



Education and Culture DG

Lifelong Learning Programme



INFORMATION AND COMMUNICATION TECHNOLOGIES

Creativity and Innovation

EUROPEAN SUCCESS STORIES



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Creativity and Innovation in learning through ICT

Successful education and training in our knowledge society depends increasingly on the confident, competent and innovative use of Information and Communication Technologies (ICT). ICT is also a powerful support tool to foster learning and teaching.

The promotion of ICT for learning is an integral part of the Lifelong Learning sectoral programmes Comenius, Erasmus, Grundtvig and Leonardo and one of the four key activities of the Transversal Programme. The role of ICT for learning and teaching, in particular to enhance creativity and innovation in people and organisations, has been highlighted by the Communication “An updated strategic framework for European cooperation in education and training”.

This brochure describes 12 excellent examples of how the European Commission promotes ICT for learning, the steady progress in the use of ICT for education and training across Europe, and the supporting role ICT plays for enhancing creativity and innovation in learning.

These 12 success stories have been selected by independent experts among more than 60 eLearning and Minerva projects as best practice examples, exploiting fully the potential of ICT for enhancing creativity and innovation in educational and training systems. Their selection is based on their outstanding contribution to enhance creativity and innovation in learning, the innovativeness of their approach, and the significant impact and sustainability of their outcomes.

Each of the twelve projects demonstrates how ICT is a valuable tool to foster the competence of being creative and innovative. Each of the twelve projects developed and supported innovative learning approaches such as the use of simulations, experiential and discovery learning, attracting drop-outs back to education, enabling learning outside the school environment and bridging the ‘digital divide’ between those with access to technologies and relevant skills, and those without.



A handwritten signature in black ink, appearing to read 'Odile Quintin'.

Odile Quintin

*Director General for Education and
Culture of the European Commission*

Creativity and innovation in learning through ICT

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Why ICT is a key driver for enhancing creativity and innovation?

Economic, technological, business and social innovation is increasingly based on and supported by ICT. In all these major areas, ICT tools have become a key lever for change. It is time for education and training to go the same way.

The recent Communication on the 'Updated Strategic Framework on European cooperation in education and training' stresses the importance of enhancing innovation and creativity at all levels of education and training. It is vital that our youngsters should develop their sense of creativity and their capacities to innovate.

New technologies therefore have a vital role, both in providing tools for creativity and innovation and in promoting organisational change. Educational systems need to become more innovation-friendly by exploiting the potential of ICT for building active communities of learning.

Creativity and innovation can be learnt and encouraged through developing specific teaching and learning methods. ICT may give the learning process new tools such as

- more dynamic interaction between students and teachers;
- encouragement of inquiry learning;
- stimulation of creativity in students and teachers;
- assistance to students in personalising and monitoring their own learning.

Substantial progress has been made in the past ...

Recent years have seen significant mobilisation and investment by national authorities and massive networking activity at European level. Access to and use of ICT-enabled learning in education and training is currently mainstreamed in most EU countries. Numerous pilot programmes and R&D results are leading to the consolidation of an increasingly professionalized community.

The European Commission has given full support to ICT for education and training from the beginning. The initial work on eLearning and Minerva at the Directorate General of Education and Culture started with the launch of the eLearning Initiative right after the Lisbon Council, and continued to the closing of the eLearning Programme in December 2006.

The eLearning programme aimed at supporting and further developing the effective use of ICT in education and training. The objective was to contribute to high-quality education and to bring the needs of the knowledge society into a lifelong learning context, as recommended under the Lisbon objectives. The budget for 2004–2006 was € 44 million, of which 45 % was directed towards the twinning and networking of schools via ICT (eTwinning).

BUT more has to happen ...

Since 2007 the actions of eLearning have been mainstreamed into the Lifelong Learning Programme, notably eTwinning in Comenius, and virtual campuses in Erasmus.



However, special efforts were required for the innovative character of eLearning and its relevance for the transformation of education and training systems now occurring in Europe. A specific Key Activity under the Transversal Programme complements ICT-enhanced learning activities and projects under the sectoral sub-programmes.

ICT for learning – Key Activity on ICT under the Lifelong Learning Programme

The EU has brought together its various educational training initiatives under a single umbrella, the Lifelong Learning Programme. With an ambitious budget of nearly € 7 billion, the new programme (2007–2013) is made up of four sectoral programmes – Comenius (schools), Erasmus (higher education), Leonardo da Vinci (vocational training) and Grundtvig (adult education) – as well as a transversal programme which focuses on policy cooperation, languages, information and communication technology (ICT) and dissemination, and the Jean Monnet

Programme to stimulate teaching, reflection and debate on the European integration process at higher education institutions world-wide.

Key Activity 3: ICT aims to harness the power of ICT to develop innovative education and training practices; improve access to lifelong learning; and help develop advanced management systems. Priorities for the key activity are set annually and the initiatives are open to any organisation or institution working directly or indirectly in those fields.

Key Activity 3 on ICT supports the following actions:

The ICT Multilateral Projects support the development of innovative ICT-based content, services, pedagogies and practices for lifelong learning. The calls from 2008–2010 focus on the following types of activity: (i) identifying and implementing innovative uses of ICT for lifelong learning, in particular for groups at risk of exclusion, and (ii) ICT as



a catalyst for innovation and creativity in lifelong learning with the aim of identifying and using ICT-enabled learning tools for fostering innovation skills such as creative problem-solving, discovery, learning by doing, experiential learning, critical thinking and creativity.

Multilateral Networks support the building of partnerships and the networking of learning communities with a view to exchanging ideas and experiences related to ICT for learning. The following types of activity may be supported by networks: (i) reinforcing the links between ICT, creativity and innovation skills, and (ii) addressing transversal issues for building links among learning communities through ICT in an innovative way.

For more information about the Key Activity 3 on ICT:

http://ec.europa.eu/education/lifelong-learning-programme/doc96_en.htm

http://eacea.ec.europa.eu/llp/ka3/key_activity_3_en.htm

http://eacea.ec.europa.eu/llp/projects/public_parts/public_part_2008_en.htm#ict

Taking stock of Minerva and eLearning programme:

<http://eacea.ec.europa.eu/static/en/elearning/index.htm>

http://eacea.ec.europa.eu/static/en/overview/minerva_overview.htm

<http://eacea.ec.europa.eu/static/Bots/docbots/TCP/Compendia/Compendia2006.htm>

http://ec.europa.eu/education/programmes/socrates/minerva/education_en.html

Information on the Education Policy around ICT for learning:

The use of ICT to support innovation and lifelong learning for all – A report on progress (Commission Staff Working Document) (9/10/2008)

Compendium of Good Practice Cases of e-Learning

Results of ICT in Lifelong Learning in Europe:

<http://elearningeuropa.info>

Act & Change – conflict resolution through cultural production

Interest in developing an online tool for creating a community theatre is at the base of this project, which promotes a new approach to combining art with distance learning and teaching technology.

The initial impulse for the project came from the work of Augusto Boal, the Brazilian theatre director and pedagogue convinced that communities and individuals can discover their own solutions to oppression and injustice by using theatre as a tool. In the safety of the theatre, the spectators can choose the best solution to try out in reality. Among the many people involved in the project were gypsies and travellers, an international group of Muslim women, Russian-speaking students living in Estonia, migrants from Maghreb, Latin America, Eastern

Europe and Sub-Saharan Africa living in Spain. Teachers and technicians from different fields worked together, learning from each other, and discovering new possibilities for using their knowledge. The project met its goal of using ICT in an unusual setting to promote change in difficult social circumstances. The outputs are available in the seven languages of the partners, plus Polish and Russian.

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WEBSITE

<http://www.actandchange.eu/>

PROJECT DURATION

2004–2006



EU-HOU – bringing interactive astronomy to the classroom

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Hands-on Universe, Europe (EU-HOU) aims to re-awaken interest in science among schoolchildren by using ICT in the study of astronomy. The project is based on real observations, some acquired by the pupils themselves in classrooms, thanks to a network of automatic telescopes operated via internet.

The concept reinforces experiential (Hands-On) learning through the practical use of real astronomical data in classrooms. The project has produced exercises for classroom use to familiarise pupils with astronomy. For each exercise – from microscopic to the grand scale of the universe – the data can be acquired online, within days of a request to dedicated observation sites in Europe and worldwide. The exercises are inspired by research activities, prepared by researchers, and adapted and tested

by teachers and educators from the partner countries. A common software has also been created to handle astronomical data in the classroom, along with multimedia tools for real-time observations. Teachers and pupils can experience the thrill of discovery via webcam systems, radio telescopes and a world-wide network of optical telescopes linked on the internet.



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WEBSITE
<http://www.euhou.net/>

PROJECT DURATION
2004–2009

e-Vocal: e-Learning for vocal/song education

Creative and innovative e-learning techniques were designed, for self-supported or tutor-supported use, to improve the quality and efficiency of education in music. DVDs and online tools were produced to enhance vocal techniques for classical singers.

e-Vocal promoted cooperation among European music schools and active participation among learners. It stimulated the use of multimedia, particularly in vocal/song education. A framework of pre-developed e-learning modules used MP3 and video learning aids such as piano accompaniments, spoken aria texts in their original language, or films of conductors, to give students the

chance to learn from performances from professionals, and to take part in simulated rehearsals. Student can practice, at home or at school, interaction with conductors, beat techniques, and the musical and linguistic/phonetic characteristics of arias.

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International (UK)

WEBSITE

<http://www.e-vocal.com>

PROJECT DURATION

2004–2007



PHOTHEREL – PHOTographic HERitage and ELearning

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PHOTHEREL urges that the digitization of photographic heritage should be more than a technical process, and should include cultural, historical and contextual framing of the image. A portal site offers the end user a tool for a “justified” digitization of photographic collections.

The PHOTHEREL project aimed at developing reflection and common practice when disseminating endangered photographic heritage. A charter developed as part of the project, and now available for wider use, insists that an image is not only an object to be “seen”, but also – and above all – an object that has to be interpreted and understood. Answers were also suggested to problems arising from interpreting the complex information structure

of visual media. Digitization should be an opportunity to reflect on new methodologies for selecting, storing, describing, analysing, and disseminating photographic heritage, and to include Europe’s culturally and linguistically diverse audience. The project promoted the use of e-learning to reach the widest audience for the methodology and the material.

PHOTographic
HERitage
ELearning



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WEBSITE

<http://www.photherel.net>

PROJECT DURATION

2004–2005

CLIM@TIC – Le Laboratoire Climatique Virtuel

Clim@tic – the Virtual Climatic Laboratory – aims to make young people aware of the problem of climatic changes and sustainable development, and to familiarize them with a scientific approach.

Co-operation was established between education and research by using a remote work environment. To increase awareness of climate change and of the role of research in understanding climatic phenomena, students are allowed to become actors in sustainable development, by assuming roles such as a journalist interviewing experts, a researcher conducting experiments in a laboratory to obtain scientific data and to formulate and check hypotheses, or as a politician or citizen making simulated deci-

sions and measuring their impact and implications on the social, economic and environmental level. The project has produced training resources for teachers as well as a media library with learning materials for pupils.

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WEBSITE

[http://climatic.inforef.be/
index.htm](http://climatic.inforef.be/index.htm)

PROJECT DURATION

2005–2007



ESMOS – Enhancing Student Mobility through Online Support

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A partnership of six universities across Europe developed, evaluated and modelled the use of Virtual Learning Environments and online technologies to support students that take part in study exchanges and/or work placements throughout the European Union.

ESMOS aimed to enhance the quality of students' experiences of mobility by providing them with high-level online support. The project took account of Web 2.0 technologies (blogs, wikis, podcasting ...), and recognised virtual mobility as an alternative to traditional 'physical' mobility. From this, the idea emerged of remodelling the support for students' mobility experience – educationally, culturally and socially. Blogging and SMS messaging, and the use of dedicated Virtual Learning Environments (VLE), were explored alongside the more traditional notion of

online student support. A model was developed for the Virtual Support of Mobility Students, including guidelines and tools to help students, academic staff, mentors and administrators in the mobility process. Case studies embedded the application of mobile technologies, online tools and VLEs into international student exchange and placement programmes.



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WEBSITE
<http://www.esmos.eu/>

PROJECT DURATION
2004–2007

eStream – Increasing the use of streaming technology in schools in Europe

eStream promotes the use of streaming technology in education in schools in Europe. The project covers technical and organisational aspects as well as usability and the didactical impact.

People intending to use or produce streaming media and similar applications for learning and teaching are the eStream project targets: teachers in primary and secondary schools, teacher trainers, educational streaming media producers and pedagogical experts. The aims are to foster the exchange of experiences and sharing of good practice, and to address educational/didactical aspects of the use of streaming media by involving end-users. Outputs include six reviews/brochures about streaming media in education and its impact upon teaching and learning, and a demo site at

the University of Patras. This displays 15 videos of science experiments produced by the project, and provides information on the theoretical background of the experiments via a dedicated website. Specific demo sites have also been set up in individual schools linked to Patras.

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Knowledge Center (SE)

WEBSITE

[http://estream.schule.at/
index.php](http://estream.schule.at/index.php)

PROJECT DURATION

2003–2006



TRIANGLE

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Sustainable dissemination of project results in e-learning quality has been promoted by the Triangle project. It focused on quality development and the creation of the European Foundation for Quality in E-Learning.

Triangle provided the environment for successfully establishing the European Foundation for Quality in E-Learning (EFQEL). The foundation aims to identify key players in quality in European e-learning, and to involve them in a European community of users and experts, so as to share experiences on how e-learning can be used to strengthen individual, organisational, local and regional development. The foundation also helped dissemination of other TRIANGLE deliverables: the European E-Learning Quality Mark (EQM) and the European E-Learning Quality Service Portal (EQUAS) which serves as a single sign-on access

point to resources related to quality. Most European networks in the field of e-learning/distance education have decided to join or cooperate with the foundation, which continues to foster debate and to promote e-learning related events.



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WEBSITE
<http://www.qualityfoundation.org/>

PROJECT DURATION
2005–2007

MuStLearnIT – Research Academic Computer Technology Institute

MuStLearnIT targets primary schools in Europe operating under special conditions, such as multigrade and remote schools, where a few teachers (perhaps even just one) are responsible for teaching a small number of pupils of different ages and grades.

The major objective was to design, develop and apply an integrated distance-learning model, to help teachers in multigrade primary schools through sharing resources (notably staff, both local and remote) by taking full advantage of technical infrastructure. Remote multigrade schools were connected with regular, “central” supporting schools, mostly in the same region, allowing teachers there to “tele-include” some pupils of the remote multigrade school in their regular classes. The model is supported by ICT and is applied in synchronous

and asynchronous modes using videoconferencing and other Computer Supported Collaborative Learning tools and specially designed educational activities based on appropriate educational software. MuStLearnIT brings together expertise from educational institutions, educational technology experts, educational administrators and – most importantly – schools that require support in offering better educational conditions to their pupils.



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WEBSITE

<http://mustlearnit.cti.gr>

PROJECT DURATION

2005–2007



Art-Net – teaching arts through e-learning

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Sharing good practice in art teaching through e-learning was not the only achievement of Art-Net. It also permitted the review of teaching material, and setting benchmarks and best practice solutions in the schools involved.

The central objective of Art-Net was to promote the sharing of art teaching sources. It collected, compared and reviewed e-learning-based art teaching material, experiences and solutions, and identified the best tools. At the same time, it created a portal allowing constant sharing of further e-learning-based material, and giving access to a database of sources of art courses and teaching resources validated by art teachers with the support of art experts. The portal also gives access to practical tools

and tutorials for producing e-learning-based art courses. In addition, Art-Net developed guidelines for producing e-learning courses and for national reports on e-learning for art teaching in European schools.



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Kompetansmegleren (NO)

WEBSITE

<http://www.elearning-art.net>

PROJECT DURATION

2004–2006

LEPLA – Learning Environment for Physics Laboratory Activities

The objective of LEPLA was to develop an innovative learning environment based on ICT, multimedia educational material and handheld technology to support and promote activities in school and university physics laboratories. Several experiments resulting from the project can now be used all over Europe.

An internet-based public resource has been created by LEPLA, with a set of experimental modules including multimedia learning material, downloadable computing procedures, programmes and sets of exemplary experimental data. These can be used together with inexpensive small-scale portable experimental set-ups and a CD-ROM version for stand-alone usage in physics teaching. Practical testing and teachers' training activities were developed using the material, and the approach was disseminated within the educational community through a forum and a trans-national cooperation network. The network also promoted the exchange of experience in experimental

physics teaching and educational uses of information technology. The main targets of the project were teachers and students at secondary school and undergraduate level in contexts where experimental activities are absent or difficult to implement using traditional methods.

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WEBSITE

<http://www.lepla.edu.pl/>

PROJECT DURATION

2002–2005



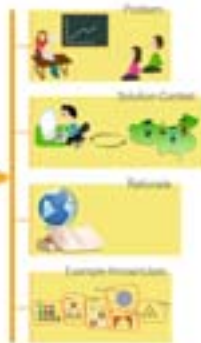
TELL: Towards Effective network supported coLLaborative learning activities

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The creation of a conceptual framework for evaluating network-supported collaborative learning (NSCL) activities was at the heart of the TELL project. Five case studies in school environments verified the framework and the development of a design pattern language for NSCL.

TELL helped understand the learning process in NSCL process environments. It also made a meta-study of methods and tools that measure the effectiveness of the NSCL process, and supported the design of new effective technological tools for collaborative learning. The emphasis was on the pedagogical and didactical approach of NSCL, in which learners and teachers engage in the co-construction of usable knowledge and in the

sharing of experience. A set of design patterns created by the project provided a way of representing key aspects of NSCL, permitting easier capture and transfer of effective pedagogical approaches. These design patterns were stored in a repository that evolved even after the end of the project funding.



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PROJECT DURATION
2004–2005

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For further information, please visit the following website of the Lifelong Learning Programme:

<http://ec.europa.eu/llp>

