to 5 hours;

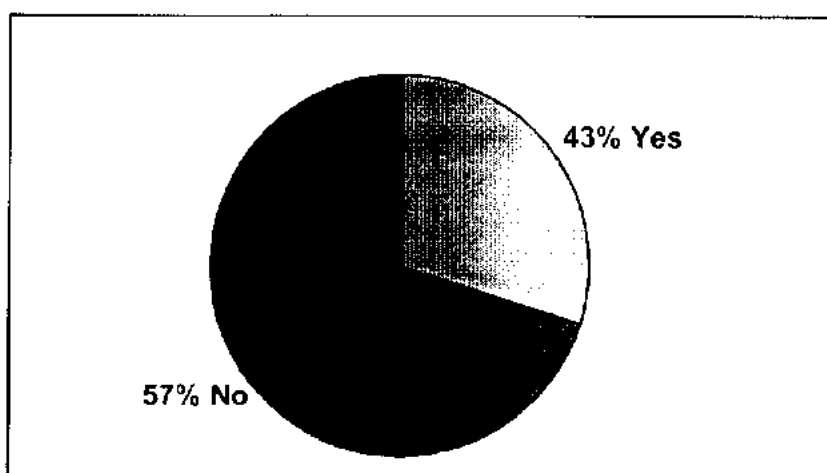
16% for a time included from 5 to 10 hours;

the remaining 3% for more than 10 hours.



Picture 2: The relationship between the users and their time of connection to the system

The potentialities of the online system were underestimated and the online tutoring was not much utilised by the school involved in the experimentation, too.



Picture 3: User who asked the tutors

Twenty nine learners out of 68 users decided to ask the online tutors questions during their learning processes. The total number of questions was 78, on average this means 2.7 questions for each learner. The analysis of the contents of the questions exchanged between users and tutors allows to identify 5 different categories classified in order of relevance

- indications of technical problems;
- requests of clarification regarding the use and the set up of the system;
- requests of deepening some contents;
- observations and remarks about the contents;
- requests of suggestion to apply the contents to the local school contexts.

The empirical evidence highlights the need for two-stage process in order to ameliorate the Interfaccia scuola performance; A first stage voted to train in the use of computer and ICT; these primary skills represents, furthermore, the bases to develop the second stage voted to train on specific communication competencies.

Table 1 has been extracted from a questionnaire submitted to the users of the multimedia system at the end of the experimental phase. It reports, in a concise way, which are the constraints and the opportunities for the dissemination of learning online systems which that one adopted by Interfaccia Scuola project.

Constrains	Opportunities
<ul style="list-style-type: none"> <li>• Resistance to change</li> <li>• Lack of knowledge of the learning online systems</li> <li>• Resistances and difficulties related to the school bureaucracy</li> <li>• Inadequate skills in the use of ICT</li> <li>• Technical problems to interact with the system.</li> <li>• Logistic deficiencies</li> <li>• Hardware deficiencies</li> <li>• Different and diversified competencies</li> <li>• Impossibility to conciliate the commitments of the teachers with the activities required by the project</li> <li>• Diffidence toward new technologies</li> <li>• Difficulties in finding educators</li> </ul>	<ul style="list-style-type: none"> <li>• Flexibility .</li> <li>• Big quality and quantity of information</li> <li>• To give the reasons for the use of ICT</li> <li>• To create professional educators to mediate and facilitate the use of new communication media</li> <li>• Opportunity to create a network of school on the net</li> <li>• Possibility of open and distance learning</li> <li>• Self updating on specific didactic contents and on new cultural issues</li> <li>• Collaborative approach to the use of the materials .</li> <li>• Awareness of the crucial role of communication in the schools toward autonomy</li> <li>• Opportunity of exchanging information with tutors, experts and schools' colleagues</li> <li>• Improvement of the efficacy of the communication flow among the establishment, universities and institutions</li> </ul>

Table 1: Constraints and opportunities for the diffusion of learning online systems

The qualitative results permit to make several considerations on the positive and negative attitudes expressed on new technologies. In general the attitudes of the teachers and schools' managers towards ICT are becoming more favourable and friendly (how it can be seen in the comments reported in the right column of the table 1). Moreover the result shows how the sensibility for the different uses and the opportunities offered by the Internet is raising. However, how to explain the poor interaction and use of the system? A critical issue deals with the change of attitudes of the teachers toward their competencies: it seems more difficult to accept the idea that the competencies are no more unchanging and invariable once acquired, but they are dynamic and changeable.

In general, it seems possible to register how the innovative boost brought by the *Interfaccia Scuola* inside the Italian schools involved in the experimentation generated different reactions of resistance and inertia. A first type of resistance to change is represented by the cognitive inertia showed by the schools' managers and teachers linked to the introduction and the dissemination of ICT. Furthermore a cognitive workload, both in the cognitive schemes and in the routines of the people involved, generates a situation of indecision and puts in discussion some constituted identities (for instance the classic relationship between teacher and learners *in presentia*).

Moreover, due to a poor support by top managers, to the creation of working routines that prevent the real use of this innovation, to a lack of professional skill enabling to master this new mean of communication, the strategic overload created can generate a strong resistance to change.

### Conclusion

Currently the quantitative and qualitative results show a poor commitment of schools' managers and teachers to this new approach to training. This situation requires a specific communication on these topics in order to develop the diffusion of the needed competencies and skills.

The technical problems that are related to the poor ITC infrastructures in schools did not allow the best possible utilisation of these self-training tools.

At last the strengthening of the present school organisation model makes fairly difficult deep modification toward more flexible models.

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# EXPERIENCES IN BUILDING THE NATIONAL VIRTUAL SCHOOL FOR K-12 EDUCATION IN FINLAND

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## Background

Finland is a country with a vast area and few people. This has led to situation where the average number of pupils or students in a particular school is quite small. There are hundreds of primary schools having only one or two teachers and the number of pupils can be under ten. There are about 3200 primary schools, 600 lower secondary schools and 450 upper secondary schools in Finland. To maintain the quality of education in all schools all over the country it is essential to make effective use of computers and telecommunication in providing adequate learning material and distance education services. By using computers and networks in a proper way it is possible to create open and flexible learning environment into classrooms.

The Finnish Virtual School is aiming to support equal learning possibilities for all students all over the country. The project started already 1996 as an information society project called Finland Towards the Information Society. The Ministry of Education has announced the new strategy for education and research<sup>[1]</sup>. It describes the outlines for the Virtual School. The Ministry of Education has the direct responsibility to build the Virtual University and the National Board of Education, which is an expert body connected to the ministry, is building the Virtual School for K-12, vocational and adult education excepting the universities.

## Implementation of the Virtual School

The basic structure of the virtual school is sufficient if all the schools are connected to municipal or national backbone networks enabling high capacity bitstreams. Additional requirements are sufficient computer density, adequate software, trained staff and suitable curriculum for ICT based learning and teaching. Of course the students and there parents should be aware of the new learning methods and they should support the school if it has decided to emphasise the virtual school services in the daily work.

*Networks:* The current capacity of networks in the Finnish educational system is reasonably good. All the universities have excellent connections via FUNET (the Finnish University NETwork). The situation is almost as good in the vocational schools. The service capacity is worse in K-12 area because a large number of schools have only ISDN-connections. It is sufficient if it is used only for text based information exchange like email or simple Internet usage, but real educational applications require fast permanent connections. Unfortunately it seems quite impossible to increase the speeds in many areas in Finland because of the high expenses of the telephone exchange technology. One solution to this appears to be the wireless telephone connections. It seems that the copper based telephone lines will be replaced by wireless connections in the most sparsely populated areas.

*Table 1: The number of schools connected to the Internet in K-12 education (at least ISDN) in 1995-1999<sup>2)</sup>*

Year	1995	1996	1997	1998	1999
Number of schools	250	1250	3500	4500	4900

Another solution might be ADSL-connections. They are widely available in many parts of Finland but unfortunately the technology is spreading slowly to the most distant areas where the need for reliable fast connections is high.

Normally all the schools have LAN networks. Some municipalities especially in the southern parts of Finland have provided their schools with Gigabit Ethernet connections. It is then possible to see TV quality video on the screens of all the computers of the school. In those cases the schools can use Video on Demand services, high quality IP based videoconferencing, distance education with high quality picture and sound and other educational Internet services that require high speed connections.

Table 2: The percentage of schools connected to the Internet in 1999

Primary	90 %
Lower secondary	90 %
Upper secondary	95 %
Vocational	100 %

*Computers:* Unfortunately the ratio students/computer is not going down fast enough to enable the schools to rely heavily on virtual school services.

Table 3: The number of computers in schools available for students in 1995 - 1999

	1995	1996	1997	1998	1999
Primary	14 000	20 000	26 000	29 000	31 000
Lower secondary	10 000	15 000	12 000	14 000	16 000
Upper secondary	8 000	10 000	9 000	11 000	12 000
Vocational	22 000	25 000	30 000	32 000	34 000
Sum	54 000	70 000	77 000	86 000	93 000

The natural reason for the slow increase of the number of computers is that each year one computer generation becomes obsolete and cannot be used anymore in the computer environment requiring more and more complex information processing. One solution to this problem is to make desktop computers cheaper and less intelligent and make the servers do the hard work.

Prof. Päivi Atjonen from Joensuu University has found<sup>[3]</sup> that the lack of sufficient computer resources is a severe hindrance in implementing the ICT-emphasized curriculum in K-12 education. This means that the idea a virtual school serving all the students in the whole country is still far from becoming reality. The number of students per one computer should not be higher than 6 if we assume that each student can work at least one hour with the computer.

*Teacher training:* There has been an extensive pedagogical teacher training programme going on in Finland in connection with the information society programme. Now the National Board of Education has launched new programme called OPE.FI. The word OPE refers to the Finnish word *opettaja* for teacher. At the moment about 10 000 teachers has been trained and the aim is to give all the teachers at least 3 weeks training period in ICT based teaching and learning. The focus in the training is in pedagogy and the municipalities have the responsibility to teach the basic technical skills for the teachers. On the other hand about 80 % of all teachers have a computer and Internet connection at home. There is not so much need to teach the basic skills anymore.

The main purpose for training is to make teachers understand how important it is for the teachers to adapt a new role in their daily work. It is very important for the student to work as a team using the same methods as the experts do in their daily work<sup>[4]</sup>. Only then the students become responsible and innovative and they can work independently without extensive amount guidance when they start their career after the school or the university. The so called low level work seems to be totally disappearing from the society and almost all the students have to be prepared to create their career as an expert in a particular area.

*Teaching and learning methods development:* The need to implement new methods of teaching and learning is obvious because the working environment differs in so profound way from traditional teaching environment. Actually the change in the role of the teacher is so remarkable that is totally impossible to

know all its consequences at once. The transition period might be several years and many teachers are opposing the idea changing their teaching methods very strongly<sup>[3]</sup>.

In order to test various approaches to ICT based teaching the National Board of Education has launched several pilot project creating new methods of teaching and learning. They all are focusing on the role of the student as the key person in learning. The role of the teacher should be more or less a resource for the students to learn<sup>[6]</sup>. The students should be active learners and there should be large variety of tools and resources available for them. At least have access computers, Internet, word processors and most of all there should be a competent team of teachers to help and guide students in their work.

New working methods require also new ways of evaluating the learning results of the students. One of the most important skills to learn is the ability to work as a productive member of team and even as a member a virtual team where the members of the team can be working simultaneously in many different countries. It is very difficult to use traditional evaluation methods to measure the amount and quality of learning in this kind of environment.

*School environment:* The parents are usually very supportive to those schools which are using virtual services for teaching and learning. They might even select the school for their children according to their willingness to use new technologies. Only very few parents are opposing the use of virtual school services in the Finnish schools. Normally they are only suspecting that it might be quite difficult to find suitable contents in the Internet in their own language and the quality of those contents might not be so excellent. This opinion is unfortunately correct. The Finnish publishers are still waiting for the market to mature. It can happen that we have to wait for the beginning of the mass production of the digital educational material for several years. The appearance of digital radio and TV can change the situation quite fast.

*The National Virtual School:* The services and all the learning material the National Virtual School will be found in the Internet through a specially dedicated portal. A number of teams all over the country are preparing the material for various Internet courses for the schools to use. There will be no independent national virtual school with its own administration. Everything will happen inside the existing school network. Only the working methods will be changing in those schools using the virtual services.

The amount of time that a student is spending while using for example videoconferencing must be limited. The reason is the poor quality of picture in ISDN based connections. The other reason is that the main purpose of the Finnish school is not to deliver as much information as possible to the student but to help her or him to adopt those working methods, metacognitive and social skills that make her or him a productive member of the society. In every case almost all the current information will be obsolete in a few years.

One of the main services in the virtual school will be to enable students from various schools to create virtual learning teams usually guided by a teacher. There has been several experiments in this area and it seems to be that language learning will benefit very much from virtual learning communities. Other suitable subjects are physics, mathematics and music. There are vast amount of positive experiences from virtual and distance learning in almost all subjects. The biggest problem is the lack of adequate digital learning material and competent virtual learning experts and teachers. There are a number of ambitious projects in the cities like Helsinki, Espoo, Turku and Kuopio to create local virtual services. The problem is that all these projects are quite expensive, but on the other hand it is usually a part of the local development strategy to make the city more attractive to highly educated workers in the high tech areas.

The Finnish National Virtual School has still many challenges to overcome, but without any doubts it will be an integral part of the Finnish educational system after a few years. The virtual school will help to maintain the regional equality by giving equal opportunities for learning also to those student whose families have chosen to live in the most distant areas of the country. Many special groups of students will greatly benefit from these services. Handicapped students and those who are suffering from severe illnesses have a possibility to study without travelling every day to school.

The virtual school is already operating in the area of adult basic education. The Virtual Upper Secondary School provides services for adults to pass their matriculation examination if they have failed to pass it during their school years. About 4000 adult persons are using these learning services every day. The

services comprises of web material, radio and TV programmes and tutoring in some regular upper secondary school for adults nearby the student. The experiment is very promising and it will continue still for four years. A very important partner in the project is the Finnish Broadcasting Corporation (YLE). Its educational department is producing excellent web material in addition to its educational radio and TV programmes. The local ISP:s are also active in the area being convinced to find market value to their communication services.

The basic structure of the national virtual school is healthy, and the number of schools using the services might exceed the critical mass in near future and then the virtual services will be finally integrated to the Finnish educational system.

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# THE CLASSROOM AT A DISTANCE: THE CHALLENGE OF CHILDREN FROM TRAVELLER COMMUNITIES

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## **Introduction**

One of the more challenging issues facing educational authorities across Europe is the education of children who are part of highly mobile communities. Examples include circus, fairground and bargee families and some groupings within Gypsy cultures. These are long-established communities, and travel is part of the social and economic content of their lives. However the travelling lifestyle, often on a week-to-week basis, does not fit the pattern of public schools and schooling for (static) majority populations which has become established over the last two hundred years. Responses to this challenge have developed across Europe and include two main themes 'outreach services' (mobile schools, tutors who visit travelling families, etc.) and teacher-supported Open and Distance Learning (ODL).

Advances in ICT have, of course, meant new opportunities and radical changes in traditional patterns of ODL, and EFECOT (The European Federation for the Education of the Children of Occupational Travellers) has played a leading role in exploring applications which can address the particular challenges of the mobile lifestyle. This short paper describes one project, 'FLEX', co-ordinated by EFECOT which has attempted to use ICT to demonstrate a viable distance-schooling service for Traveller children, and has been part of the European Commission's Educational Multimedia Programme.

## **The essence of the FLEX Project**

It is important to appreciate that FLEX is not about using ICT to provide mediated settings which can complement normal classroom activities. Rather the mediated environment replaces the normal schooling experience for the travelling pupil. The FLEX approach has therefore drawn on experience and grounded theory from the ODL perspective. It has set out to develop an environment which acknowledges the significance of 'transactional distance' (see below), and the importance of combinations of effective materials and good tutorial support.

From the pedagogical perspective, key priorities included the establishment of an indexed library of re-usable, modular resources, and the integration of constructivist learning principles into all aspects of the design and implementation of the learning environment.

The technological challenges included the development of a cost-effective wireless communication system (mobile families do not have access to terrestrial networks) capable of delivering multimedia materials, but also able to send results back from learners to tutors and to support two-way messaging.

## An overview of the communication system

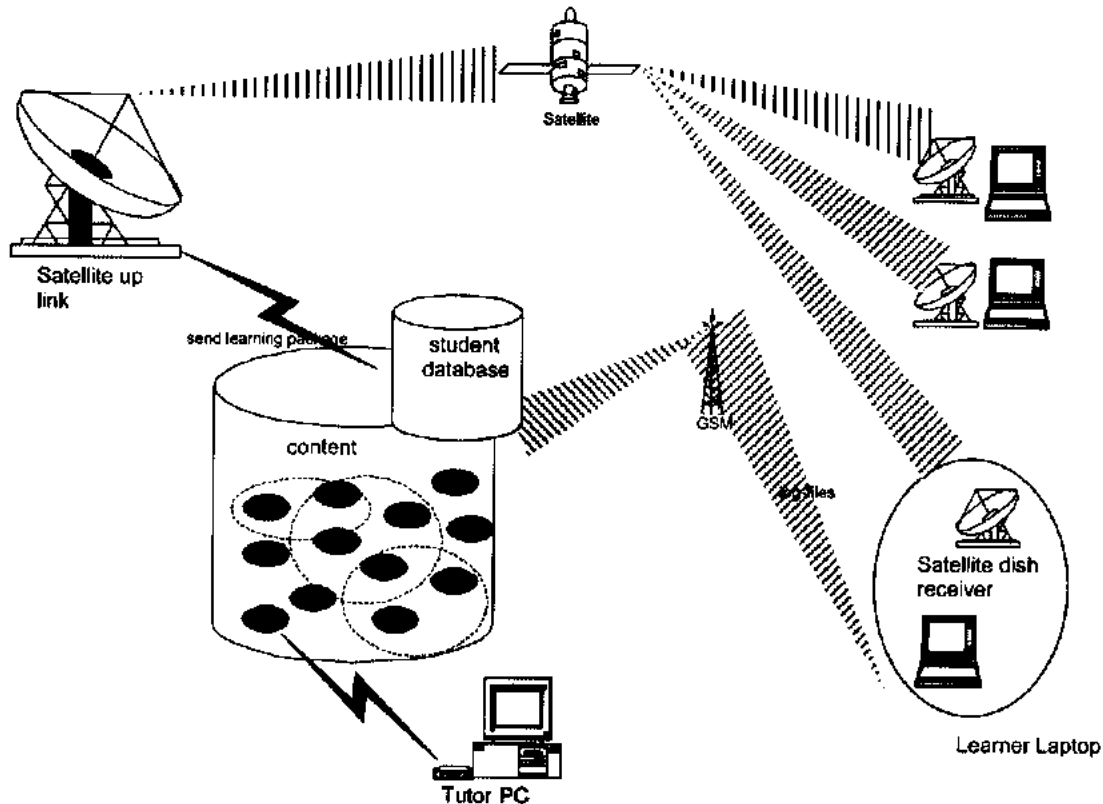


Figure1: Communication within FLEX

The functions of the communication system can be separated into four parts. First: the design allows the teacher/tutor to upload new, or revised, blocks of material to the content database, and to download existing materials within this resource library to see if they are appropriate (with or without amendment) for use by individual learners. This can be achieved via normal terrestrial links provided teachers/schools have access to these.

Second: The tutor can create 'learning units' from the blocks (which are the fundamental elements of the database), and put these into coherent and personalised modules which can then be transmitted by satellite at regular and agreed times.

Third: The learner's own environment tracks time spent on each exercise undertaken, together with results, and contains 'data collection' units where the pupil can put work which is to be returned to the tutor. This information is then automatically transferred to the 'student database' via the GSM network.

Fourth: The system allows the exchange of messages. Tutor messages can include video-files for the young children as well as text based messages for parents as part of the broadcast facility. Parents can use a specially designed part of the Learning Environment to set up messages for the teacher which are then transmitted via the GSM return link.

### The learner perspective

From the learner perspective, a session starts with switching on the laptop. This action automatically initiates the Learner Environment, and loads any new learning modules from the most recent transmission. The young learners (aged 4-7 for the purposes of the trials) can study at their own pace, and at times convenient to the working patterns of their travelling family. This is important as parents were given training, and actively encouraged, to be involved in their children's learning, and many tasks designed by tutors involved some off-line activity.

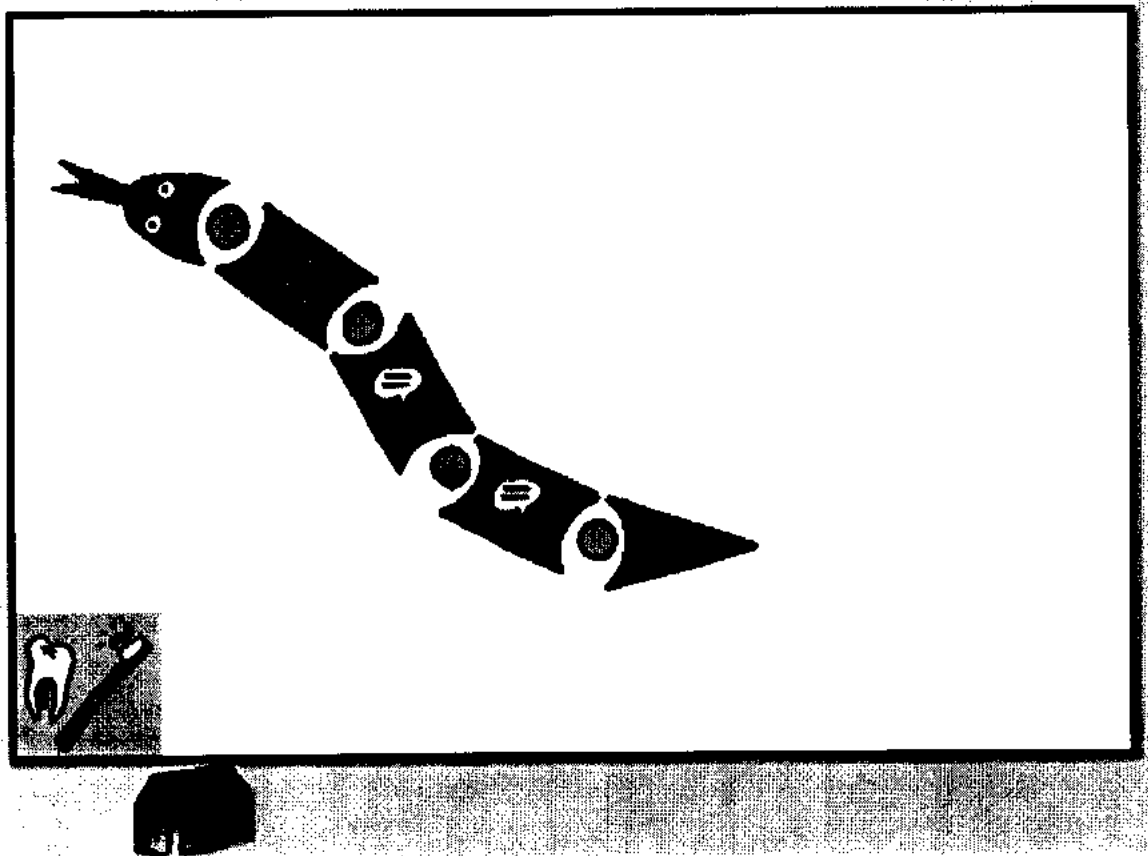


Figure 2: A screen from the Learner Environment

Figure 2 illustrates the Learner Environment as seen by the child. The bottom bar is used for menu items. The snake represents a learning module, and each segment gives access to an independent learning unit within the module. The materials were designed to include minimal but critical internal feedback, and the software produced by the project included wizards to enable tutors to make interactive exercises with a full range of multimedia assets. Many units also contained tasks which referred to other materials, outside the immediate environment, and, as noted above, some were designed to involve parents. The environment also contains a 'picture book' where pupils could see their friends' drawings. At the end of a learner session, closing the environment automatically triggered the sending of 'results' data to the database, as well as text-based messages from parents, via a GSM link; the GSM modem and aerial were linked directly to the laptop.

### **The teacher perspective**

Teachers from Belgium, Germany, Ireland, The Netherlands and the UK were involved from the start of the project and received training and support to develop ICT skills, including the specific skills needed to produce materials for, and to use, the FLEX environment. Materials were eventually produced in Dutch and English. Constructivism was also seen as integral to this training. Tutors were, for example, encouraged to design tasks and materials which would focus on active participation, the making of choices, sensitivity to the learning characteristics of their pupils and minimal but critical support (within the ethos of scaffolding).

The actual teacher interface within the FLEX framework consists of a set of web pages located on a password-protected website. This interface was designed to allow teachers to use the resource library (as described above), to request the sending of materials at regular fixed times, and to review the progress of their pupils. It also enables tutors to send messages for support and feedback (which could be in multimedia format) and to read text-based messages sent back by learners and their parents via the GSM link.



- ▼ **Learners**
  - \* Learner Overview
  - \* Add New Learner
  - \* Follow-up
  - \* Remarks
- ▶ **Temporary Tutors**
- ▶ **Content**
- ▶ **Picture Book**
- ▶ **Messages**

Figure3: A screen from the tutor interface

Figure 3 shows the main menu on the interface. 'Content' gives access to the indexed library of materials, and the 'Picture Book' and 'Messaging' buttons are also shown. The sub-menu for 'Learners' is open ready to give access to sections where teachers can, for example, get an overview of their learners, and enter the 'Follow-up' section, to look at information like time spent on individual units, and the results of exercises which pupils had completed.

The whole approach is, of course, asynchronous. As well as allowing the children to work at their own chosen times, this also had the great advantage of allowing teachers to organise their use of the environment alongside other commitments.

### **Project experience and the future**

The validation trials for the project were completed in September, 2000. They have led to some changes in the communication framework as FLEX looks towards establishing a consolidated service (see below). At the same time, the feedback from both Traveller families, and teachers, confirms that FLEX is seen as a major step forward when compared with traditional ODL support for these mobile children, and more of a revolution than an evolution. The main reason for this seems to be a sense in which the 'psychological and communication space' identified by Moore in his discussion of ODL has been significantly reduced. As noted above, FLEX set out to improve dialogue between teacher and learner/parent, and also to enable a flexible approach to the learning programme for each pupil. These are the key elements identified by Moore in his discussion of 'transactional distance' (Moore, 1993). Certainly the ability to monitor progress, provide feedback, exchange messages and modify/send materials on a regular basis have all scored highly in the evaluation of the trials, and are consistent with his analysis.

The constructivist perspective has also been important. Authors like Jonassen, Peck and Wilson have argued for the need to ensure that new technologies are used to enhance education in ways which encourage meaningful learning and 'engage students in active, constructive, intentional, authentic and cooperative learning' (Jonassen et al, 1999). These concerns have been central to project thinking in terms of technological design and tutor training, although the cooperative dimension has focused on the parent/learner relationship rather than collaborative learning for the early learners for whom the trials were designed. Similarly, the personalised/sensitive learner focus, which has also been central to the project, has drawn on concepts like 'zones of proximal development' (Vygotsky, 1986) and 'scaffolding' (Bruner, 1968), as well as aspects of the apprenticeship model (See, for example, Collins et al, 1989) and 'anchoring' (See, for example, Bransford et al, 1990). An evaluation from the pedagogical perspective has been undertaken by the Centre for Instructional Psychology and Technology at the University of Leuven.

This assessment is not as clearcut as that relating to transactional distance. However it contains some encouraging evidence about the use of the Learning Environment, and ways in which tutors have been able to incorporate constructivist insights as well as some important recommendations for the future (Canter and Lowyck, 2000).

Turning now finally to the technological aspects of the project, the database, the tutor interface and the Learner Environment (on the learner laptop) have all worked well during the trials. The two main issues identified have both related to communication. The first concerns the uploading of materials from teachers to the database, as the focus on the age group 4 to 7 meant that there was a concentration of files containing audio and video. Most schools did not have access to fast links, and an alternative approach was adopted which allowed tutors to send large files through the post using CDRoms, which were then transposed into the environment by one of the project management partners.

The second was more fundamental. During the early field trials, although there was some success, it became clear that the particular satellite broadcast reception-transfer process used for FLEX was problematic. The system was generally not robust and usable enough, and difficult to support in a dispersed, mobile context. The approach was therefore modified with the broadband satellite transmissions made to fixed sites (the schools) where transmission content was written on to CDRoms for distribution to each individual learner. The CDRoms could exactly replicate the broadcasts, and were found to be preferred by many families (i.e. rather than having to transport and set up satellite reception and transfer equipment each time they changed location)

The consolidated service now being planned by FLEX will therefore initially focus on this 'intermediate' solution to satellite communication, whilst exploring other satellite options, as well as continuing to offer the CDRom uploading service to teachers lacking access to fast internet links.

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# INTRODUCTION OF INFORMATION TECHNOLOGY IN PRIMARY SCHOOLS OF SMALL ISLANDS

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## 1. Introduction

Information technology (IT) is introduced in almost any sector of society. It interferes dynamically in a wide range of activities. It is a basic part of any modern system and a necessary complement of infrastructure. Inevitably, it affects structures and up to a point, values of modern society. Its potential and importance have been acknowledged to such a degree, that the extent of its use is an acceptable indicator of a country's progress.

Education, a basic sector that affects quality of human capital, could not remain unaffected by such a revolutionary invasion. Education specialists have already given a positive answer to the dilemma of the introduction of IT in schools. They seem to be convinced about its pedagogical value. They have also created a strong theoretical background for the necessary methods and tactics that should be adopted on this matter.

With respect to primary education, the need for the introduction of IT has been well established in educators minds. The problems of financing the relevant infrastructure and the lack of know how do not allow the rapid response of schools.

As with any part of the world, the isolated islands of the Aegean face the challenge of new technology. For these islands, IT not only offers important help to teachers and students but also it contributes highly to the transformation of societies from rural into modern ones.

The purpose of this work is to present a pilot project about the introduction of IT in the field of primary education at the remote and sensitive area of the Aegean islands.

## 2. Description of the program

### 2.1 Definitions

The program SCHEDIA (Educational Network Web of the Aegean Schools<sup>1</sup>) aims to provide the necessary equipment and know-how to the primary schools of the small Aegean islands so that they will have the chance to enjoy the benefits of IT. The program includes the connection of schools with the Internet through the creation of a website which enables communication not only between the schools, but also with other educational institutions.

The funding organization is the Ministry of the Aegean. The Department of Primary Education of the Aegean University is responsible for the implementation of the program with the co-operation of the programs Aegean Net<sup>2</sup> and Askoi tou Aeolou<sup>3</sup>. The main inspiration for this program was the project in distant education that took place in the Greek island of Telos in 1998-99 (5).

### 2.2 Targets of the project

The program includes installation of hardware and acquisition of technical knowledge on IT with the aim to:

- Upgrade quality of education in these islands.

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<sup>1</sup> In Greek this word means raft

<sup>2</sup> Aegean University Network

<sup>3</sup> Network of the Greek Pedagogical Institute

- Reduce isolation.
- Analyse the parameters that affect the efficiency of IT in primary education.

### ***2.3 The program's identity and content***

The program SCHEDIA includes the installation of 112 computers in 64 primary schools situated in 36 islands. In this way the program covers all the Aegean islands with a population of less than 3.000 inhabitants, and also some primary schools in mountainous and isolated areas in bigger islands.

As a first stage, the installation of 82 computers in 45 primary schools of 31 the Aegean islands has been implemented.

The program includes the following:

- Installation of the necessary equipment.
- Creation of a specialists' team to provide technical support.
- Teachers' training in IT and its use in education.
- Connection of schools with the Internet.
- Communication between schools.
- Distance education from the Pedagogical Department of the Aegean University.
- Constant help and technical support

### ***2.4 Hardware and Software***

The equipment for each school is a complete system comprising of one or more computers, a printer, a video camera, education software and supporting software. The number of computers in every school varies, with an average of one computer for every 20 students. In some, relatively big, schools small local networks of 2-5 computers are installed.

The project provides three categories of software:

1. Windows '98, Office 2000.
2. Educational software. This includes a package of 10 CDs for each school, covering some important school lessons (Language, Mathematics, History, English, Geography, Encyclopaedia). Some games are also included. The aim is to convince students that IT has both a pedagogical but also an entertainment use. Software help is offered on the program's site. Help is provided by the supporting team on a continuous basis.
3. Utility software including a variety of free or shareware programs. It includes remote use of the computer, antiviral protection, files compression, connection of multiple computers on the Internet, administration of sound and video files, special text processors etc.

### ***2.5 Connection – Training – Support***

Connection to the Internet and communication between schools is achieved via a simple dialup telephone line, provided by the infrastructure of the Aegean University net. The creation of sites on the Internet facilitates communication between schools. Each school has its own pages on the Internet.

Teachers' training will take place in 2 educational centres (Rhodes and Syros to minimise travelling efforts of the trainees). At the first stage it will last 16 hours and will cover various subjects such as Getting Familiar with the System, Windows, Communication Techniques, Educational Software (provided on the CDs). The teachers' training will continue through the broadcast of lectures on various subjects aiming to provide technical skills on the use of computers. Videoconference with the Aegean University will be a frequent task, and videoconference between schools will be encouraged (4).

There will be constant communication and help from the Aegean University. In addition, efforts are made to ensure the active involvement of municipalities and other institutions with the project. If this is succeeded, then these institutions will undertake part of the cost of training.

### **3. Implementation**

#### ***3.1 Installation - Net connection***

Connection of the selected schools to Internet and to the Aegean University is achieved using the nodes of the University network Aegean Net and of program "Askoi tou Aeolou".

For the installation of the computers, some local inhabitants that had the necessary knowledge have helped a lot. In those cases in which this wasn't possible, people from nearby islands were appointed to install the equipment and to teach the basic skills.

#### ***3.2 Operational Communication***

An effort was made to establish constant communication (through mail, telephone and fax) between schools and the University. We have sent questionnaires to the schools with the aim of evaluating the already existing equipment (if any).

Out of 34 schools that answered the questionnaire, 19 had at least one computer (total: 56 computers, 30 of which were of acceptable standards). 9 schools had 43 out of 56 computers, which means that the distribution of hardware was not even.

#### ***3.3 Working tools***

For the needs of the program's administration, a database was created. This included information about the schools, the people involved, the equipment, the materials and the software. The database covers also the repair and maintenance details (such as identification of the damage, consignment of the accessories for reparation, reinstallation of the accessories).

An important characteristic of the database is that it can be accessed through Internet. In this way authorized users can watch the progress of the program from any computer with an Internet access.

The creation of web pages is an important part of the program. The site provides educational, pedagogical but also technical and telecommunication support to teachers and students of the participating schools.

The Web site is: <http://www.rhodes.aegean.gr/sxedia> and it is under construction. It includes a presentation of the program, pages of the schools, some games and links to other web sites with educational contents. Having in mind the small experience of the users, a big part of the site is covered with instructions for the use of the programs, technical advice and help. Through the site, it is also possible for a user to describe a technical problem and get help from the supporting team. From the pedagogical – educational part of the site, a teacher can get information on pedagogical and educational issues (1), (2). He can also attend lectures (live or stored), take part in conversations and share his thoughts and opinions with other colleagues.

### **4. Results - Problems**

#### ***4.1 Problems in schools***

The big number of schools creates difficulties in the administration of the program. This is a fact that had been predicted up to a point at the planning stage, but the experience from the application surpassed any prediction. The difficulties are analysed below and they reveal basic problems, problems of mentality and also technical problems. The schools' timetable causes delays in the process of implementation.

Many members of the teaching staff are planning not to stay for a long time in the islands. As an example, 16 headmasters (out of 45), are expected to be transferred to the mainland next year, while 5 think of leaving. In order to overcome this difficulty, more than one teacher per school should be trained.



Almost all participants were highly interested in the program. However there was a serious difficulty in returning the questionnaires and handling correspondence.

Most of the people responsible for the installation of the equipment and instructing the teachers, were teaching IT in high schools in the area. However such qualified people were not available in every island. As already mentioned other people have also offered assistance either from the islands inhabitants or from other islands.

#### ***4.2 Technical problems and problems of infrastructure***

The well-known problems of lack of hardware and services in the Aegean, disturb the time schedule of the program. Thus:

There were big delays in handling correspondence, parcels etc. Often the correspondence was delayed as much as 3 weeks. The biggest delay in receiving mail was tracked in Chrisomilia – Fourni (3 months).

The fluctuation in the electricity voltage caused functional problems and damages. This was repeatedly met in the small islands. The condition of telecommunications (phone and fax) was better.

Attempts were made to solve technical and infrastructure problems from distance. However there were some cases in which a distant solution was not available. In these cases the supporting team had to visit the islands.

### **5. Conclusions**

The program SCHEDIA is in progress. Its full operation will soon be a reality and this is expected to be the project's most interesting part. Until then, the evaluation of the program is not possible.

However, even at this stage, there are some important conclusions about the role of IT in small islands, the teacher's participation, the interest shown by the students, the performance of various communication techniques, etc. Given the relatively high number of schools and the fact that most of them are very small, the conclusions drawn can be a valuable guide for any similar school all over the country<sup>4</sup>.

Some of the conclusions drawn so far are the following:

- a) The Aegean is a geographic area with specific characteristics. The dispersion of the islands and their small size do not allow high quality services. Such disadvantages require inspired, essential and modern approaches, among which the use of IT is worth mentioning (3).
- b) Nevertheless, although IT is mostly advantageous for isolated areas, these areas usually do not have the chance to enjoy the benefits of technology. The main reason is the absence of background for the development of informatics. In the case of the Aegean, SCHEDIA offers a chance for the creation of such an "environment".
- c) Common parameters for all the islands of the project are the small size of each island's society and the lack of skills in technology. Both of these parameters are disadvantages for the program. Nevertheless once we get over the lack of technological knowledge, the small size stops being a handicap. Actually it becomes an asset for the program. This is so because IT is considered as the teacher's personal issue as well as an achievable challenge for the local society.
- d) The massive introduction of IT in primary education of small islands is an important innovation for Greek standards. The program at this stage already gives valuable experience in various fields, such as:

Organizing field: The size of the islands, their dispersion and lack of regular communications, create specific needs for co-ordination and organisation of the relevant activities.

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<sup>4</sup> In this case small means that there are few pupils taught by few teachers. It is not uncommon that a teacher teaches more than one class or all six of them. A class can contain few even one pupil.

**Technical field:** Lack of technological knowledge, difficulties in maintaining hardware and software locally and the infrastructure problems lead to the need for constant and detailed help. A system for an immediate tackling of the problems should be adopted. A help desk is a must.

**Field of human capital:** The success of the program depends heavily on the interest that the teacher shows for IT. Although the teacher is not obliged to use the computer as a tool in his work, our experience is that, the he usually responds positively and is willing to spend time and effort on this matter.

**Institutional field:** With respect to IT in small islands at an institutional level, the Ministry of the Aegean is the institution that has taken serious initiatives. But the will to improve education and quality of life on the islands, passes through a complex of governmental and other institutions among which the Ministry of Education and the Pedagogical Institute.

The complete application of the program is expected to lead to a series of additional conclusions, some of which are mentioned below:

**The role of IT in the educational field:** Conclusions are expected be drawn about the validity of the pedagogical theories that support the introduction of IT in education.

**Relationship between social structure and IT:** The results will give conclusions about the relationship between IT and the area's social and financial characteristics. It is expected that the application of such a project in an urban environment (where there is greater technological know how among teachers, students, technicians and tutors) will be easier and more effective than in an rural society.

**Degree of dispersion of IT knowledge:** Given the high degree of mobility of the teachers of the Aegean<sup>5</sup>, the results from teacher's training will soon be spread around the country. This gives to the program the role of a IT training course for teachers. The degree of dispersion of the teachers' technological knowledge will be studied.

**Indirect benefit for other population groups:** Through this program, the entire population of the islands is indirectly benefited. IT infrastructure and know-how on the island, create opportunities for all the inhabitants to get acquainted either specifically with IT or with technology in general.

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<sup>5</sup> Ie the fact that a large number of teachers does not stay for a long time in the same area of the Aegean)

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# INTERDISCIPLINARY PROJECTS WITH CROSS CURRICULAR AND TEAM TEACHING

## AN EXPERIMENT FROM ONE CLASSROOM TO OPEN CLASSROOMS THROUGH THE WEB

*Alkistis Patrinely, Georgia Fitsiou, Ziridis School*

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### **Introduction**

The idea of combining two or more disciplines , pedagogical approaches, groups of people, or skills is not new. Interdisciplinary education has been considered a key element of middle level education since 1960s. Interdisciplinary teaching teams and multi-disciplinary units of study have been frequently found in middle level schools since then.

Following, we will present our own experience and effort from the previous school year; that is , we will describe how we applied a cross curricular approach combined with team teaching and we will also provide an example of how this effort could take on an international nature.

The view that learning about forming connections between fields of knowledge is an essential educational need for success in the 21<sup>st</sup> century.

### **Our experiment - Stages/phases**

After a careful study of the relevant bibliography and respective research on the internet, we were convinced that it would be worthwhile to find a way to combine the cross-curricular approach of a topic with team teaching.

A team of teachers of all specialties - among whose members we counted ourselves- undertook the task of thinking out and organizing this program.

The main steps we had to follow were :

1. Getting the idea
  - Must know what the idea of the course will be
  - Must know what disciplines will be presented/involved
2. Inventing the subjects
  - Begin with the topic
  - Establish to do something that can't be done in a disciplinary course
3. Determining learning outcome
  - Interdisciplinary learning outcome include :
  - Knowledge
  - Comprehension
  - Application
  - Analysis
  - Synthesis
  - Evaluation
4. Establishing the scope and sequence, breadth and depth
  - Where does the course begin and end?
  - How should its content be ordered?
  - How many topics should be included?
  - How deeply should any one topic be explored?
5. Building the structural organization
  - How many students will be involved?
  - How will the class activities follow course objectives and learning outcomes?
  - What materials will be used?
  - Exactly what will take place each time the students meet?

Finally we decided to create 45 projects that we assigned -- according to their level of difficulty -- to the three classes of gymnasium (12-14 year olds).

Every class in our school is divided into five groups which meant that each group would have to be assigned three projects. The groups of students for each project consisted of 8-10 students, depending on the total number of students per group.

We drew up three charts (part of which can be seen below) one for each class, which comprises the titles of all projects, and the ways they were approached through the different disciplines.

Religion	Ancient Greek	History	Literat.	Physics	Maths	Biology	Chemistry	Geography	Music
Building materials in the construction of temples	Architecture in Ancient Greece	The history of Architecture	-	Heat-insulating sound insulating materials	The use of geometric formulas in various calculations	The sick building syndrome	Building materials and buildings throughout the ages	-	-
The wedding in Cana	Ancient texts- Etymology of the word	Dionysos- The worship of Dionysos	References in folk songs	Hydrostatic pressure- Communicating vessels	Calculating the volume of solids	Alcoholism -- influence on the human body	Wine in man's life	-	-
The Mediterranean- the birthplace of religion	The travels of Pausanias	Ancient Civilizations of the Mediterranean	Poems of Elytis	-	Distances- nautical mile- converting units	Pollution problems in Mediterranean	-	The Mediterranean sea	Musics of the Mediterranean
Noah's ark	Ships in Ancient Greece	The role (contribution) of ships in the development of mankind	Ships in Literature	Naval Architecture	Mathematical relationships- calculations	-	Shipbuilding materials and their properties	Oceans -- seas -- rivers	-

The idea was that for every thematic area there should be a "core" lesson from which the project would begin, and remaining lessons would approach the thematic area, each from its own angle.

We tried to involve as many lessons as possible so that each thematic area would be observed from a variety of viewpoints.

Thus, six or seven teachers -- one of which was coordinator -- collaborated with the students that had been assigned to a specific project. These teachers were language teachers, historians, mathematicians, physicists, physics education teachers, theologians, art teachers, etc.

Then, a time-chart of project work and lectures of each teacher's respective lesson to their team of students was drawn up, and during certain class hours, two or three teachers together would discuss the progress of the project, possible problems and questions that might have arisen.

Student teams were organized (by the students themselves) in such a way that there was a distribution of work (bibliographic research, seeking information on the internet, typing, etc.) and had appointed a member of the team as coordinator, who was also responsible for collecting the material, and had direct communication with the teacher who was coordinator of his team.

Apart from the material provided to the students by the teachers, other resources were used such as the internet, newspapers, magazines, cd-roms, etc. so as to ensure satisfactory completion of the project.

Most of the work was completed at school, more specifically in the school library and the computer labs.

All of the completed projects were presented in a book form although some were presented in digital form (cd-rom), some of which we will show you at the end of this presentation.

We should mention, that all projects are intended to be presented in digital form

These cd-roms were produced by the students themselves, since our school was able to provide the technological equipment necessary for productions of this kind.

## **Positive education outcomes for students and teachers**

In the research we had conducted before we began this endeavor , we had read about the advantages and positive results that interdisciplinary and cross-curricular teaching has to offer both to students and teachers.

After the end of this school year , we are able to assure you that the following, are true benefits.

### *For students*

- An increase in understanding, retention and application of general concepts
- A better overall comprehension of global interdependencies along with the development of multiple perspectives, points of view and values
- An increase in the ability to make decisions, think critically and creatively and synthesize knowledge beyond the disciplines.
- The increase ability to identify , assess and transfer significant information needed for solving novel problems.
- The promotion of cooperative learning, a better attitude towards self as a learner and as a meaningful member of a community
- Increased motivation

### *For teachers*

- Improved and more meaningful relations with the students.
- More curricular flexibility and less scheduled and subject fragmentation.
- Better overall integration with increased time efficiency wider comprehension of the connections between disciplines.
- Support from research on the human brain and the learning process.
- Relevance to the needs of the twenty first century.

## **Our proposal for this year**

Imagine all the above taking place not only within one school, but with collaboration of different classrooms all around the world.

We are going to present our idea with the following specific project plan :

Three schools (classes) can collaborate on this project : one from Greece, one from the USA and one from Germany . (The reason we are proposing these three countries will be shown further along, in the way the program is organized , without this meaning there are any restrictions)

Communication among the classes during the project can be achieved through videoconferences , e-mail, newsgroups or chat-rooms. Thus , when referring to communication among the classes , we mean one of these methods/ways.

### ***Our subject : the forest***

**Disciplines :** Literature, Language teaching, Chemistry, Biology, Mathematics, Physics Education.

### ***Literature***

Reading of a “warm-up” text/passage

In all three participating classes, teachers will read the same passage, which we thought could be this : The answer given by Seattle chief of an Indian tribe , to the President of the United States Franklin Pierce (1853-1857) when the latter asked Seattle to sell his land to the government. This answer was made public by the American government in 1976 during the bicentennial celebration.

After certain key words in the passage are found, we should logically come to the conclusion that the forest is a living organism, and we should realize the danger that lies in the destruction of forests.

There should then be communication among the classes, so as to discuss the conclusions reached.

### ***Language teaching***

Using the above passage and the conclusions that will have been reached concerning the dangers threatening our planet's forests as an incentive, a chart with nouns, adjectives and verbs all relevant to the topic can be drawn up and then:

- Vocabulary exercises
- Passages concerning Greek facts/data from the Greek class-discussion, speculation
- Passages concerning Germany facts/data from the German class – discussion, speculation
- Passages concerning American facts/data from the American class – discussion, speculation

Then, communication among classes and exchange of opinions on the problems each country is facing.

*Language production*: students will be asked to write an essay/composition whose topic could be:

*"Describe your feelings when you see a burnt or a destroyed forest"*.

Some of these compositions can be sent back and forth from one class to another, to be read by everyone.

### ***Chemistry***

It is certain that from the aforementioned speculation it will emerge that one of the reasons for the destruction of forests (especially in Germany) is acid rain.

The contribution of the chemistry teacher here is the explanation of this phenomenon and at this point the information supplied by the German class will be of great importance since they can supply a great deal of scientific data.

### ***Biology***

A destroyed forest can be reforested. A biology teacher can explain the life-cycle of a tree and will sensitize the children to the idea of reforestation giving each student the opportunity to plant and be responsible for a tree so that each class will have their own "forest" which can be transplanted at some point in a pre-selected area of their community.

Classes can communicate at this point to exchange information concerning what kinds of trees grow in each country and how they are planted and cultivated. Children can even exchange pictures of their "forests" and of the various stages of the reforestation procedure.

### ***Mathematics***

Teachers of the three classes will have to have introduced students to the concept of area and more specifically to the formulas computing the area of specific geometrical shapes (rectangular, triangle, etc). Students will be given problems/exercises dealing with areas and reforestation (e.g. A burned forest has been divided into lots of specific geometrical shapes. How many trees will be needed to reforest the area, if in each square meter one tree is planted?) Classes communicate here exchanging information concerning the units of measurement each country uses, and the methods used by the students to solve the problems.

### ***Physics Education***

Teachers and students can choreograph or mime a forest and the life forms found within it.

One class can see the other's choreography through a videoconference or one common choreography can be created with each class providing the others with ideas.

An alternative idea is for each class to videotape its work and send it to the others. Even still pictures of each presentation would do.

## ***Social studies***

A discussion on the organizations concerned with the preservation of forests in each country (e.g. Greenpeace).

Communication among classes here could be achieved in such a way, so that all children together could write a letter urging other children and adults to show their concern about the forests of our planet and to all join in the effort to preserve them.

The creation of a web site where the course and progress of this project together with all of the children's work will be presented will constitute the completion of the project.

This endeavor may seem to ambitious, perhaps even difficult, but we believe that it is worth setting in motion.

Let us hope that it will be the starting point of a wider effort that will make the open classroom with simultaneous teaching from different parts of the world and the collaboration of as many students and teachers is possible, a reality.

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## **THE PEDAGOGICAL ICT-DRIVER'S LICENCES: A DANISH NATIONAL INITIATIVE TO RAISE TEACHERS' ICT COMPETENCIES**

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The development of the use of information technology has undergone dramatic change and has substantially influenced the current educational debate.

The Danish Ministry of Education has developed action plans for the integration of ICT in education. One outcome of this action plan is that through financial support the Ministry of Education has created a nation-wide Sector Net (Internet infrastructure) thus offering Danish educational institutions access and opportunity via the Internet to create virtual classrooms and new learning spaces through an efficient, electronic communication network.

In addition to offering infrastructure, the action plan of the Danish Minister of Education states that by 2003 all Danish teachers must possess sufficient, relevant, measurable and homogenous pedagogical ICT competencies to insure a sufficient ICT integration in all subjects at all educational levels.

The paper describes how the development of the Pedagogical ICT-driver's License has helped push this development and how the decentralised model has ensured local commitment while still maintaining a sufficient degree of national quality control.

The first developmental project under the umbrella of the Pedagogical ICT-driver's License was the School-IT project in which primary and lower secondary teachers are taught basic ICT skills but primarily ICT-integration skills. By October 2000 the Pedagogical ICT-driver's License course has been attended by one third of all Danish primary and lower secondary teachers.

Parallel to this success the development of a Pedagogical ICT-driver's license for upper secondary teachers has taken place. Due to the higher degree of subject orientation in upper secondary education, this ICT-driver's license, while building upon the School-IT model, has a substantially higher degree of flexibility of choice for the individual teacher.

The paper describes the two models and states how the two basic frameworks have been localised in various other areas of education covering staff in educational areas such as after-school day care, nursing schools, language centres, technical and business schools.

Recently the model of School-IT has successfully been tested in Norway.

### **Key objectives of the Pedagogical ICT-driver's Licence**

The Pedagogical ICT-driver's licence must

- Substantially contribute to meet the needs for ICT-pedagogical competencies of the teachers in primary and lower secondary education
- Contribute to improve the pedagogical practice of the participants in relation to the integration of ICT
- Contribute to a change in methods in the work with the basic cultural techniques (reading, writing, arithmetic and the use of ICT).
- Contribute to the development of participants' understanding of and competencies in the use ICT
- Contribute to an increased use of netbased, flexible learning that meets the needs and qualifications of the individual teacher



## **Structure**

The Pedagogical ICT-driver's Licence is divided into 8 modules each comprising 3-4 chapters. Each module contains a comprehensive theme that is described both from a pedagogical and an ICT-skill point of view, and each module focuses on a specific ICT genre.

The School-IT courses offers 8 modules that are identical for all teachers where as the HighSchool-IT courses consists of 8 modules, which the teacher selects from a pool of 45 modules. The 8 modules cover 3 compulsory modules, 3-4 modules from a pool of 10, 1-2 subject specific modules from a pool of 32.

Teachers of primary and lower secondary schools are first and foremost teachers, subsequently English teachers or music teachers. In principle they must be prepared to teach all subjects at all levels.

Teachers in upper secondary schools, on the contrary, are first and foremost English teachers or geography teachers and subsequently upper secondary teachers. Thus it is important that the first group are offered comparable and unanimous qualifications; where as to be able to satisfy the upper secondary teacher you will have to offer him/her a very flexible, subject-specific course with a high degree of individual choice.

## **Course materials**

The materials supporting the course are:

- Texts that focus on the pedagogical possibilities that arise from the integration of various ICT genres. The texts inspire the teachers to reflect on the role of ICT in education
- Exercises to each chapter. Working with the exercises makes the teacher take up the necessary ICT skills
- Links to relevant material on the net
- ICT manuals that help the teachers work through the exercises
- Web-conference system to support the pedagogical debates

## **The course model**

The pedagogical ICT-driver's licence is realised through flexible learning.

The course is opened by an introductory day where teachers meet and get acquainted with each other, the course and its content and have the opportunity to discuss the objectives of the course with each other and the instructor.

The introduction also deals with the necessary technical and basic ICT skill elements that make the teacher able to continue the course after the introduction. During this introduction the teachers are divided into teams of 2-4 participant. In the School-IT model this team works together during the 8 modules, in HighSchool-IT teachers participate in a number of different teams according to their interests and choice of modules.

The course covers 20 weeks or more; and during this period the teacher teams hand in 8 papers to the instructor.

The concept is based on team based competence development in which netbased communication between teacher and instructor is crucial.

The flexibility of the concept offers participants wide opportunity to organise the work so that it meets the needs of their everyday work as much as possible.

The team writes the module papers, which arise from and document the daily teaching practice of the teachers, and when a draft of the paper is ready, it is sent to the instructor. The instructor gives a reflective and qualifying response to the team who then rewrites the paper and sends it to the instructor again for final approval.

In primary and lower secondary education a paper is 1½-2 pages, in upper secondary education a paper is 4-5 pages.

### **The distributed course organisation**

Both the School-IT and the HighSchool-IT courses are offered to the teachers in a very decentralised model in which the courses are realised by a number of local or regional actors in education. The course concept is described in such depth and detail that it has been possible to involve local actors in the practical aspects of the organisation of the courses. The result is that the courses are not perceived by teachers as being top-down or hierarchically founded courses. They are often seen as highly local, offered to the teachers sometimes by the very school in which they are employed, sometimes offered to the teacher by the regional educational centre and sometimes by the local division of the pedagogical university.

In a distributed course organisation like this one, the quality and consistency of the concept and the accompanying material become crucial as do the mechanism of quality control.

### **Quality control**

A number of mechanisms of quality control have been employed by the central course administration.

A contract with the local actors who offer the courses is the most important measure. This contract is public, open to everybody and identical for all local actors. The contract states how and when the School-IT and HighSchool-IT courses can be offered, how the materials are used and must be used and who can teach at the courses.

The contract states that the courses can only be realised with the dedicated material and that this material can only be used for these courses. It must be used as an entity and cannot be supplemented or used out of this particular context.

IT also states that the courses can only be realised with the assistance of certified instructors. As the instructors are the ones to pass papers, it is important that they act as representatives of the project organisation. A certified instructor will have to update his/her certification once a year - all instructors will undergo an annual update - as does all the material, online and paperbased.

In addition to the two quality control measures there is an element of random sampling of papers to check whether the quality of the papers is sufficiently high.

In less than two years we have one third of all Danish primary and lower secondary teachers involved in the course. We have more than 75 local actor contracts, we have educated more than 400 instructors and issued more than 7500 Pedagogical ICT-driver's licences.

### **Philosophy**

One of the objectives of the Pedagogical ICT-driver's licence is to contribute to an increase in the use of net-based flexible learning. Another objective is to give each teacher the opportunity to take his point of departure in his working and social context. Through the development of a learning space in the net-based conference system the work becomes to a high extent independent of time and place and the individual teacher becomes very much in control of when, where and how.

One of the founding principles of the pedagogical thinking of the Pedagogical ICT-driver's licence is that knowledge and competencies do not arise through the transport of information from one person to another but that it is a result of collaborative learning through contributing, creating and acting.

## **Basic preconditions**

- Development, process and teamwork are the key phrases
- No use of ICT-tools without a pedagogical rationale
- Consistent use of pedagogy and ICT tools throughout the course
- The top and bottom 5% are always at the back of our heads when we design the course and produce the accompanying materials. It is important that the materials are both attractive for those who have begun the ICT integration in their teaching and understandable for those who have not even begun working with the computer on an individual basis.

## **The future**

The Pedagogical ICT-driver's licence is already localised to support upper secondary school teachers and teachers in teacher training colleges.

The next steps that have already been planned are Pedagogical ICT-driver's licences for teachers in daycare centres, in language centres in nursing schools and in health schools. After these come teachers in business and technical colleges and universities.

Internationally the concept has been successfully tested in Norway, where almost 100 pedagogical ICT-driver's licences have already been issued and negotiations for a Norwegian version of the concept have begun.

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# INTRODUCING INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN PRIMARY SCHOOLS

## THE FAIAKES PROJECT

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### 1. Introduction

The “Faiakes” project<sup>1</sup> is a school improvement pilot project, which aims at integrating Information and Communication Technologies (ICT) in primary education across the school curriculum, within all traditional school subjects. It is considered to be an innovation as it is the first project that promotes ICT use in the primary classroom. It originated from the need to systematically integrate ICT in teaching and learning and in fact do so, starting from the primary school learners. The project involves 14 schools and upper-primary students and its conclusions are expected to contribute to the planning and implementing other ICT initiatives and even to the planning and implementing an ICT strategy.

This paper briefly describes the context where the “Faiakes” project is set, includes a review of the current situation in Greek schools as far as the introduction and use of ICT are concerned and highlights certain areas of the project implementation and early results.

### 2. Information and Communication Technologies (ICT) in Greek schools - Project Context

There is no doubt that the increasingly significant impact that ICT have on several aspects of society as well as its learning benefits to students and teachers have both enthused and alarmed policy makers, government bodies, academics etc. They all acknowledge that the integration of ICT in Greek schools should become a priority and that a national strategy should be carefully planned and launched. Until now, there have been several small-scale projects, which aimed mostly at raising awareness on issues related to the facilitative role of ICT in teaching and learning. A national strategy, introducing ICT in all levels of education has not been put into effect yet. At present, the principal aim of the Greek Ministry of Education is to create a critical mass of human resources, students, software applications, networks and hardware that will make the use of ICT part of the school’s *modus operandi*. The target is for every school, every teacher and every student to have access to educational networks by 2002.

However the situation is currently as follows; in *primary education* only a few schools are equipped with computers and are connected to the Internet, as a result of (1) private initiatives subsidised by the municipal authorities, parents’ associations and/ or the school councils and of (2) the schools’ participation in small-scale ICT projects. The initial planning for the integration of ICT in primary education at national level supports a holistic approach of using ICT in teaching and learning. This approach views technology as a tool that can help young learners discover and add to their existing knowledge, work with peers and with their teachers and develop their learning skills.

In *secondary education*, Information Science and Technology was first introduced in certain schools in 1985. In 1993 it became an independent compulsory course for the third-year students in lower secondary schools and for all students in upper secondary schools. Since then, ICT has officially been part of the school curriculum in the secondary sector as a separate school subject, called Informatics, which aims at the acquisition of (1) knowledge of how computer, software and networks operate and (2) of computer skills and capabilities that allow learners to: use the technology, create simple and sophisticated presentations, collect and process data, search various resources and practice conducting research, communicate and collaborate and develop software applications.

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<sup>1</sup> Financed by the Greek Ministry of Education, under the Second Community Framework for Greece and implemented by the Faculties of Primary Education of the Universities of Athens, of Thessalia and of Crete, the National Technical University of Athens and Lambrakis Research Foundation.

## 2.1 Description / orientation of the project- Aims and phases

The “Faiakes” project is part of an initiative called “Odysseia”<sup>2</sup>, which consists of a number of pilot projects aiming at equipping schools with the appropriate hardware and networking them, developing new or adapting existing software products, training teachers and/ or introducing ICT in the classroom. It particularly aims at assessing the feasibility of the introduction of ICT in classroom practice, in terms of resources and learning benefits.

More specifically, the project’s stated aims (Project Technical Annex pp6-7) include:

- exploring the cost effectiveness of networking a small number of schools
- creating a framework of educational services offered to schools through the Internet
- developing a learning community among participating schools
- facilitating and improving student learning
- promoting discovery learning, collaborative learning and self-learning
- training educators and encouraging continuous teacher development, and
- raising awareness regarding the need to upgrade and transform the educational system

In addition, the project is divided into several phases, ranging from the definition of the project aims, selection of the schools involved, evaluation of existing or development of new software, to teacher training, implementation of the innovation (classroom level) and evaluation. According to the initial timetable, the project was to run from July 1998 until June 2000; however, the project was extended for six months allowing project coordinators and participants to continue the validation phase till December 2000.

## 2.2 Teacher training and support

Project partners developed a training programme after reviewing successful training patterns in the light of the project’s objectives, specific needs and characteristics of the target audience. The teacher-training programme was mainly delivered through one-day seminars and school-based workshops and aimed at:

- *familiarising teachers with the project aims and methodology* in order to raise teachers’ awareness and ensure their commitment to the project;
- *reviewing the traditional classroom practice and roles*, where teaching is telling and learning is listening, in the light of the educational added-value of ICT;
- *helping teachers (a) become more at ease with ICT and (b) realise how they can enrich and enhance the learning experience in the classroom through ICT and how the new tools can contribute to their professional development*;
- *promoting collaborative and inquiry-based learning*;
- *developing teachers’ skills for evaluating and using educational software in teaching and*
- *helping teachers develop own multimedia material for educational purposes*.

For a start, a two-day seminar was organised at the end of September 1999, in which teachers and school principals participated. It was intended to be a welcome seminar, an introduction to the programme and a “social” event too. It aimed both at providing teachers with necessary information on the project aims and methodology as well as giving them the opportunity to meet each other, exchange views and experiences.

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<sup>2</sup> URL: <http://odysseia.cti.gr>

Indeed, awareness raising is fundamental if teachers' co-operation is to be secured. According to Stoney (1987 p33), teachers will co-operate as long as they know. Presentations, lecture, discussion and the sharing of views can be combined in order to raise participants' awareness and inspire in them a feeling of ownership for the innovation. Successful courses (Mortimore & Mortimore, 1989 p137; Brown et.al., 1990 p30) are reported to be the ones where staff is able to feel some ownership towards them. When they grasp the meaning of change, they are actively involved, or when their needs are taken into account, any value barriers that may have emerged at the beginning are dissolved, a knowledge base is created and a community with similar views and ideas is developed.

After the two-day seminar, school-based workshops took place. More specifically, teachers attended two or three-hour school-based workshops after classes. Off-site training, in the form of one-day seminars, such as the first training event mentioned above, was kept to a minimum to avoid disruption to pupils' learning. Distance training and support is- at the time of writing- not provided yet and is therefore rescheduled.

During school-based workshops, opportunities for hands-on training and for exploration of the issues (a) of integration of technology into the curriculum, (b) classroom organisation and classroom management were provided. According to the initial plan, teachers would receive technical training through a 40-hour course, and pedagogical training on issues, such as the application of constructivism in teaching, evaluation and use of educational software in teaching etc. through a 20-hour course. However the duration of the training courses varied and was adapted to suit local differences.

Formative evaluation of the teacher training revealed both its shortcomings and features of good practice. These can be summarised in the following:

Most teachers have realised the need to revise classroom practice and integrate ICT into it. Some have clearly expressed their interest in ICT, as they believe that technology will benefit students and prepare them to meet the demands of tomorrow's society. This has motivated them to conduct research and inform themselves on this subject further. Training has also helped them realise that ICT can contribute to the arrangement and organisation of collaborative activities and group work for students as well as to the development of interdisciplinary projects.

In general, they have developed a rather positive attitude towards ICT. However, motivation resulting from awareness does not produce or guarantee long-term change; motivated teachers are not necessarily competent and skilled enough to introduce an innovation in their existing classroom practice. If they feel that they do not have the necessary skills, however positive they may be, they are likely to revert to what they know well.

On the other hand, teachers' technical skills in operating ICT tools have improved to a limited extent. In addition, they feel that the educational potential of ICT has been poorly presented. In fact, they report that they were presented with few examples of how ICT can be integrated in teaching. We may therefore assume that they are uncertain of how and when to use ICT in their teaching. They suggest that observing a colleague and/ or an experienced ICT user would help them develop understanding of how they can (1) use various ICT tools in teaching, (2) organise technology-rich activities that will enhance student performance, (3) facilitate students' information processing and use, (4) develop students' critical thinking and communication skills. One can hardly expect that teachers at this stage are capable of transferring concepts, skills and principles in the classroom, as they do not possess them yet. Further school-based training sessions involving teacher engagement in designing and conducting technology-rich activities with or without the collaboration of their colleagues, using a variety of software, should be provided. Setting a context for teachers to work, will give them the opportunity to strengthen their practical ability to use ICT in their teaching.

In addition, support provision should be made. Teachers stressed the need for support. They reported that support material i.e. books, notes or in the form of suggested lessons plans and activities was insufficient. They also feel that strong technical support is needed, as they are unable to solve or even identify problems when these arise. It was also suggested that a classroom assistant would be very helpful. Finally, it was reported that schools need financial support too; expenses such as purchase of ink for the printers is not included in the budget schools have at their disposal.

Indeed, the implementation of the multifaceted innovation the project is trying to achieve necessitates the creation of a strong support system, which may involve various actors and media. After reviewing the project context and resources, project partners designed a support scheme, which incorporates various approaches and aims at providing schools, teachers and students with both technical and pedagogical support. However, it has not been fully put into effect. Nevertheless, the support scheme involves the following:

- *school-based training seminars* conducted by qualified trainers; these included training on the technical operation of various ICT tools and their pedagogical use in teaching and learning and have been previously described
- *school visits* by project partners
- *support through the project's website*; this includes information and useful training material, suggested activities and lesson plans and enables communication between teachers and school communities. In addition, a help-desk is due to operate offering technical advice and support.
- *assignment of the role of the ICT co-ordinator* to a teacher from each school, who is both competent and confident in the use of ICT and has a good grasp of technical issues. He/ she will become a key person, a stimulus and a source of help and advice for the other teachers. This role is said to determine the sustainability of change as having a "resident expert", who will cascade and filter down ICT skills to other staff within the school, strengthens the capacity of the school to incorporate change.

### 2.3 Software evaluation

Software that enriched and supported teachers' and students' activities was provided to schools after the evaluation process was completed. What should be noted is that the methodology of the MENON network<sup>3</sup> was adopted, for the purposes of the evaluation.

In general, the evaluation process included:

(i) *The definition of the evaluation criteria, which centred on:*

- the pedagogical content, its interest, originality and accuracy, the pedagogical approach used, the existence of tools that facilitate learning, such as a dictionary, a system of answer analysis etc.
- the flexibility, i.e. the possibility for both the teacher and the learner to choose among several scenarios, create new ones, and/ or the possibilities to add exercises, integrate media (e.g. video, slides etc.)
- the user friendliness, in terms of the easiness of use and navigation, the organisation of the information, the provision of support
- the technical quality, reliability, system of protection, prescription of hardware requirements and provision of sufficient information on installation/ un-installation.

(ii) *Research in the Greek multimedia market for software that matched project requirements, i.e. addressed the needs of 10-12 year olds, covered the subject areas of Language arts, history, maths and physics and enabled the development of interdisciplinary projects.*

(iii) *Selection and training of a group of teachers that acted as evaluators. Training aimed at their familiarisation with the evaluation methodology.*

(iv) *Organisation of evaluation activities. These involved the review of each product by two teachers-evaluators using a questionnaire that included the aforementioned criteria.*

(v) *Internal review of the evaluation results and final selection.*

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<sup>3</sup> [www.menon.org](http://www.menon.org)

### 3. Conclusions

Summarising project activities and intermediate results we can conclude the following. Training has resulted in raising teachers' awareness. Progression to the development of concept and organised knowledge, acquisition of skills and their integration into classroom practice, which are the other levels of training impact suggested by Joyce and Showers (1980 pp379-385), is not likely to occur unless further training is provided and certain arrangements are made. Teachers should be provided with concrete examples of the use of ICT in the classroom, in certain curriculum areas and of how students can explore and discover knowledge through interdisciplinary, technology-led lessons. This will help them obtain a clear picture of what the innovation is all about, or how it can be implemented in their classrooms and develop practical understanding of the innovation. According to Halpin (1998), proper teacher training must include modeled instruction using technology for teaching specific concepts that can be transferred into the teachers' real classrooms of instruction.

Furthermore teachers should be assigned or encouraged to undertake the development of a lesson plan, activity or project in order to put into effect what they have already seen and learnt. While teachers try to design and structure an activity, and carry out job-related tasks i.e. experience problem-centred training as opposed to solution-centred training, hidden problems and inefficiencies are usually revealed and solutions are sought in collaboration with trainers and colleagues. If teachers (Norton & Sprague 1996) practice alternative teaching strategies as part of their own learning, changes in their perception of the teaching/learning process may occur and transfer of theory to everyday classroom practice may take place. Learning by doing (Stoney, p33 1987) is a powerful training strategy.

Finally, pedagogical and technical support will help teachers apply new instructional methods and use new tools. The need to provide continuing support in the implementation phase, to check that the innovation has been properly understood and to ensure that local differences lead to adaptation rather than gross distortion has been well documented. Support will minimize confusion, loss of motivation and commitment.

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## **AEN – ADULT EDUCATION NETWORK A SOCRATES / ODL PROJECT**

*Christian Dorninger, Austrian Federal Ministry of Education, Science and Culture  
Wilfried Nagl, Project Co-ordinator  
Walter Steinkogler, Distance Learning Co-ordinator*

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### **The Project Objectives**

The aim of the project is to develop a co-operation between institutions and organizations with experience in adult education and ODL in 9 European countries. It includes the following objectives:

- To implement an electronic network for teachers and students: Practical models will be developed to set up support systems and to simplify access to networks and electronic learning environments.
- To develop criteria to improve the organization of courses and to improve the methods of counseling.
- To develop example learning materials and modules.
- To contribute to the further training of teachers by the dissemination of experiences, know how and innovative methods in ODL including the development of exemplary modules for the training of teachers.

The target groups of the project are educational institutions which provide ODL courses in adult education, adult learners in such courses and their teachers. Furthermore, teacher training institutions, public authorities, publishers and associations can gain a benefit from the project outcomes. Adult learners in 12 partner institutions participate in networks for students and we expect an impact on the structure of the courses by the exchange of experience made in different European countries as well as new orientations concerning pedagogical and didactic issues.

Teacher training courses in ICT are also a main concern of the project to create the necessary conditions for an effective use of ODL in adult education. In particular teachers are trained in the use of electronic learning environments and in developing their own material and courses, supported with software tools. The whole activities are focused on the practical work with adult learners.

### **The Partnership**

Federal Ministry of Education, Science and Culture (AT)  
Abendgymnasium Graz (AT)  
Abendgymnasium Innsbruck (AT)  
Abendgymnasium Klagenfurt (AT)  
Abendgymnasium Salzburg (AT)  
Abendgymnasium Linz (AT)  
Handelsakademie für Berufstätige. BFI – Wien (AT)  
HTBLVA für Berufstätige EDV & Organisation – Wien (AT)  
Pedagogical Institute Salzburg (AT)  
Pan Verlag Wien (AT) – 1st Project Year  
BITmedia e-learning solutions(AT)  
Copenhagen Business School (DK) – 1st Project Year  
Landesinstitut f. Schule und Weiterbildung Soest (DE)  
Töölön Senior High School for Adults, Helsinki (FI)  
European Distance Education Network (EDEN) (UK)  
Distance Learning Centre of the Technical University Budapest (HU)  
Associazione CAMPO, Firenze (IT)  
IRRSAE Toscana, Firenze (IT)  
Koning Willem I College, 's-Hertogenbosch (NL)  
Centro Naval de Ensino a Distancia - Portuguese Navy, Lisboa (PT)

Instituto Superior Technico, Technical University of Lisboa (PT)  
Komvux Vänersborg (SE)  
SSVH - National Institute for Distance Education, Hårnösand (SE)  
University of Derby - School of Maths & Computing (UK)  
Project Homepage: [www.aen.at](http://www.aen.at)

### Summary / Findings and Recommendations

The issues of the efficiency of online-learning, co-operation of educational networks or effective administration of educational institutions in the field of e-learning are being raised quite frequently, but are far from concise answers and solutions.

The AEN-project contributes to these issues and supports the following aspects:

1. The coaching of working adult students who study to get certificates of qualification can be supported to a very large extent by multimedia learning material organised and available in web-based electronic learning environments. The students however have to purchase the necessary IT-equipment and get connected to the internet. The mental and financial barrier to overcome is gradually getting lower.
2. The coaching of students in ODL-courses requires a proper combination of phases of home-study and student-teacher meetings. In their phase of home-study they are supported via internet-services. In Austria 50% of the classes normally required according to the curriculum are being used to work with the students of ODL-courses at the institutions. This requires weekly meetings of students and teachers in the evenings after the work in their respective jobs. These face-to-face meetings help to reduce feelings of loneliness and frustration of the home-learner. The Finnish and Swedish partner-institutions seem to have shorter periods of student-teacher meetings, however, the Finnish partners in particular can even offer support with TV and radio programmes.
3. Students appreciate the concise planning not only of the face-to-face meetings but of the home-study periods in particular. ODL-courses require a higher degree of self-organisation and self-discipline on the side of the students than face-to-face tuition in the classroom. The distant learners have to learn about these aspects in the first meetings. They have to realise their liberty in the learning process as regards time and space. On the other hand they need concise schedules and strict management of their "workload". Electronic learning environments can help to facilitate the situation of the home-learner.
4. Communication via internet-services like e-mail and newsgroups etc. means communication in writing. Discussing problems with study-material and issues of the courses requires logical thinking and exact verbal expression to a higher degree than in face-to-face tuition. The written word can be scrutinised much more thoroughly than oral contributions. Thus expressing ideas in writing is an essential component of the learning process and has to be estimated much higher than the one or the other animated study unit.
5. It seems vital to analyse the efficiency of web-based study-material. One of the partners in the project (BIT-media/Siemens) works on principles of the design of online-courses based on the constructivist theory of learning and assessment. Aspects like interactivity, learner-autonomy and independence, reality-based contexts, reflection and imitation of institutional structures in electronic learning environments have to be regarded in this context. The efficiency of multimedia-supported learning material ("e-learning efficiency factor") has to be evaluated.
6. We can distinguish between three aspects of computer support of the distant learner:
  - communication
  - content
  - course management

As far as communication is concerned there are the internet-services like e-mail and chat-rooms facilitating communication between students and teachers. These services are available and ready to use.

Authoring tools like *Macromedia Authorware Attain* are vital for content creation. Tools for content creation have to be evaluated according to the subjects and topics they should be used for. Topics of natural sciences seem to need more features for animation whereas foreign languages need tools supporting sound for listening comprehension exercises and exercise-types like text-reconstruction. Thus a single tool for content creation in e-learning is obviously not equally practicable for all kinds of content.

Electronic learning environments facilitating course management via the internet are being evaluated and tested according to the demands of the respective institutions because not all educational institutes have the same requirements on student-record tracking, communication-facilities, assessment, etc. Therefore co-operation between the partners of the project was limited to criteria of evaluation and demands on electronic learning environments and exchange of experience. The internet workspace of the project is "bscw" (short for "basic support for co-operative work"), a shared workspace system developed by the Deutsche Gesellschaft für Mathematik und Datenverarbeitung. The development of the BSCW system took partially place in the CESAR project, funded by the European Commission through the Telematics Applications Programme. In 1996 and 1997 the developments were partially funded through the CoopWWW project.

Online learning environments are still being developed by an increasing number of companies, so the diversity of products on the market is on the increase. Particularly European companies seem to be catching up in this field.

7. The average teacher seems to be capable of designing on-line courses based on his/her practice and methodological experience. However, web-based multimedia courses should be realised by IT-experts and the co-operation of content developers and designers seems advisable. Only very few teachers are experts in course design and online course development by means of authoring systems. If teachers on the university and secondary educational level are supposed to design web-based courses they will depend on professional help in order to achieve professional results.
8. Web-based electronic learning environments have to be serviced on a daily basis. The work-load of keeping online-courses up to date and the networks in running order is usually underestimated. However no institution can afford networks that do not work properly and study-material that is not available to the students in time. Therefore the costs for manpower in this field are high and must not be underestimated.

### **European Educational Policy and Contributions of the AEN project**

European countries are characterised by an increasing lack of IT-experts. Estimates vary from 1,2 million jobs to about 1,6 m. The gap between Europe and the USA in this field seems to widen. E-business is considered to be the driving force behind the economic boom in the US. Europe has to struggle hard not to lose even more ground in the digital economy.

Beside the demands of the economic markets under the Portuguese presidency the European Union decided on an "e-Europe 2002" initiative which shall not only affect business and tourism but also the field of education and all the people involved in this sector. In the chapter "e-Europe" the member states are required to connect all educational institutions to the internet and to train all teachers and students in internet-services. These facts as such are not so surprising. It's the tight schedule for these activities that makes one wonder if these targets can be realised till the end of the year 2002.

The results of the Socrates-ODL-Project "Adult Education Network" fit perfectly to the latest EU-initiative on "E-Europe". While questions of equipment and curricula are subject of national educational policies and while IT-certificates rather need organisational backing, the AEN-Project addresses the important issue of the development of web-based learning material and internet supported co-operative learning organisation.

The Feira-demands for internet-services, web-based teaching and learning material organised in electronic learning environments are most difficult to realise. According to these demands authors should be experts for content development and web-presentation although experience with online-learning is scarce, particularly off the university campus.

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# TRAINING TEACHERS FOR OPEN CLASSROOM COLLABORATIVE WORK

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## Abstract

As modern technologies continue on to develop at very high speeds, the barriers for communication between individuals created by time and space are fading away. It is now feasible to develop *collaborative work* –as in the case of space research being transferred to education- even between industry, university and schools. The experience gained by the author in the last two decades on *open classrooms*, clearly shows that *training teachers* is as important as providing suitable hardware and software infrastructure. The European Distance Education Network should provide the necessary environment to help teachers to develop the necessary skills to meet the emerging conditions. Barcelona 2004 Forum could be an excellent meeting point for teachers to present their various cultural backgrounds to other communities.

## Introduction

In the past two decades the author has been the witness of the development of “technology assisted education” from the simple use of the personal computer to the sophisticated high-technology equipment that bridges societies all around the globe. From earlier experiences in teaching BASIC and ASSEMBLER languages using computers, interest has shifted to the implementation of the *communication networks* in teaching computer skills to freshmen students in the university where he is now affiliated. In this paper recent experience in a) training secondary school teachers in computer skills (1998), b) encouraging students to create their own learning environment on the network (1999), c) counseling the leader of the secondary school network for a joint project (1999) and d) preparing freshmen to develop oral presentation skills using computers (2000) is reported.

We strongly feel that collaboration work between industry, university and schools -as is the case in the Chalmers University of Technology “Dialogue 2000” program- must be promoted [1]. Only international organizations can bridge the gap between institutions moving all the stakeholders in the education arena towards a more effective learning world.

Reflections and recommendations for future work are also included at the end of the paper.

## Training Teachers Computer Skills

The university where the author is affiliated launched for the first time in the summer of 1998, a teachers training program for 240 school instructors working in different regions of Turkey. The program was designed so that all participants could have hands-on experience in using computers in developing educational media for schools. The World Bank is providing the funds to enhance computer-based learning in Turkey by supporting various programs.

“Project based learning” was implemented as educational method and teachers were requested to prepare unique presentations. Although some participants showed some resistance during the first weeks, group dynamics helped in securing full participation of everybody. Projects prepared ranged from topics in literature, mathematics, life sciences, history, arts, geography, and language. Microsoft PowerPoint program was used to compile information gathered mainly from Internet.

Participants had access to the work-in-progress of their peers via the local network and oral presentations were scheduled at the end of the six-week program. All the projects were made public at that time on the Internet classified by instructor and subject. It is hoped that this experience will help encouraging others to join the ever growing “project based learning” bandwagon. Results obtained –also gently acknowledged by the ministry of education- were very encouraging [2]. (See Fig.1.)

## Encouraging Students to Use Networks

The method described in the previous section gave inspiration to a new approach in the style of teaching in higher education. Fortunately the author was awarded a research fund to start a virtual school designed to serve the educational needs of a large range of learners. Following some successful cases that have been reported on the electronic learning environment, most recently the National Higher Education Council submitted to all universities in Turkey a mandate to start education at a distance.

Virtual school presupposes the existence of some kind of courseware where student can refer for information and examinations are delivered in a similar way to the tradition method. We have proposed - contrary to the traditional methods- for our school an "exploratory learning" approach in which students are expected to prepare their own material and submit them for approval under the close guidance of the instructors acting as mentors.

The project is now under way and students have taken the initiative of preparing the electronic environment. Students are clearly showing that learning should be based on free discussions and sharing of information. Drafts for home page, news page and student registration page is being currently prepared and students are sharing their "discoveries" with great enthusiasm. Students need to be allowed to develop their creative skills freely. A presentation was made in the Open University in Israel that can be seen in <http://www.fed.boun.edu.tr/main/cet/Erol/israe99/index.htm> [3]. (See Fig. 2.)

## Counseling Leaders for Joint Projects

The World Bank is currently looking for new ways of bridging the gap between the "have" and have-nots" in computer literacy. Turkey has been one of the fortunate recipients of loans for improving the infrastructure of secondary schools. Concurrently with the efforts to implement modern computer laboratories, relevant educational software is being developed by several parties.

We wish to quote from the UNESCO report named "Learning: The Treasure Within" prepared by a commission headed by Jacques Delors published in the year 1996: *...there is, therefore, every reason to place renewed emphasis on the moral and cultural dimensions of education, enabling each person to grasp the individuality of other people and to understand the world's erratic progression towards a certain unity; but this process must begin with self-understanding through an inner voyage whose milestones are knowledge, meditation and the practice of self-criticism.*

The report describes the four pillars of education -learning to know, learning to be, learning to do and learning to share- that administration staff must point to improve the present conditions if we are looking for a better future in this our planet. Some experience was gained in the World Bank sponsored WorLD project. This project attempts to use computer networks to create environments where students all over the developing world can share experiences while developing learning projects. New encounters with the 31 turkish secondary schools involved in this project may enlighten the path for more collaborative work [4]. (See Fig.3.)

## Preparing Students for Oral Presentations

A novel program of education was implemented during the spring semester of the 1999-2000 academic year. A group of 38 university students from the faculty of education participated in the "Introduction to Computers" course, designed to develop the basic communication skills required today in daily life using emerging technologies. The method adopted is the result of many years of experience gained while using computers as tools for learning in the classroom environment.

The students prepared drafts on paper for the presentation slides and then transferred the approved material on the computer followed whenever possible by oral presentations. Make-ups were not allowed and grades were reduced for late presentations. The standard grading system generally accepted was adopted as the basis for final assessment. Students not familiar with this "project centred learning" approach, had difficulties to adopt during the first weeks. Nevertheless performance improved as pride on the work accomplished became -without the pressure of grading- the main concern.

Although collaboration between students was not encouraged, in some cases it was inevitable. For the sake of checking the authenticity of the work, short examinations were given whenever possible. By the end of the semester students were requested to make one peer-evaluation and prepared the final own examination questions. Documents can be found in [www.yeditepe.edu.tr/~eor/ders](http://www.yeditepe.edu.tr/~eor/ders) folder. No doubt that although puzzled with the educational method adopted by the instructor, students enjoyed in most cases with this new learning approach.

Results obtained at the end of the semester are very encouraging. Students in many cases confessed that they were unfamiliar with some of the themes of their own history. Presenting their contributions in class demanded effort to develop both written and oral presentation skills. This experience showed the need for a publication that would give learners a step by step method in public presentation. Such a document can now be find in the files *car.ppt* and *mpp00.ppt* in the same web page cited before [5]. (See Fig. 4.)

## Conclusion

Experience in training secondary school teachers in computer skills, encouraging students to create their own learning environment on the network, counseling the leader of the secondary school network cooperating in a joint project and preparing freshmen to develop oral presentation skills using computers is reported in this paper. As a result of this experience now students in the faculty of education where the author is affiliated are being introduced in the use of computers in learning various subjects. The production of teaching material that included "animation" is now the main concern in the courses given. Recently the author has introduced drama practice as a complement to the computer practice.

"Technology Mediated Communication" (TMC) is rapidly enhancing the way we do business and is also improving the way we learn. Technology can be used to make the learning process more enjoyable both to the teacher and the student. The emerging technologies and "project centered learning" techniques can bridge the expectations of the teachers and students. In our opinion it is more important to upgrade the computer skills of teachers, than the enhancement of hardware and software.

Experiences gained in the use of computers in the last two decades allows us to draw some conclusions about the launching new educational ventures. It is our sincere aim to join efforts with other similar institutions having planned similar ventures with the desire to assure a youth becomes more aware of the existence of "others", an awareness that is important ingredient for world peace.

The European Distance Education Network should provide the necessary environment to help teachers to develop the necessary skills to meet the emerging conditions. Barcelona 2004 Forum could be an excellent meeting point for teachers to present their various cultural backgrounds to other communities. The community project launched by a leader personal computer company can be a good starting point.

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**günümüzde internet**

**yusuf inal**

- İnternetin dünya üzerindeki konumu.
- Bilgiye kolay,ucuz,hızlı ve güvenli ulaşım.
- Merkezi yönetimi yoktur.
- Bir demokrasi platformudur.
- Bilgi de ğiş-tokuşu.
- 25 milyonu aşkın bilgisayar ağı.
- Bir hayat kolaylaştırıcı.

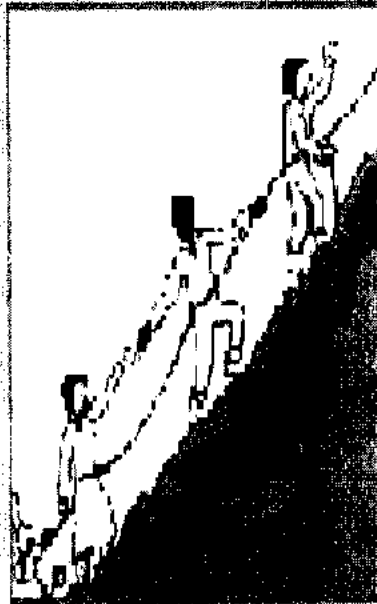
**bilgi** → **bilgi**

Figure 1. First trial from a a teacher in the computer skill training course



# VSE - VIRTUAL SCHOOL ENTERPRISE

News  
Vision  
Administration  
Registration  
Staff  
Courses  
Students  
Resources  
Forum  
Sponsors  
Contact



any idea for that  
empty part ?  
do we have a  
slogan maybe ?

mail to webmaster : hazard@zagor.yeditopo.edu.tr

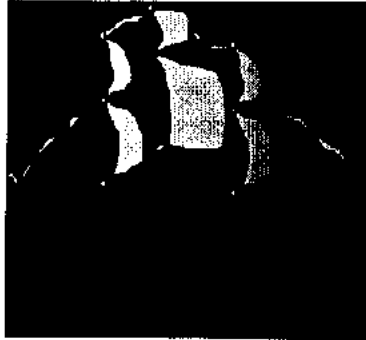
Figure 2. Home-page prepared by students in partial fulfillment of course assignments



Figure 3. Textile now in the Metropolitan Museum as example for collaboration

# FIRST JAPAN-TURKEY RELATIONS STARTED WITH

## THE ERTUGRUL FRIGATE



Sultan Abdulhamid II sent Japan a ship full of Ottoman's presents  
to set relations.

SENDOGAN

Figure 4. Slide prepared by student in "Introduction to Computers Course" 1999-2000 year.

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# BUILDING A VIRTUAL SCHOOL FOR IN SERVICE TEACHERS ON ENVIRONMENTAL EDUCATION

*Vittorio Midoro, Istituto Tecnologie Didattiche, CNR*

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## Introduction

One of the central issues in the field of environmental education (EE) is that of teacher training. [1] The question here is: what skills and knowledge does a teacher need to have in order to take part in an EE project? What expertise is the teacher expected to have? What kind of teacher training processes should be developed?

There is wide consensus that the study of EE in schools ought to be carried out through interdisciplinary projects addressing an environmental issue. Hence teachers will no longer work in isolation but must learn how to co-operate within a project group and master the basic design techniques common to any system.

Therefore, training courses must cater for prolonged interaction. The use of telematics can foster this by removing space and time constraints. Computer-mediated communication is largely text-based and asynchronous (deferred time). This purely technological factor has an enormous impact on the way communication is conducted. [2] While no in-depth studies have been carried out into this aspect, there is little doubt that, when working in a group, the need to communicate in writing in deferred time involves a much greater degree of synthesis and clarification than in face-to-face oral communication.

In EE projects there is a constant risk that the isolation in which teachers work will lead to fragmentation and end up limiting project scope. An EE teacher should feel part of a wider community that, while operating locally, has a solid general base. On-line education helps to overcome teachers' isolation by linking them up in an on-going manner, even though they may work in separate geographic locations. With on-line training courses, teachers involved in projects become aware of the possibilities offered by interaction and collaboration not just with colleagues in their own school, but also with those working elsewhere.

The rigid scheduling of conventional school activities hinders group members seeking to work together in a flexible manner. In this respect, on-line training courses present participants with the means to tackle time restraints through the use of deferred written communication.

The isolation faced by teachers also hinders their access to information sources and to sites where knowledge is generated. Participants in on-line training become aware of the possibility of accessing authoritative sources (experts, professionals etc.) and information. Even when the course is over, the teacher can keep a channel open with the tutor and other participants, thus reinforcing that sense of belonging which is often lacking in conventional training courses.

An important aspect of environmental education is to reflect on what one is doing, bearing in mind the implications this action may have on the process as a whole. Interaction that takes place in an on-line course is constantly available in written form, presenting a potentially powerful tool for analysis, review and synthesis; this fact alone would justify using telematics in teacher training.

Being able to address both educational and environmental problems, while taking the points of view of others into account, is a vital factor for in-service training in the EE field. In conventional distance learning this aspect has often been neglected, with little use being made of the know-how and experience each participant brings to the course. In network communication, on the other hand, this resource is fully tapped.

In this light, distance learning (DL) methods are most suitably applied in adult education, where sharing personal experience related to the subject being studied can play a key role in the collective growth of the group.

These are some of the aspects that make on-line education attractive to teachers who are developing EE projects. Bearing these ideas in mind, we have developed MEDEA, which at beginning was a single on line course for in-service teachers and now has become an online school for teachers willing to learn how to develop an EE project in the classroom.

### **Original solutions for in service teacher training**

The quality of an online learning process could be very high, however typical online courses involve a small number of students (30-50). MEDEA tries to overcome the quantity limit of online courses, trying to save their quality.

Before discussing how to conjugate quality and quantity, let us briefly discuss what the basic components of OLE are.

Three features characterise OLE [3]:

1. a learning community, involving participants, tutors, experts, observers etc.;
2. a pool of material;
3. a telecommunication infrastructure with the related services.

The community uses the telecommunication infrastructure with the related services to communicate, to access and share information and to co-operate. The material is available in the web or off-line. It also could be developed and sent out by tutors or other members of community. In the OLE the co-operative features and the interaction among the participants are the more relevant features. Moreover the written communication allows storing and reconstructing the co-operative process, providing the basis for evaluation and tuning of the whole learning process.

#### *Quality*

As with other forms of distance education, online education removes space and time constraints, but it shows a new characteristic which makes it more powerful than those ones. In OLE, the availability of tools for a rapid reliable and cheap communication allows to implement forms of social and co-operative learning based on asynchronous written messages. As a result, not only time and space constraints (typical of a classroom situation) are removed, but also the learning paradigm is changed. While in the classroom the prevalent paradigm is the transmissive one, which is not suitable for a target of expert teachers, in OLE the learning paradigm is a social construction of knowledge. Here a community of experienced professional uses the technology to share information, communicate and co-operate, and learning takes place as a result of a co-operative activity. In this process new knowledge and material are created which become available for other teachers involved in future teacher-training processes.

#### *Quantity*

The best participants/tutor ratio is about 30. A single course does not solve the problems linked to a large number of trainees. But any online course can be repeated many times, in series or parallel, provided that there are enough tutors. In fact, materials, methods and technology are reusable. Moreover the course becomes richer and richer at any replay, since it acquires new materials and expertise pertaining the ways of running it. The apparent drawback of this approach is the large number of tutors required to running it in parallel sessions. But this problem can be overcome, considering that any run of the course "produces" people who can become tutors of an online course. It is required a little effort to transform this potentiality in an effective availability of tutors, as we will discuss later in the paper.

Let us see now how these general statements have found a practical application in a case of in service teacher training.

## **MEDEA: an online teacher training program**

At beginning (1994) MEDEA was a single online teacher training course regarding environmental education (EE) [1].

The idea behind MEDEA was to respond to the needs, constraints and structures of EE by adopting on-line education approaches. The course originated within the framework of LABNET, an R&D project carried out by the Italian Research Council's Institute for Educational Technology (ITD) under the INFEA Programme, granted by the Italian Ministry for the Environment.

In MEDEA, a computer mediated communication system, First Class, was used to support learning activities that involved groups of teachers living in various Italian cities.

The course was based on a methodological approach proposed by ITD for the development and management of EE projects based on educational technology [4]. The chief objective was to give teachers the skills for designing and carrying out EE projects using this methodology. The approach comprises a number of phases and examines the planning and management of EE projects by groups of teachers from various disciplines. Rather than dealing with individual teachers, MEDEA addressed groups of teachers, the aim being to encourage local face-to-face interaction as much as possible. These groups met up at local EE centres or in their schools in order to use the necessary network links.

Ten groups of teachers located in various Italian cities were enrolled in the course

Three tutors, who were also experts in the specific subject matter, led MEDEA. Five observers, who had an interest in the project, although they did not participate in the work groups, also followed the course.

The course was organised into three major phases; each composed of a series of modules that ranged in length from 2 to 4 weeks.

Considerable emphasis was given to practical work and inter-communication in each module: phases of individual and group work alternated with periods of interaction with other groups and tutors/experts (methods and contents).

At the outset of the course, the students were given a kit of materials that included a user guide, articles, videotapes, publications, and so on.

Each module was based on individual study of the material, discussion about the content, activities proposed by the tutor in each local group, communication of results obtained by the local groups to other groups, and inter-group discussion.

Upon completion of MEDEA, the groups were to produce a final product, i.e. their EE project. A final face-to-face meeting was held at the end of the course to discuss the whole experience.

After this experience, MEDEA was tuned up and run again in 1996.

In 1998, MEDEA became European, and was called EuMedea. The EuMedea project was born from the idea of creating a synergy between the European project telematics for Teacher training, T3 and the experience developed at national level with MEDEA. [5]

EuMedea in fact involved teachers and student teachers from 5 European countries: Finland, Italy, The Netherlands, Portugal and UK.

The design of EuMedea, besides trying overcome some of design of EuMedea, entailed a number of adaptations to the multinational and multicultural context of T3, as well as to the attempt to strike a balance between the different organisational requirements of various countries.

In the following we briefly describe the differences and similarities between MEDEA and EuMedea, pointing out the reasons of changes.

### *Population*

While MEDEA was addressed to local groups of teachers, EuMedea was addressed to local groups composed of teachers and/or student teachers co-ordinated by a local tutor. Online courses depend on the ability of participants to build new knowledge based on the experience of each member. In EuMedea we studied the effectiveness of this kind of learning with student teachers with no or little experience of teaching. To increase the knowledge of each group, we suggested the local groups to enrol a local tutor and give the group the possibility to consult an in service teacher via CMC. Another important issue was the language. We had been forced to choose a common language, English, which was the mother tongue of only one group. We studied how this influenced the remote group communication and what could be done to minimise problems related to the language. Finally, contexts in which local groups acted were very different. We studied the impact of these differences on the effectiveness of the course.

### *Timing*

MEDEA lasted six months, while the EuMedea partners required reducing this period to three months. As a consequence we had rearranged the content in three modules, in which the main points of the seven MEDEA modules were dealt with.

### *Technology*

Both MEDEA and EuMedea used a computer mediated communication system. However, since EuMedea took place in the context of a European project, dealing with telematics, its visibility through the web was an important requirement. On the other end, in our course, we had the need to restrict the interaction to the registered participants. The first need required that all Internet users could access EuMedea to observe it, while the second one called for an Intranet approach which restricted the communication inside a given community. We chose to support EuMedea using the more recent release of FirstClass, because it allowed to implement a system offering both these features.

Online courses usually start and end with face to face meetings, where participants familiarise each other's. In our experience these events are very useful to create a friendly environment for the course interaction. In the context of EuMedea, face to face meetings would have been too expensive. In alternative we planned an initial and a final multipoint videoconference as a substitute of face to face meetings.

Along with EuMedea an ad hoc methodology to validate online courses was developed and used.

In 1999 MEDEA became an annual training program involving a set of parallel courses based on a revised version of the original one. Here, the key idea was to test 2 hypothesis:

1. Tutors, others than the original course designers, are able to hold the MEDEA course.
2. A percentage of MEDEA alumni can become MEDEA tutors.

In the affirmative, we could have found a possible key to solve the problem linked to the great number of teachers to be trained.

Three teams of tutors planned, organised and held three MEDEA courses in three different environmental education labs, Milan, Udine and Genoa, with excellent results. MEDEA99 verified the first hypothesis. However it became clear that to ensure the "portability" of the course some tools for the future tutors should be developed.

At the end of 1999 started MEDEA2000, which involves five courses, with 78 groups, and 335 participants. MEDEA2000 tutors are both tutors and alumni of MEDEA99. The MEDEA2000 program started with a short (2 days) introductory course for the 9 tutors. A tutor guide was developed for helping tutors in their task and a conference area was open for assisting the tutors while performing their task. Tools for "real time" course validation were given to the tutors, to help them to understand the effectiveness of the course at any moment. So far, MEDEA2000 is still in progress, but the first results show that also the second hypothesis is verified.

## **Lessons learnt**

MEDEA shows how ICT can be used to develop mass and quality teacher training courses, dealing with both an interdisciplinary content (EE in this case) and educational technology applied to that content. In the following some lesson learnt are shortly described.

MEDEA shows that it is possible to develop online courses, that are effective and reusable for in-service teacher training. The MEDEA approach can be generalised to the development of online courses dealing with curriculum areas, involving in the design both OLE and content experts. This should ensure the quality of these courses.

EuMedea has shown that adapting a well-designed online course to very different context is easy to accomplish and cheap as far as human and financial resources are concerned. The differences due to different contexts can result as richness and not an obstacle.

MEDEA99 has shown that tutors who were not involved in the development of an online course can hold it successfully, with no significant lost of quality.

MEDEA99 has shown that instructional and helping tools are useful to assist new tutors in holding courses designed by others.

In MEDEA2000 these tools consisted of a two-day course, a tutor guide and a conference area in the CMC system where to pose questions and ask for help to more experienced tutors. These tools were effective for MEDEA2000 and could be effective also for other kind of online courses. In any case tools for helping tutors should be designed for ensuring the course portability.

Environmental education labs supported both MEDEA99 and MEDEA2000. These belong to a national network of EE labs called LABNET. ITD provided the CMC system and assisted the novel tutors while holding the course. The lesson learnt is that disseminating an online course requires structures to accomplish the tasks performed in MEDEA by the EE labs and ITD.

The described dissemination mechanism involves two elements apparently in contrast. A centralised element dealing with planning the whole system, as the management of the whole program, the administration of the CMC system, the helping facilities for the tutors etc., and a local element, as for example recruiting participants, localising the course, organising the local initial and final meetings etc. The MEDEA experience has shown that this combination of centralism and localism can be very effective, provided that the quality of the whole system is continuously monitored.

## **Conclusions**

The diffusion of computers and the Internet is comparable to that of telephone and television in the recent past. A scenario, in which every family has got one or more computers and the Internet access, is becoming a realistic one. These tools deeply modify not only the ways to communicate, but also the ways to learn, cooperate and work. School should change to accommodate this new situation and, along with school, the teachers' role should change. The teachers' competence would have to enrich, involving ICT skill for both personal productivity and as a tool to facilitate children's learning. This change is required now and we cannot wait for a change of generations, but then a great number of in-service teachers should be retrained. The paper has tried to contribute to find possible solutions to the problem of how to train hundred thousands in-service teachers. ICT and more recent results of research in education technology can help to cope with this issue. MEDEA, a program of annual online courses, which every year multiplies the participants' number, is an example of how ICT can be used for that purpose. Some lessons learnt have been discussed, but the main suggestion is that the solution to the problem of a mass and quality in-service teacher training can be found connecting ICT, research and local educational structures, co-ordinated by means of central programs and structures.

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# VIRTUAL COMMUNICATION AND INTERACTION : KEY ELEMENTS FOR TEACHER TRAINING TODAY

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## Introduction

The world of education in Spain has undergone a number of changes over the past 15 years. A permanent adaptation to changing university curriculum; the launch of a reformation plan in education making academic programmes to evolve; a more balanced teacher-student relationship in the classroom; an increasing investment in educational infrastructures; the remarkable role of technology as an essential tool for transforming and adapting to the new society, among others.

Today's educational reality is living through an internal revolution that demands immediate and qualified responses. The concern that some governments and administrations across Europe show before this economic and social change is a proof of it. A rising global economy demands an equally global education, to where society is led. This change not only questions but conditions the traditional concept of education as a forging element of society. The key role played by educators is affected by this new reality, as far as society, economy, and technology are concerned. The continuing training followed periodically by instructors ought to be adapted to these emerging needs.

This paper, therefore, will focus on two proposals for instructor training using tools and systems in communication, besides tele interaction in a virtual learning setting. The developed telematic proposals, the main objectives, and a summary of the basic features involved are to be explained later on, along with punctual conclusions and valuations of experiences based on teacher instruction. It is important to remark that the whole educational process generates to participants new expectations and needs, all of which will be referred to in the final part of this abstract.

## **The UOC: an acknowledged proposal for virtual education.**

The UOC not only enhances but keeps up a leading position at creating virtual environments and tele programs aiming to the field of education. The role of a teacher in today's society means that he or she must be aware of how the new technologies evolve, what pedagogical possibilities they offer, and in which way can be applied to a classroom.

The emerging IT society demands educators who can respond to the new reality that students go through. It is certainly important to be familiar with tele work and its applications, but to possess virtual communication strategies is even more necessary.

G. Landow put it clearly in 1997: "New computer technology changes the nature of my teaching activity because it permits me to assume professional responsibilities that another way will become too difficult or I could not assume... The most important advantage of these new technologies is the way they create emerging electronic communities with capacity for sustaining and maintaining intellectual or other kind of concern".

As for distance education in a virtual learning environment, the UOC has been promoting a number of challenging projects on the basis that a learning environment is a meeting place for individuals and ideas, as well as a site that enables positive interchanges for ultimate educational purposes. A virtual learning environment can be seen as a workplace that enhances and increases the choices provided by the new technologies to the different elements involved in distance instruction. As the meeting point extends through time and space, members of the educational community do not need to meet in real time and space. The classroom can be situated in any place equipped with interconnected computers, and the lesson can be delivered thanks to a computer log-in. Students may pose their questions to the teacher at any time of the night or the day (Gil, J., Guitert, M., Giménez, F. 2000).

In this context, some virtual workgroups in tele education have been designed and developed by the UOC. It is the case of the BCN educational boulevard for IMEB or that of a setting of telematic secondary education for ICESD. These forerunning examples not only show but also approach teachers and students to the virtual world of education, which is conceived as a reality integrated in today's pedagogy.

The educative proposal for **Virtual Workgroups** relies on a better use of information and communication management tools, so as to create a personalised learning environment for every student according to his/her needs. To succeed, it is necessary to show skill on new methods of communication along with strategies and specific norms of interaction as demanded by the use of telematic and computer tools.

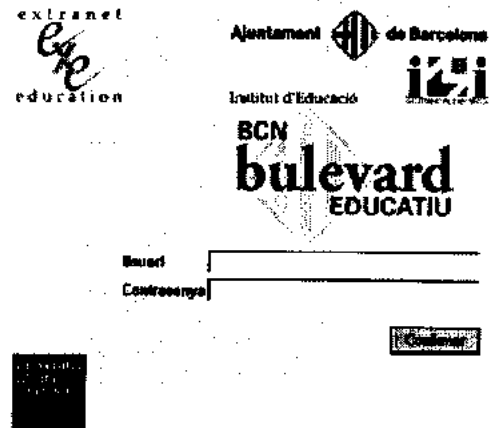
**Virtual Workgroups** is an time-limited activity program ranging from communication, to research and co-operation, all of which being conducted by an online tutor. He or she has a clear goal: to enable students to attain a basic instruction in the use of the telematic work tools that can be found in a virtual campus. In other words, he will give guidance to students while taking their first steps to carry on work in the Virtual Campus, by firstly presenting activities on exchange of information and communication (Guitert, M i Gil, J. 1999).

### Case Studies based on virtual tele education workgroups

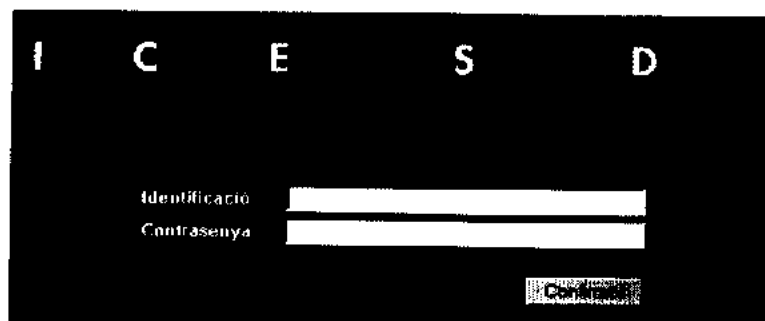
A proposal for programming these virtual workgroups upon a basis of communication strategies and the use and optimisation of graphic tele work- related interfaces focussed on the following aspects.

Main objectives:

- To offer virtual communication strategies
- To give an answer to any eventual doubt and proposal that may arise. On-line aid.
- To encourage the use of telematic tools as considered one of the many pedagogical resources available for educators.
- To disclose all the possibilities offered by this tool.
- To analyse any aspect according to its design and environmental functionality as to study further adaptations.

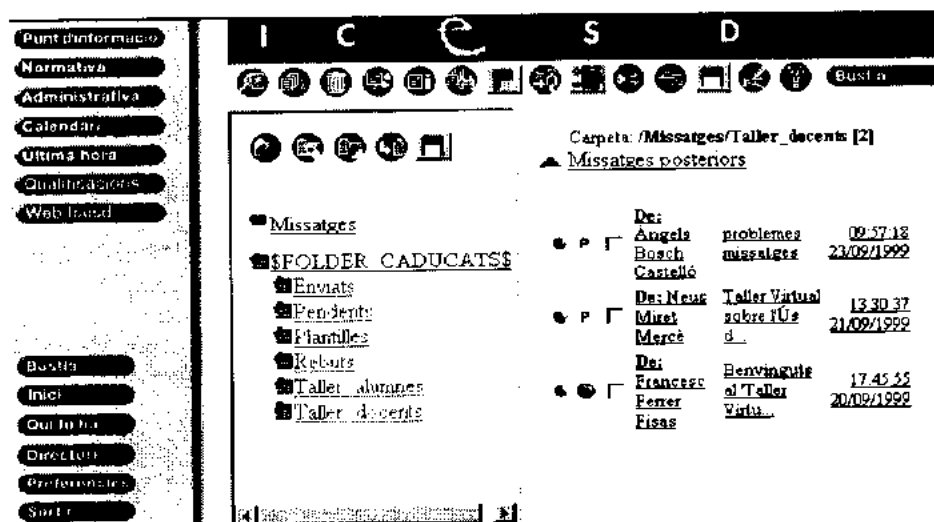


The initial material for developing the virtual workgroup and the former planning involved are regarded as the pillars of the tutor's performance. He or she will lead the participants through the process of learning within the virtual workgroup. He or she will make the activities available according to his/her students and any circumstance that may alter the group and the work interface.



The objective is to guarantee a familiar relationship with the virtual environment and the latest strategies for study, work and norms of interaction rather than with labour itself. In short, this is the process to follow at the time of advancing practice exercises:

- A tutor's introduction to the group
- The Campus as a work scene primarily based on asynchronous written communication.
- Environment access: email address, log-in name, password
- Possibilities to navigate to the main screen
- E-mail basket: in-basket marking (flags), listing of e-mails. Opening an e-mail. Parts of an e-mail. Reply. New e-mail to a course colleague.
- Site of education. The Virtual Workgroup. Shared classroom e-mail baskets: Teacher's billboard, Forum and Debate areas.
- To be aware of distance communication demands: accuracy, reiteration, and clear exposition of circumstances of doubts and problems. Better to send two messages covering various subjects. The importance of being brief-oriented in style. Other services and functions in a virtual environment.



ICESD setting's virtual interface is a design meant for a specific tele work used by teachers and students in second education school.

At this point, there are additional contents like for instance searching on the Internet and developing practices with Office for Virtual Workgroups to be lasting between one month and a month and a half. Searching on the Internet has collected positive results. The objective aims at looking up articles about search engines. Because there are many of them, the student only needs to sort out one article, and then account for the process, the strategy and the search tips. Conclusions are expected to be drawn (directories, search engines, metasearch engines). Other proposals may deal with the search for course content-related websites and a later account for the outcomes in the Forum area; to create and enlarge a Word file by adding a table with interesting URLs, etc.

### Further considerations

In spite that workgroup's valuations and suggestions are of a practical kind (to facilitate the educator's task by providing an offer from the *Centre de Recursos Pedagògics Telemàtic*; creating a digital Education library; delivering search strategies on the Internet in the educational domain, etc.), as members of the team of educators we cannot ignore - as far as these virtual non-university teacher workgroups are concerned - that the workgroup's first objective splits into two: to guarantee a deep insight

of a the virtual setting, and what's even more important, to help assume the latest strategies in study, work and interaction norms in this new environment. Educators as workgroup students, hence, may undergo a new way of teaching and learning to be implemented in their professional background.

Finally, teaching those workgroups has proved that the important thing is to provide communication strategies and to enhance virtual interaction in learning, rather than to help exert a good command of the new tools.

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# CHANGE OF PARADIGM IN TEACHER TRAINING WITHOUT TEACHERS?

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The main thesis of this paper is that a paradigm change can be observed in the fields of teaching and training the last few years. One of the most important fields of this change is the field of teacher training, since all influences have a multiplied effect in this field. The new paradigm gets to more and more people through teachers. In the first part of this paper, I would like to guide you through the theoretical background of this phenomenon.

At the Berzsenyi Dániel College we recognized the need for change, so we introduced a new course two years ago. Its name was Introduction to Information Technology. The goal of this course is to broadcast this new paradigm to students, who are going to become teachers, and to make them able to play an important role in shaping this new paradigm. After a year's experience, last year we changed the methods of this course. In a few groups, we started to use ODL-methods instead of the traditional teaching methods. In the second (and main) part of the paper is about this experiment.

## 1. What is a paradigm?

- 1.1 Paradigms are essentially scientific theories or ways of looking at the world. They fulfill two requirements: they must be "sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity," and they must be "sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve"  
(Kuhn 1962)
- 1.2 In formulating new paradigms, social factors may affect how scientists choose to interpret the facts they directly glean from nature. A paradigm represents more than just a collection of known facts; it represents a plan of the universe through which they can at least temporarily look at the universe and further their research. In other words, once they have adopted a paradigm, they can then test the limits of its scope. Thus, while the paradigm is essentially based on observed facts, the ideas and creativity that go into articulating the paradigm may be the result of cultural or metaphysical notions.  
(Kuhn 1962)
- 1.3 According to my point of view, if we start to apply all the things mentioned above to training and especially to teachers' training, we can make the following statement: if we look at the training as a special way of communication, then: information technology changed all the kinds of communication dramatically, thus it's obvious, that it changed the ways of training in such a way, that it can be observed as a change of paradigm. Think of the Greek scientist walking under the palm trees and his students, and on the other side, think of the professor and his student, who are thousand kilometers away and communicate through the Internet.

## 2. ODL

The name „ODL” can be used in many different ways. In the following paragraphs, I will show you my interpretation of the ODL. Mainly I build my explanation on the following notions: Open Learning, Flexible Learning and Distance Education. We use these notions in the following meanings:

## 2.1. Open learning:

2.1.1. „The main feature emphasized is to increase the learner’s choices, and therefore, increase accessibility. However, this is a very loose definition, which will embrace many forms of learning provision, different levels of learner choice and varying degrees of accessibility.”

(Calder- McCollum 1998)

2.1.2. Carr draws a distinction between ‘the two central concepts’ in open learning, namely the opening up of access and learner-centerlines, and argues that the removal of barriers in terms of place and pace in no way equates with shift in responsibility to learners in deciding what and how they will learn; furthermore, there may be contradictions in attempting to increase access and increase learner autonomy.

(Carr, 1990)

2.1.3. However, according to my point of view, there is a difference between the two opinions. These two just make each other stronger.

## 2.2. Flexible learning

2.2.1. There are five key features in organizing flexible learning:

2.2.1.1. Meets individual learning needs

2.2.1.2. Helps students to take on more responsibility

2.2.1.3. Makes effective use of resources

2.2.1.4. Allows for differential learning

2.2.1.5. Supports staff development and support.

(Calder- McCollum 1998)

2.2.2. „Flexible learning is education and training offered in ways intended to make the provision more adaptable to the needs of different learners. A number of mechanism, including modularization, accreditation of prior learning, open and distance learning, may be introduced by a single provider”

(Cooper 1996)

2.2.3. In contrast, others see flexible learning in terms of delivery systems. For example, the director of the Distance Education Center at the University of Southern Queensland in Australia asserts that ‘ It is time to recognize the combined value of instructional design and flexible learning systems, which have the potential to significantly staff training and development in a cost effective manner.’

(Taylor, 1997)

2.2.4. According to my point of view, the contradiction is not real. I think that both approaches are right and he two sides complete each other.

## 2.3. Distance Education

2.3.1. Both cooper and Taylor see delivery as playing a key role in flexible learning. It is of course, the separation of teacher and learner through the use of alternative modes of delivery which makes distance education so distinctively different from traditional face to face provision.

2.3.2. Nipper was the first to suggest the idea of 'generations' of distance education, based upon different delivery technologies. He proposed that distance education could be classified into three methods:

2.3.2.1. The single medium / correspondence model

2.3.2.2. The multimedia model

2.3.2.3. Information technology / telelearning model

2.3.3. I think that the first model means the theoretical establishment, the second means technological development, whereas the third model integrates both the first and the second approach. This is the most used model.

2.4. The ODL – according to my point of view – is a mixture of all these approaches.

### 3. Thesis

I think that in the process of teachers' training the method of telelearning can be used well under regulated circumstances. This method completes or even substitutes for the face-to-face method.

### 4. ODL at Berzsenyi Dániel College

4.1. The goal of the course

At our college the methods of the ODL is first used to teach Information Technology as the basis of the ODL.

4.2. The name of the course:

Foundations of information technology:

4.3. The period of teaching the course:

2 semesters, 2 lessons per week

4.4. Experiment:

Does open and flexible learning help teaching without teachers being there all time, with the help of the Intranet of the college?

4.5. Hypothesis:

If students have a good grounding in information technology, then they can be educated without the presence of teachers, with using the Intranet of the college.

4.6. Dates:

4.6.1. Number of students:	314
4.6.2. Students who are educated using flexible and open learning methods:	93
4.6.3. Number of face-to-face groups:	26
4.6.4. Number of ODL-groups:	8

4.7. Curriculum

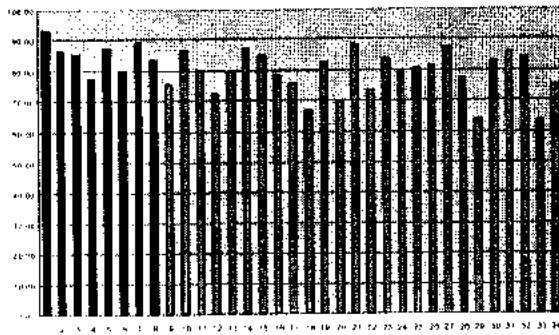
4.7.1. Opening lesson

- 4.7.2. Windows foundations
- 4.7.3. Internet I - E-mail, WWW
- 4.7.4. Word processing I
- 4.7.5. Word processing II
- 4.7.6. Word processing III
- 4.7.7. Word processing IV
- 4.7.8. Internet II - foundations, E-mail
- 4.7.9. Internet III - WWW
- 4.7.10. Internet IV - IRC, ICQ
- 4.7.11. Internet V - FTP, Outlook
- 4.7.12. Test
- 4.7.13. Presentation creation I. (Microsoft Word)
- 4.7.14. Presentation creation II. (PowerPoint) Presentation creation III. (Using wizards. Working with objects) Presentation creation IV.  
(Table. Notes. Animation. Action. Printing. Stand-alone presentation.)
- 4.7.17. Image processing I. (Monitors, video cards) Test
- 4.7.19. Image processing II. (Microsoft Photo Editor) Sound processing (Physical properties of sound.)
- 4.7.21. Windows and sound. Sound recorder. Media player. CD Player.) HTML editing I. (Parts of a web page, foundations Word and HTML)
- 4.7.23. HTML editing II.  
(Word and HTML (objects) PowerPoint and HTML) Test

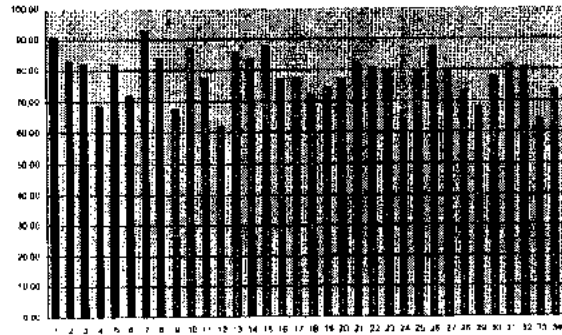
4.8. The following four diagrams show the achievement of the special and the traditional groups. The achievement of the special groups (8 groups) are marked red, the achievement of the traditional groups are marked blue. The last diagram shows the average score of the groups in the last four tests. According to the diagrams, the following statements can be made: there's no significant difference between the achievement of the groups trained by the ODL method and the groups trained with the traditional face-to-face method.



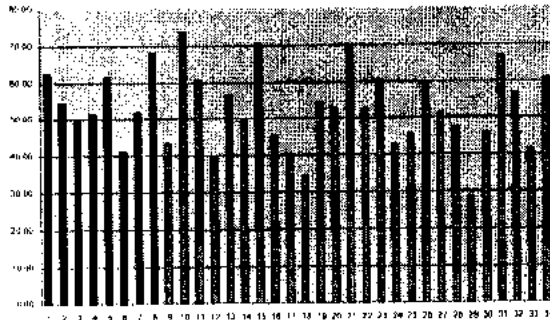
1st semester, test 1



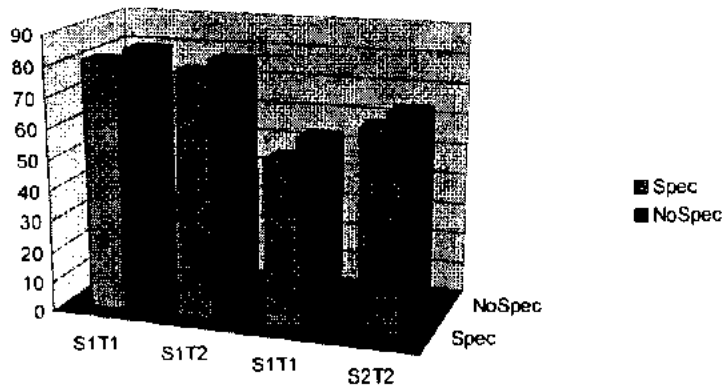
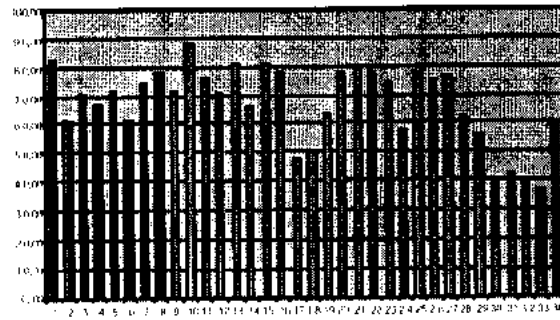
1st semester, test 2



2nd semester, test 1



2nd semester, test 2



4.9. Continuation:

In this academic year, the method will go through further development, and the research will examine also the attitude of the students.

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# CONTINUING PROFESSIONAL DEVELOPMENT FOR TEACHERS

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## Introduction

Young people are often taught the use of the new information and communication technology with entertainment-based methods (e.g. computer games) something that does not promote serious use of these new potentials. In consequence, their applications in the job situation leads for the most part to rigid and uncritical use of professional software. Besides, not all parents are able to help their children acquire information technology literacy on the base of their own knowledge and experience. The predominance of English in these technologies creates additional barriers based on languages. However, industry absorbs majority of computer science specialists and it results in deficit of such a staff in education area. Therefore the Council of Europe [2] emphasises the importance of education in modern science and technology and recommends developing of the suitable pupil friendly programs and tools. Besides, it devotes a great deal of attention to the training of teachers for all types of schools. Similarly, the Polish Ministry of Education has made increased effort in this area. It offers some funds to achieve access to the Internet for each school and supports some grants for preparing teachers for high-tech world of computers.

The authors of this publication prepared proposal of the grant entitled *Internet and Multimedia for Need of the XXI Century* [5]. The grant was accepted and implemented in the Faculty of Electronics, Telecommunication and Informatics, Technical University of Gdańsk. Below we present the idea of postgraduate studies on information technology for teachers of secondary schools. The basic curriculum and practical lab involving Internet and multimedia technology are discussed. Initial evaluation of the first participants of this study is also included.

## 2. Postgraduate IT study curriculum

This postgraduate study is devised for high school teachers who will teach information technology in their schools. According to Polish Government educational policy, information technology teaching in high schools will take place in computer laboratories equipped with multimedia PC's connected to Internet.

The general idea of the study curriculum is to give participants knowledge in two main areas: IT technology and its application in education. Firstly, teachers should know how to use such Internet services as e-mail, ftp, newsgroups, WWW browsers on the one hand and should be familiarised with such extending phenomena as electronic business, electronic company, digital metropolis on the other hand. Secondly, teachers should know how to develop computer based teaching methods and new teaching tools using Internet and multimedia resources.

According to the core curriculum knowledge of the first area is done by three following subjects:

- *New Trends Information Technology* which gives knowledge of main information processing models (sequential, concurrent, parallel, distributed, collaborative ones), system configuration, Internet architecture and Web programming;
- *Internet Services* which is devoted to network services (telnet, rlogin, ssh), file transferring tools (ftp, rcp, scp, wget) e-mail, newsgroups, Web browsers (Netscape Communicator, Internet Explorer) and the most popular Web search engines (AltaVista, Yahoo, Exite, Infoseek, Magellan).
- *Internet Programming* which gives knowledge of HTML programming, designing and developing WWW pages using HTML and JavaScript, Object Oriented Programming and Delphi programming.

The second part of the study curriculum is composed of three subjects too.

- *Models of Communication in Education* which is devoted to principles of effective communication between teacher and students in education, advantages of making use of visualisation tools for lecturing, development of leadership;
- *Interactive Multimedia Presentation* which gives knowledge and skills of preparation of presentations in PowerPoint, training of oral presentation, methods of evaluation of presentations;
- *Creation of Virtual Classes* covers the following issues: configuration of computing environment, utilisation of network services and multimedia tools for virtual class creation, rules of work co-ordination in virtual class environment, long distance checking procedure.

This curriculum is designed for one year study. The study takes 240 hours including 70% of practical exercises in laboratories.

### 3. Interactive multimedia presentations

It's a well-known fact that the Internet gives new possibility in computer-based learning. We can prepare WWW-based courseware on a given topic (e.g. about geometric problems [1]) for individual study or we can create on-line student - teacher interactions in order to collect geographically distributed participants in one virtual class [3]. First of all, Internet can be used successfully for teaching information technologies [4]. As an example we describe in details one of our subjects titled *Interactive Multimedia Presentations*. The main purpose of the subject is not only to present a special guidance for teachers on development methodologies for interactive multimedia products [7] but also to improve the teacher skills concerning oral presentation and evaluation procedure which could have been applied in a school practice. The lecture of the subject covers the following issues:

- definition, features, applications of interactive multimedia (AIM),
- the uses of AIM in education,
- a model of AIM,
- AIM feasibility studies
- AIM design (the storyboard, navigational design, hypermedia, graphic design, programming),
- AIM evaluation,
- AIM implementation and maintenance.

The practical part of the subject is performed in computer laboratories. Exercises for teachers are based on using Power Point software for preparation of AIM. Such an application consists of several (many) screens, which illustrate a part of the lecture delivered by a teacher in his/her real classroom. The presentation can be located on a network servers as WWW pages and used by pupils as supplementary materials related to the traditional lectures. In this way we prepare material being a part of WBT environment which be completed in the next semester.

In general, the teachers are obliged to develop AIM presentations and to demonstrate their projects during the final meeting for their colleagues and academic staff. The final grade is the average of three marks including:

- motivation of the subject choosing,
- visual clarity of the presentation,
- performance of their presentation.

Fig.1 and Fig.2 shows example screens of the projects developed by teachers in lab.

It should have been stressed that all teachers were very much involved in the subject and they performed quite well. The last message for them was to send the project to the academic teacher responsible for the subject. The idea was to build the special library of ready made projects in case there is a need for usage at school. The next reason was to collect the work for future postgraduate students.

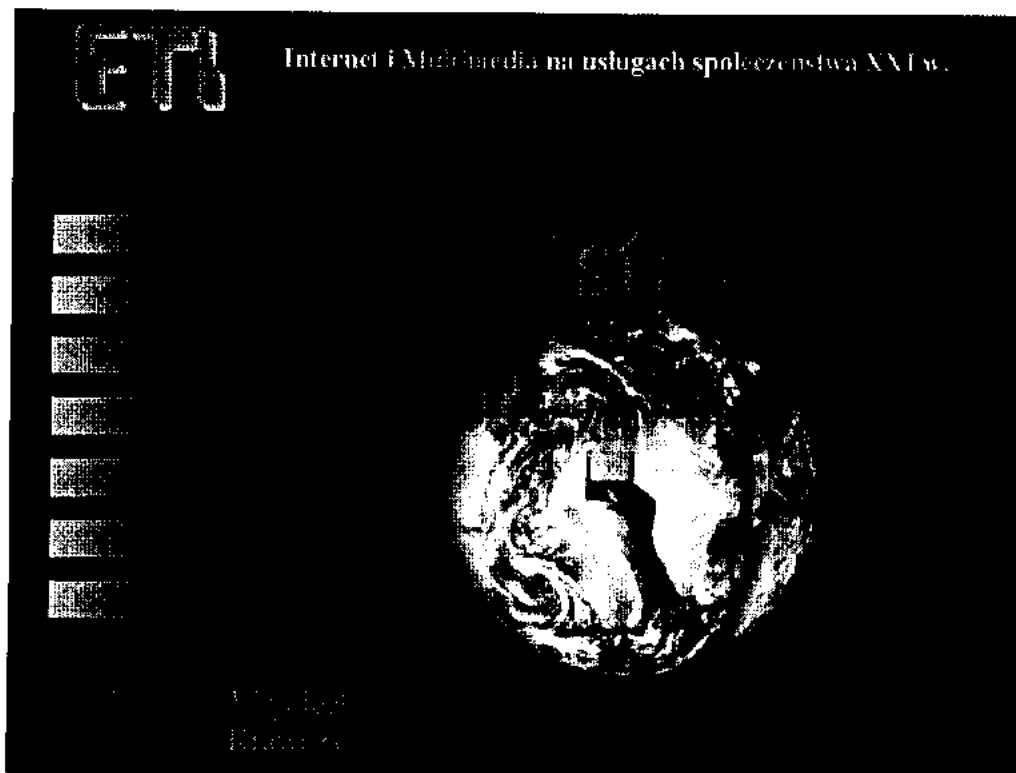


Fig. 1. Example of AIM's screen of project "Internet basics"



Fig. 2. Example of AIM's screen of project "Beauties of my family town"

#### 4. Evaluation procedure

The general purpose of the study described above is to give participants knowledge about up-to-date Internet and multimedia technologies and show them how to use these technologies in their work at school. According to the grant regulation, the study must be evaluated and the evaluation procedure consists of two parts:

- internal evaluation which is carried out by lecturer staff ,
- external evaluation done by the Ministry of Education experts.

We planned and organised an internal evaluation of the study curriculum and its didactic realisation to obtain a feedback information about the study. Generally speaking, the purpose of the evaluation we planned is to assess effectiveness of the study. More precisely, we look for some opinions and remarks, which enable us to improve the study curriculum and the study didactic process.

We planned to gather and analyse two kinds of information. The first kind of information comes from a questionnaire filled out by the participants of the study. Participant marks (tests, assessment of practical exercises) of all subjects form the second kind.

In the questionnaire form, participants evaluate the following aspects of a subject:

- matter of subject comprehension,
- meeting of participant's expectations,
- knowledge and qualification improvement,
- quality of study tools,
- exercise quality,
- effectiveness of class time usage,
- quality of lab's equipment.

The participants express their evaluation by assigning a number from 1 to 5 to an aspect (5 - denotes the highest assessment, 3 - medium, 1 - the lowest one). In the questionnaire, furthermore, participants point to the strongest point of the subject and the weakest one.

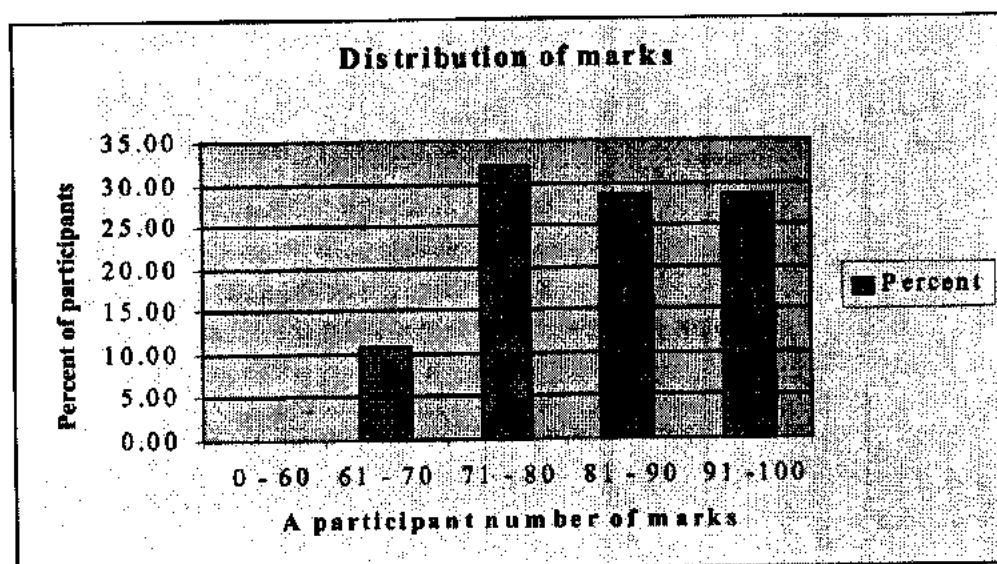


Fig. 3. Distribution of participant marks.

On the other hand lecturers evaluate participant knowledge and workmanship of practical exercises giving the participant a number of marks for each task. The maximum number of marks, a participant may obtain in every subject, is a hundred.

Marks and data from questionnaires are collected and statistically arranged. Next, they are analysed and the both kinds of information are compared to find factors, which cause weak points of the study.

In order to illustrate described procedure, we show handled information on the subject *Interactive Multimedia Presentations*. Distribution of marks is shown in Figure 3. Synthetic data derived from the questionnaire are shown in Table 1.

Table 1.

No	Aspect of training	Evaluation [%]				
		5	4	3	2	1
1	Matter of subject comprehension	85	15	0	0	0
2	Meeting of participant's expectations	65	35	0	0	0
3	Knowledge and qualification improvement	75	25	0	0	0
4	Quality of study tools	35	50	15	0	0
5	Exercise quality	65	35	0	0	0
6	Effectiveness of classes time usage	70	30	0	0	0
7	Quality of labs' equipment	75	25	0	0	0
<b><u>Strong points of the subject</u></b>						
1. The way in which subject matter is presented provokes participants to bring new information technology into effect at schools.						
2. Lab exercises are very interesting. They may be used at school after small modification.						
3. Interactive multimedia presentations may be applied in many areas.						
<b><u>Weak points of the subject</u></b>						
Number of hours of lab exercises is too small.						

As a result of analysis of participant marks and questionnaire data we decided:

- to increase the number of lab hours in the next study edition,
- to improve quality of study tools.

## 5. Final remarks

We propose the postgraduate study in IT area for teachers of secondary schools, where participants are not trained as narrow-track specialists, but rather to learn how to understand the influence of computer science and information technology on our world in comprehensive manner. The teachers of this study can achieve new dimension in illustrating the subject matter being taught also with regard to variability and simulation. They can practise how to handle and make full potentials of the new technology and suggest for solved problems the right software. The main aim is to encourage teachers to learn how to work on the Internet and to make use of it in their work at school.

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# AN OPEN DISTRIBUTED COMPUTER ENVIRONMENT FOR EDUCATIONAL TELEMATICS

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## 1. Introduction

The aim of this paper is to present the functions and tools of an open distributed computer environment for telematics-based learning; developed under the international project ARCHIMED "Advanced Multimedia-System Architectures and Applications for Educational Telematics"<sup>1</sup>. The RTD activities in this project were oriented towards: establishing virtual environment affecting the effectiveness of the used learning methods and systems, the design, integration and testing of telematics-based services; development of new multimedia user interfaces; development of solutions appropriate for different user groups, including ways of visualisation, mobility, interactivity, hypermedia organisation

The analysis of the educational multimedia features and the current trends in educational telematics [1, 2, 5] leads to the following conclusions for the computer environment required functionality: the necessity of interactive use of the multimedia materials, allowing individualised feedback and discussion; extensive use of distributed multimedia resources available on WWW; the necessity of effective student navigation according to the student's needs and current state of knowledge; the necessity for versatility of composition for fast update and modernisation of educational content; the necessity of modular and open-system organization; the need for intelligent assistance in information handling.

The open educational environment under consideration is based on conceptual pedagogical model, specifying both the structure of multimedia courses and various ways of their use (teacher-centred or learner-centred organisation of the educational processes). It applies the constructivist pedagogy principles and use models, based on the following main ideas [3-5]:

- Learning should be context based, i.e. learning experiences should be contextualised in authentic activities; learning is acquired through making links with existing knowledge.
- Conceptual learning is through active involvement: a task is understood through participation in it.
- Learning is through collaboration with others: sharing knowledge resolves misunderstandings; understanding evolves from shared knowledge constructing;
- Learner should have personal autonomy and control over learning; teacher mediation depends on needs and skills of the learners.
- Specific content and learning outcome should not be prescribed; multiple perspectives of the learning task and different approaches to understanding are needed.

## 2. Archimed Knowledge Village and its virtual spaces

The metaphor of ARCHIMED Knowledge Village (AKV) was developed to serve as a conceptual framework for creation of distributed educational multimedia systems and is oriented towards development of sufficiently general and open environments which can receive and organise in a comprehensive way an open variety of courses in very different knowledge fields AKV supports Distant Learning Centres providing distant learning courses, organising learning activities in a given knowledge field, located in partner sites or distributed among them. The functions and services /Fig.1/ of AKV are organised around several virtual spaces. The decomposition to virtual spaces permits to combine AKV

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<sup>1</sup> The work reported in this paper has been supported by the EC INCO-COPERNICUS Program, Grant No. PL961060 with partners from Greece, France, Austria, Hungary, Bulgaria, Portugal



functionally related modules in groups. This decomposition facilitates AKV design and implementation as it focuses the designers' attention on the common information flow and information structures, backed up by the AKV databases.

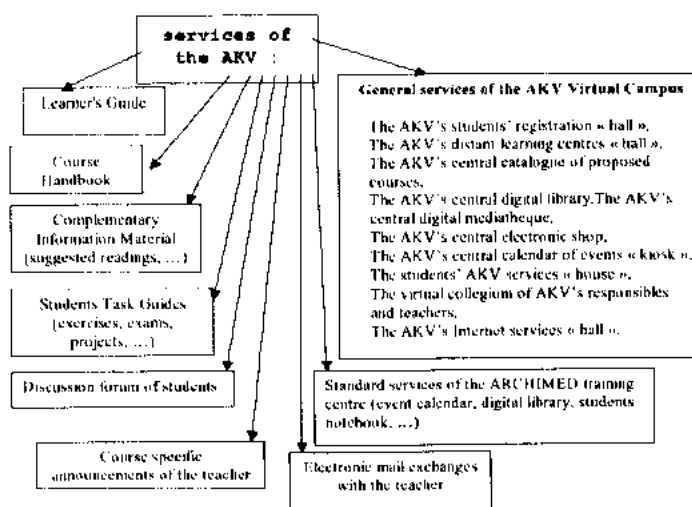


Figure 1

## 2.1 Learning space

This space enables the learners to do computer-assisted learning by access to appropriate services via a user-friendly interface:

- The learner uses interactively the produced courses and courseware modules in the learning environment of AKV. The courses are organised as applications kept in the distributed depository.
- The learner executes the tests and assessments, included in the courses as well as personal assessments, assigned by the teacher. S/he develops projects on the course materials (possibly using other materials from the virtual library).
- The learner exchanges information (questions/results) with the other students, executes evaluation assignments (c.g. peer review), participates in discussion forum and forms of collaborative learning.

The learning space integrates the educational activities of learners and teachers/instructors around the offered distant learning courses. A distant learning centre can have many members, including learners as well as instructors, grouped in a generalisation hierarchy. Learners follow courses and participate in examinations. Examination objects can be individual exercises, exams, projects, etc. Examination feedback is based on discussion messages, examination results, analysis and suggested readings. Feedback messages are exchanged between the learner and the instructor of the course. Examination results involve the evaluation marks. Learners also participate in groups for doing team work for a course. Learner groups take part in several educational activities in the same way as individual learners do.

## 2.2 Information space

This virtual space supports the AKV, providing various types of necessary information for the learners and trainers. Its main part is the «courseware repository» module, containing the pedagogical resources (courses, courseware modules and documents, used as courseware building blocks) together with more detailed standardised descriptions of the documents and access parameters. The pedagogical resources are structured around the concept of a course, consisting of courseware elements. The major components of the repository include:

- User catalogue with descriptions of the available courseware and courseware elements. The descriptions are developed considering the approach and standards of educational metadata (IEEE LTSC Learning Object Metadata standard) and support distributed access and retrieval of the material, available in AKV repository.

- The courseware elements, stored centrally or in a distributed way in the courseware database. The database permits two ways of structuring the courses: a/ as electronic books, consisting of chapters, sections, subsections etc. associated with document in any format such as HTML, Word Document, PDF or any multimedia document format; b/ as sets of lectures, consisting of presentation slides and multimedia material. The data model also allows inclusion of examination material, consisting of exercises and projects. Simple and complex exercises are considered, the latter category comprising multiple-choice questions, answer matching exercises, interactive exercises and projects.

### *2.3 Teacher's and author's space*

This virtual space supports all AKV activities of teachers and authors of multimedia educational materials.

- The teachers' activities in the ARCHIMED Knowledge Village is to give and organise courses and follow student progress.
- The teacher monitors the teaching process by offline/online connection with the learners of the group (e-mail, billboard) and has access to local section of the repository with materials for finished/on-going tests, assessments, projects. S/he has access to lists of students questions, memorised sessions of talks 'advisor-student', memorised sessions of peer reviewing. Learner progress follow-up includes the correction of examination material and provision of feedback on learner activities, answering to learner questions and overall evaluation of learners with respect to a specific course.
- The authors create and modify multimedia courseware, by means of the available in the environment authoring tools and using materials from the «courseware repository».

### *2.4 Administrative space*

This virtual space organises two groups of administrative activities in the AKV:

- Management of the learning/teaching/authoring processes with registration of learners, teachers and authors with appropriate access rights;
- Management of the AKV information resources, including further development of the sites, realising the ARCHIMED Knowledge Village.

## **3. Classifications of A K V courseware**

The implementations of AKV modules reflect the features and intended methods of use of different multimedia courseware, developed under the project ARCHIMED and kept in the AKV courseware repository. The courses are classified according to three organisational features, determining the specific features of the courseware content and its presentation.

### *3.1 Classification according to the learners target groups*

1/ **Introductory courses.** These courses are oriented toward acquisition of initial knowledge for the discipline under study and serve as general introduction in the field for non-specialists. They are teacher-centred expositive<sup>2</sup> courses with less attention to interactivity and exercises.

2/ **Intermediate and advanced courses.** These courses are aimed at deepening the knowledge in the problem area. They often have as a target also skill acquisition and mastering. In the current practice of

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<sup>2</sup> In an expositive course, the information flows mainly from the resource to the learner. The learners' input to the course is mostly in the form of navigation clicks. Expositive documents are typically used for learning-by-reading

technology-supported learning there is a strong tendency to develop such courses as active<sup>3</sup> learner-oriented courses, possessing essential "learning-by-doing" features.

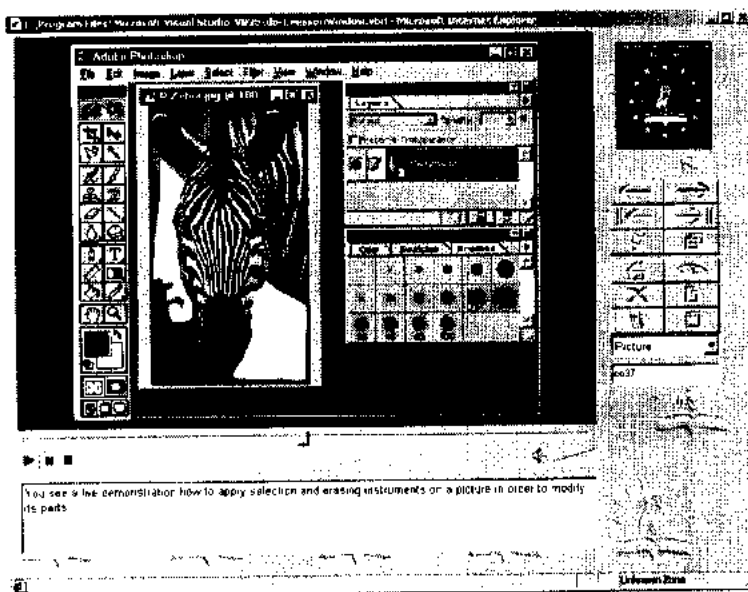


Figure 2

### 3.2 Classification according to the courseware organisation as computer application

#### 1/ Courses, organised as stand-alone applications

These applications contain all the necessary multimedia information structures as well as the control sequences for their presentation.

#### 2/ Courses with modular organisation.

This organisation uses more adequately the possibilities of database technology. It permits easy reconfiguration and generation of variants for different learner groups. In the AKV courseware repository the modular course organisation is achieved by set-of-lectures database elements.

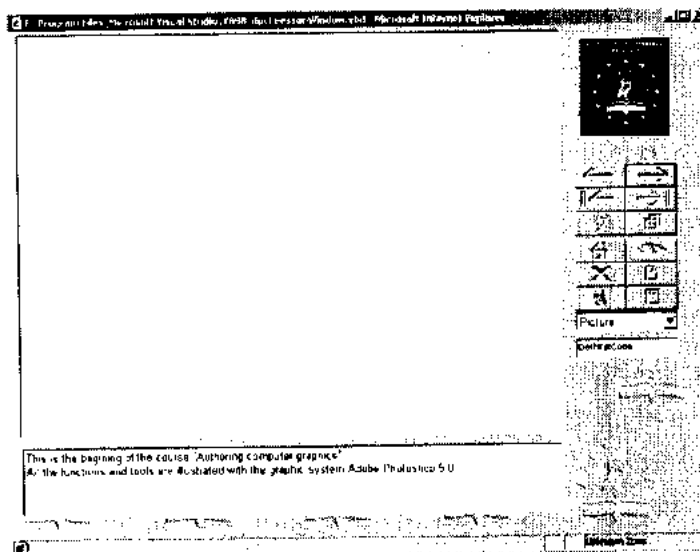


Figure 3

<sup>3</sup> In an active course, the information flows in both directions - from the resource to the learner, but also from the learner to this resource. Semantically meaningful input to the computer is expected in the courseware organisation. Active documents are typically used for learning-by-doing.

Both types of courseware are kept in the courseware database module, realising the courseware repository. In the case of stand-alone applications the users have access only to the whole course, while in the second case different levels of the courseware are accessible: variants of the whole course, different modules, their units ("lectures") and possibly their building blocks.

### *3.3 Classification according to the course content organisation*

#### *1/ Courses/modules, organised as electronic books/book chapters*

This organisation is appropriate for expository courses. They are characterised with pre-defined sequential navigation through the lessons/exercises, possibly with additional hypertext links. This type of courseware is natural for domains when the verbal content is predominant not only in presentations but also in the learning goals (e.g. in language learning). In this case there is a strong trend to perform assessments in the form a small variety of tests (multiple-choice tests, fill-in tests etc), which may be checked automatically. The authoring systems for multimedia documents offer means, permitting relatively easy to create courseware in the form of electronic book.

#### *2/ Project-oriented courses/modules*

This organisation is appropriate for active courses. Their important characteristic is that the learning goals include not only acquisition of knowledge, but also acquisition and mastering of respective skills. Such courses require more on-line interaction with the learning environment in the AKV distant learning centre and are oriented towards learner-centred education. This specific of the course content fits more naturally to the modular courseware organisation.

The conceptual scheme of the AKV courseware database module makes possible an association of the book and lecture types of content organisation through their finer structural elements, as for a specific course entity chapters and lectures refer to the same material. In fact the two organisations represent different ways to view or present the learning material of a course. Therefore the same multimedia documents from the database may be integrated in an electronic book courseware or in a modular lecture-based organisation. Fig2. and Fig 3 show screen examples of the project-oriented active modular course "Authoring Computer Graphics" from AKV repository.

## **4. A K V implementation directions and decisions**

The choice of appropriate hardware and software platforms for implementation of AKV modules is based on the analysis of the necessary functions and services of ARCHMED architecture /Fig.4, Fig.5/ and of the computer and communication infrastructure of the university partners. This analysis leads to the following design and implementation decisions for use of software system and instrumental tools:

- The main modules of the AKV virtual spaces are developed as applications working under the operation systems Microsoft NT Server / Microsoft NT Work Station.
- The multimedia courseware is developed by using different authoring tools like Microsoft PowerPoint, Macromedia Director etc. in accordance with the course content and authors' experience and preferences.
- The prototypes of the courseware repository and other databases are realised using Microsoft SQL Server.
- The organisation of the communications inside and between the learning, teaching and administrative AKV spaces is performed through execution of control sequences (scripts) by the applications - implementations of the main AKV modules. The scripts are written using appropriate scripting languages as Visual Basic Script.
- More complex communication services inside the local computer networks of the project partners, which constitute instances/subsets of AKV realisation, are to be covered by the product Microsoft Site Server.
- Totally distributed realisation of ARCHIMED Knowledge Village is designed to be implemented with the use of Microsoft Exchange Server on the top of the sketched hierarchy of computer and communication means.

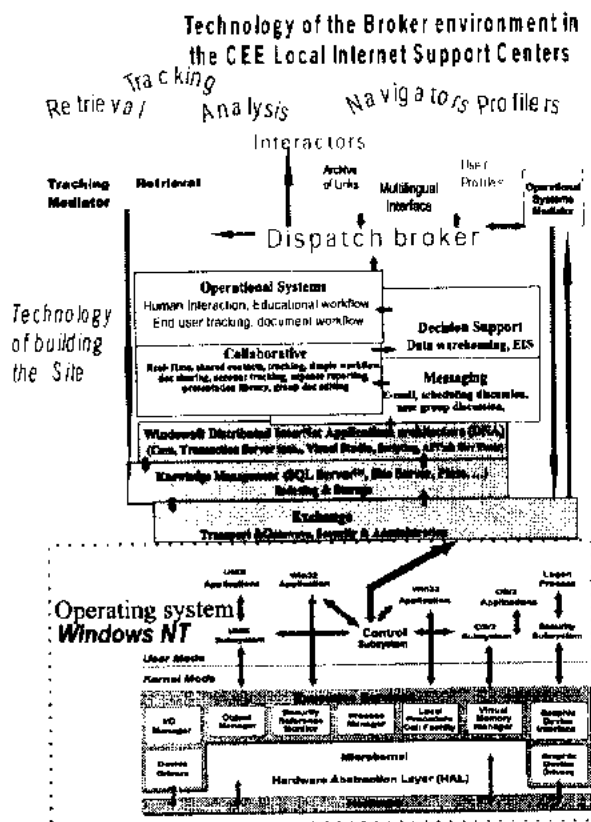


Figure 4

Mediator based authoring tool architecture in the Local Internet Support centers in the CEE partners

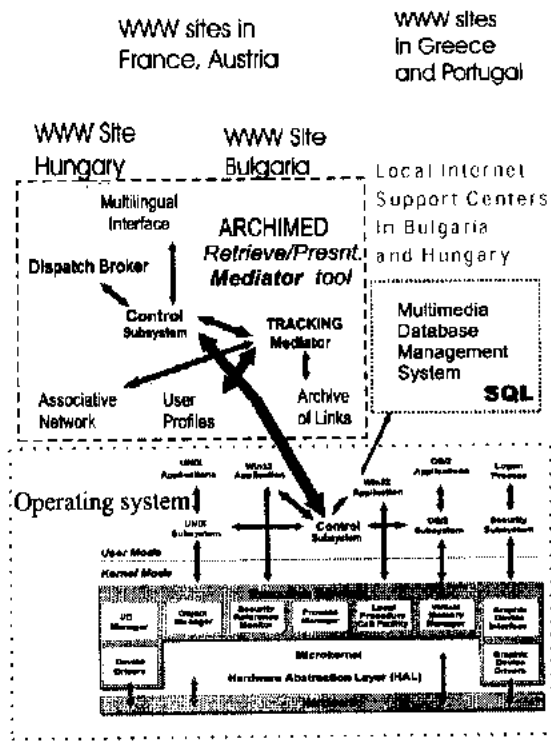


Figure 5

### Acknowledgements

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# SUPPORTING LEARNERS AND TEACHERS IN HANDLING THE DIDACTICAL AND ORGANIZATIONAL INNOVATIONS OF TELEMATICS-BASED EDUCATION BY THE USE OF LEARNING CONTRACTS

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## Introduction

In the „Mercur“-project and in the project „Meisterassistent im Handwerk“ (assistant master craftsman), we utilize learning contracts in a telematics-based advanced vocational training measure. A learning contract is a contract concluded between a learner and a teacher resp. between a learner and an institution, in which stipulated learning and teaching activities are fixed. Our main target is to clarify the innovative organizational structure with a combination of face-to-face sessions and phases of telelearning to the learners and the teachers as well as to bind them to its didactical implications and to give hints about how learners and teachers have to behave and to cooperate.

Even though the experiences we gained were gathered in the field of vocational training, they can easily be transformed and used for education in the school level.

In the “Mercur”-project<sup>1</sup>, forward-looking possibilities and limits of the use of telecommunication technologies for further training in the craft trades have to be researched, developed and tested with the scheme „Betriebswirt/in des Handwerks“ (business administration in the craft trades). This course is aimed at master craftsmen and is held by several chambers of handicrafts and the guilds.

The project „Flexible Zusatzqualifizierung (Meisterassistent/in im Handwerk)“<sup>2</sup> (flexible additional qualification as assistant master craftsman) is designed to research, develop and test possibilities and limitations for the acquisition of additional qualifications in the course of initial vocational training for the craft trades with the use of ICT.

## Contract learning in theory and practice

In general, learning contracts are agreements between a student and a teacher that provide a framework for describing what a student will learn as a result of a specified learning activity. Though not binding in a strictly legal sense, learning contracts are statements of agreement on at least four elements: [1],[2],[3],[4],[5],[6],[7]

- learning objectives
- learning resources and strategies

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<sup>1</sup> Project Participants: Research institute for vocational education and training in the crafts trade at the university of Cologne, Cologne Chamber of Crafts, North-Rhine Roofers' Association and the Bundesinstitut für Berufsbildung (Federal Institute for Vocational Training & Education).

Financing: The pilot project Mercur is financed by the Bundesinstitut für Berufsbildung (Federal Institute of Vocational Training) with funds of the Bundesministerium für Bildung und Forschung (Federal Minister for education and research; No.: D 2187.00) and with funds of the German crafts sector.

Time Scale: 04/1998 – 09/2001. URL: <http://www.fbh-mercur.de>

<sup>2</sup> Project Participants: Research institute for vocational education and training in the crafts trade at the university of Cologne, Chair of Economics & Business & Social Education, university of Cologne; baker's trade guild city Cologne and Erft district; Cologne Chamber of Crafts, Hairdresser's trade central association Germany.

Financing: The pilot project Meisterassistent is financed by the Bundesministerium für Bildung und Forschung (Federal Minister for education and research; No.: K 3397.00) and with funding of the German crafts sector. Time Scale: 11/1998 – 12/2001. URL: <http://www.uni-koeln.de/wiso-fak/fbh/MAH.html>

- evaluations of learning activities
- a time line for completion

The term contract learning is known since the beginning of the last century. Learning contracts demonstrably exist since the 1960s in the United States.[8][9]

With the signature of the contract, both parties accept an obligation:

- the learner commits to work with the material and to learn the content
- the teacher/tutor commits to provide material, to be ready for support and consulting, and to answer to questions as previously agreed upon.

The contract can easily be modified during the runtime. By the use of the contract, learners and teachers/tutors appear formally as emancipated, what can improve their relationship.[10]

### **Learning contracts and telematics-based education**

In addition to the “normal” problems of conventional education (e.g. newly learned skills are not transferred), in telematics-based training learners and teachers are spatially and temporally severed. A lot of learners are often not used to learn in a self-directed way with telematics-based media. Furthermore, the problems of computer-mediated communication, e.g. the reduction of communication channels, the lack of social context cues [11], or social information processing [12], are well-known.[13] A very busy adult learner, as well as a pupil using telematics for learning purposes for the first time, will not send an e-mail with a question to a teacher or tutor from whom he or she does not know when he or she reads it and answers the request. The acceptance of a new learning method depends strongly on reducing the incertitude of the learners. Also a lot of teachers are not used to utilize the new forms of teaching and communication in a telematics-based setting.

The learning contract we designed for our courses eliminates the obscurities right from the beginning by describing some of the attitudes of the teachers and learners that differ in comparison to a conventional course. In both projects, face-to-face sessions and phases of telelearning are combined. As every teacher refers to a different didactical strategy, the contents and intentions of the telelearning phases vary. The teachers replace nearly half of the face-to-face sessions with telelearning. Learners and teachers declare in the learning contract at which point of time this substitution is pronounced, what the learners are expected to do with regard to their communication and cooperation behaviour, what and when the teachers are expected to respond, when the teachers are to provide materials, which organizational rules the teachers have to observe, etc.

### **Experiences with learning contracts in telematics-based education**

According to the experiences in our courses, this learning method in telematics-based education seems to achieve the following objectives:[14]

- the constitution of an organizational model for the steering of the teaching and learning progress, that is declared by teachers and learners.  
In the learning contracts, stipulated learning and teaching activities are fixed, e.g. appointments for the answer of questions posed by e-mail. Learners are provided with supplemental course information that outlines course objectives, concepts, and ideas.
- intensification of the individualisation and the autonomy of the activities of the learners.  
The learners are motivated to design their learning activities on their own. Learners in further trainings in the craft trades, as well as learners in the school level, often do not attend and utilize the opportunities and the necessity to design their success in learning on their own. By the use of learning contracts, this can easily be demonstrated and requested.
- Support and maintenance of a suitable form of communication between teachers and learners, particularly during phases of telelearning.

We combine face-to-face sessions and phases of telelearning. In our judgement, also with the possibilities of telecommunication, a great amount of face-to-face sessions is needed. [15] Also in the school sector, phases of telelearning should only be used in addition to "normal" education. Because of this organizational division of the learning situation, a permanent synchronous communication between the learners and a teacher/tutor is neither possible nor intended. The asynchronous forms of communication have to establish a didactical added value concerning the achievement of a success in learning. In general, learners in telematics-based education forms think that timely feedback to assignments and questions is a significant factor of success. [16] In our courses, everybody knows to which forms of communication and cooperation teachers/tutors and learners have committed themselves. According to this, learners and teachers do use the possibilities of communication (e-mails, discussion boards) in our system.

In addition to the objectives mentioned above, learning contracts should not be used independent of an analysis of the target group. Against the background of specific didactical and organizational considerations, they always have to be adapted to the specific needs and requirements of the target group. For example, the learners in the project „Flexible Zusatzqualifizierung (Meisterassistent im Handwerk)“ need more elements that stimulate their motivation and give orientation, because of their minor age and their smaller experiences with self-directed learning, both in comparison with the learners in the "Mercur"-Project. In the learning contract, such elements can be integrated. Regarding education at school level, similar considerations concerning adaptations have to be made.

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# AN ANSWER TO TRAINING NEEDS FOR NEW PROFESSIONAL FIGURES IN TUSCANY IN THE MULTIMEDIA TECHNOLOGY ERA

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## 1. Introduction

A previous paper entitled: *Technology and Pedagogical Content: Are they really hand-in-hand?* [1], presented at the EDEN Conference in 1998, called into question the state-of-the-art in the harmonisation of the fields of Education and Technology. It also identified the need for a "deus-ex-macchina" in the form a "Content Provider cum Design Collaborator", or a hybrid figure, identified as "a Learning Content Input Provider and Design Development Active Collaborator (LCIP & DAC)", or, alternatively, an "inter-disciplinary team", "so as to create and develop pedagogically valid Learning Objectives and Learning Objects in a stimulating and Learner-friendly environment". In view of the ideas expressed at that time, and the subsequent, though more recent, developments in the use and application of IT within the context of the Region of Tuscany in relation to the Regional Professional Training Policy and the IST, the time is ripe to take a look at the initiatives underway in Tuscany at present in this area. The present paper presents a concrete example of the work underway to develop and train new professional figures capable of effectively using IT in a variety of Education-related situations in the rapidly changing and evolving context of Learning in the Information Society.

## 2. A glimpse at Change-in-action in Italy

Higher-level Education and Professional Training are currently under-going important radical changes in Italy. The newly acquired autonomy by the University as an Institution is transforming a cumbersome bureaucratic quasi-fossilised "dinosaur" at its very viscera. Such a radical change, needless to say, is coming face-to-face with ideas and approaches which are deep-rooted and, consequently, the "weeding" process is slow, cumbersome and, frequently, met with opposition, resistance and distrust. However, as with every darkened, gloomy and threatening sky, a cloud with a silver-lining appears. In this particular case the "silver-lining" can be identified with the changes in Education and Training Policy at a greater European level, as well as the efforts made to achieve a greater European-integration and an attempt to tackle the rising trend in unemployment which threatened to cripple Europe while, on the other side of the Atlantic, a society re-acting positively to the technological changes already underway there, was not suffering from the same ailment!. Indeed, new professional figures were quickly identified to avail of the new technological advances to the utmost. In the field of Learning, support figures such as Instructional Designers, Educational Technologists and Media Experts quickly emerged in response to the developing needs and promising Market niches in areas related to Education and Training.

By comparison, in this area, Europe moved at a slower pace, and, given the bureaucratic structures in place, Italy moved even more slowly. The initial changes started in the late '80s and the early '90s, with the setting-up of the MURST (*Ministero dell'Università e della Ricerca Scientifica e Tecnologica*<sup>1</sup>) under Minister Ruberti; previously, the University was within the Ministry of Education (*Ministero della Pubblica Istruzione*), so as to promote better co-operation and easier collaboration with other European partners in the context of European Programmes such as ERASMUS and COMMET. During the same period, the I.S.F.O.L. (*Istituto per lo Sviluppo della Formazione Professionale dei Lavoratori*)<sup>2</sup> began to undergo changes. This process of change has borne fruit, and, so, today, we have already begun to see some of the effects. To sum up briefly, the most remarkable changes we can mention include the introduction of:

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<sup>1</sup> Ministero dell'Università e della Ricerca Scientifica e Tecnologica was instituted by Law N° 168, 9<sup>th</sup> May 1989 and its organisation and role became more clearly defined in the following amendments dated 4<sup>th</sup> Aug. 1990 (n° 419), 6<sup>th</sup> Sept. 1996 (n° 522), 25<sup>th</sup> March 1997 (n° 326), and governmental reform dated 30<sup>th</sup> July 1999 (n° 300) and 1<sup>st</sup> Dec. 1999 (n° 477).

<sup>2</sup> ISFOL (Institute for the Development of the Professional Training of Workers) is a public law institution which works in collaboration with the Ministry of Labour (*Ministero del Lavoro*) and other State and Regional Administrations involved in the development of professional training.

- the concept of “training” (*formazione*) alongside that of “education” (*istruzione*)
- the so-called “Short Degree Programme” (*Mini-Laurea*) in the University-system
- the Foreign Language requirement within numerous Degree Courses
- the introduction of the semester
- the reduction in the number of Exam-sessions (*Appelli*)
- the University-Industry-Region collaboration in areas of Education and Training
- In-coming and Out-going student training placements
- PhD Programmes (*Dottorato di Ricerca*)
- Technology Poles
- New Professional Figures.

Given the previous state of affairs, this amounts to no mean accomplishment but, rather, serves as the basis for a major overhaul of both the Education and Training systems in Italy. This process of change-in-action requires time but what is important is that it is already underway. Indeed, in certain areas (i.e. Engineering and Medicine), the Short-Degree Programmes have been consolidated; in other areas (e.g. Arts) they are being continuously introduced.

### **3. Identifying & Training New Professional Figures to make effective use of IT in the Learning Context**

On the basis of the above, in the case of Italy, and together with the permanent and on-going changes introduced with the consolidation of IT, at a global-level, the need for a general re-think of one’s understanding of the concept of Education as a “temporally-defined and qualification-linked” process, became apparent. The introduction of the concept of Life Long Learning, the re-discovery of Piaget and Vygotsky’s philosophical approaches to Education, the opening-up of the field of Cognitive Science together with Gardner’s theory [2] and the new models of Learning styles, have all contributed to the new operative and accepted concept of, and approach to, Learning. Added to this, the continuous advances of the ISTs and their application/s in everyday life, are totally modifying the once-accepted norms, figures and roles of Education and Training.

The traditional teacher and traditional classroom are called into question by these new developments, not alone in Italy, but world-wide. Indeed, the function, role and concept of “teacher” become re-modelled. The “teacher” becomes the “Learning facilitator”, the Virgil-like guide, who admits his finite knowledge in the context of a greater infinite Knowing. The “Learner” is no longer the student alone; now, the “Learning facilitator” admits his/her limited “knowledge”, identifies the vacuum and recognises his/her need to access new knowledge, in the context of a Collaborative Learning Environment which extends beyond the “student-learners” and becomes an integral part of a wider on-going Knowledge-acquisition process from which no-one is excluded and which is required of all. This leads to the perception of a “gap”. In this case, a “professional gap” which can be identified as a lack of know-how in a changing professional role and context.

Indeed, in Italy, and more specifically in our case in Tuscany, this “gap” has been identified in the lack of professional know-how in newly emerging contexts which are directly related to the areas of Education and Training. One of the most significant events can be identified in the bringing into effect of Legislation related to the concept of Regional Education and Training initiatives. In March 1998, in relation to Training and Orienteering Placements, the Official Publication published the following :

“Al fine di realizzare momenti di alternanza tra studio e lavoro nell’ambito dei processi formativi e di agevolare le scelte professionali mediante la conoscenza diretta del mondo del lavoro, sono promossi tirocini formativi e di orientamento a favore di soggetti che abbiano già svolto l’obbligo scolastico ai sensi della legge 31 dicembre 1962, n. 859.”<sup>3</sup>

This commitment marked a decided break-through in the Italian context of Education and Training, and paved the way for the creation of new Learning models within the Education system at large.

Faced with the need to develop new learning strategies and courses in this newly developing technological context, at a national level the Consorzio NETTUNO came into being, and produced the first attempts in Italy to realise Mediated Distance Education Programmes. Furthermore, the whole concept of Training *per se* as well as the related concept of Trainers began to develop as a result of the pan-European initiatives in this area. To this end, mention can be made of the efforts undertaken within the context of European Programmes such as TEMPUS in projects such as PANNONIA with the participation of one of the first Emilia-Romagna trainer-training centres, SCIENTER (Bo - Italy), to extend this concept not only in Italy, but also beyond (e.g. in Hungary).

As with all that is new, there was need for development, improvement, perfection and wider distribution. In addition, several universities instituted professional re-training course for degree-holders, so as to fill the professional learning gaps that existed in the different subject areas; these courses were based on (i) the traditional correspondence-type courses, (ii) block-training periods<sup>4</sup>, (iii) correspondence-type courses with tutor-contact in given time-frames, and obligatory group meeting<sup>5</sup>, and (iv) technology theory and application courses<sup>6</sup>.

Today, the pattern set and the routes paved by the pioneering individuals, centres, universities and regions, are beginning to provide results and stimulate further and more concerted activities.

All of this must be seen within the greater context of European integration and advancement, as well as harmonisation in the areas related to Training and Education. Taken as a whole, these constituted the initial steps in the tackling of problems related to the whole area of Professional Development and Training. Indeed, it must be stated that the Emilia-Romagna Region was one of the fore-runners in these initiatives and served as a model for other Regions and Institutions to follow suite. Research in this area highlighted the lack of expertise in this sector in Italy. (To this end, it is interesting to note that the trainers of teachers as such, had not been envisaged in the Italian Education system, with obvious consequences within the same system!). The changes brought about as a result include the inclusion of a compulsory training component for the preparation of prospective first and second-level teachers as an integral part of their curriculum of studies.

#### 4. Short-term Outcomes

In view of the above, as well as in an effort to identify and tackle emerging needs in the area of Education, the Region of Tuscany together with the University of Florence, thanks to the financial commitment of the EU, has set about developing a Professional Training Programme for New Professional Figures (Continuing Professional Development, otherwise known as CPD) in areas related to the field of Education and Training.

With regard to the Education and Training sector, and based on Market-trends and Market-demands not only within the Region of Tuscany, but also further afield, for IT to be effective, efficient and feasible in

<sup>3</sup> Translation: “In order to bring about alternating periods of study and work with the training process and so as to facilitate professional choices through direct contact with the world of work, training and orienteering placements are promoted in favour of those who have completed obligatory schooling in accordance with Law N°. 859, dated 31<sup>st</sup>. December 1962.”

<sup>4</sup> e.g. instituted in the Academic year 1997/98, Corso di Perfezionamento in “Didattica delle Lingue Moderne”, Facoltà di Lingue e Letterature Straniere, Università di Bologna

<sup>5</sup> e.g. Corso di Perfezionamento in “Comunicazione Multimediale e Didattica”, C.A.R.I.D., Università di Ferrara

<sup>6</sup> e.g. instituted in the Academic year 1998/99, Corso di Perfezionamento “Master in Multimedia”, Dipartimento di Sistemi ed Informatica, Facoltà di Ingegneria, Università di Firenze, RAi (Fi) e Regione Toscana

IST, the following areas revealed an uncatered for need which needed to be met with new professional roles within the area of Network Learning Support (NLS). The origin of such a need can be interpreted as the result of a lack of planning and/or foresight as far as organisational and/or instructional-based NLS initiatives are concerned.

In brief, within the context of the TELEFOR Project <sup>7</sup>, which is realised by the Consorzio FIT <sup>8</sup> a needs analysis found a vacuum as regards a number of key-figures already identified as being essential to the effective and efficient use of a technology-based Learning environment [3,4,5]. These figures, together with their projected professional roles, were identified and were as follows:

- Media-application experts <sup>9</sup>
- Telecommunication system expert <sup>10</sup>
- Tele-training Instructional-design experts <sup>11</sup>
- Tele-training tutors <sup>12</sup>
- Tele-training trainers <sup>13</sup>.

Once identified, in order to activate the first training step in the Project, the next task was to develop the necessary curricula and content to create the five new Professional figures linked to the world of Education cum Technology. This required a concerted team-effort by people from two distinct, and usually "isolated" academic areas: one from the sector of Engineering & Information Technology <sup>14</sup>, and the other from that of the Arts or Humanities sector, from the specific area of Education and Training <sup>15</sup>. This involved the bridging of two different worlds, together with their different cultures, modes of thinking and of expression. It meant translating ideas, concepts and approaches and re-interpreting them in what each side could recognise as a comprehensible format which would serve as a "working template" for the production of Course-Content. To this end, a detailed set of guidelines was developed <sup>16</sup>.

The objective was twofold: to provide clarification and guidance for those for whom the use of specific technologies was new and to help Course Authors prepare Content Materials in a harmonious manner. In addition, by providing working guidelines, would-be concerns were pre-empted. As a result, a technology-based training programme, tailored to the projected needs of these five new professional figures within an Educational and Training context, was developed. For each Professional figure, a specific role, together with its related characteristics at entry and exit-levels, was identified and the envisaged work-profile was charted. In order to provide an overall picture of the background work involved in identifying and charting these new professional roles, the following table provides the necessary summary information.

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<sup>7</sup> The TELEFOR Project is part of the wider TRIO Project financed by the Regione Toscana: the project is known as "TELEFOR operatori e professionalità per la teleformazione DDRT n. 6822, 06/11/1998.

<sup>8</sup> Consorzio FIT represents: Università degli Studi di Firenze, Università degli Studi di Pisa, Università degli Studi di Siena, Università per Stranieri di Siena, Scuola Superiore di Studi Superiori e di Perfezionamento S. Anna.

<sup>9</sup> The Italian term for this new Professional figure is: "Progettista di Media".

<sup>10</sup> The Italian term for this new Professional figure is: "Tecnico sistemista".

<sup>11</sup> The Italian term for this new Professional figure is: "Progettista della Teleformazione".

<sup>12</sup> The Italian term for this new Professional figure is: "Tutor della Teleformazione".

<sup>13</sup> The Italian term for this new Professional figure is: "Formatore della Teleformazione".

<sup>14</sup> Facoltà di Ingegneria, Università degli Studi di Firenze, and the Università degli Studi di Pisa, Università degli Studi di Siena

<sup>15</sup> Facoltà di Scienze della Formazione, Università degli Studi di Firenze and Corso di Laurea in Scienza della Comunicazione, Università di Siena.

<sup>16</sup> Project Internal Documents, *FORMATO E GESTIONE DEI MEDIA*, E. Guerin & M. Masseti; and *STIMA DEI COSTI DI PRODUZIONE DEL MATERIALE DIDATTICO*, E. Guerin & M. Masseti.

Table 1.

NEW PROFESSIONAL FIGURE	ROLE	WORK-PROFILE
MEDIA-APPLICATION EXPERT	INTERACT & COLLABORATE WITH CONTENT EXPERTS, TELE-TRAINING INSTRUCTIONAL-DESIGN EXPERTS & TELECOMMUNICATION SYSTEM EXPERTS	PLAN & DEVELOP INTERACTIVE MULTIMEDIA PRODUCTS USING HCI CRITERIA & TECHNOLOGY TOOLS
TELECOMMUNICATIONS SYSTEM EXPERT	PROVIDE TECHNICAL ASSISTANCE FOR USE OF TELE-TRAINING INSTRUMENTS FOR TRAINING CENTRE PERSONNEL & REMOTE USERS	MANAGE SYNCHRONOUS & ASYNCHRONOUS TECHNOLOGY INSTRUMENT INTEGRATION; INSTALL & MAINTAIN TECHNICAL PLATFORMS & APPLICATIONS
TELE-TRAINING INSTRUCTIONAL-DESIGN EXPERT	DESIGN TELE-TRAINING COURSE WITH AN EYE TO TRAINING VARIABLES, USE MULTIDIMENSIONAL & INTERDISCIPLINARY APPROACH	IN DESIGNING TRAINING APPLY THEORETICAL METHODOLOGY & TECHNIQUES
TELE-TRAINING TUTOR	CO-ORDINATE & FACILITATE LEARNING ACTIVITIES; MONITOR & HELP EVALUATE PROCESS; PROVIDE LEARNER SUPPORT & FOLLOW TRAINING PLACEMENT	KNOW HOW TO MANAGE LEARNING PROCESS; MANAGE & CO-ORDINATE TRAINING; DIRECT LEARNING PROCESS; BE FAMILIAR WITH MAIN TECHNOLOGIES FOR TELE-ASSISTANCE & TUTORING
TELE-TRAINING TRAINER	MANAGE INTER-PERSONAL RELATIONS; MANAGE TRAINING PROCESS WITH SPECIFIC LEARNING PROGRAMME; CO-ORDINATE & GUARANTEE COHERENCE; EVALUATE LEARNING PROCESS	OPERATES AT A DIDACTIC LEVEL; MANAGES & CO-ORDINATES LEARNING , PROGRAMME METHODS & TECHNIQUES, DIDACTIC ACTIVITY & EVALUATION

Further information can be found at the TELEFOR Project web site at the following address:  
<http://www.fit.unifi.it>.

### 5. Long-term Objectives

Given the work carried out by the team and their achievements to-date, as well as the Professional Figures at present engaged in the Learning process, it can be stated that much has been learned with regard the future direction to be taken especially as regards the effective use of IT in the Education and Training sector. What can be considered imperative for the near future is the provision of targetted training initiatives for the following clearly identified staff training needs in the areas of Education & Training:

- provide teachers & IT assistant personnel with the expertise to use Technology effectively as a *LEARNING TOOL*
- provide the necessary training in the areas of design of Technology-based Learning Materials Design
- provide training for Technology-based Learning-environment management
- provide training in areas related to Evaluation and Assessment in Technology-based Learning
- provide training & certification of technical skill acquisition
- provide training & certification of proficient technology-users for Learning Environments
- develop tutoring skills so as to provide suitable network learning support (NLS).

## 6. Conclusion

Such initiatives require investment both by government institutions and by Education Professionals: finance from the former, time from the latter, and commitment from both. Furthermore, this investment also calls for a recognition of the commitment made by Education Professionals, by provision of recognised certification of their continuing Professional Development. This would also “entice” other colleagues and help them tackle what is often a fear of the technology-component. In addition, it would help quell the fears frequently harboured by Education Professionals in relation to Technology in the Learning Environment. With the latter in mind, it is worthwhile pointing out that the 1999 Report issued in America by the Institute for Higher Education Policy stresses the fact that “technology cannot replace the human factor in higher education”. This fact is highlighted, even moreso, by the creation of these new professional figures whose task it is to contribute to the effective and efficient use of integrated types of technology in a Learning environment. In Tuscany the “Technology Training Marathon” is underway, but the finishing line is nowhere near! The task in hand is an arduous one, but the rewards are worthwhile and the commitment is steadfast. The team-moulding has begun and so, with enthusiasm, we await the output.

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# EXE EXTRANET ENVIRONMENT ADAPTED TO THE NEEDS OF THE IMEB TEACHERS

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## Introduction

Extranet Education (EXE) project aims to support teachers from across the educational spectrum (primary, secondary and tertiary level) in their use of multimedia, information and communication technologies (ICT) within their teaching practices. This aim has been broken down into a series of objectives, which have been used to structure the project:

- Identification of users' needs
- Development of a structured method for syllabus design
- Development of the Extranet platform
- Development of basic and advanced Educational Wizards (easy-to-use multimedia authoring tools)
- Development and delivery of training programmes in the use of multimedia and the EXE tools (Extranet and Wizards) to the user group
- Demonstration of this model with a larger group of new users
- Preparation of an exploitation plan, based on a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of EXE's offer

## User needs and services required

The first year of EXE Project was focused on listening to the end-users in order to get their requirements and wishes. At the same time, it was very useful exercise in order to take into account the main drivers and barriers that could enhance and inhibit the acceptance of the EXE Extranet environment, specifically in the cultural, organisational and educational model domains.

The organisation we took as a reference was Institut Municipal d'Educació de Barcelona (IMEB) which is managing educational institutions (network of schools or educational centres) in Barcelona, with an range of involved schools, students and teachers (eg about 140 schools, 5.000 students and 400 teachers). IMEB with the other two end-user organisations participating in EXE (Provideratto and Artec-Bologna and London respectively) were the right kind of target market for the EXE Extranet environment.

The UOC, as the EXE Extranet environment developers, considered the following inputs

- the Report on User Needs of EXE Project (D0301)
- the outcomes of the process for the definition of the EXE Extranet environment functionalities services management and technical installation.

The Report on User needs of EXE Project analyses the use of computer technology in the spectrum of educational establishments in Bologna, London and Barcelona and explores the possibilities of the integration of technology into the teaching and learning environments. From this report, we took into consideration all aspects related to the need of teachers in the areas of communication, co-operation and learning with new technologies. Based on the User Needs Analysis it seemed that EXE Project would lead with the Extranet Environment being incorporated into teacher activity in different ways:



- as a tool for information collection
- for internal and external co-operation
- for students to use in follow-up additional learning
- to introduce interaction into learning experience

On the other hand, and in order to incorporate end-user organisation needs to the process of building EXE Extranet environment, we considered all the outcomes of the process for the definition of the EXE Extranet environment (functionality, services management and technical installation). Within this process, IMEB, as end-user organisation, was able to introduce all its considerations from an organisational, cultural and pedagogical point of view in order to define the services required of EXE Extranet environment.

Based on IMEB requirements exposed during this process it seemed that the Extranet Environment should be incorporated into organisation activity in four different ways:

- To expose teachers to new technologies
- To provide teachers with an empowerment tool
- To introduce Internet into the curriculum
- To become a Management tool for teacher's administration, teacher's continuous training and school managers' private network.

At the same time IMEB desired to have an easy to manage tool available to the organisation, to spend low resources on maintenance, with which to organise a working and identifiable team in the organisation for the content management, communications management and activity management.

### **Description of the functionalities**

EXE Extranet environment implements the basic services of a virtual community for working and training in the field of multimedia tools applied to education. EXE Extranet environment is a remote access WEB Extranet platform which integrates under a common user interface the necessary set of software applications for working and learning on educational multimedia and managing distance training programs.

EXE Extranet Environment benefits are:

- To build a Virtual Community between educational professionals interested on multimedia technologies facilitating communication and the exchange of experiences.
- To motivate educators to participate on virtual training activities.
- To allow open training programmes creation and teaching.
- To make agile distance training management and monitoring.
- To facilitate the dissemination of best practices in applying multimedia to education.
- To facilitate access to a common and selected compilation of multimedia resources useful for professionals of education.
- To become a unique reference for educational professionals accessing the Internet

The applications integrated in EXE Extranet Environment are the following ones:

- Electronic mail service. Web based messaging application for the creation and management of internal and external (Internet) mails.

- Shared disk. Resources sharing manager aimed at provide a common disk area to share applications and information resources between virtual community members.
- Administrator. The EXE environment manager with the following associated tasks: entries and exits of memberships, user privileges and personal data updating and database maintenance.
- Contents manager. Application for contents classification, maintenance and updating.
- Multimedia Resources Manager. An special developed tool (Educational wizzards) for storage and search of multimedia resources on electronic format according to some pre-established criteria.
- Collaborative work applications based on IP. A set of third party applications and tools destined to facilitate group work in real time between students and teachers. These applications include on-line chats, video-conferencing, and resource sharing.
- CHAT for dialoging on-line.
- Microsoft NET Meeting for share applications and resources.

### **Technical characteristics of the Prototype**

- Unique access key for all applications. Users only have to identify themselves once, by entering a common password for all integrated applications in EXE Extranet environment.
- Security. The environment guarantees that only registered users enter to the environment, assures the confidentiality of access keys and virtual community memberships information interchanges and finally restricts access to specific services and applications depending on a predefined user profiles table.
- Third party application integration. The environment is an open software architecture which fulfils Internet standards in order to facilitate the evolution and improvement of its integrated applications. Third party applications integration capability is vouched for the use of API's (Applications Programming Interface) which defines the interaction between applications making up EXE Extranet Environment.
- Scalable and robust environment. It supports a wide range of services of working, training and information. All users together (teachers, animators and management staff ) build a complex matrix structure to manage. It can register thousands of users and the concurrence peak is up to 10% of them.
- Low requirements for the end user work platform. The environment work platform consists of a PC with Internet connection and an Internet browser software.

### **Quality criteria**

In order to guarantee the quality of the EXE Extranet environment as an outcome of the EXE Project the development of EXE Extranet included a continuous process of assessment. This has entailed a process or a set of processes leading to ensuring and analysis of relevant information on which some value of judgement has to be passed regarding the EXE Extranet environment. This value judgement was useful for the improvement of the environment possibilities and strategies of development. The assessment process of EXE Extranet environment was designed in order to guarantee and allow for the improvement of the EXE Extranet at any time during the development of the project

The quality criteria and issues applied during the assessment process could be classified in three blocks: the first block refers to technical aspects; the second block to user-related aspects; and the third block to educational aspects. For the assessment of the Extranet it would be possible to consider a fourth block referring to contents, but we have given up on it for the time being seeing as in our case it would be the responsibility of other future phases in the project.

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# A DISTANCE LEARNING EXPERIMENT IN TEACHING PROGRAMMING LANGUAGES

*Dr Jenny Pagge, Department of Education University of Ioannina, Greece*

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## **Abstract**

*This paper reports on a study concerning the design, development, trial and evaluation of a course, using Web based learning Environments. In the University of Ioannina we applied an instructional system in order to experiment new teaching methods through the use of digital communication technology. This study showed that there was a low level of acceptance and performance amongst the students with pedagogical background. Moreover, a concurrent use of a technology based on a distance learning environment with a traditional face to face synchronous techniques were useful.*

**Keywords:** Distance Learning Methodology's experiment, Self regulated computer aided education, Programming languages.

## **Introduction**

Distance learning, New Technologies (NT) and computer-based technologies provide new opportunities to the teaching and learning process and they are a useful tool in the teaching process when they are not misused (Aubrey 1994, Campbell et al. 1992, Shayer et al 1981). Researchers suggest that although some people still consider the remote education as a poor one, due to its earlier difficulties, nowadays technology may improve not only face-to-face classes but also distance education provided by universities (Turoff 1999 and Pange 1998, 1999). In a recent study, Jafari (1999) suggests that a web enterprise system offers to universities and colleges a cost-effective and easy-to-use solution, producing generally an effective learning environment. But Martens (1998) states that distance education is problematic when a student has difficulties in assimilating educational material. Moreover, the consideration of the quality of academic provision and especially the characteristics of the learning environment and the students' characteristics in an electronic learning environment are very important and they have to be examined in an distance education system (Laurillard 1993, Schuyten et al 1998 and Turoff 1999).

The literature also suggests that universities have to prepare their students to be able to: 1) produce content applications appropriate for their own teaching, 2) use technology applications in learning activities (Means 1994, Pellegrino & Altman 1997, Top et al 1995, Walters 1992).

As the main goal of education should be seen the development of intellectual and creative abilities of students, the aim of this study was to report on the design, development, trial and evaluation of a course, using Web based learning environments in a group of students.

## **Materials and Method**

During a diploma course in 1999-00, 30 students of the Dept. of Preschool Education attended an online course on Programming Languages based on self-regulated computer aided education (Fourth semester course or else part b).

All students had almost the same age, but different mathematical background. Moreover, these students had attended an introductory course in computers in their previous academic year.

The online course based on computer mediated communication and emphasized on the

- provision of structured seminars offering the educational material
- access to additional educational resources
- queries and requests from the tutor to the students and vice versa
- provision of advice and guidance

- encouragement of team projects.
- assessment (and self-assessment) of team projects. Actually the teams interchanged the roles of the examiner and the examinee.
- In this study we wanted to evaluate the performance and the
- acceptance rate of learning using learning technologies, of students in order to teach programming languages.

## Results

According to the results of our analysis, students from the Dept. of Education said that it was quite difficult for them to attend the course at the beginning. The number of questions concerning the course material was quite a lot although the encouragement to the students of the Dept. of Education was continuous during the course. As a result to the insecure feelings of the students of the Dept. of Education, more team projects were running during this course. At the end of the course all students passed the examination test.

## Discussion

As educational institutions face increasing pressure to develop and evaluate new methodologies exploiting the growth in new digital communications, higher education has to convert the instructional process, classroom teaching, into products such as CD ROMs, Web-sites or courseware. Moreover, web based teaching can offer quite a lot to the teaching and learning process.

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EUROPEAN DISTANCE EDUCATION NETWORK



# FOURTH OPEN CLASSROOM CONFERENCE

**OPEN CLASSROOMS in the Digital Age**  
**Cyberschools, e-learning and the scope of (r-)evolution**

## *CONFERENCE PROGRAMME*

**Mapfre Tower, Barcelona**

**19, 20-21 November, 2000**

*Hosted by Universitat Oberta de Catalunya*

*Organised in Co-operation with*

*European Commission DG Education & Culture, DG Information Society*

*Generalitat de Catalunya, Ajuntament de Barcelona, MENON Network*

*EENet (European Experts Network for Educational Technology)*

*European Education Partnership (EEP)*

*Supported by:*

*Consell Escolar de Catalunya - The Education Council of Catalonia*

*Associació de Mestres Rosa Sensat - The Teachers' Association "Rosa Sensat"*

*Collegi Oficial de Doctors i Llicenciats - The Bachelors & Doctors Association*

## ***19 NOVEMBER, SUNDAY***

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14.30-19.30 REGISTRATION, UOC Support Centre

*(Address: Av. Drassanes 3-5)*

16.00-18.00 "OPEN CLASSROOM AGORA", UOC Support Centre

### **PARALLEL WORKSHOPS**

#### ***Building Learning Networks***

Dr. Nikitas Kastis, Director Research and Development  
Lambrakis Research Foundation

Dr. Andreu Bellot, Universitat Oberta de Catalunya

#### ***New Learning Paradigms in the Digital Age***

Dr. Aahron Aviram, Head of Centre for Futurism in Education, Ben  
Gurion University

#### ***Digital Literacy –What learning gains are we getting?***

Roger Broadie, Chief Executive, European Education Partnership – EEP

20.00 WELCOME RECEPTION

TOWN HALL OF BARCELONA, SALÓ DE CENT

*(Address: Plaça Sant Jaume, 1)*

## ***20 NOVEMBER, MONDAY***

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8.30-9.30 REGISTRATION, MAPFRE TOWER

*(Address: Marina 16-18 )*

9.30-11.15 OPENING PLENARY SESSION

**Session Chair:** Dr. Erwin Wagner, President of EDEN

Room: **CONFERENCE OPENING – WELCOME ADDRESSES**

Auditorium Dr. Erwin Wagner, President of EDEN

Professor Gabriel Ferraté, Rector of Universitat Oberta de Catalunya

Representatives of the Generalitat de Catalunya and  
Barcelona City Council

## KEYNOTE SPEECH

### *Implementing eLearning – Building on European Strengths and Existing Initiatives*

Maruja Gutierrez-Diaz, European Commission DG Education and Culture,  
Head of Unit, "Multimedia for Education, Training and Culture"

### *European Schoolnet Servicing Schools in Europe*

Guus Wijngaards, EUN – European Schoolnet

11.15-11.45 COFFEE BREAK

11.45-13.45 PARALLEL SESSIONS

### SESSION A – Needs and Policies

#### **Session A1 School Education Systems in the Information Society**

Session Chair: Ingeborg Bo, Norwegian Association for Distance Education, Norway

Room: FROM "COMPUTERS IN THE CLASSROOM" TO THE CRITICAL RADICAL ADAPTATION  
Auditorium OF EDUCATIONAL SYSTEMS TO THE NEW EMERGING ICT CULTURE

*Dr. A. Aviram & Mrs. O. Comay*

INNOVATIONS AND CHANGES IN THE NORWEGIAN SCHOOL EDUCATION SYSTEMS

*Morten Soby, Norwegian Network for IT-Research and Competence in Education*

TOWARDS A SCHOOL IN THE INFORMATION SOCIETY

*Javier Mengíbar Jiménez, Centro Nacional de Información y Comunicación  
Educativa, Ministerio de Educación Cultura y Deporte de España*

INFORMATICS AS A MANDATORY SUBJECT AT SECONDARY SCHOOLS IN BAVARIA

*Peter Müller, F.A.S.T. GmbH, Peter Hubwieser, Technical University of Munich*

#### **Session A2 New ICT Applications, Products and Services**

Session Chair: Claudio Dondi, SCIENTER, Italy

Room: THE OBSERVATORY OF THE ICT IN HIGH SCHOOL CENTRES  
Barcino I *Albert Sangrà, Academic Director (UOC), Andreu Bellot, Instructional Designer  
(UOC)*

IMPLEMENTATION OF SCIENTIFIC METHODOLOGY AND MODELLING TOOLS IN AN  
OPEN CLASSROOM (AGES 10-17)

*C. Athanasopoulos<sup>a</sup>, E. Apostolakis<sup>a</sup>, P. Eisenbarth<sup>b</sup>, G.Th. Kalkanis<sup>c</sup>, H.  
Lewinsky<sup>d</sup>, M. M. Sarris<sup>a</sup>, S. Savas<sup>a</sup>, S.A. Sotiriou<sup>a</sup>, M. Sperka<sup>d</sup>, H. Stemmler<sup>e</sup>, V.  
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Frankfurt am Main, Institut für Didaktik der Physik, Institut für Pädagogische  
Psychologie, <sup>e</sup> Freiherr vom Stein Schule*



**CLOSING THE GAP BETWEEN SCHOOL, UNIVERSITY AND FURTHER EDUCATION SYSTEMS IN THE PROCESS OF LIFE LONG LEARNING**

*Prof. Dr. Christian-Andreas Schumann, Centre for New Forms of Education of the University of Applied Sciences, Zwickau*

**BRAZIL UNDERTAKES AN "INTERGALACTIC COMPETITION": A CHALLENGE FOR DISTANCE EDUCATION**

*Marialice de Moraes, Ricardo Miranda Barcia, Programa de Pós-Graduação em Engenharia de Produção – PPGEP, Sônia Pereira, Fernando Gauthier, Escola de Novos Empreendedores – PPGEP*

**Session A3**

**Education Partnerships**

Session Chair:

Carl Holmberg, DISTUM – Swedish Agency for Distance Education, Sweden

Room:

DIGITAL SCOTLAND - A SMALL NATION WITH LARGE AMBITIONS

Mare

*Jackie Galbraith, Learning and Teaching Scotland*

Nostrum I

ICT AT SCHOOL – NOT FOR EVERYBODY

*Rigmor Sterner, DE-consultant*

INDICATORS OF THE OPEN, INNOVATIVE AND INCLUSIVE SCHOOL

*Gudmundur Kristmundson, Karl Jeppesen, Iceland, Maria Micheliadou, Greece, Pia Guttorm and Ole Hansen, Denmark*

CAUSES FOR THE IMPLEMENTATION OF A DIDACTIC INNOVATION IN THE ECOLOGICAL AND ENVIRONMENTAL EDUCATION

*Juliusz C. Chojnacki, Agricultural University, Dep. Marine Ecology and Environmental Protection, Ewa Fleszar, University of Szczecin, Lab. Biology Teaching Studies.*

SCHOOL DEVELOPMENT IN A SWEDISH MUNICIPALITY - A LONG AND WINDING ROAD

*Kerstin Löwenhielm, Sirkku Männikkö-Barbutiu, Birgitta Sjögrund, Stockholm Institute of Education*

**Session A4**

**Networking for Schools and Teachers Development**

Session Chair:

Johan Van Heddegem, Katholieke Universiteit Leuven, Audiovisual Services, Belgium

Room:

VIRTUAL COMMUNICATION AND INTERACTION: KEY ELEMENTS FOR TEACHER TRAINING TODAY

Mare

*Francesc Ferrer, Montse Guitert Catasús and Teresa Romeu Fontanillas, Open University of Catalonia*

Nostrum II

THE PEDAGOGICAL ICT-DRIVER'S LICENCES: A DANISH NATIONAL INITIATIVE TO RAISE TEACHERS' ICT COMPETENCIES

*Oyvind Broegger and Ulla Gjorling, UNI-C*

INTRODUCING INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN PRIMARY SCHOOLS: THE FAIAKES PROJECT

*Athena Sidiropoulou, Lambrakis Research Foundation, GR*

**AEN – ADULT EDUCATION NETWORK - A SOCRATES / ODL PROJECT**

*Christian Dorninger, Austrian Federal Ministry of Education, Science and Culture, Wilfried Nagl, Project Co-ordinator, Walter Steinkogler, Distance Learning Co-ordinator*

**TRAINING TEACHERS FOR OPEN CLASSROOM COLLABORATIVE WORK**

*Erol Inelmen, Faculty of Education, Bogazici University, Bebek, Istanbul-TURKEY*

**13.45-15.30 LUNCH BREAK**  
(Marina Moncho's Restaurant, nearby Mapfre Tower)

**15.30-17.30 PARALLEL SESSIONS**

**SESSION B – New Learning Environments**

**Session B1 School Education Systems in the Information Society**

Session Chair: *Aahron Aviram, Ben Gurion University, Centre for Futurism in Education, Israel*

Room: **A TUTOR'S ROLE, MORE THAN COUNSELLING?**  
Auditorium *Martha Lea, Stavanger University College, Norway*

**STUDENTS' USE OF INSTRUCTIONAL MANAGEMENT SYSTEM (IMS) SOFTWARE IN IRISH SECOND-LEVEL SCHOOLS**

*Keith Johnston, University of Limerick, Dr. John O'Brien, University of Limerick*

**AN ONLINE TUTOR COMMUNICATION MODEL**

*Stefania Bocconi, Francesca Pozzi, Istituto Tecnologie Didattiche – CNR*

**THE SCHOOL OF TOMORROW: A SCHOOL OPEN TO THE WORLD – EXAMPLES OF ELEMENTS OF GOOD PRACTICE**

*V. Anastasiou, Ch. Athanasopoulos, M. Sarris, S. Savas, S.A. Sotiriou, V. Tolia, Research and Development Department, Ellinogermaniki Agogi, Chalandri, Greece*

**SPECIFICATION OF PLATFORMS FOR DISTANCE LEARNING**

*Marie-Noelle Bessagnet, Institut d'Administration des Entreprises des Pays de l'Adour*

**Session B2 New ICT Applications, Products and Services**

Session Chair: *Christian Dorninger, Federal Ministry of Education, Austria*

Room: **DIGITAL RESOURCES FOR EDUCATIONAL SUPPORT**  
Barcino I *Serge Candor, CNED, France*

**TRAPEZE: USING A TWO-WAY SATELLITE NETWORK FOR EDUCATION PURPOSES**

*Sally Reynolds<sup>1</sup>, Mathy Vanbuel<sup>1</sup>, Ken Marks<sup>2</sup>*

*<sup>1</sup> ATiT - AV Technologies, Informatics and Telecommunications, Leuven, Belgium*

*<sup>2</sup> EFECOT, Brussels, Belgium*

#### **E-EDUCATION AND LEARNER SUPPORT: A NEW APPROACH**

*Wybe G. Zijlstra, Paulien Taconis, Centre for Innovation and Co-operative Technology (CICT), Faculty of Mathematics, Information Technology and Natural Sciences, University of Amsterdam*

#### **THE SCHOOL OF TOMORROW. INVESTIGATING THE E-LEARNING PARADIGM FOR NATIONAL DEVELOPMENT**

*Miltiadis Lytras, Georgios Doukidis, Athens University of Economics and Business*

#### **USER ASSESSMENT AND LEARNER TRACKING AGENT LAYER IN AN INTERNET TRAINING TOOL**

*Roland Yatchou – ENSP Yaoundé, Claude Tangha – ENSP Yaoundé, Guy Gouardères – IUT Bayonne*

### **Session B3**

#### **Education Partnerships**

Session Chair:

*Sarolta Zárda, Számalk Systemhouse Ltd., Hungary*

Room:

**THE INTERNET: TRAINING TOOL AND TEACHING AID**

Mare

*Montse Guitert Catasús and Teresa Romeu Fontanillas, Open University of Catalonia*

Nostrum I

#### **REACHING THE MASSES – USING DIGITAL INTERACTIVE TELEVISION TO CAPTURE THE INTEREST OF BASIC SKILLS LEARNERS**

*Matthew Love, Sheena Banks, Sheffield Hallam University*

#### **CONSTRUCTING INFORMATION SOCIETY IN EDUCATION - THE MODEL OF ICT LEARNING CENTRE**

*Marja Kylämä and Pasi Silander, University of Helsinki, ICT Learning Centre*

#### **SWR SCHOOL-TV = MULTIMEDIA IN CLASSROOMS**

*Hanspeter Hauke, Südwestrundfunk Baden-Baden, German Television*

#### **AN OPEN LEARNING SYSTEM FOR ADULT TRAINING: LESSON FROM INTERFACCIA SCUOLA PROJECT**

*Francesca Rizzo, University of Siena, Multimedia communication laboratory  
Alessandro Lovari, University of Siena, Marketing and Communication University Center*

### **Session B4**

#### **Networking for Schools and Teachers Development**

Session Chair:

*Jenny Pange, University of Ioannina, Greece*

Room:

**BUILDING A VIRTUAL SCHOOL FOR IN SERVICE TEACHERS ON ENVIRONMENTAL EDUCATION**

Mare

*Vittorio Midoro, Istituto Tecnologie Didattiche, CNR*

Nostrum II

#### **CHANGE OF PARADIGM IN TEACHER TRAINING WITHOUT TEACHERS?**

*Imre Balogh, Berzsenyi Dániel College Szombathely – Center of Distance Education of Budapest University of Technology and Economics*

CONTINUING PROFESSIONAL DEVELOPMENT FOR TEACHERS

*Henryk Krawczyk, Tadeusz Ratajczak, Anna Grabowska, Technical University of Gdansk, Poland*

AN OPEN DISTRIBUTED COMPUTER ENVIRONMENT FOR EDUCATIONAL TELEMATICS

*Danail Dochev, Institute of Information Technologies – BAS, Radoslav Yoshinov, Laboratory of Telematics – BAS, Radoslav Pavlov, Institute of Mathematics and Informatics – BAS*

17.30 AFTERNOON COFFEE

21.00 CONFERENCE DINNER – RESTAURANT CAN CORTADA

*(Address: Av. de l'Estatut de Catalunya s/n)*

*For delegates who have booked for the event.*

*Coaches are leaving from Mapfre Tower at 20.30*

***21 NOVEMBER, TUESDAY***

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9.00-11.00 PLENARY SESSION

**Session Chair:** Francesc Vallverdú, Vice-Rector  
Universitat Oberta de Catalunya

Room:

*Indicators on ICT in Education: Scope, Difficulties, Action Plan*

Auditorium

Claudio Dondi, President, ScienTer – Bologna  
MENON – Multimedia Educational Innovation Network

*The present and the future use of technologies in education*

Albert Sangrà, Academic Director, Universitat Oberta de Catalunya  
Internet Interdisciplinary Institute

*European Education Policies and ICTs – EENet Experience*

Carl Holmberg, Senior Advisor, DISTUM - the Swedish Agency for  
Distance Education  
Harald Gapski, ECMC – European Centre for Media Competence  
EENet - European Experts' Network for Educational Technology

*Digital Literacy - an aim to be pursued or a distraction from real  
learning?*

Roger Broadie, Chief Executive, EEP - European Education Partnership

11.00-11.30 COFFEE BREAK

**11.30-13.30 PARALLEL SESSIONS**

**SESSION C – Experiences and Good Practice**

**Session C1 School Education Systems in the Information Society**

Session Chair: Martha Lea, Stavanger University College, Norway

Room:

Auditorium

ELEARNING ACTIVITIES AND ODL EXPERIENCE

*Dr. Christian Dorninger, Federal Ministry of Education, Austria*

AN INVESTIGATION OF TEACHERS' USE OF IMS SOFTWARE IN IRISH SECOND LEVEL SCHOOLS: A CASE STUDY

*Oliver McGarr, University of Limerick, Dr. John O' Brien, University of Limerick*

THE INFLUENCE OF TECHNOLOGY ON EDUCATIONAL INTERACTIONS

*Paola Forcheri, Maria Teresa Molfino, Alfonso Quarati, Istituto per la Matematica Applicata – Consiglio Nazionale delle Ricerche*

INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE INTEGRATION OF VISUALLY IMPAIRED STUDENTS FROM SECONDARY SCHOOL TO HIGHER EDUCATION

*Kornélia Pongrácz, Distance Education Center, Budapest University of Technology and Economics*

LANGUAGE IN COMMUNITY AND SCHOOL

*Elda Gjergji, University of Elbasan*

**Session C2 New ICT Applications, Products and Services**

Session Chair: Miltiadis Lytras, Athens University of Economics and Business, Greece

Room:

Barcino I

INTERFACE: A METHODOLOGY FOR ASSESSING QUALITY OF EDUCATIONAL MULTIMEDIA PRODUCTS DEVELOPED IN THE FRAME OF A LEONARDO DA VINCI PILOT PROJECT

*Lajos Izsó, Károly Hercegi, Budapest University of Technology and Economics, Endre L. Erdős Budapest Polytechnic  
Paper presented by Dr. András Szűcs*

“HOW WE WERE” - A WEB SITE OF THE SOCIAL HISTORY OF CHILDHOOD MADE BY CHILDREN MULTIMEDIA FOR KIDS – MEDIAKIDS

*Anna Rubio y Marga Carreras, Technique co-ordinators of the project MediaKids, Laboratori de Mitjans Interactius, Dep. Didàctica i Organització Educativa, Universitat de Barcelona*

LECTURES ACROSS THE OCEAN. LONG DISTANCE LEARNING IN PAM CENTER

*Slawomir Gurdala, University of Lodz, Zbigniew Mikurenda, University of Lodz*

### Session C3

### Education Partnerships

Session Chair:

Sirkku Männikkö-Barbutiu, Stockholm Institute of Education, Sweden

Room:

EXPERIENCES IN BUILDING THE NATIONAL VIRTUAL SCHOOL FOR K-12 EDUCATION IN FINLAND

Mare

*Jari Koivisto, Senior Advisor, The National Board of Education*

Nostrum I

THE CLASSROOM AT A DISTANCE: THE CHALLENGE OF CHILDREN FROM TRAVELLER COMMUNITIES

*Ken Marks, University of Sheffield, Ann Dobbeni, Limburgs Univ. Centrum*

INTRODUCTION OF INFORMATION TECHNOLOGY IN PRIMARY SCHOOLS OF SMALL ISLANDS

*Costas Tsolakidis, University of Aegean*

INTERDISCIPLINARY PROJECTS WITH CROSS CURRICULAR AND TEAM TEACHING: AN EXPERIMENT FROM ONE CLASSROOM TO OPEN CLASSROOMS THROUGH THE WEB

*Alkistis Patrinely, Georgia Fitsiou, Ziridis School*

### Session C4

### Networking for Schools and Teachers Development

Session Chair:

Wilfried Nagl, Education Board Upper Austria

Room:

SUPPORTING LEARNERS AND TEACHERS IN HANDLING THE DIDACTICAL AND ORGANIZATIONAL INNOVATIONS OF TELEMATICS-BASED EDUCATION BY THE USE OF LEARNING CONTRACTS

Mare

Nostrum II

*Jens Breuer, Forschungsinstitut für Berufsbildung im Handwerk an der Universität zu Köln (Research institute for vocational education and training in the crafts trade at the University of Cologne) CSAK ANGOL?*



AN ANSWER TO TRAINING NEEDS FOR NEW PROFESSIONAL FIGURES IN TUSCANY IN THE MULTIMEDIA TECHNOLOGY ERA

*Elizabeth M. C. Guerin, Università di Firenze*



EXE EXTRANET ENVIRONMENT ADAPTED TO THE NEEDS OF THE IMEB TEACHERS

*Mariona Sanz Ausàs, Internet Interdisciplinary Institute Universitat Oberta de Catalunya, Angel Garcia Bassets, Internet Interdisciplinary Institute Universitat Oberta de Catalunya*

A DISTANCE LEARNING EXPERIMENT IN TEACHING PROGRAMMING LANGUAGES

*Jenny Pagge, Department of Education University of Ioannina, Greece*

13.30-15.30

LUNCH BREAK

(Marina Moncho's Restaurant, nearby Mapfre Tower)

15.30-17.30 CLOSING ROUND TABLE DISCUSSION

*School Communities and the Implementation of the eLearning  
Action Plan: actors, stakeholders, planning, bottom-up initiatives*

**Room:** Auditorium **Moderator:** Walter Kugemann FIM-Psychologie, University of Erlangen, Germany

**Panelists:** Nikitas Kastis, Chair of EDEN Open Classroom Working Group

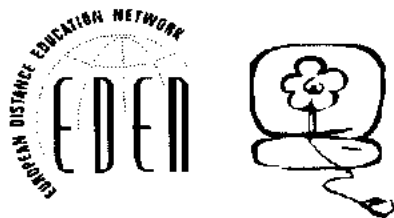
Representative of EDUCALIA, Universitat Oberta de Catalunya

Roger Broadie, Chief Executive, European Education Partnership – EEP

Ingeborg Bo, Executive Director, Norwegian Association for  
Distance Education

Jari Koivisto, Senior Advisor, The National Board of Education, Finland

Mathy Vanbuel, ATiT – AV Technologies, Informatics and  
Telecommunications, Belgium





**EDEN Fourth Open Classroom  
Conference  
19, 20-21 November 2000, Barcelona**

**List of participants**

**Austria**

Dorninger	Christian	Federal Ministry of Education
Nagl	Wilfried	Education Board Upper Austria
Steinkogler	Walter	Abendgymnasium Salzburg

**Belgium**

Dobbeni	Ann	Limburg University Centre
Gutierrez-Diaz	Maruja	European Commission, DG Education and Culture
Maes	Veronique	Coimbra Group
Meeus	Freddy	European School Heads Association - Belgium
Remy	Christoph	University of Ghent
Reynolds	Sally	ATTI & Associates
Van Heddegem	Johan	K.U. Leuven
Van Oost	Johan	E.F.ODL
Vanbuel	Mathy	ATTI & Associates
Wijnngaards	Guus N. M	European Schoolnet

**Brazil**

de Moraes	Marialice	Federal University of Santa Catarina - UFSC
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**Bulgaria**

Yoshinov	Radoslav	Bulgarian Academy of Sciences, Laboratory of Telematics
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**Cameroun**

Yatchou Tchana	Roland	Ecole Nationale Superieure Polytechnique
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**Denmark**

Broegger	Ojvind	UNI-C
Gjoerling	Ulla	UNI-C
Guttorm	Pia	PPR/TESS Network
Hansen	Ole	PPR/TESS Network
von Staffeldt	Nina	Learning Lab Denmark

**Finland**

Heikkila	Jussi	City of Espoo
Hyttinen	Paivi	University of Art and Design
Koivisto	Jari	National Board of Education
Koskinen	Leena	University of Art and Design
Kylämä	Marja	University of Helsinki
Leminen	Arja	City of Espoo
Orava	Jukka	University of Art and Design
Rekola	Jaakko	City of Espoo
Santala	Kristiina	City of Espoo
Seppanen	Jorma	City of Espoo
Silander	Pasi	University of Helsinki
Sirviö	Pertti	University of Art and Design
Valkonen	Airi	City of Espoo
Yletyinen	Helena	City of Espoo

## **France**

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Candor  
Kouyoumontzakis

Marie-Noelle  
Serge  
Georges

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CNED - Centre National d'Enseignement à Distance  
Université de Provence

## **Germany**

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Gapski  
Hauke  
Kugemann  
Müller  
Schilling  
Schumann  
Wagner

Jens  
Harald  
Hanspeter  
Walter  
Peter  
Klaus  
Christian  
Erwin

Forschungsinstitut für Berufsbildung im Handwerk  
European Centre for Media Competence  
Südwestrundfunk  
University of Erlangen-Nürnberg  
F.A.S.T.  
University of Applied Sciences, FH-Weingarten  
Fachhochschule Zwickau  
University of Hildesheim

## **Greece**

Fitsiou  
Galoukas  
Kastis  
Lytras  
Michaelidou  
Niakaris  
Pange  
Patrineli  
Poupaki  
Sidiropoulou  
Sotiriou  
Tsolakidis

Georgia  
Stelios  
Nikitas  
Miltiadis  
Maria  
Christine  
Jenny  
Alkistis  
Irene  
Athena  
Sofoklis  
Costas

Ziridis School  
Geitonas Schools  
Lambrakis Research Foundation  
Athens University of Economics and Business  
Ministry of Education and Religious Affairs  
Hellenic American Union  
University of Ioannina  
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Pongrácz  
Szúcs  
Wagner  
Zárda

Kornélia  
András  
Anna  
Sarolta

Budapest University of Technology and Economics  
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EDEN Secretariat  
Számalk Systemhouse Ltd.

## **Iceland**

Jeppesen

Karl

Iceland University of Education

## **Ireland**

Broderick  
Johnston  
McGarr  
O'Bric

Miriam  
Keith  
Oliver  
Ruán

National Council for Educational Awards  
University of Limerick  
University of Limerick  
Udaras na Gaeltachta

## **Israel**

Aviram

Aahron

Ben Gurion University

## **Italy**

Bocconi  
Dondi  
Ferrari  
Forcheri  
Grementieri  
Guerin  
Mancinelli  
Manfredi  
Midoro  
Molfino  
Ott  
Quarati

Stefania  
Claudio  
Simona  
Paola  
Valerio  
Elizabeth  
Elisa  
Paolo  
Vittorio  
Maria Teresa  
Michela  
Alfonso

Istituto Tecnologie Didattiche - CNR  
SCIENTER  
Università Cattolica, Milano  
Istituto per la Matematica Applicata - CNR  
Associazione Campo  
Università di Firenze  
SCIENTER  
Padova University  
Istituto Tecnologie Didattiche - CNR  
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C.N.R. - Consiglio Nazionale delle Ricerche  
Istituto per la Matematica Applicata - CNR

Rizzo Turrini	Francesca Monica	University of Siena SCIENTER
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**Luxembourg**

Oliveira	Carlos	European Commission, DG Information Society
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**(9) Norway**

Bo	Ingeborg	Norwegian Association for Distance Education
Fjuk	Annita	Telenor Research and Development
Hasle	Sigurd	University of Oslo
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Jakobsen	Mona	Telenor Research and Development
Kristiansen	Tove	Telenor Research and Development
Larsen	Anniken	Telenor Research and Development
Lea	Martha	Stavanger University College
Soby	Morten	Network for IT-Research & Competence in Education

**Poland**

Chojnacka	Elzbieta	Agricultural University, Szczecin
Chojnacki	Juliusz C.	Agricultural University, Szczecin
Grabowska	Anna	Technical University of Gdansk
Mikurenda	Zbigniew	University of Lodz, PAM Center
Ratajczak	Tadeusz	Technical University of Gdansk

**Portugal**

Ferreira da Silva Soeiro	Alcindo Alfredo	CNED - Portuguese Navy University of Porto
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**Romania**

Gergely Grad	Eugen Alexandru	Lucian Blaga University Lucian Blaga University
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**Slovak Republic**

Szakálová	Ivana	National Bank of Slovak Republic
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**Spain**

(23000)

Almeda Ortega	Toni	Universitat Oberta de Catalunya
Arenas	M. Begona	SCIENTER Espana
Barnils I Domingo	Josep Maria	Institutio Familiar D'Educacio
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Borges	Federico	Universitat Oberta de Catalunya
Cabrera	Nati	Universitat Oberta de Catalunya
Carreras Ibanez	Margarita	Universitat de Barcelona
Cuatrecasas	Marta	Universitat Politecnica de Catalunya
Diaz-Carrasco	Aureo	Ibermatica S.A.
Echarri	Luis	Universidad de Navarra
Felton	Paul	P.A.U. Education
Ferraté	Gabriel	Universitat Oberta de Catalunya
Ferrer	Francesc	Universitat Oberta de Catalunya
Fragua	Rosa	Centro de Estudios CEAC S.L.
Frances	Vicente Luis	AOETT-Fundacion Universidad
Galtes	Angels	Universitat Oberta de Catalunya
Garcia	Angel	Universitat Oberta de Catalunya
Gil	Ramon	Viviance New Education
Girona	Cristina	Universitat Oberta de Catalunya
20 - Gonzales Casellas	Eva	Universitat Oberta de Catalunya
Guardia	Lourdes	Universitat Oberta de Catalunya
Guitert Catusus	Montse	Universitat Oberta de Catalunya
Hinojosa	Jordi	Universitat Oberta de Catalunya
Lozano	Guillem	Universitat Oberta de Catalunya
Marti	Marti	Universitat Oberta de Catalunya

Monforte	Carmen	Universidad Politecnica de Valencia
Paloma	Jose Maria	Universidad de Navarra
Pascual	Mireia	Universitat Oberta de Catalunya
Ponce	Antoni	Universitat Oberta de Catalunya
Puyal	Beatriu	Universitat Oberta de Catalunya
Ramirez Sarrado	Carles	Universitat Oberta de Catalunya
Riu	Antoni	Universitat Oberta de Catalunya
Rocadembosch	Carles	Universitat Oberta de Catalunya
Roig I Planas	Tina	Associacio de Mestres Rosa Sensat
Romero Marti	Quim	Edu Lab
Romeu	Teresa	Universitat Oberta de Catalunya
Rubio Carbo	Anna	Universitat de Barcelona
Salas Monforte	Rosa M.	Generalitat de Catalunya
Salvador Mencerre	Eugénia	Fundacio Jaume Bofill
Sangra	Albert	Universitat Oberta de Catalunya
Sanz	Mariona	Universitat Oberta de Catalunya
Vallverdu	Francesc	Universitat Oberta de Catalunya
Vivancos Marti	Jordi	Generalitat de Catalunya
Yagüe	Ana	Universitat Oberta de Catalunya

(9) **Sweden**

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Granhagen	Erik	Ljusdals Kunskapscentrum
Holmberg	Carl	DISTUM - Swedish Agency for Distance Education
Lowenhielm	Kerstin	Stockholm Institute of Education
Mannikkö-Barbutiu	Sirkku	Stockholm Institute of Education
Sjoegrund	Birgitta	Stockholm Institute of Education
Sterner	Rigmor	DUDACO
Wirén	Helen	University of Gavle

**The Netherlands**

de Groot	Rindert	University of Amsterdam
Schoneveld	Greta	CPS
Sligte	Henk	University of Amsterdam
Zijlstra	Wybe G.	University of Amsterdam

**Turkey**

Inelmen	Erol	Bogazici University
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**United Kingdom**

Broadie	Roger	European Education Partnership
Fencott	Zoey	Jubilee Arts
Kemp	Patricia	Learning and Teaching Scotland
Love	Matthew	Sheffield Hallam University
Myers	Kate	Homerton College
Richardson	Alan	Independent consultant
Whitlock	Quentin	Technologies for Training

**USA**

Del Duca	Louis	Pennsylvania State University
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*a matter of connections*

# trapeze

Connecting to the Internet has become as common as connecting to power sources or gas services. However, not everyone finds it so easy. Just think of the many islands off the European coasts, for example, where telecommunications are not as good as they are in the heart of the city. Or think of how hard it is to connect people that are always on the move. Establishing a high quality and secure connection to remote, isolated or mobile communities and individuals is now becoming a possibility even when terrestrial or fixed lines are not available, thanks to the use of satellite technology.

Satellite technology can also provide an answer to situations where the bandwidth (and speed) offered by fixed lines simply isn't always adequate. Corporate intranets or learning content networks are good examples.



TRAPeZe

*The Trapeze project shows how the use of cheap and easily deployable two-way satellite technology can contribute to facilitating high-quality access for all. Its outcomes will be useful for companies, institutions and governments that are seeking a technological solution that can rapidly and reliably ensure universal, high-quality connectivity. The project members have selected the educational needs of children on the move as their challenge to prove this point.*

## theaim

The aim of **Trapeze** is to use satellite technology to link travelling children with each other and with their teachers, so they can continue to learn without interruption while they are travelling. During the project, a unique showcase satellite tele-education system is built and tested. The results of the tests are used to create a full set of blueprints as to how this system can be implemented and expanded into the mainstream educational offer for these children throughout Europe. Stakeholders within the sector of traveller education will be contacted with this value proposition.

# thetrapeze



**Trapeze** is supported under ARTES 3, the European Space Agency's Multimedia Initiative, as part of their commitment to the use of advanced European satellite developments in education. **Trapeze** is a year long project which began in November 1999 and continues till October 2000.

## thechallenge

Providing good quality and consistent learning opportunities for children in fairground, circus and bargee families can be quite a challenge. Due to the nature of their housing, these children have little or no access to traditional school structures during several months of the year. In various countries specialised, publicly financed schools and services provide more flexible and open learning opportunities to these Travellers.

The main challenge, with which these schools and services are confronted, lies in connecting these children (and their parents!) to their teachers and learning resources while on the move. New communication technologies can provide a means to achieve this. On the condition they are mobile of course...

# technology

*Trapeze  
using advanced  
satellite technology*

and a more secure environment for the child, would be the result of the new technology. The new technology would be the result of the new technology. The new technology would be the result of the new technology.

The mission that can be obtained in the Trapeze learning environment is impressive. The mission downloaded from the hub station is able to reach 300 miles. The learning objectives of the channel to be used with the program with the new technology. The new technology users experience the benefits of creating children's new year and.

## how

*How the  
Trapeze system  
works*

The new technology would be the result of the new technology. The new technology would be the result of the new technology. The new technology would be the result of the new technology.

TRapeze

# trapeze

## *Main partners and their role*

- **European Federation for the Education of Children of Occupational Travellers (EFECOT) (BE)**  
*Co-ordination and external relations*
- **@iT** - an audiovisual technology, informatics and telecommunications company specialising in the field of telematics supported learning (BE)  
*Technological and pedagogic support, external relations*
- **Telespazio (IT)**  
*Satellite Service Provider. Company owned by Telecom Italia.*
- **Stichting Rijdende School (NL)**  
*School service participating in the pilot project*
- **West Midlands Consortium - Education Service for Travelling Children (UK)**  
*School service participating in the pilot project*
- **Audiovisual Services of the Katholieke Universiteit Leuven (BE)**  
*Audiovisual support and development of learning materials*

The Trapeze project is co-financed by the ARTES 3 Programme of the European Space Agency (ESA).

Further information about **Trapeze** is available from:

### **EFECOT**

Grensstraat 6  
1210 Brussels  
Belgium  
+32/2/227 40 60  
efecot@efecot.net

<http://www.efecot.net>  
<http://estec.esa.nl/artes3>  
<http://trapeze.teleospa.it>

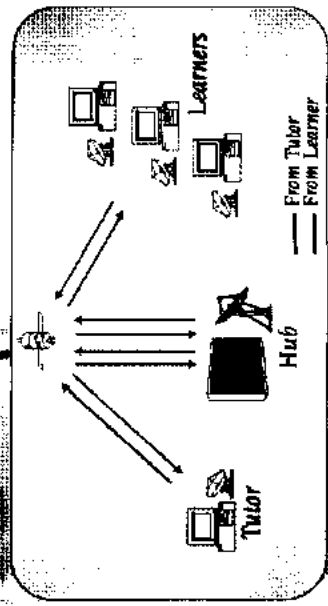




## STRUCTURE & PURPOSE

Trapeze is an Information Communication Technology (ICT) project funded by the European Space Agency (ESA) through the Artes 3 Programme. The programme is focused on encouraging the development of innovative satellite technology. The partners involved decided to target women families for the pilot phase of their high mobility and limited access to high quality communication lines.

Usually satellite-based ICT communication systems are one-way communication. It is usually established via the objective of the Trapeze project is to use satellite technology for the return link too. This leading-edge technology offers the ideal solution to build an infrastructure for dispersed and mobile large information files, be it audio or graphics.



The system will be piloted during 1 month of the summer term 2000.



## PILOT GROUP

10 pupils in Key Stage 2 have been identified for the pilot. They all attend either Green Rock Primary School in Walsall or Dudley Wood Primary School in Cradley Heath (Dudley). All of these pupils travel with the Fair during the summer months and have experienced paper driven School Based Open and Distance Learning Packs (DLP). Traditionally pupils are supported by visits from Advisory Support teachers from Traveller Education Support Services.

With TRAPEZE these pupils will receive teacher support daily via the satellite links. This daily contact will be in a variety of forms including group and individual contact.



Green Rock Primary School

## WORK STRANDS

The work consists of 3 main strands that will be delivered to individual pupils on a daily basis.

**Maths strand** - concentrating on the 4 basic computation skills.

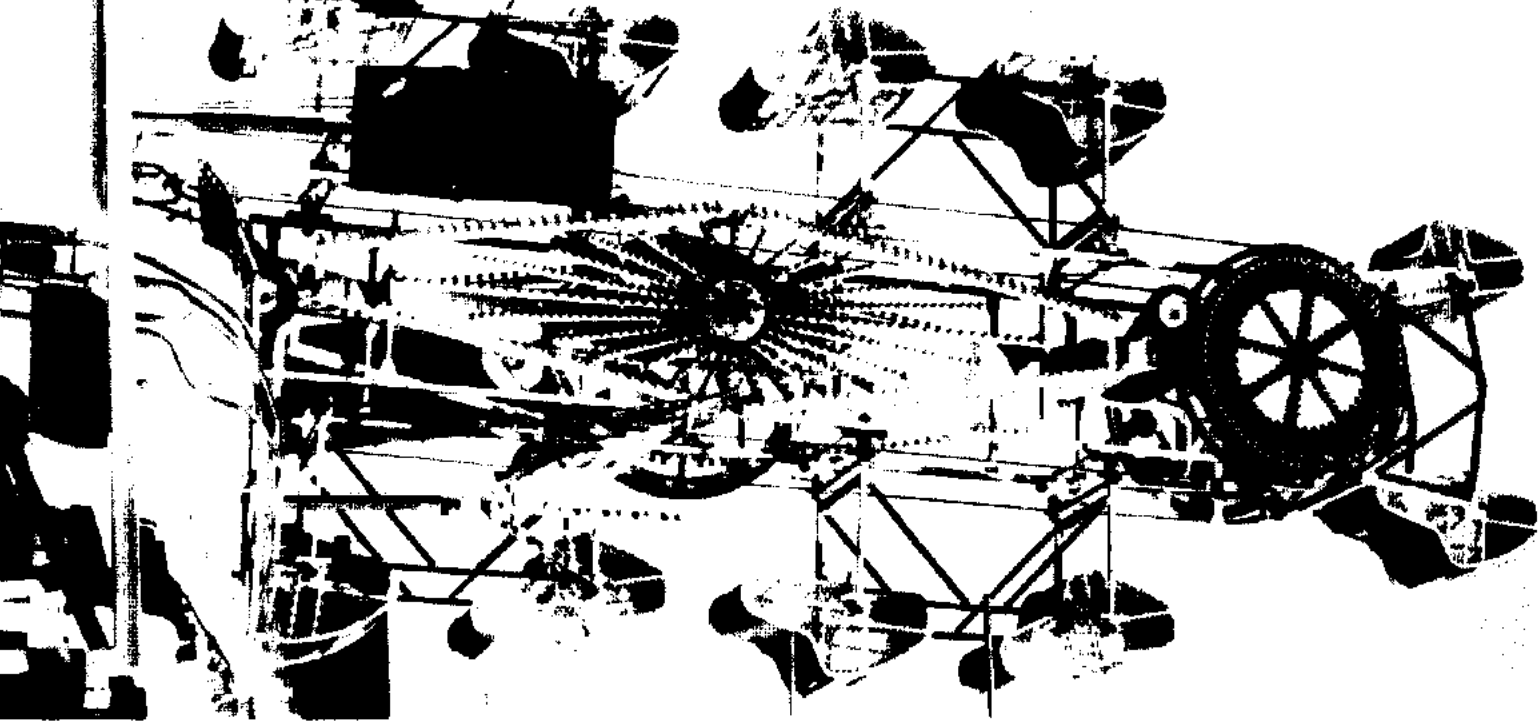
**Cross curricula investigative strand** - which includes a range of different activities for every week of the pilot.

**Science strand** - this includes:  
 the properties of materials  
 solids, liquids and gases  
 changes  
 magnetism

The pilots will direct the pupils via ICT to use the specific materials provided to support this work.

Science has been the main focus for developing the pilot because this has proved to be an difficult area to cover by the usual DLP methods.





The project is being evaluated by Ken Marks from the Department of Educational Studies, Sheffield University.

Any comments regarding the UK pilot should be directed to

Paul France and Lynne Powis at

WMCESTC,  
The Graiseley Centre,  
Pool Street,  
Wolverhampton,  
WV2 4NE.

Tel 01902 714646 Fax 01902 714202

E mail: [lylne@siwop.freemove.co.uk](mailto:lylne@siwop.freemove.co.uk)  
[pelof.france@notping.fsnet.co.uk](mailto:pelof.france@notping.fsnet.co.uk)

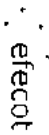
Partners in Learning



@IT (BEI)



Stichting Rydenade  
School (NL)



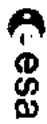
EFECCOT (BEI)



K U Leuven  
Audiovisual Services (BEI)

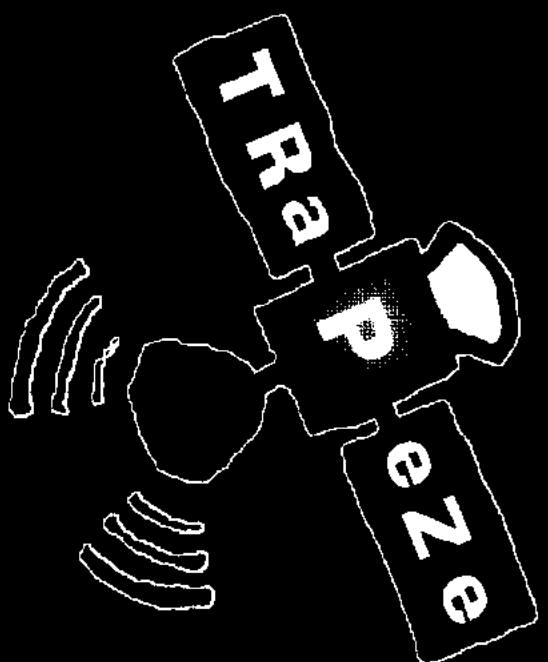


telepazio (ITI)



ESA

West Midlands Consortium -  
Education Service for Travelling Children (UK)



DISANCE LEARNING BY  
2 WAY SATELLITE  
COMMUNICATION



# EXE BULEVARD VER 1.0

**An engine to empower virtual communities in education**

EXE BULEVARD implements the basic services of a virtual community for working and training in the field of multimedia tools applied to education. EXE BULEVARD is a remote access WEB Extranet platform, (accessible via cable, ISDN or dial up connection through PSTN), which integrates under a common user interface the necessary set of software applications for working and learning on educational multimedia and managing distance training programs.

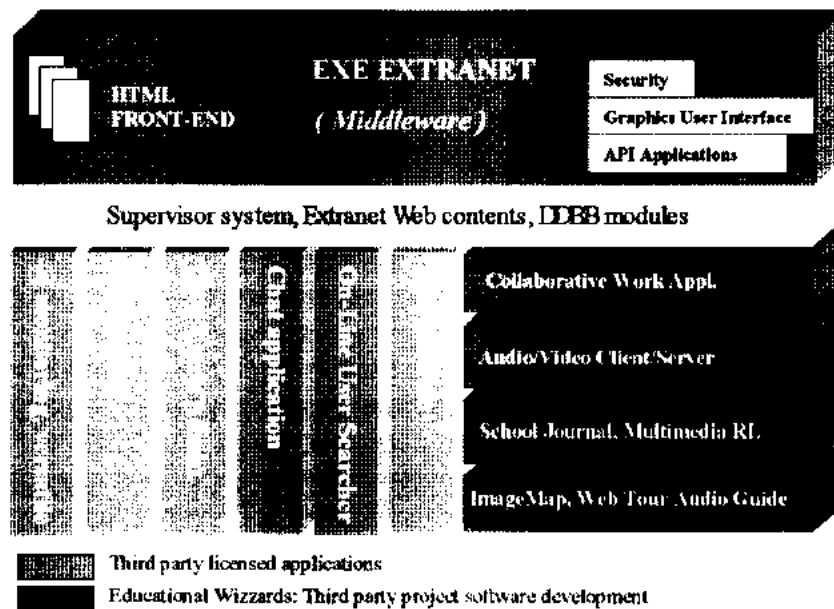
## **Benefits**

EXE BULEVARD benefits are:

- To build a Virtual Community between educational professionals interested on multimedia technologies facilitating communication and the exchange of experiences.
- To motivate educators to participate on virtual training activities.
- To allow open training programmes creation and teaching.
- To make agile distance training management and monitoring.
- To facilitate the dissemination of best practises in applying multimedia to education.
- To facilitate access to a common and selected compilation of multimedia resources useful for professionals of education.
- To become a unique reference for educational professionals accessing to internet

**Characteristics** EXE BULEVARD can be defined by the following characteristics:

- **Unique access key for all applications.** Users only have to identify themselves once, by entering a common password for all integrated applications in EXE BULEVARD.
- **Security.** EXE BULEVARD guarantees that only registered users enter to the environment, assures the confidentiality of access keys and virtual community memberships information interchanges and finally restricts access to specific services and applications depending on a predefined user profiles table.
- **Third party application integration.** EXE BULEVARD is an open software architecture which fulfils Internet standards in order to facilitate the evolution and improvement of its integrated applications. Third party applications integration capability is vouched for the use of API's (Applications Programming Interface) which defines the interaction between applications making up EXE BULEVARD.
- **Scalable and robust environment.** EXE BULEVARD supports a wide range of services of working, training and information. All users together (teachers, animators and management staff ) build a complex matrix structure to manage. EXE BULEVARD can register thousands of users and the concurrence peak is up to 10% of them.
- **Low requirements for the end user work platform.** EXE BULEVARD work platform consists of a PC with Internet connection and an Internet browser software.

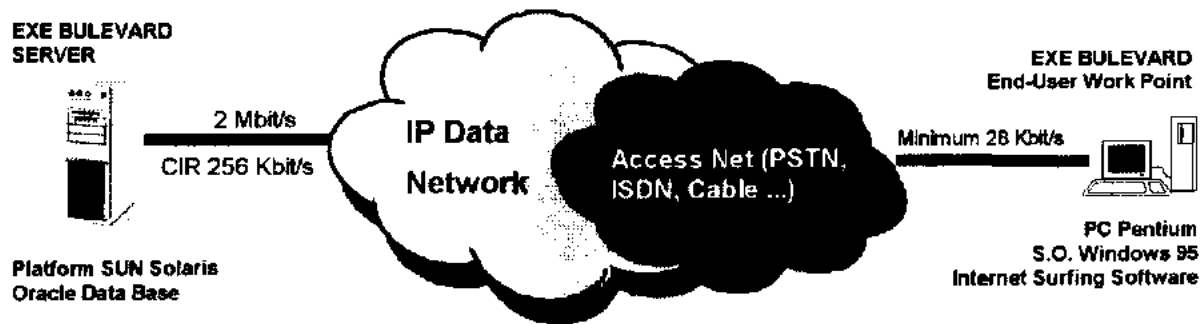


## Applications

EXE BULEVARD ver 1.0 will integrate the following applications:

- **Electronic mail service.** Web based messaging application for the creation and management of internal and external (Internet) mails.
- **Shared disk.** Resources sharing manager aimed at provide a common disk area to share applications and information resources between virtual community members.
- **Administrator.** EXE BULEVARD environment manager with the following associated tasks: entries and exits of memberships, user privileges and personal data updating and database maintenance.
- **Contents manager.** Application for EXE BULEVARD contents classification, maintenance and updating.
- **Multimedia Resources Manager.** An EXE BULEVARD developed tool (Educational wizzards) for storage and search of multimedia resources on electronic format according to some pre-established criteria.
- **Collaborative work applications based on IP.** A set of third party applications and tools destined to facilitate groupwork in real time between students and teachers. These applications include on-line chats, video-conferencing, and resource sharing.
  - CHAT for dialoging on-line.
  - Microsoft NETMeeting for share applications and resources.

## Hardware, Software and connection technical requirements



## Server system requirements

### Hardware:

- Example: Minimum server platform for up to 200 nominal users, 10% concurrence.  
SUN Enterprise 250, 1 processor 300 MHz, 256 Mb RAM, 18 Gb HD (9+9 mirroring).

### Software:

- Operating System (O.S.) SUN Solaris 2.6
- Oracle Server 8.0.3 database management system. (7.3.3 libraries)
- Oracle Application Server 3.0.1 Enterprise
- Web Server: Netscape Enterprise Server 3.5.1
- McAfee antivirus for Solaris.

### Communication:

- Link to IP data public network (Recommended out CIR 5Kbps, in CIR 3Kbps per concurrent user)

## Client system requirements

- Personal Computer PC Pentium, 32 Mb RAM, 1,2 Gb HD, CD-Rom 4x with Multimedia kit recommended.
- S.O. Windows 95
- Internet surfing software (Netscape Navigator, Communicator or Microsoft Internet Explorer).

For further information and product demonstration, please contact:

Universitat Oberta de Catalunya  
International Programmes and Research  
Tel: 34 93 253 57 00  
Fax: 34 93 211 01 26  
e-mail: [research@uoc.es](mailto:research@uoc.es)  
<http://www.uoc.es>

EXE BULEVARD is one of the main results of EXE Extranet Education Project, financed by the European Commission, in the framework of Telematics Applications program.

Institutions which take part: Comune di Bologna (Main contractor), Nomisma S.p.A, Horizons Unlimited S.r.L, Provveditorato agli Studi di Bologna, London Borough of Islington-ARTEC, University of North London, Interaction Design Ltd, Municipality of Barcelona-Institut Municipal d'Informàtica, Universitat Oberta de Catalunya, Universitat Politècnica de Catalunya.

(See also <http://www.comune.bologna.it/iperbologna.exe> for the EXE portal site).



**EUROPEAN DISTANCE EDUCATION NETWORK  
NETWORK OF ACADEMICS AND PROFESSIONALS (NAP)**

**2000 NOMINATION FORM FOR INSTITUTIONAL MEMBERS**

The Network of Academics and Professionals (NAP) has been set up to support activities of interest to individual members of EDEN, in line with EDEN's general aims and activities. It comprises all individual members of EDEN, as well as individuals delegated by institutional members. It is coordinated by a Steering Committee elected by a ballot of its members.

As an **institutional member**, your membership fee entitles you, at no extra cost, to nominate up to **FOUR** individuals within your institution to NAP. If you, as the main contact person for your institution, would like to join NAP, please include yourself as one of the four.

Please complete this form with the names and addresses of your nominees, and return it to the **EDEN Secretariat**, together with the membership form.

<b>Name of Institution:</b> .....
<b>Main contact person:</b> .....
<b>Nominees to NAP:</b>
1. Name: .....
Address: .....
Tel.: ..... E-mail: .....
2. Name: .....
Address: .....
Tel.: ..... E-mail: .....
3. Name: .....
Address: .....
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# *Special Offer*

## *EDEN membership 2001*

### **For the participants**

### **of EDEN Fourth Open Classroom Conference**

*Welcome to Barcelona !*

If you are registered participant of the Fourth Open Classroom Conference and submit your EDEN membership application as a new institutional or individual member by 15 December 2000, you will be offered a thirty percent reduction of the membership fee for 2001:

Institutions with more than 3000 students or networks with more than 10 members <i>instead of £330</i>	£220
Institutions with less than 3000 students or networks with less than 10 members <i>instead of £240</i>	£160
Individuals <i>instead of £60</i>	£40

As an additional benefit, these new members will receive a FREE copy of the EDEN 1999 Open Classroom Conference Proceedings „Shifting Perspectives – The changing role and position of open and distance learning in school level education” (book or CD format, as preferred).

Send your membership application form to the EDEN Secretariat or just hand it over at the Registration Desk to Anna Wagner.

We are looking forward to welcome you in EDEN and celebrate in 2001 together, with special events like the Stockholm Annual Conference, the tenth anniversary of the European Distance Education Network!

Dr. András Szücs  
Secretary General, EDEN

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### Introductory notes of the new President of EDEN

In this time - looking forward to its 10th anniversary in 2001 - EDEN finds itself in a rather stable position. Membership has well grown and the level of active participation on conferences, workshops and similar events shows to be very encouraging. Most of EDEN conferences attract a veritable number of non-members, too, which is a rather promising

development proving that EDEN is taking challenges, issues and topics of general interest and well in front of the professional and political development in the field of open and distance learning (including the various "virtual" patterns as well). Looking back at the experience of the important European Conference about Quality Networking organised by the ODL Liaison Committee - with EDEN playing a major role in terms of preparation and participation - gives evidence to the fact that co-operation and joint actions between the different ODL related networks on a thematic as well as on a political level have reached a remarkable state. Internal affairs of EDEN - its leading committees and subgroups as well as its secretariat and the financial situation - are in a very good shape and provide professional and effective services for the organisation on a high level. So what should be done in order to further strengthen and improve the position and the chances in a dynamic, promising and competitive European (and global) environment? Let me look at these question taking the role and the strategic interest of the president of this organisation and thus focus on three aspects which seem to be of essential importance: the character of a "professional(s)" organisation, the contribution to "quality gain" in the field and the specific kind of "policy-making" as an open network.



What do we mean by saying EDEN is a "professional(s)" organisation? Well it does not mean - to start the answer with this remark - that EDEN regards its fellow-networks in the field not being "professional". It is focussing on the fact that EDEN is the only completely open organisation - open for all kinds of institutions and individuals, in every sector and on all levels - in the field of European open and distance learning which attracts institutions, networks and individuals just for professional reasons and for their interest of being professional. This is what EDEN is about: to offer open platforms for exchange, co-operation and joint development - regardless of being public or private, belonging to a consortium or not, being a university or a private training institute. To focus on this aspect of course would mean to care for a couple of relevant areas. One of them is *research* in the field, the way it develops, progresses and contributes to a sound knowledge base as well as to innovation and improvement. This is why EDEN will continue with organising high-level events related to this area. Another area is the development of *professions* in the field as such. The rapid change of technology and the organisational structures are leading to a radical change in the professions related to the development, delivery and support of ODL and/or "virtual" study programmes, too. Emerging from the distance education and open learning tradition by history EDEN must and wants to offer an adequate platform to the "new" professionals in the field as well. The third one may be named as *knowledge base* in our field. All of us know that there is a vast differentiation and extension going on. EDEN has to keep tack with these process and - not only for this reason - further develop its good contacts and co-operation with other networks and stakeholders in the field.

Why should *quality* - and even more demanding: *quality gain* - be a key word in the strategy of EDEN? Quality yet is and in the future in the context of open international markets will be one of the key issues to ensure acceptance, reputation and success. Of course it is a basic condition of professional life, too. Furthermore it will not be sufficient only to ensure quality - this is a basic category - but continuously to improve and extend high quality. EDEN is known for the good quality of its conferences and workshops. This is the base where we start now again - in order to set and meet new challenges in this respect. This will mean to keep and even raise the quality of presentations and to offer new opportunities for exchange and co-operation in our conferences, to develop new methods and strategies to make EDEN events as interesting, challenging and productive as pos-

sible. To give quality gain a high rank in the strategy of EDEN will mean a clear commitment of the organisation, adequate services for its members to encourage and foster quality gain and last but not least the decision to take leadership in this area. Members and guests at EDEN meetings and events shall (as many of them have done already till now) highly appreciate to be "part of the game". People from the marketing area might say EDEN should become a "brand name" for quality and professionalism in the field.

Some might say what is interesting about "*policy-making*" in this respect. Isn't it the basic reason for networking as such? Well, but what would this mean now and in the near future? What would this mean in conceptual as well as in practical terms? Being a company in legal terms EDEN in its definition, its commitment and its practical business is not acting as an enterprise. EDEN is not a firmly structured and managed consortium. And - being glad about this - EDEN is not a political superstructure. But as other networks, too, EDEN of course is a political organisation. EDEN - as single professional and comprehensive network and as part of strategic alliances - takes action to get and to enlarge influence in the political area. This is mainly focussed on the European environment and political institutions but does not end there. Sometimes it can be appropriate on a national or even regional level; sometimes it is connected with global structures and initiatives. Besides the task to install and care for the necessary communication with political institutions this gives high priority to the relationship and co-operation with other networks in the field. EDEN - as an open and comprehensive network - clearly is committed to establish and maintain good and mutually benefiting relationships with other fellow-networks on the base on a well defined division of labour, the clarification of shared interests and taking responsibility within joint actions where this is the best choice. EDEN will be a good and reliable partner in the community of networks and organisations with a clear own profile and agenda.

It would be of great benefit not only for EDEN and its members but also for the development of open and distance or "virtual" learning and the students/clients who choose these kind of learning because they are convinced that this will be the best choice for them. At the end of the day this is what we are working for.

Erwin Wagner  
October, 2000

# EDEN Annual General Meeting 2000

EDEN's ninth Annual General Meeting took place on 21 June 2000 during the Lisbon 2000 European ODL Conference. All members will receive the Minutes of the AGM, however a brief summary of the issues that were discussed and resolved follows:

## ● **President's Report**

The report, presented by Professor Valerio Grementieri, emphasised the following main strands of activities and achievements:

- EDEN could well develop and transform its membership services in accordance with the growing demand and new requirements, thus strengthened as a European co-operation platform and as an active membership organisation
- Considerable increase could be observed in the number of members,
- The initiative to support networking amongst the National Distance Education Centres and Study Centres established in frames of the PHARE programme and the opening towards students as strategic target group was highly appreciated by the institutions and persons concerned.
- A leading role in promoting European co-operation amongst the networks involved in ODL was achieved
- Conference activities and project involvements have been increased and this has created a stable basis - in financial terms, too - for the extension of activities
- The publication and information activities have been upgraded, which improved the communication and visibility of activities and events around the Association

## ● **Achievements in the main strands of EDEN activities**

The AGM was reported on the research workshop held in Prague and developments of the EDEN Research Network concept by the Vice-President, Dr. Erwin Wagner. He informed members that - upgrading the concept of the originally initiated workshop - a real conference was organised as the open distance learning community reacted to the call very positively and the interest for the event was considerably high. The workshop character of the event was meanwhile strengthened also by organising the meetings on the marketplace, where interactive discussion, exchange of ideas and impressions was possible. The collected comments, short reports, feedbacks were being processed and would be made available for the ODL community at the EDEN website.

The AGM was updated on the developments of the Open Classroom Working Group activities by Dr. Nikitas Kastis, Chair of the WG. The Working Group supported EDEN's Open Classroom activities, by taking the responsibility of negotiations about the venue and concept of the next Open Classroom Conference. He told that the preparation for the Conference had been

started and that Universitat Oberta de Catalunya was ready to act as the host institution of the event.

Johan Van Heddegem, Chair of the NAP (Network of Academics and Professionals) Steering Committee briefed the AGM on the NAP elections, held at the beginning of the year and outlined future plans of the Steering Committee for the vitalisation of the NAP activities.

## ● **EDEN 2001 Budget**

The audited accounts of EDEN for the year 1999 and the budget for 2001 recommended by the Executive Committee were endorsed. There was a convincing increase in the income, meanwhile the cost-effective solutions applied and the good financial management with strict control on expenditures contributed to the maintenance of the stable financial situation. Reserves remained untouched.

## ● **Membership fees for the year 2001**

Institutional and individual membership fees will remain the same as in 2000 (see last page for details). The Executive Committee suggested not to change the membership fees considering the healthy financial situation of the Association. EDEN has not changed the membership fees since 1995, and that was meant as a message that the Association is serving with increased level of activities the international ODL community without requesting higher financial contribution from its members, rather by increasing other incomes and by ensuring efficient operation.

## ● **Election of officers**

Erwin Wagner, University of Hildesheim, Germany, Vice President of EDEN between 1998-2000 was elected as new President of EDEN.

Sarolta Zarda, Szamalk Systemhouse, Ltd., Hungary, was re-elected to serve for her second three year term of office. Claudio Dondi and Carl Holmberg have been elected for the first time of office, beginning July 2000, as new members to the Executive Committee, on the place of Valerio Grementieri and Sergei Schennikov.

Life membership was awarded to Professor Michel Moreau, former Rector d'Academie of CNED, for his outstanding contribution to the development of open and distance learning in Europe and for the invaluable services and achievements for the evolution and progress of the European Distance Education Network.

## ● **EDEN conferences, events in the year 2000-2001**

- ◆ 20-21 November, 2000 - Fourth Open Classroom Conference, Barcelona
- ◆ 11-13 June, 2001 - Annual Conference, Stockholm, Sweden
- ◆ fall of 2001 - Research Workshop, venue to be identified later

# Personal

## **NEW PRESIDENT IN EDEN**

The EDEN Annual General Meeting on 21 June 2000 in Lisbon elected Dr. Erwin Wagner, Director of the Centre for Distance Learning and Continuing Education of the University of Hildesheim, Germany - who served as Vice President between 1998 and 2000 - as new President of EDEN.

## **New members in the EDEN Executive Committee**

At the Annual General Meeting in Lisbon, on the place of Professor Valerio Grementieri and Sergei Schennikov, who had completed their term of office, the following two new members have been elected to serve in the EDEN Executive Committee:

**Dr. Claudi Dondi**, SCIENTER (Research and Technical Assistance Centre on Learning System), Bologna

**Dr. Carl Holmberg**, DISTUM (Swedish Agency for Distance Education), Stockholm

*Claudio Dondi* is President of SCIENTER since 1988. SCIENTER, a research institute is specialised in the field of open learning and innovation in education and training systems. Claudio Dondi has co-ordinated several programmes of trainers' training in Italy and a number of national and European programmes (COMETT, DELTA, FORCE, TEMPUS, LEONARDO, SOCRATES, ADAPT, EMPLOYMENT). He holds the post of Secretary General of CAMPO - the Italian Open Learning Association.

*Carl Holmberg* is Senior Advisor at DISTUM, a newly established organisation with the main task of the development and implementation of an agenda for research into Distance Education in Sweden. Being by profession a psychologist for many years he worked at the Department of Education and Psychology, at the Linköping University. His main field in teaching was Research methodology and Educational planning. As an expert in the Governmental Committee on Distance Education he contributed to the shaping of the future of distance education in Sweden and later working at a non-profit organisation he was deeply involved in dissemination of knowledge. He holds the post of the Chair of European Experts' Network for Educational Technology (EENet).

Both Claudio Dondi and Carl Holmberg have been collaborating with EDEN for a long time.

## **New Vice-President in EDEN**

The EDEN Executive Committee at their meeting of 13 October, held in Budapest elected Ingeborg Bø, Executive Director of the Norwegian Association for Distance Education, as new Vice-President of the Association.

**CONGRATULATIONS AND MANY SUCCES FOR THE NEW OFFICERS OF EDEN!**

*EDEN has to thank whole-heartedly to Professor Valerio Grementieri who had a substantive role in the strengthening and growing of the Association during the past six years. His Presidency has experienced EDEN's continuous development both in the increase of membership and in intellectual terms, the extension of activities, implementing new initiatives.*

*Valerio had decisive part in initiating and implementing the collaboration of the different networks in open and distance learning on a European scale, which he served with ideas and effective organisation, benefitting from his exceptional sense of diplomacy as well. His job done for and committed activities in the interest of the Association will undoubtedly serve as an example of committed performance which shaped considerably EDEN and will earmark a remarkable period of the Association.*

## The Lisbon 2000 European Conference

The Lisbon 2000 European Conference "ODL Networking for Quality Learning", as the first joint event organised by the European ODL Liaison Committee, took place on 19-21 June, at the "Parque das Nações", where the EXPO '98 was held, in Lisbon.

Special feature of the well attended event (over 300 delegates) were the invited contributions of the networks represented in the Liaison Committee. (Individually submitted papers were introduced by rapporteurs of thematic sessions.). EDEN has contributed with two comprehensive discussion papers serving as basis for the debate in the plenary conference sessions. The essay entitled "ODL networking in Europe and the experience of the East-West co-operation", by Professor Tamás Lajos, Director of Distance Education Center of the Budapest University of Technology and Economics, Hungary, Professor Valerio Grementieri, President, EDEN, Florence, Italy and Dr. András Szűcs, Executive Director, EDEN offered a selection of examples concerning the needs, chances, experiences, barriers and difficulties about networking in open and distance learning in Europe. It included certain

theoretical assumptions but also technical experience concerning ODL networking.

The review paper of EDEN Network of Academics and Professionals (NAP), "Research into Open and Distance Learning", by Dr. Erwin Wagner (with support from Christel Claeys, Claudio Dondi, Georges Van der Perre, András Szűcs), reviewed the current state of research into ODL, topics and thematic priorities, problems and limitations, resources and strategies, methodological and theoretical approaches for investigation and also evaluation of outcomes and impacts.

EDEN was particularly successful in attracting contributions for the conference, as out of the altogether eighty individual presentations more than sixty had been submitted for the conference through the Association.

The review papers of the Lisbon 2000 Conference will be published in a separate book which will soon be available. Would you be interested in receiving the publication, please contact by fax or e-mail to the EDEN Secretariat.

## New members in the European ODL Liaison Committee

The European ODL Liaison Committee held their latest meeting in Lisbon on 19 June 2000, during the Lisbon 2000 European Conference.

Two European associations applied for being involved in the Liaison Committee. The Committee considered the applications from Santander Group - European Universities Network and E.A.T.A. - European Association for Telematic Applications. Santander Group primarily aims to establish special academic, cultural and socio-economic ties among the states represented in its membership and to promote the free movement of students, professors and knowledge among and between its member institutions. In Santander Group, sectorial work in micro-groups has been done in the ODL field. E.A.T.A's main objective was to promote Telematic Applications within the European Union and one of their related actions was the organisation of regular fora ('Netties') of exchange of experiences in the field.

The two organisations during the meeting provided

information related to their activities in open and distance learning and details about their involvement in information and communication technology applied to education. The Liaison Committee appreciated the strong commitment of the new applicants towards participation in activities of the Committee.

The Liaison Committee whilst considering the requests, highlighted the criteria that the extension should not endanger the efficiency of the Committee, and emphasized that the main requirement towards new members to show substantial activities in the field of open and distance learning should be met. It was finally decided to welcome the applicants as observers in the Committee, meanwhile also communicated that the Liaison Committee intended to review its role and objectives in general and re-identify the main emphasis in their operation.

*The web site of the European ODL Liaison Committee:*  
<http://www.odl-liaison.org>.

# ***OPEN CLASSROOM CONFERENCE, BARCELONA***

## **Open Classrooms in the Digital Age Cyberschools, e-learning, and the scope of (r-)evolution**

**The Fourth Open Classroom Conference of EDEN  
19, 20-21 November 2000, Barcelona**

The vision of schools, which has already been shaped through a number of international meetings, conferences and studies, showing a realistic way towards the qualitative upgrade of education, across regions and societies is promoted by EDEN since 1995, through the Open Classroom initiative and with a series of Open Classroom Conferences.

The fourth Open Classroom Conference of EDEN will be organised in November, in Barcelona. The host institution of the event is the Universitat Oberta de Catalunya. The conference is organised in co-operation with the European Commission DG Education & Culture, Generalitat de Catalunya, EENet (European Experts Network for Educational Technology), MENON Network and the European Education Partnership (EEP).

The conference in Barcelona is intended to shed light upon the radical changes, brought about by the Information Society Technologies (IST) and the flexible (open) learning applications, in the School Classrooms of the Digital Age; changes that are greatly affecting education of children and eventually, the societies of the future.

Themes of conference parallel sessions include: School Education Systems in the Information Society, The New ICT Applications, Products and Services, Education Partnerships and Networking for Schools and Teachers Development.

The Open Classroom AGORA Workshop Session, on 19 November will focus on the themes of "Building Learning Networks", "Emerging Learning Paradigms in the Digital Age" and "Digital Literacy".

## **Online Educa Berlin, 2000 Pre-conference Workshop - Distance education experiences in Central Europe**

This year's Online Educa Berlin Conference on Technology Supported Learning and Training will take place from 29 November - 1 December. Topics of workshops and parallel sessions range from the integration of e-training solutions in leading companies, to best practice examples in flexible universities, to the potential of mobile communications for learning (<http://www.online-educa.com>).

EDEN, in line with the particular mandate of the Association to facilitate East-West co-operation in ODL and its recent initiative to support the maintenance of existing network of National Distance Education Centres in the countries of Central-Eastern Europe, has initiated to organise a pre-conference workshop to enhance the involvement of the above National Centres in the

international professional life of ODL. The initiative was welcomed and the workshop, chaired by Dr. András Szűcs, EDEN Secretary General, has been announced with the title: *Drawing up an Inventory of a Decade - Open and Distance Learning in Central and Eastern Europe, 1990 - 2000*, to take place in the afternoon of 29 November.

In frames of the workshop it is intended to present a survey and analysis of main trends, experiences and perspectives related to the development of open and distance learning (ODL) and technology based education in Central and Eastern Europe. The focus will be on countries who have received funds from EU Phare educational programmes.

The workshop will summarise the development of situation with the transformation of economy, offer debate about

trends, achievements, failures, lessons learnt and survey the practice of Western assistance and co-operation in the ODL field. With the approaching extension of the EU towards the associated countries, the question will be assessed in a broader context and opportunities explored to develop partnerships, based on the identification of mutual interests. The workshop aims to reveal whether the necessary conditions for a real partnership are present, and enhancing the recognition of specificities which should be considered in future collaborations.

Resource persons will include heads of national distance education centres from Central Europe and leading EU experts of policy and ODL development implementation issues in the region.

## FOR YOUR DIARY

### ***Pre-Announcement:***

The EDEN 2001 Conference,  
celebrating the 10<sup>th</sup> Anniversary of the Association  
Stockholm, 11-13 June 2001

### ***Co-organised with***

DISTUM - the Swedish Agency for Distance Education and

SADE - the Swedish Association for Distance Education

The conference will be hosted by the *Royal Institute of Technology, Stockholm*

Please reserve in your agenda the days of this special conference. The conference will offer special opportunity for a summative approach and in-depth discussion of future scenarios and trends further to present the best European practice. Taking advantage of the tenth anniversary of establishment of EDEN, we would like to develop the conference to a particularly memorable event, by ensuring the presence and contribution of the determining personalities and institutions of open and distance learning in Europe, in order to provide a look forward to the next generation of ODL.

# How to Build Up European ODL Networks

## A Socrates- MINERVA project starting

A project proposal with the above title has been submitted by the consortium including Dennis Gabor College (co-ordinator), Hungary, Universitat Oberta de Catalunya, Spain, Kaunas Regional Distance Education Study Centre, Lithuania, Jutland Open University, Denmark, and the EDEN. We are pleased to announce that the project has been approved for funding by the European Commission.

In the European countries there are distance education institutions, universities, colleges existing, having networks of different kinds, size, operation. These networks were built up in different ways, their co-ordination, quality assurance, and realisation of the education process are diverse, due to national and historical differences, regulations, etc. The project deals with specifically distance education or dual-mode institutions, that have established a network with regional centres.

The aim of the project is to summarise the experiences and to provide help for the harmonisation and more effective operation of the existing networks in different European countries, further to serve as a guide for the institutions, wishing to establish or to develop their own network, where the up-dating of the existing distance educational system has become urgent and/or where the traditional educational institutions are planning to introduce the modern forms of open and distance learning.

At the first stage project partners will prepare a comparative analysis of the different distance education networks in the European countries, by examining their efficiency and making the experiences public for the European educational institutions. The immediate result of the project will be that the collaborating partner institutions - with the help of their own network analysis - will be able to up-date their networks, thus increase its efficiency. In the follow-up phase changes in the network development, activity and efficiency of the partner institutions will be summarised. The project is intended to contribute to the wider dissemination of ODL, to the increase of the level of the quality of modern educational forms realised in the available networks.

The analysis will also examine whether the ODL networks offer an initial and life-long lasting professional knowledge that fulfils the challenges of national, European and global labour market at the same time and how far they are able to transfer these values through teacher- and student mobility and publication in the ODL development.

Contact: [lengyel@okk.szamalk.hu](mailto:lengyel@okk.szamalk.hu)

# Developing and introducing multimedia teaching materials for vocational education: a Leonardo da Vinci pilot project

Application of new computer based educational technologies, including multimedia teaching materials in the vocational training has become one of the priorities: increasing efficiency and attractiveness in this field is a necessary condition for utilising European human resources and for increasing competitiveness of industry. The same demands have been articulated very definitely in the fields of both regular and continuing vocational education in Hungary. The following deficiencies are blocking the large-scale introduction of multimedia in the vocational education: shortness of *existing multimedia materials* both in quantity and quality, *pedagogical, psychological and technological knowledge and know-how* necessary for effective educational use of multimedia, *international contacts* are occasional in the field of preparing, using and evaluating multimedia teaching materials, and *lack of co-operation between higher educational institutions and vocational high-schools* in the field of multimedia development.

The Leonardo project, co-ordinated by the Budapest University of Technology and Economics intends to meet these demands via covering the whole lifecycle: needs analysis, early and detailed design, collecting source materials, producing and testing working prototypes, creating and evaluating advanced versions, class-room introduction and impact study, and follow-up study. Partner institutions in the project include Blackburn College, UK, Mid-Sweden University, Lambrakis Research

Foundation, Greece, EDEN, a Hungarian vocational high-school (R. Kolos) and the Budapest Labour Market Intervention Centre.

The main goal was to provide attractive, up-to-date and high quality multimedia teaching materials on six selected topics for vocational high-schools in the UK, Sweden and Hungary that would also serve as models for further dissemination of both the particular teaching materials produced and this educational culture in general.

The *main results* included personnel development that has been carried out by providing basic multimedia courses for high-school teachers in Hungary and advanced multimedia courses for selected staff of partners institutions in Greece and the UK. Multimedia CD courses have been developed in the following themes: *Human Factors of ICT, Fundamentals of IT, Electronic Circuit Conversions, Business etiquette and behavioural norms, Health and Safety in Motor Vehicle Workshops, Analogue Circuits.*

One of *the main achievements of the project* was the further development of the *INTERFACE* quality assessing workstation. The INTERFACE acronym stands for *INTEgrated Evaluation and Research Facilities for Assessing Computer-users Efficiency*. Based on more than a decade of experience gained in the field of assessing usability of different commercial software products, the present advanced version of the INTERFACE has been developed in the frame



of the Leonardo da Vinci pilot project, providing a methodology for assessing quality of educational multimedia

A set of tools that have been developed to identify those parts of student-multimedia dialogues that require the most mental effort. This method simultaneously investigates and records: (1) *Performance of students* (based on speed, performance time, number of problems correctly solved, number of unnecessary steps or dead-ends, etc.), (2) *Behaviour and observable actions* of users while performing. This is based on (a) video recording of users' behaviour (acts, mimics, gestures etc., as psychological information reflecting the mental state), and (b) video recording of the current screen content. Video-records tied to all the other recorded events (keystrokes, mouse clicks, experimenters' comments, psycho-physiological parameters' actual values, etc.) makes possible studying important pieces in more details simultaneously. (3) *A psycho-physiological parameter* - the power spectrum of HPV (Heart Period Variability) - which is closely associated with users' current psychic investments and, therefore applied as an objective measure of current mental effort. The basic advantage and novelty of this methodology lies in its capability of recording continuous on-line data characterising the students' actual mental effort together with relevant events of interaction.

With the help of this methodology, based on properly designed experimental sessions, the quality of the educational multimedia "Electronic circuit conversions" produced also in the frame of the above mentioned Leonardo project has been assessed. As a result several weak points

of this multimedia product have been identified (e.g. poorly legible pieces of texts, too sketchy figures, not properly formulated or misleading tasks, not informative feedback, etc.) that were fed back to the developers and have been redesigned.

An important lesson learned was that the philosophy of considering the whole lifecycle of multimedia development rather than its isolated stages has been proved extremely useful: we were able to understand the whole process and its relatively weak points. These identified "bottlenecks" provided us with the empirical knowledge of increasing the overall effectiveness. An important general experience is that the crucial moment of success lies hidden in involving interested teachers at the very beginning: if a teacher has the ambition to continuously improve his or her curriculum, style and repertoire of demonstration tools, he or she can be motivated to pick up the necessary skills of creating more or less detailed multimedia scenarios. Providing teachers with the expertise of graphic design, sound effects, video techniques, coding, etc. which are necessary for multimedia development, they are happy to work as content providers.

Dr Lajos Izsó  
Project Co-ordinator

Budapest University of Technology  
and Economics

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## For your bookshelf

### **Copyright & Distance Education: Trainer's toolkit**

This toolkit provides a variety of resources designed to assist trainers in preparing and offering a workshop that introduces participants to copyright as it relates to distance education. It describes the basic features of copyright, identifies institutional issues and concerns and outlines ways to deal with them. It is appropriate for academic staff involved in writing and presenting course materials; administrative staff involved in publishing, purchasing, selling, and presenting courses and course materials; and institutional staff involved in setting up procedures and policies on courses and course materials through central administration, the library or a learning resources centre.

The entire toolkit is available on-line for non-commercial use.

<http://www.col.org/copyrightTK.htm>

*(From The Commonwealth of Learning)*

### **The Changing Face of Learning Technology**

*Edited by David Squires, Gráinne Conole and Gabriel Jacobs*

The use of new technologies in education developed rapidly in the 1990s, as, for example, with the Internet, whose impact on educational practice could not have been predicted seven years ago.

Much is now expected of this technology, but has its adoption led to the development of genuinely innovative approaches to teaching and learning?

The papers collected in *The Changing Face of Learning Technology* illustrate how the field of learning technology has developed. The volume is divided into four sections: design and evaluation of technology-mediated learning environments, institutional change, learning technology in a networked infrastructure, and reflections on future possibilities.

The distinctive approach of this collection provides an interpretative framework for an understanding of the use and design of learning technology. It is hoped that this will stimulate an appreciation of underlying issues and their significance for supporting learning and teaching in both higher and further education.

Full details and selected chapters can be viewed on the web:

[http://www.uwp.co.uk/book\\_desc/1681.html](http://www.uwp.co.uk/book_desc/1681.html)



## EDEN Executive Committee

### President:

Erwin Wagner, Director  
Centre for Distance Learning and Continuing Education  
University of Hildesheim, Germany

### Vice President:

Ingeborg Bø, Executive Director  
Norwegian Association for Distance Education, Norway

### Members:

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Centre National d'Enseignement à Distance, France

Sarolta Zárda, Director  
SZÁMALK Systemhouse Ltd., Hungary

Maria José Ferro Tavares, President  
Universidade Aberta, Portugal

Richard Lewis, Co-Director  
The Open University, Quality Support Centre, UK

Claudio Dondi, President  
SCIENTER, Italy

Carl Holmberg, Senior Advisor  
DISTUM, Sweden

Jan Lojda, Head of DE Centre  
Technical University of Brno, Czech Republic

Johan van Heddegem, Executive Director  
EuroPACE 2000, Belgium  
Chair of the Network of Academics and Professionals  
(NAP) Steering Committee

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**Pedagogical ICT-driver's licence** 

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**ICT integration in education**

**- two models**

**UNI•C** Ulla Gjendings - Øyvind Brøgger

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**© School-IT** **Highschool-IT** 

- Danish Ministry of Education
- CTU - Danish National Centre for Technology Supported Learning
- The Royal Danish School of Educational Studies
- Danish Broadcasting Corporation

- Danish Ministry of Education
- UNI•C, The Danish IT center for Research and Education

**UNI•C** Ulla Gjendings - Øyvind Brøgger

*75% ...*

*... ..*

*... ..*

*... ..*

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**A national approach** 

- Political board with all central actors in the field: ministry, labour unions, local/regional authorities, employers' associations
- National scope
- De facto national standard

**UNI•C** Ulla Gjendings - Øyvind Brøgger

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## Delearning - learning



To overcome the fear of change you need

- to delearn old culture
- a vision of new culture
- social support and network



UNI•C

Ulla Ejlertsen - Øivind Bruggen

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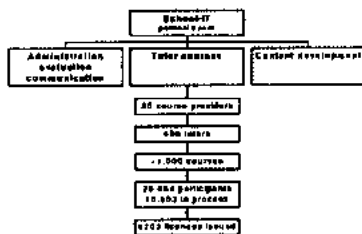
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## Organisation



Distributed network  
social, professional, personal and electronic



UNI•C

Ulla Ejlertsen - Øivind Bruggen

Content for the head of panel group and content development

Ulla Ejlertsen

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## Responsibilities



### Tutor

- Teacher and coach
- Supporter
- Responsible for the introductory day
- Chairman of the electronic conference
- Professional sparring partner
- Assess the 8 papers

### Participant

- Active participation in conferences
- Active participation in team
- Active participation in collaborative learning process
- Responsible for the update of own personal IT-qualifications

UNI•C

Ulla Ejlertsen - Øivind Bruggen

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## Course concept

- Courses are preferably school based
- Introductory day with tutor
- Work in teacher teams
- Duration: minimum 5-6 months
- During the course teams must write 8 educational papers to obtain the 'Driver's License'.



UNI•C

Ulla Gjerding - Øyvind Sægger

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## Objectives and key notions

### Awareness of

- ICT's influence on the role of the teacher and the student
- ICT's impact on learning content and curriculum
- ICT and new ways of working and learning

### Key notions

- No ICT without a pedagogical rationale
- Remember the 2 x 5%
- Development, process and teamwork are the key issues
- All participants cannot everything after the course – but they have all "moved" and a process has been initiated



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Ulla Gjerding - Øyvind Sægger

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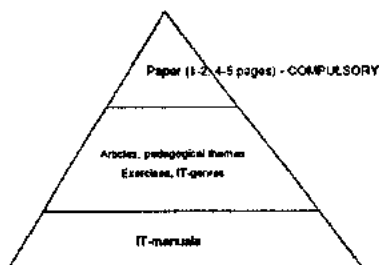
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## Course concept – the module



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**Content – School-IT**

5-6 months

UNI•C

Ulla Gjering – Øyvind Øranger

Objektive i kategorien IT i skoleprogrammet

skoleprogrammet

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**Contents – Highschool-IT**

5-6 months

UNI•C

Ulla Gjering – Øyvind Øranger

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**Contents – Highschool-IT**

1. Compulsory modules - IT and education, Internet, production of course material
2. Optional modules
  - The use of presentations
  - Production of websites
  - Digital image processing
  - Digitalisation and data logging
  - Multimedia
  - Spreadsheets and statistics software
  - Models and simulations
  - Language and IT
  - Producing and working with texts
  - Project oriented work
3. Subjects - 32 subject specific modules

UNI•C

Ulla Gjering – Øyvind Øranger

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Ulla Gjering, Skole IT, dk

Use of this very few...  
 Teachers cannot be forced to follow the terminology...  
 This... can be used to...  
 ...

## Course materiel



- **Written material**
  - articles
  - exercises, platform independent
  - instructions for the test papers



- **Conference systems**
- **Web-site**
  - articles, links
  - platform dependent
  - IT manuals
- **Administrative tools**

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Ulla Gjorling - Special Blogger

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## Localisation of the two models



### School-IT

- Health care
- Second language centres
- Pre-school
- Norway

- **Same course for all teachers**

### Highschool-IT

- Vocational schools
- Nursing schools

- **Individual courses when teachers are primarily subject-oriented**

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Ulla Gjorling - Special Blogger

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## Additional information



[www.skole-it.dk](http://www.skole-it.dk) (School-IT)

[www.gymnasie-it.dk](http://www.gymnasie-it.dk) (Highschool-IT)

[ulla.gjorling@uni-c.dk](mailto:ulla.gjorling@uni-c.dk)

[ojvind.brogger@uni-c.dk](mailto:ojvind.brogger@uni-c.dk)

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Ulla Gjorling - Special Blogger

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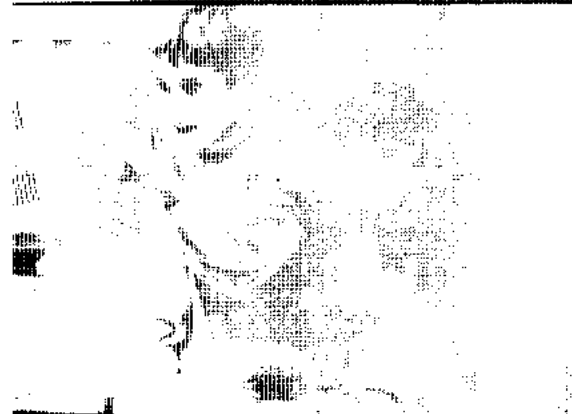
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**C**ONNECTED  
The magazine

**News**

**Features**

**Funding**

**Infrastructure**

**Grid Content**

**Training**

**Communities**

**NIGfL**  
Scotland



# Quest

## Editorial



**Schools, colleges and communities have many common interests, but none more vital than education. There may be differences in emphasis, even differences in priorities, but there is a**

### **strong consensus that ICT is critical to the progression of the education agenda.**

The Government's National Grid for Learning initiative has provided a focus for much of the work that has to be undertaken if the learner, irrespective of context, is to be challenged, inspired and supported by ICT. Without NGfL, educational initiatives may have been successful; but their impact would have been local, their sustainability always in question, and the pressures on practitioners almost intolerable. NGfL has been given the resources to ensure that we might avoid the more negative factors so often associated with innovation.

A glance through this issue of **Connected** will amply demonstrate how misplaced any lingering scepticism would be about the role of ICT in learning.

We have the evidence of how libraries are contributing alongside community groups, schools and colleges across Scotland. There are lessons that might be learned from the Irish experience with Scoilnet of forming partnerships with industry and

commerce. We see the importance of local and regional partnerships within and across sectors, working together to maximise the benefits to all. The availability of funds from the European Community to match those being sourced at local and national level is a further opportunity for partnership working. We have every reason to believe that the energy behind NGfL Scotland is touching the community near you, and as a result learners and educators will identify measurable benefits.

**Tom Wilson**  
Chair, Learning and Teaching Scotland



*Tom Wilson*

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### Editor:

Patricia Kemp  
NGfL Scotland



## Videoconferencing Across the Web

Today when we think of the large educational investments now being made in technology in schools, the internet is the first thing that comes to mind. Yet the developments in computers and communications have led to improvements in many areas. Just look at the advances that have come for teachers in methods of presentation. Video-projectors and touch-sensitive whiteboard computer displays along with

software packages such as Powerpoint greatly enhance our work, improving the quality of display and encouraging interaction with pupils. Admittedly they are still expensive items, but they are starting to be used more and more in schools and in due course will become available to all.

Another improvement coming the way of Scottish schools is increased bandwidth. This means that high-quality videoconferencing is now becoming increasingly available in a wide range of schools. Videoconferencing links can support teaching in so many ways – from

allowing audio and video links for consortium arrangements between schools for minority subjects, to allowing linking between pupils in different countries, thus enhancing language teaching and the understanding of different cultures.

The possibilities for primary schools are endless; however, the typically high costs involved mean that the majority of teachers are not yet able to access this technology. The good news is that a low-cost option is now available – videoconferencing over the internet. It's very 'cheap and cheerful', but it does work. It costs little and allows for an exciting form of communication with people and places anywhere in the world. As with all technological developments involving higher available bandwidths, we can be sure that the level of performance will steadily improve.

The big problem is security. It is almost impossible to communicate in this way and be sure that the 'call' is private and secure. For schools this is essential. At Learning and Teaching Scotland we are currently investigating this issue, and we hope that we can provide a secure system for Scottish schools. It should not be difficult to set up a secure system and we will keep you posted of developments.

Richard Pietrasik  
Executive Director, LT Scotland



## NGfL @ Fusion Conference

On 26 September, the National Grid for Learning Scotland will host an activity day for teaching professionals in Scottish schools, colleges and teacher education institutions called 'Unlocking the Grid – Making NGfL Work for You'. The event is funded by the Scottish Executive Education Department making it a free day for all state schools and colleges. It will be held at the Scottish Exhibition and Conference Centre (SECC) from 9:00 am to 3:30 pm. Participants will

be offered a wide range of ICT workshops, with presentations and keynote speeches running throughout the day.

There is no limit to how many staff a school or college can send, everyone will be welcome. However, pre-registration is required. Online booking is available at [www.fusion-2000.com/booking.htm](http://www.fusion-2000.com/booking.htm). Alternatively you can call Davina Wyper on 0141 337 5046 for a form, or e-mail her at [D.Wyper@LTScotland.com](mailto:D.Wyper@LTScotland.com).

Bridging the gap between school and home learning, a free family learning show will follow the day, and will afford parents, grandparents and children the chance to discover how software, hardware and internet sites can add value to home learning.

We hope to welcome many teachers, lecturers, students and parents to what looks to be a stimulating and exciting day.



The NGfL Scotland Team can be contacted at the Fusion Conference on Stand 714 next to the cybercafé.



# Merged Bodies – The Birth of Learning and Teaching Scotland

**Learning and Teaching Scotland (LT Scotland) is the national public body formed from the merger of SCET (the Scottish Council for Educational Technology) and Scottish CCC (the Scottish Consultative Council on the Curriculum). Just as SCET and**



**Scottish CCC worked with the Scottish Executive in managing the National Grid for Learning team and supporting the NGfL initiative, so LT Scotland looks forward to working with schools, local authorities and others in advancing this vital development.**

The Chair of LT Scotland is Professor Tom Wilson, Principal of Glasgow College of Building and Printing, Chair of the Glasgow Telecolleges Network and formerly Chair of SCET's board of directors. The new body will work out of offices in Glasgow and Dundee. In all areas of its work, LT Scotland will make best use of all opportunities to exploit the potential of ICT to enhance learning and teaching. This will be reflected in the content and nature of curriculum support materials and staff development opportunities offered by the new body.

At the same time, the range of technology-based products will expand. Support for current educational initiatives and developments, such as the revision of aspects of 5-14 national guidelines, the Higher Still programme and the review of education for citizenship, will increasingly be delivered online to schools, colleges and other centres. As physical links to the National Grid proliferate, and as the hardware and software resource base improves, LT Scotland will work with others to ensure that high-quality content is available that meets the needs of the Scottish curriculum and of Scottish qualifications.

To a very large extent, the activities of LT Scotland will be driven by the needs of its key stakeholders. This will be apparent in two ways: in the widespread consultation undertaken by LT Scotland as part of its annual planning process; and in the collaboration and partnerships developed to take forward specific projects. As a national public body sponsored by the Scottish Executive, LT Scotland will naturally concentrate its energies on the main national education priorities. It must establish close, mutually beneficial relations with national bodies, local authorities and the business community, including the ICT industry. Above all, it must listen to and respond to the needs of all involved in developing and delivering high-quality educational provision in Scotland.

Mike Baughan  
Chief Executive, Learning and Teaching Scotland

Mike Baughan, was formerly Chief Executive of Scottish CCC and before that Headteacher of Webster's High School in Kirriemuir.



## Innovation Fund Update

The NGfL Scotland team was delighted to be able to administer the ICT Innovation Fund, set up by the Scottish Executive to provide grants ranging from £1000 to £5000. Its aim was to encourage innovative approaches to the use of ICT in small-scale, local learning projects.

The fund stimulated interest from a wide range of organisations and 195 applications from 31 out of 32 Scottish councils were received. The community and voluntary sectors were also well represented. Partnerships and joint working between organisations and sectors were a predominant feature of applications.

The entries were sorted into the following broad categories: 'pre-5', 'primary school', 'secondary school', 'further education' and 'community'. As many entries offered partnership working across different sectors, applications were categorised by the lead organisation. 'Special needs' were integrated with the other categories.

Of the original applications, 32 were shortlisted. From these, the judging panel selected 17 successful bids, comprising one pre-5, four primary, five secondary, two further education, five community.

Full details of the winning applications and judging panel are available on the NGfL Scotland website at [www.ngfscotland.gov.uk/fund.asp](http://www.ngfscotland.gov.uk/fund.asp)

The breadth of the applications gave the team a snapshot of where sectors and groups are with respect to ICT, where the strengths lie and where there may be gaps. They have also given us a wealth of information on potential educational content.

Each winning project has been assigned an NGfL team specialist who will provide advice and guidance, check that milestones are reached, and ensure that the grant is being properly spent. Interim and final reports will be requested.

The awards will be officially presented by Peter Peacock, Depute Minister for Children and Education, on 26 September at the Fusion 2000 Global Learning Summit.



## School Domain Names

The purpose of this project is to standardise all domain names for schools throughout Scotland and the UK under the sch.uk domain. This will mean that a school can easily be located on the internet with the knowledge of its name and geographical location.

**Example:** <school name>.<geographical location>.sch.uk

This ought to facilitate communication and information transfer between schools and education authorities, central government, relevant professionals and general internet users.

SEED, in conjunction with NGfL Scotland, BECTa and Nominet UK, are managing the project, and plan to implement the project over the coming months in consultation with local education authorities and schools.

To achieve this aim SEED has commissioned Nominet UK, the UK national registry for all internet domain names ending in 'UK', to create a fully populated sch.uk register of all schools in Scotland.

Nominet UK has therefore proposed that all schools will be offered a domain name, which will have the above format. In general, the <geographical location> will be either the full name of the education authority in which the school is located, or a shortened form of it.

SEED will publish a 'best practice' booklet in conjunction with Nominet and BECTa, which will be distributed at the end of the project to education authorities prior to the loading of school domain names into the register. It is anticipated this will occur by the end of January 2001.

There are no costs for the school or the education authority associated with this initiative. Funding for the project will come from central government budgets.



## ICT in Scottish Schools – Research Summary

On 18 August 2000, Dr Dorothy Williams from the Robert Gordon University, Aberdeen, gave a presentation to Learning and Teaching Scotland on ICT use in Scottish schools.

Drawing on evidence from three major pieces of research in this area over the last three years, she compared teachers' and pupils' use of ICT, teachers' perceived training and support needs, obstacles and challenges to teachers using ICT, support provided by education authorities and, finally, technical support issues.

She concluded that whereas three years ago the main issue for teachers was access, this was no longer the case, due to initiatives such as the National Grid for Learning. The main themes emerging from her comparison of previous and current research are as follows.

1. Levels of use of the World Wide Web and e-mail remain low.
2. Much external support is still needed before ICT becomes more integrated into the school curriculum.
3. There has been a shift towards more interest in the educational applications of ICT.

### References

Williams, Dorothy, *et al.*, *Teachers' ICT Skills and Knowledge Needs*

The research for this report was undertaken during the 1997–1998 school year. The full text is available on the web: [www.scotland.gov.uk/library/ict/append-title.htm](http://www.scotland.gov.uk/library/ict/append-title.htm)

Stark, R. *et al.* *The Impact of ICT Initiatives*

The results of the first phase of this research covering the period 1999–2000, were published recently as 'Interchange 63' available in paper format from the Scottish Executive

Education Department or online at:

- [www.scotland.gov.uk/library2/doc16/ic63-00.asp](http://www.scotland.gov.uk/library2/doc16/ic63-00.asp)
- [www.scotland.gov.uk/library2/doc16/ic63.pdf](http://www.scotland.gov.uk/library2/doc16/ic63.pdf)

Williams, D. and Coles, L., *ICT Support for Scottish Teachers, 1999–2000* (forthcoming)

For a fuller summary of the main points of the presentation visit:

[www.ngflscotland.gov.uk/research.asp](http://www.ngflscotland.gov.uk/research.asp)



## European Funding

The last issue of *Connected* contained a flyer asking people to register their interest in European Funding streams for ICT development.

As a result of the large response, NGfL Scotland has decided to offer a seminar designed to inform all sectors of recent changes in the requirements for successfully securing funds in Scotland. It will focus on:

- encouraging regional applications by looking at collaboration across different sectors to avoid duplication of effort and funds
- how partnerships (not only local and regional, but also commercial) can maximise the potential to secure extra funding, and share the costs of sustainability and development
- sources of matched funding from commercial and regional partners, central government funds, NOF funds and other 'clean' funding streams.

(See Thomas McCusker's article in this issue of *Connected* for an overview of how the European Commission's new levels of change will affect Scottish bids for funding.)

The seminar will be held on 26 October 2000 in the Glasgow offices of Learning and Teaching Scotland. To register, please complete the enclosed form and return to:

Davina Wyper, LT Scotland  
74 Victoria Crescent Rd  
Glasgow, G12 9JN  
Fax: 0141 337 5030  
Tel: 0141 337 5046  
E-mail:  
D.Wyper@LTScotland.com





## Integrating ICT – Finland

Finland, like any emerging knowledge-based society is trying hard to exploit the potential of the new information and communications technology (ICT). This activity in the area of education is no longer a solitary hobby of maverick teachers, but it has become a systematic collaborative effort of civil servants, teachers, business professionals and academic researchers to improve education.

Finding appropriate roles for ICT in teaching and learning is a painstakingly slow process, often with unexpected results. In Finland we have currently initiated the second round in this iteration process. The first information society strategy for the education sector was carried out in 1995–99. (The previous strategy was largely dedicated to teaching IT alone.)

The school reforms especially related to the knowledge-based society seem to lead to a discrepancy between the aims and the actual outcomes of reforms. One reason for this is the difficulty in distinguishing between technical and social innovations. What is technically possible and can be achieved in well-supported and designed small-scale experiments may fail to materialise on a larger scale because of a failure to overcome the chasm between innovators and the majority. It is easy to get early adopters to pick up new

things but it takes much more to make the majority adopt innovations if it requires changing habits and investing time and money for benefits not immediately at hand. The history of technical innovations is full of failures in making them socially successful. The short history of IT in education suggests that we have underestimated this social inertia, and many innovations never cross this gap, named 'Moore's chasm' after writer Geoffrey Moore.

Unfortunately, our recent evaluation of ICT in Finnish education has largely confirmed this hypothesis. There are a number of innovative experiments and projects all around the country, but it is difficult to consolidate good practice in the schools participating in the projects – let alone to disseminate the results to other schools. The big challenge is still to accomplish lasting pedagogical changes on a large scale. The national strategy for the years 2000–2004 was published by the Finnish Ministry of Education in 1999. It follows up and develops further many ideas already expressed in the first strategy, but it accepts the criticism on the lack of scaling-up of good practice. The vision statement is formulated as follows.

*By the year 2004 Finland will be one of the leading knowledge and interaction societies. Success will be based on citizens' equal opportunities to study and develop their own knowledge and extensively utilise information resources and educational services. A high-quality, ethically and economically sustainable mode of operation in network-based teaching and research will have been established.*

The uses of the new strategy are:

- information society skills for all
  - proliferation of information society skills

- intensified teacher education
- more and better ICT and new media professionals
- extensive online education system
  - net based learning environments
  - virtual university
  - virtual school.
- enhancing provision of electronic learning materials
- strengthening of support structures.

The proliferation of so-called information society skills or media literacy was chosen as the first priority to be addressed. The target group is the entire population, with a strong reference to the ideas of lifelong learning. The new skills and competencies required in an emerging knowledge-based economy and society can best be pursued by raising the skills and competencies of teachers through intensified and improved pre-service and in-service teacher education to remove the bottleneck identified.

Ever-increasing numbers of better qualified ICT and new media professionals are also needed. Investments in physical networks are useful only if the networks will be effectively used. This calls for an extensive online education system and services based on one of the best education network infrastructures in the world.

The network capacity will be quite poorly exploited if we fail in enhancing electronic learning materials. This task is part of a larger national effort of the entire government to develop Finland into one of the leading-edge countries in the content industry. The technical infrastructure needs still strengthening.

All this cannot be achieved through the public sector alone: it requires careful and innovative orchestration of collaboration between the public and the private sectors.

Implementation plans for the strategic targets outlined above were adopted by the Finnish Ministry of Education earlier this year. The implementation process will be monitored by the task force implementing the strategy. The outcomes will be evaluated internally throughout the process and externally at least when halfway through and at the end.

**Matti Sinko**, Senior Advisor,  
Finnish Ministry of Education



# Registration Form

## European Funding for ICT Development

Thursday 26 October 2000 at Learning and Teaching Scotland, Glasgow

74 Victoria Crescent Rd, Glasgow G12 9JN

National Grid for Learning (NGfL) Scotland is organising a seminar to advise and provide guidance on the new European Funding Programme 2000-2006. This seminar is funded by NGfL Scotland and is free to delegates.



### The aims of the seminar are:

- < to inform delegates of European funding available under the new scheme
  - < to provide guidance on European funding applications
  - < to explain the mechanism of matched funding (contributions in kind) and where it can be applied
  - < to encourage collaboration and partnerships within and across sectors to maximise the potential for European funding
  - < to encourage cross-sectoral bids within geographical regions.
- 

To register, please complete this form and return to:

Davina Wyper, Learning and Teaching Scotland, 74 Victoria Crescent Rd,  
Glasgow G12 9JN

Contact details:

Fax: 0141 337 5030 Tel: 0141 337 5046 Email: [d.wyper@ltsotland.com](mailto:d.wyper@ltsotland.com)

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Name:

Organisation:

Position:

Postal Address and Postcode:

Telephone Number:

Email Address:

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# ICT for Travelling Children

**There are many learners who, for one reason or another, cannot physically attend school. They may be ill, they may be travellers, or they may face social, emotional or behavioural difficulties that make long-term attendance difficult. The mere fact, however, that a learner cannot be in a particular building does not negate his/her right to education.**

In this article, we take a glimpse into the very near future by looking at FLEX (Flexible Learning Environment eXperiment), a European Applied Research project that is developing a unique *learning environment* that simultaneously exploits state-of-the-art technology and the latest developments in pedagogy. This environment uses a hybrid of mobile and fixed communications technologies to provide a particular target group of disrupted learners – travelling children – with an educational environment suited to their needs and circumstances. The project consortium is made up of educational and commercial organisations from the United Kingdom, Ireland, Belgium, the Netherlands and Germany.

It so happens that FLEX targets the children of occupational travellers. However, LT Scotland (Learning and Teaching Scotland), a main partner in the project, is responsible for investigating future promising applications of FLEX for learners from other educational and social backgrounds. Although the particular model deployed will vary according to the particular learner group, much of the FLEX pedagogy and technology is transferable to a wide range of learning scenarios.

## The problem – educating children on the move

Mobility is having a greater than ever impact on our daily lives. This is especially true in the field of ICT (information and communications technology), where information is transported across an ever-increasing range of communications media such as the internet, satellite, cable and so on.

But it is not only the technology that is mobile. People themselves are mobile. For some people, even their homes are on the move. This means their children are continually on the move. How does this affect the education of these children? Unless they attend boarding school, their learning is frequently interrupted as they move from one school to another.

Schools and Traveller Education Services have been confronted with this problem for many years. Traditional distance education, which exploits paper-based learning resource packs and follow-up learning systems in some cases helps to alleviate the problem. However, past and recent experimentation suggests that new learning and communications technologies can play a major role in the education of travelling children.

## The FLEX solution

The FLEX project is one such ICT initiative that tackles this problem head-on.

This innovative and ambitious project sets out to develop a unique *learning environment* that simultaneously exploits state-of-the-art technology and the latest developments in pedagogy. By 'learning environment' we mean a physical and virtual setting that provides a learner with learning goals, learning content and learning support.

With input from tutors belonging to five EU countries, two training courses are being designed, implemented and tested in the new FLEX Learning Environment. One course targets young children and teaches them *basic skills* – reading, writing and numeracy. The second course is aimed at the tutors of bargee, fairground and circus children and gives them *skills in ODL* (Open

and Distance Learning). This course equips them to teach the children from a distance.

The FLEX project began in September 1998 and runs to October 2000. It comprises an analysis phase, a development phase, a validation phase and an exploitation phase.

## Wireless learning technologies

If the users are mobile, then the technology must be too. That is why the FLEX project exploits *satellite and mobile phone technologies* to transfer data between the learner and the tutor workstations.

Both workstations consist of high-end multimedia computers (mostly portable laptops) connected to web cameras, digital cameras and/or scanners. In addition, the workstation of the learner also includes a satellite IRD (Integrated Recorder Decoder) and a GSM (Global System for Mobile Communications) modem. This allows for a digitally addressable store and forward reception by satellite and transmission by GSM, irrespective of geographical location.

These peripherals support a rich flow of information between the users (for example text, pictures, sound, video, etc.) Both the technological and the pedagogic effectiveness of each of these value-added support devices can be contrasted and compared.

## The FLEX Learning Environment – pedagogy comes first

Like many other integrated learning environments, the FLEX Learning Environment offers its users – teachers, learners, parents, publishers, administrators and so on – a diverse and rich spectrum of functions including student management information, tools to author learning materials and tools to search for information such as learning resources. However, the FLEX Learning Environment has several distinctive characteristics.

First, the FLEX project strongly considers pedagogy to be the main ingredient for a successful learning environment. In fact, the FLEX Learning Environment embraces scientific research into how people



actually learn. In this respect, constructivism plays a crucial role. Central to the theory of constructivism is the fact that the learner is *encouraged to take control of his/her own learning*. He or she is not a passive recipient of information. This includes self-evaluation of his/her own progress. In FLEX, we translate these principles into technological reality.

Secondly, what is the original meaning of 'multimedia'? It is simply a lot of different media, such as text, sound, pictures, video and so on. In the FLEX Learning Environment the participating tutors integrate all these media and select those appropriate for the given learning goal. The tutor continues, for example, to work with his or her favourite (paper-based) handbooks or picture books, but creates instructions in an electronic format and sends them to the learner. In this way, we make the best of both worlds to create a rich learning environment of which the computer forms a functional part.

In the FLEX Learning Environment all of these components – lessons, exercises, activities, tests and so on – are fully described in FLEX's own electronic database. This database also lets the tutor determine the state of learning achieved by each and every learner.

Thirdly, the FLEX Learning Environment integrates both the pedagogic and technological needs of its main target group – the occupational travellers – both children and their parents. However, other groups such as adults in vocational education or in company training can also benefit.

Last but not least, the FLEX Learning Environment is not intended to replace the teacher or tutor. On the contrary, it serves as a crucial support tool to complement the existing work of the teacher.

### **Work carried out so far (September 1998–July 2000)**

FLEX started in September 1998. Having initially gathered extensive data on the users – schools, teachers, education services, teacher trainers and learners – a lot of work then involved preliminary R&D in two main pedagogic areas: *constructivism* and

*personalised learning*.

The next important activity focused upon specification of FLEX learning content. In fact, the FLEX project uses *learning blocks*, which are essentially small, independent knowledge units. Learning blocks can be selected by the teacher and assembled to make learning packages for the children. *The actual choice of blocks is made by the teacher according to the individual pedagogic needs of the learner.*

Whilst FLEX pedagogic specifications were being developed, so too were technical specifications for the FLEX Learning Environment. Much effort went into developing electronic databases to store both learning content and learner results. Further work also went into developing a web-based interface to allow the tutors to assemble individual learning packages from the FLEX learning blocks. And, of course, another integral part of the learning environment, the FLEX communications platform (satellite, GSM and internet), was concurrently being built.

Regarding training prior to later pilot experimentation, a FLEX-developed ODL course was delivered to the teachers. This course is split into two parts.

- **ODL training that does not rely on use of the FLEX Learning Environment. Interestingly, part of this training contains reused elements of the well publicised ECDL (European Computer Driving Licence).**
- **ODL training that focuses upon using the FLEX Learning Environment. Here, the tutors actually learned how to use the environment in terms of assembling learning packages. As part of their course, they also completed ODL exercises, which are sent back to the FLEX learner database by GSM. In this respect, the teachers themselves played**

**the role of the target learners, the children.**

After completing their ODL training, the teachers then proceeded to *develop basic skills learning content* to be later delivered to the children during the pilot phase of the project.

### **Where are we right now?**

FLEX finishes in October 2000. Since January 2000, the emphasis has been on *testing and validating the FLEX Learning Environment* with the three main user groups – tutors, children and their parents. One major pilot activity happening right now is *satellite testing*, the means by which learning content is transmitted from the central electronic database to the learner. Another main test activity involves evaluating the effectiveness of GSM communication, the means by which the child's learning results are transmitted back to the central FLEX database. This database can then be accessed by the tutors through the internet.

**Gerard Queen**  
Specialist Consultant,  
LT Scotland

### **Further information**

The FLEX project is cofinanced by DG XIII-C of the European Commission under the auspices of the Multimedia Task Force. The FLEX project runs in partnership with Toshiba and Microsoft.

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# The People's Network for Public Libraries

**Something very exciting is happening in public libraries right now – something that will change their image forever. It has been under discussion for some time and today there is no escape from it. It is called 'The People's Network'. For the first time since the investments of Andrew Carnegie, public libraries are the recipients of major Government investment. The Government has recognised the important role that libraries can play in delivering their initiatives of social inclusion, active citizenship, and educational opportunity, through the creation of learning centres in libraries throughout the United Kingdom.**

So what is the People's Network? In basic terms it is the public libraries component of the National Grid for Learning. In reality it is the future of public libraries. *New Library: The People's Network* was published in 1997 and has quickly become required reading. Fast on its heels came another hefty tome, *Building the New Library Network*, and together they provide the vision of the library of the future and how it is to be achieved.

The basis of the vision focuses on what is sometimes referred to as the 'three Cs' – connectivity, competence and content.

## Connectivity

The infrastructure to support the learning centres is divided into two strands – the backbone, which will link all local authority library services

to a single network, and the local authority network, which will enable each individual library access to the backbone.

The result will be to provide seamless access to all information for everyone regardless of location.

## Competence

It is essential that all public library staff are trained to a level of competence that enables them to gain access to the information that they need. Areas that have been identified include supporting learning, providing access to information, promoting reader development and providing access to remotely delivered public services. All library staff must be sufficiently familiar with information and communications technology (ICT) not only to be able to use it easily and effectively but also to help customers use it creatively.

## Content

With all this infrastructure and training in place, consideration had to be given to what people would want to use. The internet contains a great deal of information but most of it is unsuitable for educational purposes. The third strand of the People's Network concentrates on digitising material to develop content that will provide quality information of real educational value.

## How will we support the vision?

Never before have there been so many opportunities for public libraries to bid for funding to support and complement existing services. The New Opportunities Fund, established in 1999 as a lottery distributor, works closely with the Government to ensure that funding is given to projects which will deliver the government's initiatives. It will provide major funding for training, infrastructure and digitisation projects. Learning Direct Scotland (previously the Scottish University for Industry) has funding available through the Capital Modernisation Fund to provide for the development of learning centres through many community facilities. Other funding opportunities include the Gates Foundation and Out of School Hours Support.

## Where are we now?

Things have been moving quickly since the beginning of the year. Authorities will have three opportunities to bid for each of the projects, both training and infrastructure.

The first round of training bids has been received and passed, and funding will begin to be drawn down in September. The second phase of submissions is due in August 2000. The Scottish authorities have all successfully completed the first part of their bid for infrastructure and are now preparing to complete the second stage.

The bidding for the digitisation of content is being carried out on a UK basis and bids are now being grouped together into consortia to achieve a more effective approach. This project is now at the second stage of the bidding process.

## The future

These are very definitely exciting and challenging times for public libraries as ultimately all libraries in the United Kingdom will be delivering services through ICT. Lifelong learning has always been a cornerstone of public libraries but the injection of considerable funding and the commitment of the library profession will provide a vibrant and innovative community asset, returning libraries to the forefront of 'learning for life'.

**Frances Roberts,**  
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# ScoilNet goes from Strength to Strength

The content and traffic on ScoilNet, Ireland's official national education portal, continue to increase week after week. Since the launch of the site in September 1999 by then Minister for Education and Science, Micheál Martin, ScoilNet has continuously evolved, adding many new features and improved functionality.

ScoilNet, which represents a public-private partnership between Intel, the Department of Education & Science and the National Centre for Technology in Education (NCTE), recently released a completely revamped version of the site. The site took on a new look and feel with every page undergoing a major redesign. All of the content has been reclassified, with lots of new curriculum and community content added specifically targeting students, teachers and parents, making it simpler and easier to use. Ease of navigation has been greatly improved, with a significant reduction in the number of mouse clicks required to access content. 'Now more than ever, ScoilNet is the ultimate, user-friendly educational resource,' said the Minister for Education and Science, Dr Michael Woods TD.

New features and improvements include the following:

- Every page on the site has been redesigned – there are more than 1,500 pages.
- Content has been reclassified and reorganised to make it easier to find and better targeted at the different age groups.
- There's a new, more targeted search engine for the site.
- There will now be six channels of information: ages 4–8, 9–12, 13–15 and 16–18, as well as channels for teachers and parents.

- The site has been redesigned with a unique look and feel for each channel.
- Improvements have been made to ScoilNet's publishing tools to make it even easier for everyone to post their own material.
- The new 'Examination Centre' includes previous exam papers, sample questions and answers, tips and guidelines and an exams discussion group.
- Another innovation is the regularly updated listings in the 'Lifestyle' channel for sport, TV, cinema, concerts, news and travel.

*"We redesigned ScoilNet because we listened carefully to what the pupils and teachers have been saying to us. We're committed to continuous improvement, through phased development, so as to keep ScoilNet and Ireland at the forefront of online educational resources"* said Michele McCabe of Intel

Use of the site surpassed all expectations for its first year in operation, indicating the level of acceptance of and confidence in internet technologies among Irish students today. Within six months of launch, ScoilNet was already within the top 10 Irish sites in terms of traffic. During the school year the site receives an average of 900,000 to 1 million page impressions per month.

Subject specialist teachers from around the country have developed most of the curriculum content on the site. Web publishing tools are available on the site; these enable users to publish their own material on ScoilNet. The tools are easy to use and require no programming knowledge. ScoilNet actively encourages user participation in the site not only through use of these tools but also through the various discussion groups and chat facilities available. These areas offer an ideal opportunity for collaboration and sharing of knowledge and ideas.

ScoilNet represents a partnership between Intel, the Department of Education & Science, and the NCTE. The NCTE and the Department of Education & Science are responsible for the educational content of the site. Intel, through a significant and ongoing financial investment in ScoilNet, has used the latest technologies and project management methodologies to support this innovative and far-reaching initiative in Irish education. A dedicated team is based in Intel and the NCTE, focusing on the development of ScoilNet. In addition, a group of 50 subject specialist teachers around the country has developed a wealth of new content for all age groups. While continuing to provide content for teachers, there has also been an increased focus on developing and sourcing learning content for students.

ScoilNet is the first education portal developed by Intel anywhere in the world. The site has been built on state of the art Intel® Pentium® III processor-based technology that is uniquely designed to maximise the use of the internet. Designed and developed by a leading-edge web technology design team, ScoilNet is intended to be a fully future-proofed,



secure and scalable 'turnkey' solution, hosted and maintained by Intel to ensure world class reliability and performance.

**Michele McCabe**  
Product Marketing Manager, Intel

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ScoilNet can be found at:  
[www.scoilnet.ie](http://www.scoilnet.ie)



# FUNDING

## Changing Directions in European Funding

**Thomas McCusker, Business Manager (Projects) for Learning and Teaching Scotland, explains the importance of regional applications in accessing future European funds.**

Things are changing in the European funding arena and these changes are affecting Scotland. New programmes and new measures are being put in place that will have an impact on the way learning institutions access funds. All the new programmes will have a significant part to play in encouraging cooperation in the field of education, increased opportunities in the field of lifelong learning and support for open and distance learning (ODL).

One significant strand that is apparent throughout the EU programmes is the priority given to the *integration of information and communications technology (ICT)* within schools, colleges, universities, communities and businesses. In all the programmes, emphasis is given to the importance of ICT in improving access and flexibility to learning. For example, under the new Leonardo programme there are specific strands dedicated to *networking and networking structures* through the use of ICT. Under the Socrates programme, the specific strand called 'Minerva' will promote improved understanding among teachers, learners, educational decision makers and the public at large of the implications of ODL and, in particular, ICT for education, and of the use of tools and methods that use such technologies for educational purposes. Objective 3 has measures to support lifelong learning through

further development of online learning.

### **Integration to avoid duplication will be the key**

If you then consider government initiatives linked to ICT, such as the National Grid for Learning (NGFL), Scottish University for Industry (LearnDirect), and initiatives under the New Opportunities Fund, there is a definite opportunity to pull resources and expertise together through EU- and government-funded programmes for the ultimate benefit of the learner.

The future success in obtaining EU funds will lie in the acceptance by all bodies that the majority of projects will have to be constructed through *regional applications*. This will entail local authorities, local enterprises, local colleges, local community groups coordinating their advocacy and collaborating fully with each sector. *Integration to avoid duplication will be the key*. To assist with regional applications, government programmes have to look at ways of releasing their funds for initiatives in line with European priorities and deadlines to increase the opportunity of using those funds as matched funding for EU projects.

Collaboration on joint regional applications has already begun in East and West Dunbartonshire with the implementation of the Dunbartonshire Telecolleges Network to be branded 'Get Learning'. Future EU applications will be submitted with a mixture of key bodies from the area working together. This will eventually result in a common agenda for Dunbartonshire and will maintain a common front on Government and EU initiatives. If this example can be replicated within other regions of Scotland, the full benefits of European funding will be realised.

**Thomas McCusker**  
Business Manager (Projects)  
LT Scotland

### Useful websites

- [www.europa.eu.int](http://www.europa.eu.int)
- [www.scotlandeuropa.com](http://www.scotlandeuropa.com)
- [www.eurodesk.org](http://www.eurodesk.org)



# Funding for ICT Development

Money for the National Grid for Learning and related ICT initiatives comes from a number of sources.

## Equipping schools

The current expenditure plans cover the financial years 1999–2000, 2000–01 and 2001–02. The majority of the Scottish Executive's support for the development of the NGfL in schools comes through the Excellence Fund. This is allocated to local authorities to support projects aimed at:

- **reducing the ratio of pupils to modern (less than four years old) computers**
- **increasing the number of networked computers in schools**
- **extending and improving access to the internet**
- **establishing and improving local and wide area networks, including links to public libraries and community centres**
- **securing technical support or management for hardware and software**
- **providing educational support for teachers' use of ICT within the curriculum**
- **providing educational content for teaching, learning and staff development designed to be delivered by ICT.**

It appears from the plans prepared by local authorities that most of this money is being spent on projects to create or extend ICT infrastructure in schools.

The Excellence Fund money has been supplemented by additional resources targeted at further improving the pupil-computer ratio in primary schools. This extra money is dealt with under the same arrangements as the Excellence Fund.

A share was allocated to each Scottish local authority, provided that they

prepared an Improvement Plan showing how they would use the resources to help achieve the national targets for the NGfL. The original Excellence Fund money was allocated on the basis of pupil numbers, with different weights allocated to primary and secondary pupils to reflect the different targets for pupil-computer ratios. The additional resources for primary schools were allocated purely on the basis of primary pupil numbers.

All this is, of course, in addition to the money that local authorities are spending on ICT from their existing budgets.

## Training teachers and librarians

The New Opportunities Fund (NOF), a National Lottery distribution body, is supporting a programme to offer training in the use of ICT to all teachers and school librarians. In Scotland £23 million is available over the life of the programme from 1999 to 2002.

The resources are allocated to authorities on the basis of teacher and school librarian numbers. Schools have received a catalogue of approved training providers from the NOF. Once the training has been taken up, the local authority draws the money from the NOF and pays the training provider.

## Further education

A total of £29m (1999–2002) has been allocated to build the further education element of the NGfL, broken down as follows:

- **1999–2000 £5m distributed**
- **2000–2001 £15m allocated**
- **2001–2002 £9m allocated.**

The main aspects for the allocation of funds are:

- **networks and networked services**
- **college infrastructure development**
- **staff development**
- **content development.**

## Community access/public libraries

The Community Access to Lifelong Learning programme aims to encourage more people into learning

with a particular focus on improving access to learning opportunities through the use of information and communications technology. £23 million has been allocated by NOF for Scotland by 2002, including £11.5 million reserved for creating the People's Network of ICT Learning Centres in public libraries.

Additionally, £50,000 has been made available from NGfL funds for the development of training materials for the effective use of ICT in communities. NGfL funding also paid for the Communities Conference and will fund the development of some strategic content for community-based learning and development specialists.

## Central initiatives

The Schools ICT Team in the Scottish Executive Education Department also has a sizeable budget over the 1999–2002 period to take forward a number of projects from the centre. This includes:

- **the creation of content and software for schools**
- **the NGfL team at Learning and Teaching Scotland**
- **the development of the NGfL Scotland websites**
- **the Innovation Fund**
- **the Computers for Teachers scheme**
- **part-funding of two CD-ROMs to identify training needs for the NOF ICT training programme**
- **organising conferences, e.g. for teacher education institutes and on NOF/NGfL synergy**
- **SOLSN**
- **BBC Bytesize website**
- **the Domain Names Rationalisation Project**
- **European Net Days**
- **Connected magazine**
- **various research and evaluation programmes including the Broadband Feasibility Study.**

## Scottish University for Industry (SUI)

The Scottish Executive has invited the Scottish University for Industry (SUI) to administer the Capital Modernisation Fund, established to assist the development of modern,

## FUNDING

flexible learning centre provision to meet the needs of all types of adult learner, whether in the community or at work. These will be high quality learning facilities that will carry the *learnirectscotland* brand and be part of the national network of learning centres that SUfl will establish throughout the country. A total of £8

million over two years has been allocated. Grants will normally range from a minimum of £1,000 to a maximum of £100,000. In consideration of all projects it will be advantageous if funding is also available from other sources, although this is not a prerequisite.

Private and public sector

organisations are eligible to apply for projects that will improve learning centre provision, particularly through appropriate use of information and learning technology. Priority will be given to applications that fill geographical gaps in the distribution of learning centres and/or enhance the provision in deprived/socially excluded areas.

### Summary of NGfL Scotland expenditure

Financial year	1999-2000	2000-01	2001-02
Excellence Fund grants to education authorities	£22.6m	£23.4m	£13.6m
Improving the pupil-computer ratio in primary schools	£ 2.0m	£ 8.0m	£10.0m
<b>Total support to EAs</b>	<b>£24.6m</b>	<b>£31.4m</b>	<b>£23.6m</b>
Central initiatives	£ 2.382m	£ 2.082m	£ 2.882m
Computers for Teachers Scheme	£ 0.5m	£ 1.0m	£ 1.5m
ICT Learning Centres	£ 2.0m	£ 4.0m	£ 6.0m
Further Education	£ 5.0m	£15.0m	£ 9.0m
NOF ICT training programme	£23.0m over 3 years		
NOF CALL programme	£23.0m over 3 years		

Jeff Maguire

Scottish Executive Education Department



## NOF CALL Funding Update

Judging by the large volume of applications received for the first round of the New Opportunities Fund's 'Community Access to Lifelong Learning' (CALL) programme, addressing the digital divide is clearly a key priority across the statutory, community and voluntary sectors in Scotland.

£23 million is available for the CALL programme in Scotland. £11.5 million of this is being used to establish the People's Network, which will link up every public library in Scotland to the internet, community websites and the National Grid for Learning by 2002. This is now being rolled out.



## New Opportunities Fund

The rest of the CALL programme funding (£11.5 million) will be awarded through open application for projects that support the development of a nationwide network of learning centres with ICT access to information and learning. Community Grids for Learning that support the NGfL and provide community-based websites will also be funded. Communities may be geographical or interest-based.

Applications received in the first round (closing date was 5 May) are currently being considered by an expert panel. The panel, which is chaired by New Opportunities Fund Board Member Dugald Mackie of the

University of Glasgow, includes representation from the Scottish Qualifications Authority, the Association of Scottish Colleges, NGfL Scotland, SUfl, the Scottish Council for Voluntary Organisations, the Scottish Libraries Information Council, the Convention of Scottish Local Authorities (COSLA), Community Learning Scotland (CLS) and the Scottish Executive. The first grant announcements for the CALL programme are expected in the autumn.

**Jackie Killeen,**  
Information Officer, NOF

[www.nof.org.uk](http://www.nof.org.uk)





## Introduction

**'Times they are a-changing.'** How appropriate these words are today, with technology advances taking place at an exhilarating pace, and key initiatives being implemented throughout the country. **Where does one start in relation to the design and implementation of large infrastructures?**

Clearly the next twelve months are going to be crucial in shaping the direction of the communications industry. With OfTel pressurising British Telecom to offer an unmetered service - FRIACO (Flat Rate Internet Call Origination) - to telecoms providers and ISPs over the Local Exchange Loop, and with recent developments in wireless and fibre technology, not to mention broadband initiatives for schools and further education, you could be excused for thinking a bucket of sand was included in your solution options.

In order to get all this in perspective, the reality needs to be separated from the hype. We do know that the broadband initiatives are real (the Scottish Executive has commissioned PricewaterhouseCoopers to conduct a feasibility study), but what about the new emerging technologies? Are WAP (Wireless Application Protocol) or GPRS (General Packet Radio Service) phones going to revolutionise the way we work? Will the quantum-leap improvement in the capacity of fibre be reflected in the annual rental charges for bandwidth? Can we expect the competition on the local loop to result in drastic price cuts for everyone anywhere? The answers are far from clear.

While the progression of technology is extremely encouraging, the exploitation of its capabilities has to be harnessed with a clear visionary perspective as to where it may best be applied to enhance the delivery of knowledge and information.

The 'how' and 'when' questions are still being asked. Some sectors are more advanced than others; traditional walls of division between and within sectors have to be lowered to ensure there is no duplication of effort and funding. Partnerships have to be developed and skills and resources shared; collaborative funding streams have to be identified and channelled to achieve best value for money for all. The commercial sector has to be integrated into the system if a leading edge in technology is to be sustained. It is imperative that content is developed to deliver quality learning materials and justify the investment in infrastructure. Continuous assessment of needs and requirements has to be a priority in order to guarantee that the potential of the system is being fully realised.

Scotland has a tremendous opportunity to encapsulate the technology to develop a continuously evolving system that will benefit all sectors of the learning community.

**Jack Davidson**  
NGfL Scotland Infrastructure Specialist

## 'Get Learning' in Dunbartonshire

**When Clydebank College and Scottish Enterprise Dunbartonshire secured ERDF funding to establish a broadband telecommunications network, it was not expected that this initial collaboration would lead so quickly to the formation of a market-leading and pioneering initiative that brought education and training to the learner at home, in the workplace, and in the community.**

The original concept had sufficient appeal to attract a comprehensive range of key partners within the Dunbartonshire and Argyll & Bute areas. This dynamic grouping now includes Scottish Enterprise Dunbartonshire, The Lennox Partnership, East Dunbartonshire Enterprise Trust and Argyll & Bute Council, coordinated through Helensburgh Library. Both Clydebank and Cumbernauld Colleges are delivering their on-line and distance learning programmes and support within the area through the 'Get Learning' organisation. The diverse expertise of the partnership will allow the key funding and support organisations to develop a 'one-stop-shop' approach for both individual learners and for businesses in the community.

Central to the success of this project has been extensive market research into the barriers and problems faced by learners and in particular the issues of concern to small and medium-sized businesses. 'Get Learning' is based on overcoming these barriers on an individual basis. Through participation and collaboration with key national initiatives such as the Scottish University for Industry, the Scottish Learning Network, New Deal, the National Grid for Learning Scotland



and the new Individual Learning Accounts, 'Get Learning' will be able to provide exciting, and appropriate individual and company learning plans in the most effective and efficient ways while accessing and directing clients to available funding wherever available. It is through this demand-led provision that Dunbartonshire and Argyll & Bute will become vibrant and prosperous learning communities. National initiatives have ensured that public funds are available to develop individuals in their communities and 'Get Learning' will ensure that Dunbartonshire and Argyll & Bute benefit to the greatest extent from these opportunities.

The cutting edge technology available through *Get Learning* will enable the place and time of learning to be in the hands of the learner. Technology, however, is not the whole solution, but a tool to be used whenever appropriate. It is in supporting the individual through professional staff, learning materials and communication links of the highest quality that *Get Learning* will promote a lifetime of learning for everyone that is not only enjoyable but also focussed on specific needs of local economies.

Extensive pilot studies have taken place and are on-going to ensure that *Get Learning* can deliver all it claims and that it is constantly improving by listening to its learning customers. Over the coming months, there will be a series of launches over the coming months where 'Get Learning' can be properly introduced to the communities it serves.

'Learndirect Scotland' will be launched shortly and, as it develops rapidly, 'Get Learning' will reflect and interpret these opportunities locally. It will ensure that the education and training imperatives of the current community planning processes have a sustainable vehicle for delivering key elements in the regeneration and development of businesses and individuals.

**Judy Cromarty**  
Clydebank College

# Connecting Colleges in Scotland

**All of Scotland's further education colleges are to have fast, unlimited internet access provided as part of the initiative funded by the Scottish Further Education Funding Council (SFEFC).**

## The network

Colleges are to be connected over the next eight months to the Joint Academic Network (JANET), the telecommunications network that already links all higher education institutions, most further education (FE) colleges and many research institutions in the United Kingdom.

JANET is an integral part of the internet in the UK. Through funded connections to this network, FE colleges become stakeholders in current and future developments of a powerful network designed to meet the needs of the education community.

Funding is being provided for connections at a bandwidth of 2 Mbits per second. Each college will be connected to one of the five Metropolitan Area Networks (MANs) in Scotland. These are centred in Aberdeen, Dundee, Edinburgh, Glasgow and Inverness (University of Highlands and Islands Project). The MANs are in turn connected to the UK network's high-speed backbone, SuperJANET.

## Funding and management

JANET is funded by the Joint Information Systems Committee (JISC) on behalf of the UK funding councils for further and higher education. UK Education and Research Networking Association (UKERNA) manages the operation and development of JANET on behalf of the academic and research community in the UK.

## Services

JISC and UKERNA provide a number of JANET support services including a helpline, network monitoring, videoconferencing, information and support materials, and education and training courses.

## Regional Support Centres and UKERNA

UKERNA will work closely with the two Regional Support Centres (RSCs) that are being established in Scotland, one for the south and west, and one for the north and east. Colleges that are part of the University of the Highlands and Islands project (UHI) will continue to be supported by UHI. The RSCs will provide a helpline and technical support to the colleges for all aspects of connection to JANET.

## A network for all the UK

Similar projects are currently underway in England and in Northern Ireland. Welsh colleges are already all connected directly to JANET. Consequently UKERNA's client base is rapidly increasing and most clients will soon be colleges.

## The FE Scotland Networking project

UKERNA is managing the project to connect all Scottish colleges to JANET. The project aims are:

- to connect all Scottish colleges to JANET by 31 March 2001
- to ensure that the services provided by JANET develop in line with the needs of the Scottish FE community.

Mechanisms will be developed to ensure that colleges are consulted regularly about their requirements from JANET.

The aims of the project complement those of the National Grid for Learning Scotland (NGfL) and close contact will be maintained. Both form part of the Government's Digital Scotland initiative.

**Janet Laurie**  
UKERNA

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Further information can be found on the following websites:

- [www.ja.net](http://www.ja.net)
- [www.ja.net/janet-sites/MANs](http://www.ja.net/janet-sites/MANs)
- [www.jisc.ac.uk](http://www.jisc.ac.uk)
- [www.sfc.ac.uk](http://www.sfc.ac.uk)
- [www.scotland.gov.uk/digitalscotland](http://www.scotland.gov.uk/digitalscotland)





# NGfL in Orkney

**The Orkney Local Authority covers the archipelago of approximately seventy islands, (the number varies slightly with the state of the tide!) situated between the Atlantic Ocean and the North Sea off the north coast of Scotland. It is the smallest local authority in the UK with a population of 19,500. We have just two six-year secondary schools, four junior high schools, 17 primaries and 1 special school with a total of under 3500 pupils and fewer than 400 staff. Ten of these schools are accessible from the Orkney mainland only by sea or air.**

As well as the problems associated with size, there are the problems of remoteness and accessibility. People south of the border often have difficulty placing us. If your atlas shows Orkney in a little box off the Moray coast, what else can you expect? One supplier 'guaranteeing' me next day delivery later apologised for having confused Orkney with the Channel Islands! Added to this is the difficulty of getting to Orkney, especially in a hurry. Boats (time-consuming) and planes (expensive) are too often disrupted by wind and fog. These latter give enough problems with itinerant staff attempting to go to island schools so what chance is there for support coming from mainland UK?

All the above, plus the fact that we are still predominantly Mac-orientated, led us to the conclusion that it would be in our interests, and conceivably cheaper, to set up and run our own system, rather than one externally managed.

### What did we already have?

In 1994 we installed a very basic e-mail system linking all our schools with each other and with the Department. This involved leased line links between the two secondary

schools, Kirkwall Grammar School, about a mile from the Council offices, and Stromness Academy, about 15 miles away. All the other schools were supplied with an extra PSTN phone line and a 14.4 Kb/s modem. That was fast in those days! This system has served us well but, after six years without upgrading, is groaning with old age.

As far as internal networking was concerned, Stromness Academy had installed, under the influence of an enthusiastic principal teacher of computing, an ethernet network that gave them limited internet access. The grammar school had, under similar influence, installed a LocalTalk (Apple) network with access to the internet and a small ethernet network for administration purposes. Two primary schools had LocalTalk networks and one or two schools had set up computers to give basic access to the internet.

A late introduction to the system has been videoconferencing equipment installed in all our island schools in a joint initiative with the local further education college and local enterprise company.

### What do we want?

Our needs are simple; the achievement of our aims is less so. We want fully filtered internet access and e-mails for all our staff and pupils, with evening access from

home, community centres and evening classes. We want a restricted Orkney intranet for staff and pupils and we want some solutions to the problem of itinerant staff being unable to take their classes in island schools due to inclement weather.

### How is it to be achieved?

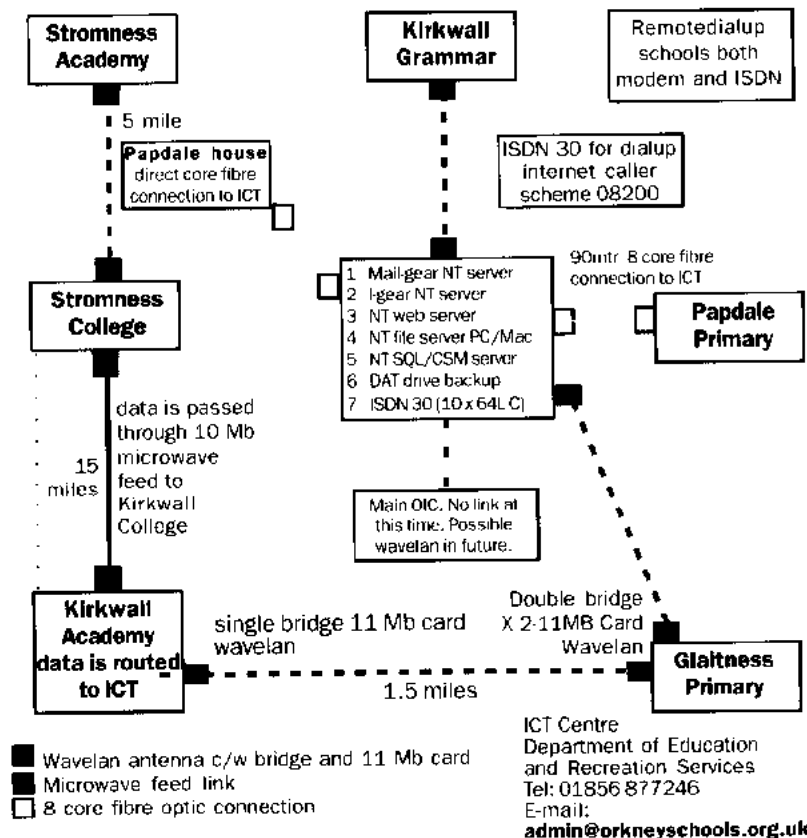
#### Management

We felt there was not the expertise in Orkney to undertake this task, so our first action was to appoint an intranet manager. His responsibilities include giving advice, establishing and managing the whole system from a new ICT centre set up in Kirkwall.

#### Connectivity

Connectivity, as you may guess, is a major problem. We had already had preliminary talks with the University of the Highlands and Islands (UHI), and had received helpful advice, and offers of help if required; but we have no cable company and no viable competition to BT as a provider.

The best example of the problem, and our solution, is how to give Stromness Academy, a potentially heavy user 15 miles away, decent access. As stated earlier, there was a leased line in place already, but this would be totally inadequate. Increasing the bandwidth of that line was going to prove very expensive in running costs. We could increase the existing ISDN2 line, but at what cost? Then we came upon the



idea of a radio link. Testing one of the early models, which had a bandwidth of 2 Mb, proved that it could work – and work well – where we had line of sight. This now provides our link with the grammar school – but 15 miles is too far! However we were able to tap into the existing microwave link between UHI departments in Stromness and Kirkwall. Between the academy and the Stromness Nautical Department we had line of sight – that is, until the mainland ferry moored in the way and necessitated a realignment! We were, therefore, able to make a link between the two towns. Our only problem now was that the early twentieth-century planners had not had sufficient foresight to realise that at some time we would need line of sight between our ICT centre and the college. The solution to this is two aerials on a school on the outskirts of Kirkwall, one pointing to the ICT centre and one to receive the signal from the college. With three schools in Kirkwall and two in Stromness linked by radio, now upgraded to 11 Mb, and one in Kirkwall having a fibre optic connection, two thirds of our pupils have internet access without any running costs apart from maintenance. Our web feed itself comes through the UHI and Orkney College using the JANET network.

Our plans for the other schools at present centre on the use of BT's Internet Caller scheme, with ourselves as Internet Service Provider, and ISDN2 phone lines. These costs will be aggregated and shared out over the whole school population on a per capita basis.

We are also establishing a base for itinerant staff that will be equipped with computers, a scanner, a printer and a videoconferencing unit, in the hope that at least staff will be able to start classes off if they are unable to get to the island. This will, of course, be more difficult for PE staff.

**Where do we go from here?**

I wish I knew. We feel we are establishing a sound base for all our objectives and are in a position to upgrade as technology changes. We are about to test satellite equipment to see if that would be a reliable, and cheaper, alternative to the Internet Caller scheme. If the various broadband studies bear fruit we should be ready to take advantage of them. Things are still moving fast.

**Ray Richards**  
Orkney Islands Council

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# Working Together for Broadband in Further Education

**This article outlines how the Scottish Funding Council is supporting colleges to develop the further education element of the National Grid for Learning (NGfL).**

The Scottish Executive allocated £29 million over three years for investment in information and communications technology (ICT) in the further education sector. The Council has consulted on an ICT strategy for the sector and is currently disbursing the second and third years of the funding. Scottish colleges will receive around £7.5 million in the year 2000/01 to develop their ICT infrastructure and provide staff development in ICT.

A key element of the strategy was the Council's decision to become a member of the Joint Information Systems Committee (JISC) in April 2000. Among the immediate benefits of this will be the connection of all colleges to the JANET network. While many colleges already have broadband network connections, there are clear benefits in having all colleges on a secure, managed network such as JANET. It will reduce recurrent network charges, ensure consistency across the sector, and allow colleges to benefit from the full range of JISC services and its development work in areas such as authentication and security.

UKERNA (the JISC network procurement agent) will connect all colleges to JANET by the end of 2000. Much of this will be achieved by connecting colleges to existing Metropolitan Area Networks (MANs), sometimes through higher education institutions. To support the connections, and to facilitate the uptake of JISC services, two JISC Regional Support Centres (RSCs) are being established. Colleges in the north and east of Scotland will be supported by a consortium that includes – amongst others – Stirling, Napier and Heriot-Watt universities, and Telford, Lauder and Borders colleges. Colleges in the south and west will be supported by a consortium that includes the Glasgow

Telecolleges Network (GTN) and WessNet Colleges together with Glasgow University.

It is hoped that the JISC RSCs, together with the wider networking initiative, will signal the start of increased collaboration between further and higher education in ICT.

The Council has provisionally earmarked around £3 million for the period up to March 2002 to support the development of content (learning materials) for use in the further education sector. However, prior to commissioning any materials, the Council has invited tenders for a managed service that will promote the Council's policies on all matters relating to content development, and support the roll-out of high quality learning materials throughout the further education sector. The service will provide advice to the Council in order to avoid the potential for duplication or overlap with other publicly funded activities, such as the Scottish University for Industry and NGfL. This service will consider how to make best use of the expertise and resources of the private sector, and ensure that materials comply with standards on quality, accessibility, metadata and so on.

It is hoped that the advisory service will enable productive partnerships to be developed with SUfI, NGfL and private sector companies for the procurement and/or commissioning of new learning materials.

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## Colleges Open Learning Exchange Group

### Introduction

High-quality content for use by learners and education professionals is a principal requirement for the success of NGfL. There are issues to be addressed about relevance, availability, cost and effective and appropriate use of technologies, etc., but we are seeing the growth of a substantial educational multimedia resource market.

Content is being created and distributed from multiple sources,

including commercial providers, government and its agencies, local authorities, colleges, and the communities and individuals themselves. Partnerships are very important in this 'mixed economy' model, as they usually lead to better products with broad acceptability.

The NGfL can stimulate market growth by raising awareness of opportunities, encouraging cooperation, and commissioning content for specific needs. An example is the CD *The Scottish People 1450-1840*, published in partnership with the National Museum of Scotland and SCRAN.

**Nick Morgan**  
NGfL Scotland Content Specialist

COLEG was established in December 1994 as a partnership of further education colleges in Scotland.

Initially COLEG provided a mechanism for the colleges to exchange open and flexible learning materials. Then, as popular courses were revised, colleges started to collaborate to develop new content.

In five years of activity, a large catalogue of print-based materials across a wide range of curricular areas has been produced. Over the last two years COLEG has experimented with small-scale developments of ICT-based materials. This year with funding from the SFEFC, COLEG launched a larger-scale development of web-based learning materials. College teams with both subject and technical expertise are producing materials in three curricular areas: core skills, financial record keeping and communication at Higher National level.

One of the biggest and continuing challenges for COLEG is ensuring that the materials meet COLEG quality standards. The standards were developed for the print-based medium, but many apply equally in the ICT environment. As development work progresses, already some common standards for ICT materials are evolving and, by sharing feedback from developers, reviewers and users of the products, it should be possible to design quality guidelines that will have general support.

Another interesting outcome of the project so far is the number of common issues that have emerged from all three projects. These include:

- the most appropriate structure for materials that individual

### The Parent Zone

The Parent Zone is a website that has been designed as a one-stop-shop for parents to access a range of information relating to their children's school education. Due to be launched in September by Peter Peacock, the Deputy Minister for Children and Education, the site has been developed by the Scottish Executive Education Department as part of the National Grid for Learning.

The Parent Zone provides information for parents under 14 broad subject headings. These are:

- Pre-school and childcare
- Choosing a school
- Going to School
- Curriculum and assessment
- Pupil progress
- Special Educational Needs
- Bullying and welfare
- Exclusion
- Rights and responsibilities
- Getting involved
- Parenting support

- School quality
- Post-school.

Browsers should easily be able to access information on specific topics using the integral search facility as well as browse the site in general. They can also access information on the latest developments in education in the current issues section, and find out about events aimed at, or of interest to, parents in the events section.

From the Parent Zone, browsers will be able to link to, or access contact details for, a range of other bodies and organisations such as education authorities, the Anti-Bullying Network, Children in Scotland, and the Scottish Qualifications Authority.

The site will be updated regularly, and may be extended in the future to include more possibilities for interaction.

**Lindsey Wright**, SEED

The Parent Zone can be found at [www.ngflscotland.gov.uk/parentzone](http://www.ngflscotland.gov.uk/parentzone)

Enquiries  
[lindsey.wright@scotland.gov.uk](mailto:lindsey.wright@scotland.gov.uk).



colleges will want to customise

- storage of materials by COLEG and ease of access for member colleges
- project management issues including effective collaboration between subject experts and technical staff, the need to maintain the flow of content to developers and the benefits of working with an established development team, development time and resources.

The products will be completed at the end of October and will go through further quality checks before dissemination to all COLEG colleges later in the session. The findings of an external evaluation of the project by SFEU will also be disseminated.

**Mary Macdonald**  
Director, COLEG



## NOF Digitisation Programme Update

The New Opportunities Fund Digitisation of Learning Materials programme, for which £50 million was allocated UK-wide, is now well underway. The programme was created to allow information and resources (including text, film, sound recordings, pictures and photos) to be put into electronic form, free to users at the point of access through the People's Network and the NGfL.

The deadline for first-stage applications was January 2000, and bids have come in under the three main themes of *cultural enrichment*, *reskilling the nation* and *citizenship* from a variety of organisations, from small local charities to national

museums, libraries and archives. A broad range of subject matter is represented, including art, poetry, the environment, archaeology, employment issues and people's heritage subjects (for example fishing and mining).

Projects invited to proceed to the second stage of the process have been asked to submit more detailed information. Applicants are also being encouraged to work on a collaborative basis with the aim of maximising links between the themes of the learning materials, ensuring there is no duplication of information being put into digital form and encouraging economies of scale.

The New Opportunities Fund has also launched a new technical guide for applicants. The guide, thought to be the first containing such advice, will ensure that all learning material put into digital form through this programme will be consistently delivered and fully accessible through the NGfL and the People's Network.

Detailed advice about technical standards has been drawn up by UKOLN in association with the People's Network Development Team of Resource and is now available on the People's Network website ([www.peoplesnetwork.gov.uk](http://www.peoplesnetwork.gov.uk)). The guide contains advice on all aspects of content creation and management, collection, development and access. Given the rapidly changing environment of networked content, this guidance will be updated regularly.

**Jackie Killeen**  
Information Officer, NOF



## ICT for All CD-ROM

The Scottish Executive Education Department (SEED) recently distributed each local authority's allocation of copies of the New Opportunities Fund ICT training programme needs identification CD-ROM for teachers of pupils with special educational needs (SEN).

The CD-ROM has been developed by

the Teacher Training Agency in close conjunction with SEED, teachers, headteachers, SEN associations, education authorities and representatives from Learning and Teaching Scotland, BECT, DfEE and QCA.

The CD-ROM comprises eight filmed case studies, including one from the highly innovative Richmond Park School in Glasgow, accompanied by teacher and TTA commentaries. Each case study focuses on aspects of ICT that support teaching and learning. Although the case studies show software and hardware being used with pupils with particular needs, in the great majority of cases the technology will have a wider application and will be helpful when used with pupils across a broad range of SENs. The commentary for each case broadens the context for the use of ICT to make it applicable to pupils with different needs or for different subjects or settings. When identifying their training needs teachers may, therefore, wish to view the CD-ROM as a whole rather than focusing on particular SENs, subjects or contexts.

The CD-ROM is designed to help teachers in mainstream schools, special schools and SEN units to gain the maximum benefit from the NOF training in the use of ICT in teaching pupils with SEN. By using the CD-ROM, teachers will be able to produce a profile of their individual training needs in relation to the knowledge, understanding and skills set out in the *Expected Outcomes for Teachers in Scotland* document of the NOF training initiative. It should be noted that the CD-ROM is not intended to provide the training; rather, it is for use in determining individual training needs prior to the start of training. Compilation software, which will assist senior managers to collate individual training profiles, will be available shortly.

The SEN CD-ROM complements the primary and secondary needs identification CD-ROM discs that were produced last year. These CD-ROMs, which were distributed to education authorities last year and are available separately from the TTA, are designed to help teachers identify their general ICT training needs in subject-specific contexts.

**Jeff Maguire**  
Scottish Executive Education  
Department





## Introduction

### Perhaps it is time to take another look at staff development for information and communications technology (ICT) in schools.

For many years there was almost tacit agreement that what people needed where computers were involved was 'training up'. This usually involved organisations offering a set menu of courses – starting with basic user skills and hardware familiarisation, then advancing through word processing, spreadsheets, databases and so on in a progression of knowledge and skills that seemed to follow an almost predictable path. At each stage you attempted to learn all there was to know about your chosen topic, finished off your undertaking (perhaps, interwoven or advanced, courses – a fine example of the mastery learning model for some people this proved to be a reasonable way of doing things – provided they had the time available to dedicate to their training.

The problem is that life just is not like that for most of us. Teachers are required to make use of ICT but have limited time to spare to absorb the required knowledge and skills.

The New Opportunities Fund (NOF) scheme for teachers and school librarians recognises this and attempts to put staff development in ICT into context by relating it to the tasks that are actually to be done in schools. This idea of 'task-related development' is becoming more and more common, with most reputable training organisations building courses to order to meet the needs of their customers.

Feedback from teachers who have experience of online training or courses (like the Scholar Forum) shows that the majority want face-to-face input at the very least in the early stages. It may also be too early even for those who might want online delivery but are just getting to grips with e-mail, mailing lists, online conferencing and discussion forums.

Fortunately, if you are a teacher or school librarian about to start your NOF training – or if you have already started – you do not need to worry about all this. Before the organisations providing the training get anywhere near you, they have to undergo an exhaustive process of evaluation. Even after they have achieved 'Approved Training Provider' status, there is a rigorous quality assurance process that is controlled by Her Majesty's Inspectors of Schools'.

The NOF scheme caters for the needs of serving teachers, but what is happening elsewhere in the system and what is going to happen after NOF?

The main problem with ICT in schools is that the majority of teachers working today qualified in a world without computers in the classroom. To make sure that the next generation of teachers is properly equipped with the appropriate skills and knowledge of ICT, the Teacher Education Institutions are making sure that their courses are designed to allow newly qualified teachers to start their careers armed with a common set of basic competences.

Clearly the NOF training is not the final answer to staff development needs in ICT. We have to recognise that the needs of individuals will evolve as they become more skilled, more knowledgeable and begin to see the potential of the technologies available to them. Therefore, the need for training will also continue and possibly grow. Personal and Professional Development should not be something that is done to you. It is a process you have to engage in.

Linda Dicks

NGfL Scotland Staff Development Specialist

For more information:

- **The NOF programme:**  
[www.nof.org.uk](http://www.nof.org.uk)
- **The Scholar Forum:**  
[www.scholar.hw.ac.uk/whatsc.html](http://www.scholar.hw.ac.uk/whatsc.html)

Customised ICT training for school Librarian Courses:

- [www.scotland.gov.uk/library/documents-w10/ictr-00.htm](http://www.scotland.gov.uk/library/documents-w10/ictr-00.htm)

Continuing Professional Development:

- [www.scotland.gov.uk/news/2000/05/se1327.asp](http://www.scotland.gov.uk/news/2000/05/se1327.asp)
- [www.scotland.gov.uk/news/1999/11/se1203.asp](http://www.scotland.gov.uk/news/1999/11/se1203.asp)



# New Teachers, New Directions (Conference Report)

As the drive continues to raise pupil standards and enhance the process of learning and teaching by imbedding information and communications technology (ICT) throughout the school curriculum, the vital importance of teacher skills is becoming clearer.

In April 1999 the Scottish Office Education and Industry Department produced *Guidance on the use of Information and Communications Technology (ICT) within Courses of Initial Teacher Education* to ensure newly qualified teachers meet a minimum agreed standard in certain core ICT skills. They must be prepared to:

- promote good learning and teaching through ICT
- promote the ICT skills of pupils
- develop the skills of managing ICT in a school setting.

## Aims of the conference

On 2 June 2000, a conference was held at the Stirling Management Centre to provide a forum for issues relating to topics that are of joint interest to teacher education institutions (TEIs) and education authorities. The conference aimed to find out what teacher education institutions are currently doing in the area of information and communications technology (ICT) and to identify obstacles likely to impede the successful

implementation of the guidance on ICT in Initial Teacher Education courses. The conference was extremely productive in bringing together key staff from TEIs and education authorities. The main issues identified for future action were as follows.

## Pedagogy and ICT

- There is a clear need to develop the pedagogy of ICT in the curriculum.
- ICT must be integrated into learning in a coherent and progressive manner.
- There should be an exploration of a variety of approaches to learning and teaching using ICT.
- While the virtual school is a possibility in the future, this is a very challenging and demanding concept.

## Initial Teacher Education and ICT

- Primary education courses and primary school teachers are more effective in integrating ICT in the curriculum.
- There is a need for secondary education courses and secondary school teachers to develop a similar level of expertise to that of their primary school colleagues.
- All ITE courses should be reviewed to ensure that newly qualified teachers are being developed as effective professionals, including the integration of ICT in the curriculum.
- There is a need for further discussion and negotiation to strengthen the partnership between TEIs and education authorities, particularly with regard to the student experience during school experience. There should be a complementarity of student experience in TEIs and schools and there is a need for greater consistency, particularly in the area of ICT in learning and teaching.

## Staff development

- There is a need to provide a coherent and progressive experience beyond New Opportunities Fund (NOF) in-service training.
- Such staff development should have a focus on the pedagogy of ICT and needs to be valued by teachers.
- There is an urgent need for staff development for non-ICT specialists in TEIs.
- There requires to be a focus on staff development for TEI staff working on secondary education courses.
- There is a need for a series of regional/national seminars on a subject/discipline basis for TEI and Education Authority advisory staff as a matter of urgency.
- Within each TEI, there should be closer collaboration between ICT staff and other colleagues.

## Resources

- There is a need to increase the level of ICT-related resources in TEIs.
- Consideration should be given to providing laptop computers for all students and staff within TEIs.
- The TEIs should submit a collaborative bid to SHEFC for additional funding to support the implementation of NGfL (consultations should take place between TEIs, SEED, Learning & Teaching Scotland and SHEFC).

John McCarney  
Associate Dean, Faculty of  
Education, University of Glasgow

A fuller version of the proceedings of the conference can be seen at:  
[www.ngflscotland.gov.uk/teic](http://www.ngflscotland.gov.uk/teic)



# 'Hello Carlo' – A Vision for a Video

What is your 'vision' of the impact of information and communications technology (ICT) on learning and teaching? How will the emerging technologies influence our schools?

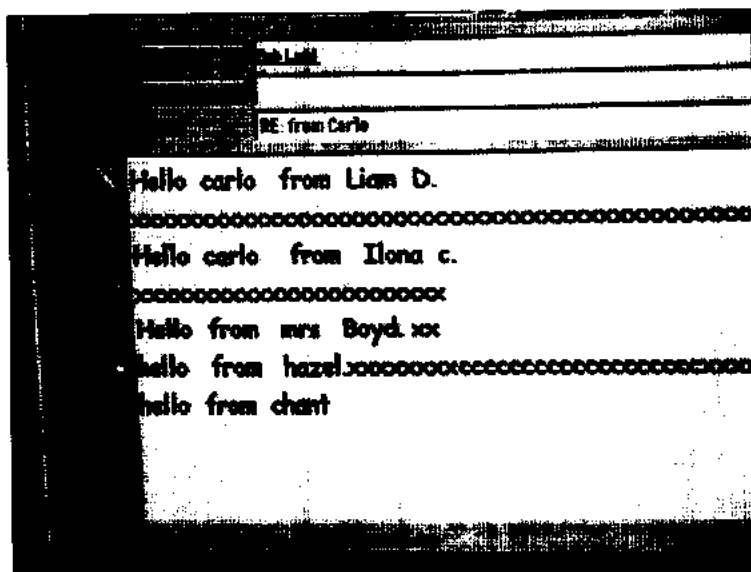
These questions have preoccupied a video production team assembled for NGfL Scotland by Learning and Teaching Scotland. The team's task was to capture, in a short video, a 'vision' of what learning and teaching might become as the ICT revolution impacts on education in Scotland.

Forecasting the future, or illustrating a vision, is no easy matter. Who in 1990 could have predicted the extent to which the new technologies would have become a part of our lives by the millennium? Seeking a firm starting point, we decided to gather a picture of how the new technologies were being used in schools today. How do teachers and pupils use ICT at the moment and what are their hopes, expectations and visions of the future?

Recently HMI in Scotland conducted a 'focused' inspection in

11 primary and 21 secondary schools in which they identified, throughout the country, examples of good practice in the application of ICT for effective learning and teaching. The shared interest of the video project and the inspection led HMI to decide to produce, for the first time in Scotland, a multimedia national inspection report. In addition to the traditional print format, an electronic version of the report will be available on the World Wide Web. In this, a

teachers were developing the use of ICT to make learning and teaching more effective. However, perhaps the most compelling of all the images we gathered arose in a Primary 1 classroom. A member of the class had gone to live for a few months in America. The class wanted to keep in touch and the teacher seized the opportunity. In pairs, from the computer in their classroom, the pupils took turns to e-mail their messages – beginning 'Hello Carlo'. If at five years of age



series of 'hot links' will provide access to video clips illustrating aspects of the good practice highlighted in the report.

To capture the video material for both purposes, we visited a sample of the schools featured in the HMI report and filmed a wide variety of learning and teaching activities. We also spoke individually to a large number of teachers, pupils and school managers. Without exception the pupils were ICT enthusiasts – whatever else ICT does, it motivates young people.

Teachers responses were more mixed but generally positive. We gathered numerous examples of very inventive ways in which

these young people are able to send and receive messages to a friend who happens to be 5,000 miles away, they should be well prepared for the ICT revolution – whatever form it takes.

The other video images will be published soon. The electronic version of the HMI report and video clips will be available on the Web in early September. The NGfL *Vision Video* will be launched at the end of 2000.

Jim Rand  
Educational Consultant



# NOF Training: Quality Assurance



## New Opportunities Fund

### What is the NOF training?

Over the period 1999–2002, all primary, secondary and special school teachers and school librarians in the UK are eligible to receive free training in information and communications technology (ICT) courtesy of New Opportunities Fund (NOF) training. Training in Scotland has now begun. Although uptake has been slow in these first few months, it is expected to pick up significantly from autumn 2000. There are twelve providers who have been approved to deliver training in Scotland. Some will train in very local areas; others will deliver training across the country.

### What are the broad aims of the training?

The aims of the training are:

- to raise standards of pupils' attainment by increasing the

expertise of serving teachers in the use of ICT to the level expected of all newly qualified teachers entering the service

- to increase the expertise of school librarians in supporting teachers and pupils in accessing information through an effective use of ICT.

Programmes must not focus solely on the acquisition of ICT skills but should focus on the use of these skills to enrich the delivery of the curriculum. The programme is all about enabling participants to know when, when not and how to use ICT to enhance the learning and teaching environment.

### How is the quality of the training assured?

It is part of each provider's contract with the NOF that they monitor the quality of their training provision on an ongoing basis. To complement this, the NOF agreed that there should also be external quality assurance of the training. In Scotland, this role has been taken up by HM Inspectors of Schools (HMI). They have developed a set of eight quality indicators that have been shared with both the providers and education authorities, to allow all participants to share the same quality assurance agenda.

A team of HMIs has been working in collaboration with a range of colleagues from school and education authority backgrounds to undertake initial evaluations of the Scottish training provision. Some of these associate assessors have been examining providers' programme materials. Others have joined the Inspectorate in focused evaluations of training that have included observation of training, interviews with headteachers and school staff and exploration of intranet sites. HMI have produced reports from these first evaluations, but these are not published.

### What are the main messages from these first evaluations?

- It is crucial that all ICT training

programmes enable participants to achieve the expected outcomes as set out in the NOF specification.

- The models of training available differ from each other. However, there are key components that contribute to the effectiveness of any ICT training model. These are:

- a sound focus on the identification of the participant's ICT training needs
- ongoing support for the participant, the setting of clear training targets, the assessment of progress in training and access to the views of colleagues also in training
- the use of a good range of technology
- an emphasis on the practical use of ICT skills in the classroom or library
- agreed procedures for signing-off from training and agreeing an action plan for future professional development.
- As far as possible, the NOF training should be embedded in a school's normal operations – that is, it should be included in school planning and staff development programmes, and should be covered by internal quality assurance arrangements.
- Wherever NOF ICT training is taking place, providers, education authorities and schools have a joint responsibility to ensure that the introduction of the NGfL and the NOF training together make the maximum impact on learning and teaching across Scotland in the years to come. The NOF training is the largest staff development opportunity ever seen in Scotland and is a unique opportunity for Scotland's teachers and school librarians and for the future of our pupils.

Alan Ogg  
HMI, Scottish Executive Education  
Department







## Introduction

**Since the last edition of this magazine, work on connecting communities to the Grid has been moving steadily forward. Some highlights have been as follows.**

In May, the NGfL Scotland Communities Conference, 'Connecting Communities' was held. 120 participants from a wide range of national organisations, local authorities and community-based projects attended to gather information and discuss the laying of the foundations for extending the grid into the wider community.

The NGfL Communities Working Group chaired by Charlie McConnell, Chief Executive of Community Learning Scotland, has been formed. The aim of the group is primarily to promote collaboration and avoid duplication within the sector. There are 25 members representing a range of sectors and key partner organisations, both national and local, which have an impact on communities, for example Scottish Enterprise, SCVO, CLS, LT Scotland, VDS, SDCDC, NOF, CCIS, Ayrshire Electronic Community, New Community Schools, FE.

NGfL funding of £50,000 has been released to support the development of training materials for the effective use of ICT in communities.

The NGfL Scotland Communities Channel is currently being



developed to provide advice, guidance, raised awareness and understanding of ICT for community-based learning, and for development practitioners from all sectors and organisations.

More about training and the channel below - along with examples of initiatives that support

access to ICT in the wider community, particularly those at risk of missing out on the 'information revolution'.

We would like to thank all the contributors to this section of **Connected** for playing their part in the promotion and awareness raising of how communities can become connected. These are still early days for the extension of the Grid into communities, but the foundations are going in nicely and the enthusiasm of key partners and practitioners is very encouraging. We know that there is a lot of valuable work going on.

If you are involved in work that you think could be usefully shared with others, or you would like more information about NGfL in communities, please contact the NGfL information line on 0141 337 5117 or e-mail [ngfl@LTScotland.com](mailto:ngfl@LTScotland.com)

**Anne Petry**  
NGfL Scotland Communities Specialist



## ICT Training Days

**Building on the success of the Software In Focus days that have been running for over three years, LT Scotland has been working in conjunction with the NGfL team to raise awareness of the uses of ICT within the community. Software In Focus days allow teachers and lecturers the opportunity to view a wide range of software specific to their subject area. They have covered everything from nursery software to secondary home economics and basic skills for adults. The ICT seminars not only look at software resources but also give those attending the opportunity to see how other ICT resources can be used as a learning tool.**

The events to date have provided libraries, community learning centres, museums and other resource centres with an overview of how ICT can be used to support learners of all ages. One delegate stated:

*It has been very useful from a team/service perspective. If we are going to work with the community, we first need the knowledge ourselves.*

Those attending get the opportunity to find out more about the National Grid for Learning and its role within the community, followed by further demonstrations and an extensive 'hands on' session. The 'hands on' session covers a variety of activities such as creating web pages, using digital cameras and scanners and viewing a range of software and internet resources that young and adult learners can access for information to assist in their pursuit of lifelong learning.

In addition to this, there is the opportunity to find out about funding opportunities to support ICT in the community, and gain an overview of ICT training courses delivered by LT Scotland. So far LT Scotland has run these events for Falkirk, West Dunbartonshire, Angus and West Lothian councils as well as the Scottish Museums Council.

The Scottish Museums Council was keen to find out how ICT could be used to support and enhance the work carried out in museums and what benefits it could provide. One of the curators from the Glasgow museums felt that 'the day certainly provided a great insight into the potential for use of ICT in museums'.

Feedback from the events has been very positive and, although the days have just been awareness raising, those attending have appreciated the chance to see where their own ICT skills need to be developed.

The cost for the day, including lunch, is £40.00 per participant.

The next planned seminar is on 6 November at LT Scotland's Glasgow offices.

**Fiona Andrew**

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## The NGfL Communities Channel

**A youth group decides to set up a cybercafé for their village. A development agency plans to provide internet access and training for local groups.**

**Neighbourhood centre workers aim to develop a website for their community. A local authority wants to ensure new technology projects 'join up' and contribute to its community learning strategy.**

Projects like these can make a major contribution to learning in communities throughout Scotland – and some are already underway. But just where are the success stories? What will work – and what won't? How do new projects start planning, make sure potential partners are on board and involve the community? Who can help project leaders?

Community-based learning and development practitioners will shortly have their own channel of information on these and other issues, and have an opportunity to share ideas.

The NGfL Communities Channel ([www.ngfiscotland.gov.uk/communities](http://www.ngfiscotland.gov.uk/communities)) will be launched this autumn, with a preview of content available later in the year. It will feature Scottish examples, while drawing on experience throughout the UK and North America.

Anne Petry, the NGfL Communities Specialist who is leading development, said:

*The Channel will be a first for Scotland – bringing together international expertise and tailoring it to local needs. We are developing the channel because there is no one place practitioners can find the information they need to*



*successfully integrate ICT into their work. We will also be developing training modules to provide more detailed support, and encouraging practitioners to contribute from their experience. This won't be just a one-way channel. We will encourage sharing of experiences and good practice between practitioners and projects as well as between schools, colleges, agencies and all other organisations working in the community.*

Initial work on the channel is being undertaken by consultants Terry Grunwald and David Wilcox of Making the Net Work. Terry has worked for 10 years on community technology projects in the US, and David has developed a number of UK-wide programmes to support local initiatives. They are working with an advisory group from Scottish organisations.

The website will provide both general advice, and also help for specific situations. This will include:

- getting an organisation online and using the internet to make it more effective
- linking local projects to create a community grid
- setting up a local learning centre.

The site will feature stories, presentations, checklists, and answers to common questions around these and other situations. Training modules developed by NGfL Scotland will provide additional detailed 'how to' material.

The team developing the site would be glad to hear from practitioners who want to contribute stories, examples of what has – and has not – worked, and websites they found useful.

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## Ayrshire Electronic Community



**An innovative project is providing the people of Ayrshire with both the means to access the emerging information society, and the opportunity to contribute to its development. The £2 million Ayrshire Electronic Community (AEC) project, part funded by the European Regional Development Fund and by the public sector, has already captured the imagination of local people.**

The project evolved from East Ayrshire Council's VISION programme. This recognised, at an early stage, the potential of information technology to deliver council and partner services online, and the benefits of extending access to the information age to everyone.

AEC provides residents of the priority areas of Ayrshire with learning and support centres, youth centres and public access points. With 42 centres planned, AEC will enable lifelong learning opportunities with easy online access to information and services. Access points are planned or in place in a number of public places, including community centres, libraries, doctors' surgeries, hospitals and shopping centres.

Supported by the three colleges in Ayrshire (Ayr College, Kilmarnock College and James Watt College), AEC will offer training and support in the community for the development of information technology skills. These skills are required to access jobs in the emerging knowledge economy. This approach will enable groups and individuals to access the variety of online courses that these Ayrshire colleges and others are offering. Eventually, whether your interest is economics or English, geography or genealogy, French or football; then AEC centres will provide the access and support to create the ideal learning environment close to home.

With a staff of eight and based in Ayr College East in Cumnock, AEC has already established learning and support centres in seven communities, including a youth centre. The team consists of the programme manager and administration officers, four ICT officers and two communities officers. The communities officers engage with statutory agencies, community and voluntary groups and with businesses to identify local needs and help to establish the type of facility required. A user group is formed and this group determines the running of the centre in conjunction with AEC staff. The ICT officers consult with the user group to take forward their information technology requirements and training needs. ICT officers deliver initial training in the basic functions of the hardware and software provided in the centres. A helpline has been established by AEC and staffed by ICT officers to support users and to log any faults.

AEC is building a communications hub in Cumnock to provide the connectivity between centres and AEC partners using both internet and intranet capability. The second phase of the communications implementation is to offer residents of the priority areas of Ayrshire their own e-mail address when registering as an AEC member.

Videoconferencing links are also being piloted, offering communities direct access to advice services locally. If the initial Benefits Agency link proves to be successful, then other advice services may be offered such as Learning Support, Council Tax, Welfare Rights and Inland Revenue – a virtual advice centre!

**Maureen Walker**

Programme Manager AEC



# Edinburgh's Education Network

**The City of Edinburgh Council recently celebrated the completion of a £7 million Education ICT Project, one of the most ambitious local education authority projects in the country. The broadband network now reaches all schools and community centres in the city. New council 'cybercafés' (local learning centres) have been set up and every citizen will have access to ICT training, support and information in local and accessible local centres throughout the city.**

In April 1997 an information technology strategy group was established to develop the vision of a connected education community and to turn it into reality. The strategy group, representing all sections of the education department as well as the Council's IT services, recognised the almost incredible potential of ICT in promoting new ways of learning and teaching. While clearly focused on the government's targets for ICT in schools, the group's vision was expanded to include a city-wide provision through which all citizens have access to the information superhighway and lifelong learning at over 200 locations. The group recognised that the

development of loyalty, pride and responsibility in the city and its communities is a priority for the Council. As well as this, high standards in education are necessary to promote economic competitiveness and secure social inclusion. The development of a city community learning strategy and local learning plans will ensure that relevant training and learning opportunities take place in local communities. For those people who cannot afford to have a

local volunteers.

Many centres have already identified ways of developing relevant local programmes. Several projects are also underway piloting the setting up of local grids for learning, taught and online basic skills training courses, the use of portable computers with wireless technology, using computers to promote participation in local decision-making and digital video production. These models will be used to ensure that citizens will



computer in their home, easy access to local centres will ensure that nobody is denied access to new technology and to the information and opportunities it provides.

Local community education centres throughout the city will become local access points for learning, information and services, as well as a resource that can be used by a wide variety of community groups. Servers and computers are already in centres and staff are being trained in ICT skills. Courses in the practical use of ICT in a community setting are currently being planned for full- and part-time staff and

have access to a consistent and high-quality range of opportunities to use and learn about new technology through supported drop-in sessions, workshops and tasters, formal classes, online learning, family learning, and training and support for local businesses and community groups.

Much of the infrastructure necessary to support and develop the relevant use of ICT in schools has been replicated for local centres. Each school in the city has an ICT coordinator whose role is supported with training and central back-up. The council's Community Education Service will have a lead

officer with responsibility for ICT in each area of the city. The lead officer's work will also be supported by the education department's Information Technology Support Unit (ITSU). Dedicated technical support has been allocated to both schools and to community education. Training for community education staff and teachers is being organised by ITSU. Central helplines and practical assistance with ICT resources and their use will be available to all staff.

Edinburgh is committed to ensuring that teachers and pupils in all its schools are well informed about the current and potential applications of the use of ICT and are skilled and effective in using them. However, it is not just schools that are benefiting from the Council's education ICT strategy. Every section of the community will have access to training, support and information. It is recognised that improved skills and access to information will be essential foundations of a prosperous and socially inclusive society in the twenty-first century.

Three years on from the setting out of the original vision, the broadband network is now a reality and technology continues to evolve at an incredible rate. Now more than ever, the ICT strategy group realises that the vast potential for developing learning and teaching in the city is vast. As training of staff and volunteers develops and the availability of local resources in schools and centres continues to grow, the vision and coherent strategy developed in 1997 will ensure that the whole community will be enriched by the opportunities afforded by the Education ICT Project in the city of Edinburgh.

**David Hillson**

The City of Edinburgh Council



## Click@Clacks – Digital Learning in Clackmannanshire

**'Click' is the password for a new learning centre that is at the hub of an innovative learning project currently being launched in Clackmannanshire. The centre will allow local people access to dynamic global learning opportunities, while making learning fun for everyone.**

Located in a creatively refurbished building in the centre of Alloa, Click houses a 'drop in' cybercafé, a 'Learning Plaza', a digital recording facility, a video-production and editing suite as well as over 40 high-specification computers, all linked to the internet and intranet. A key feature of Clackmannanshire's community learning strategy, which recognises the needs of learners in the twenty-first century, Click will provide the focus for a range of exciting developments taking place within the community and aims to make learning meaningful, interesting and enjoyable for all local people. The centre is being established with the support of a number of agencies, including SEED, Scottish Enterprise Forth Valley, Clackmannan College and, of course, Clackmannanshire Council.

### New concept

Click's purpose is to apply new understandings about how people learn in practical ways to the benefit of learners. The mediated use of

technology will provide an opportunity for people in Clackmannanshire to learn flexibly at their own pace, in their own time. It will encourage the development of skills that will meet specific needs, and allow customers to pursue their personal interests, to develop basic literacy or numeracy skills or to achieve formal qualifications.

The centre will provide both online and traditionally taught courses offered by centre staff, Clackmannan College and others

from a convenient town-centre location and will be linked to schools, libraries, agencies and other partners

throughout the county and beyond.

The centre is a comfortable place where people will be able to meet and chat over a coffee or read a newspaper or magazine, or else choose to be supported by centre staff in using the most up-to-date technology available for a wide range of purposes.

### Endless possibilities

The new possibilities created by Click are limitless. Users of the centre, whether individuals, schools or businesses, will be able to experience new and exciting learning experiences targeted at meeting their particular learning requirements. Right from the start, all members of the local community will be encouraged to drop in and use the centre's facilities at a time to suit them. One of these groups will be children and young people.

Jim Goodall, Head of Educational



Development says:

*One of our aims is to use the facilities in the centre as a way of making kids smarter. We believe that by providing a comfortable, stimulating learning environment, which incorporates intellectual challenge, we will encourage children to become motivated, creative and independent learners who are excited by new ideas and enthusiastic about discovery and innovation.*

### The learning process

The centre will adopt principles that have already proved highly successful in Clackmannanshire's Early Intervention strategy: children in P2 in some schools have reading ages that are currently 17 months ahead of their chronological age. Centre activities will encourage learners to generate their own understanding by engaging in activities that use visual, kinaesthetic and auditory stimuli, reinforcing what has been learned through the maximising opportunities for language exchange. The mix of formal and

informal areas and approaches within the centre and the active encouragement of mixed-age and ability groupings should provide an exciting but safe learning environment for everyone to learn, to connect their learning to what they already know and to share ideas with others.

One of the benefits of using technology is that it creates and supports truly individual learning and removes barriers and limitations on what can be learned. It also makes sharing expertise and problem solving much more manageable with online support through e-mail and real-time conversation. The centre will deploy chatrooms and other devices, including videoconferencing, to encourage peer support.

### Community approach

The challenge for CiCK is to promote a vision of learning for the twenty-first century within Clackmannanshire that is based on individual success and personal challenge for the whole community, emphasising that learning is for everyone.

The centre will promote all activities that support learning, from the creative industries and the arts, to technology and science. In Clackmannanshire it is recognised that the success of both individuals and societies is based on the ability to think independently and creatively, to thrive on change and have the ability to develop new skills as required.

CiCK will provide a model for learning that will place Clackmannanshire at the cutting edge of learning developments and benefit all local people by connecting them to a new world of learning opportunities through the creative use of ICT.

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## Training Module for Communities

**Training in the effective use of ICT for community-based learning and development practitioners is currently being developed with NGfL funding of £50,000 from the Scottish Executive.**

Although still in the planning stages, the short course will be available in three formats:

- tutor-led face-to-face training
- tutor-led online training
- self-study packs

and will cover:

- the place of ICT in the community
- the benefits of ICT in the community
- auditing current skills and resources
- assessing ICT needs
- developing a strategic plan
- writing a development plan
- ensuring sustainability of ICT programmes
- building ICT partnerships
- using ICT effectively.

The course is being developed by Learning and Teaching Scotland working in collaboration with representatives from the communities sector. It will have strong links with the 'community' channel of the NGfL web site.

By early 2001 the training materials should be available to access and use either on their own or as a module to be integrated with other practitioners' training programmes.

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# Castlemilk Connections

**Castlemilk Connections (CC) is a three-year project established by Castlemilk Economic Development Agency (CEDA) in May 1999 to promote the use of information and communications technology (ICT) within the community. The project is funded by a range of sources including the European Regional Development Fund (ERDF), Scottish Enterprise Glasgow and the Castlemilk Partnership Team (CPT).**

During the development of the project, Castlemilk Connections will implement a number of services to address the 'digital divide' by working in partnership with local community groups, small businesses and local residents.

Services currently being developed include:

- the delivery of training courses
- the provision of helpdesk and off-site support
- the distribution of internet-ready PCs throughout childcare, community groups, small businesses and community access points
- the construction of a childcare website
- the development of a community learning centre

Five local childcare organisations

have been selected for early assistance in terms of practical support and the establishment of a dedicated website [www.childcare.castlemilk.co.uk](http://www.childcare.castlemilk.co.uk), which will be launched during September 2000.

In addition to the services provided for childcare, a pilot ICT support scheme will service the needs of five community organisations and a further five local small businesses.

During this process, individuals will be encouraged to use on-line learning provided by the Glasgow Telecolleges Network. This will involve the delivery of e-commerce and European Computer Driving Licence training (ECDL). ECDL testing will also be provided within

Innovative partnership working will also feature strongly in the Castlemilk Connections approach with, for example, the development of local partnerships with housing associations to provide collaborative project approaches to meet local demand for ICT training.

To ensure information can be accessed and shared easily throughout the community, it is anticipated that a community website will be developed, acting as a portal for local organisations to develop their range of services, increase their accessibility and improve their confidence in the use of ICT as an everyday tool.

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**CASTLEMILK  
ECONOMIC  
DEVELOPMENT  
AGENCY**

a dedicated training suite, providing a one-stop shop for ICT accreditation.

It is anticipated that phase two of this development will support those 10 organisations to develop a company website supported by training and a technical helpdesk.

At a later stage in this process, 10 internet-connected PCs will be strategically located among five community venues to provide flexible access for residents wishing to develop their skills. This will become established as a locally based, easily accessible resource for the wider community.





**Connected** aims to keep readers up to date with NGfL progress and initiatives across all sectors involved with ICT and learning. Articles from the magazine will appear on the NGfL Scotland website. We hope you enjoy this issue. Please send comments, ideas or opinions to the NGfL Scotland team at Learning and Teaching Scotland.

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