

## COMPARATIVE STUDY

### “Improvement of National Schoolnets in Europe”

**Socrates Accompanying Measures**

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## 1. Reports

The following paper deals with the assessed reports of all project partners. The reports are summarized, the full papers can be found on the project website<sup>1</sup>. To allow an easy and efficient comparison of Schoolnets, the reports were structured similar, due to the criteria which were mentioned in the catalogue. This catalogue also can be found in **Annex 1**. Each of the reports starts with the country-specific Schoolnet(s) and policies. It furthermore shows the content of the Schoolnet, reasons for Schoolnets, the role of Schoolnets in schools, organizational and financial aspects, ICT in schools and their research measures. It finishes with different examples of Schoolnets in the different countries.

Due the similar opinion on the definition and interpretation of "Schoolnet", this issue was skipped in the summarized reports. The understanding of the term "Schoolnet" can mainly be defined as it was mentioned in chapter "Schoolnets: Definition of Schoolnets" in the project publication which can be found electronically on the project website.

Because of the comparable results, the issues "target group", "stakeholders" and "examples for European Schoolnet" are not mentioned in the following summary of the reports. Nearly every partner mentioned "schools", "teachers", "learners", "educational head teachers and support staff" and "parents" as common target groups. Frequent stakeholders are "learners", "teachers and support staff" or "administrative personal". The network which is available under <http://www.eun.org>, the several sub-portals of this network and <http://www.elearningeuropa.info> are the most known EU-wide educational networks.

Having a detailed look on the summarised reports it should also be concerned that the point of view of the authors are different: beneath university staff, also teachers or Schoolnetwork administrators completed the catalogue of questions. The result is that on one hand that the quality of the reports varies, on the other hand different aspects of each issue were mentioned.

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<sup>1</sup> See <http://www.eu-ripides.net>.

## 1.1 Bulgaria

The general concept of the Bulgarian Schoolnet is provided in the National Strategy of ICT in Bulgarian secondary education based on the programs of the government for achieving the goals of the EC Lisbon strategy. It defines the concept of a National Education Network (NEN). It is to connect schools, the management centre of NEN and other information networks.

The following paragraphs give a summarised outline of the Bulgarian report.

### **Schoolnet and policy**

The policy of the Bulgarian government, as far as this matter is concerned, is in compliance with the Lisbon strategy adopted by the European Union, with its fundamental goal of becoming the world's most competitive knowledge based economy. This implies consistent efforts for further development and improvement of education by means of broader distribution of information and communication technologies (ICT) in schools and their efficient usage in the learning process, by students, teachers and administrators.

In order to carry out the implementation and to contribute to the introduction of ICT in education, the European Commission adopted an eLearning Action Plan.

The main components of this action plan, also included in the National strategy for implementation of ICT in Bulgarian schools, are the following:

- Training courses for teacher to use digital technologies.
- Elaboration of European educational services and software.
- Acceleration of the construction of an integrated academic network, servicing schools, teachers and students.

There have been developed specific training guidelines like Training for increasing the qualification and re-qualification. Furthermore group activities included in the National Strategy for implementation of ICT in Bulgarian schools.

The main goal of the strategy is the effective use of modern ICT for increasing the quality of education, improvement of the educational contents and introduction of innovative educational technologies and methods in the teaching process.

In addition a dozen of secondary objectives have been defined. Examples for these secondary objectives are:

- Improving the teachers' skills for using the ITC for teaching purposes,
- Providing a quality educational system, based on the good traditions of the Bulgarian educational system and the European Community experience or

- Co-operation on European level in the development and exchange of innovative programmes, methodologies and training materials, as well as sharing of good practice;

### **“Reasons” for Schoolnets**

On the question for the reason for having Schoolnets the project partner mentioned “to contribute to the overall development of education by providing user-friendly environment for cooperation, information and experience exchange among teachers, students, educational decision-makers, which will greatly facilitate the progress of Bulgarian schools towards achieving the goals stated in the Lisbon strategy of EU”.

### **Schoolnet content**

The national network which is planned to be developed will contain an educational portal, which will offer developed curricula, teaching programs, different lessons, etc., including educational software, created by both teachers and students, which will be a learning aid during the study process on different subjects. In the beginning some representatives of Bulgarian schools will participate and it is planned to increase their number. The portal will provide information and different possibilities for exchange of opinions, ideas and experience of teachers and students.

It is planned to develop educational portals, platforms for distance learning and educational content for all subjects, local software platforms, multimedia contents and learning modules.

### **Schoolnets in schools**

It is planned to implement on different levels measures to establish Schoolnets for Bulgarian Schools. The administrations of the different schools should be able to exchange information. Furthermore the strategy of the National Educational Network includes specific measures to bring Schoolnets into schools.

### **Organizational and financial aspects**

The Ministry of Transport and Communication is responsible for the computerization of schools, the Ministry of Education and Science takes care of legal and educational aspects. A Center for ICT in education has already been established for implementing the national strategy, there is also the National pedagogical center and 28 Regional pedagogical centers ICT in Schools. Presently there are no detailed financial data of the Bulgarian Schoolnet available but projected expenditures of ICT in Bulgarian Schools as well as to establish a nationwide Schoolnet are available in the e-Bulgaria report<sup>2</sup>.

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<sup>2</sup> <http://www.bulgaria-gateway.org/ebulgaria/e-bg2004/index.htm>

## **ICT in Schools**

As far as use of ICT in schools is concerned some progress has been made but there are still problems implementing these technologies. The present ratio is 1.3 modern computers per 100 students, the number of Internet-connected schools is small. In 2004 computers for the equipment of 100 computer classrooms was bought, the E-Bulgaria initiative provided funds for computerization of 750 more schools. No considerable investments were made for teacher training so far, there is still no centralized national school network, several local networks were established, only two subjects are on secondary education curricula centred on IT – informatics for 10th grade, information technologies for 9th and 10th grade. Practically ICT are not applied in the teaching of general subjects.

## **Research**

The Schoolnet is still under construction and because of this the Bulgarian Report does not contain any information on research activities concerning the issue of Schoolnets. As mentioned before the Bulgarian System has figures and facts of the educational use of ICT in schools.

## **Examples**

There have been already implemented a few decentralized Schoolnets e.g. a local Schoolnet in Varna<sup>3</sup> but the national Schoolnet is in the process of planning.

## **References**

Further references concerning the Bulgarian educational system can be found under following online resources:

State Agency for Child Protection, <http://www.sacp.government.bg/>; <http://cis-sacp.government.bg/sacp/CIS/index.htm>

ARC Fund, <http://www.bulgaria-gateway.org/ebulgaria/e-bg2004/index.htm> - E-Bulgaria report

Bulgarian Ministry of Education and Science,  
[http://www.minedu.government.bg/opencms/export/sites/mon/left\\_menu/documents/strategies/strategia\\_ikt.pdf](http://www.minedu.government.bg/opencms/export/sites/mon/left_menu/documents/strategies/strategia_ikt.pdf) - National strategy for implementation of ICT in Bulgarian schools

Ministry of Transport, <http://www.mtc.government.bg>

<http://www.npc-bg.com>

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<sup>3</sup> For further details see URL: <http://www.varna.bg>.

## 1.2 Denmark

Sektornet is the complete network solution for the entire educational sector in Denmark. Originally focus was on administrative application, education only was an option. In the process of establishing Sektornet application philosophy changed and education became predominant.

The following paragraphs give a summarised outline of the Danish report.

### **Schoolnet and policy**

Due to opinion of decision makers ICT should be central module in the educational system as a whole. The government will assure that ICT is also extensively integrated into teaching so that pupils, students and teachers learn how to use state-of -the-art communication technology, a vital prerequisite for getting on in an international world. The technology should be integrated into curricula at every stage and utilized at every relevant level. Increased use of ITC in education can contribute to extended professionalism and higher standards. Knowledge and mastery of ICT as a familiar tool will provide children and teenagers with best qualifications in working life and future society.

Main objectives:

Institutions should be connected to the Internet as well as to each other, to ensure safe exchange of confidential data security was a crucial issue, to enable access to relevant services on the network. Schools with network connection were therefore offered free access to a large number of services (most important were: SkoleKom, Web-hotel, Mail\*Hub, DNS). This was efficiently supported and with access to help from a CERT function, if needed.

The goal was ICT integration in administration and education. The process was completed in three stages - establishment of infrastructure, qualification, application. Developing Sektornet comprised the first stage. These facts underline important role of ICT in the Danish educational system.

### **“Reasons” for Schoolnets**

The detailed Danish report does not refer to this question on observing the objectives and contents of the Danish Schoolnets. It became clear that the aim is to achieve synergies like ensuring safe exchange of data with the help of Schoolnets.

### **Schoolnet content**

Sektornet, the Danish Schoolnet is an overall solution with a multitude of services for schools and users. In addition a large number of services have been developed to meet users` demands like:

Skolekom is a nationwide mail and conferencing system for teachers and students on secondary level.

- **The Toolbox**, a fairly new service, provides information about and administration of a school`s Sektornet connection including security, operation and surveillance.
- **EMU**, an ambitious portal project, to establish singular access to the educational field divided into levelled universes (e.g. basic, upper secondary) with numerous cross-reference areas e.g. web ethics. Presently EMU is among the 25 most frequently visited web sites in Denmark.
- **person.emu.dk** is a server providing free web sites for teachers/students having access to SkoleKom.
- **SkoDa** is the Database Service of Schools, a subscription service with approx. 2,400 schools registered.
- **FIG**, Special-Subject Infoguide offers quality-controlled links to web sites useful in education.
- **Sektornet VPN** provides safe connection between teachers` home PCs to closed networks of schools.

### **Schoolnets in schools**

Universities only use Sektornet to a limited extent and only for administrative purposes. For education and research a Research Network is used. Teachers` training colleges use it for both, vocational schools mostly exchange data safely via Sektornet, in upper secondary and primary schools educational applications are used to a very high extent. But Sektornet is increasingly privately used for exchanging programs, download of films and music, chat, which is not Sektornet`s principal purpose. To enable schools to check illegal use specified router filters have been developed thus reducing unwanted traffic by 50%.

### **Organizational and financial aspects**

UNI-C, a department of the Danish Ministry of Education, runs the Sektornet and organizes connections, development and support.

The Sektornet unit at UNI-C has the responsibility of sales of connections to the net, and also the responsibility of co-ordinating delivery, development and support.

In the course of time Sektornet has become more integrated in the general organization of UNI-C, and sales have been distributed on four different sales groups, each of them responsible for an individual school segment. The responsibility for technical operation, including responsibility for configuration of routers, is at UNI-C.

All in all, the total of the state subsidies for the Sektornet is approx. DKK 480m. The financing of Sektornet has already completed the establishment

phase and the state subsidies are decreasing rather quickly.<sup>4</sup>

### **ICT in Schools**

The student/computer ratio fell to six in 2003, in 2002 the student/Internet access ratio was nine against 18 in 1999. In 2004 17 per cent of the population had used the Internet monthly for education and training. The number of computer driving licences, the Danish "PC-kørekort" has increased to about 234,500 in 2004. This is an internationally recognised licence and comprises training in seven different computer skills. In cooperation with Dansk IT the Ministry of Education issues a computer driving licence for teachers. It is aimed at teachers at different levels of education, about 43,000 have been issued in 2004.

### **Research**

Research measures have been implemented. The Danish report refers to various publications:

- Sektornet, the Danish School Network, UNI-C 2003, By Kurt Bøge
- Information and Communication Technologies in the Education System, Action plan for 1998-2003, The Ministry of Education 1998, <http://eng.uvm.dk//publications/10InformationCom/1.htm>
- Information and Communication Technologies in the Danish School System  
A State of Art Evaluation in 6 Areas of Government Action, The Danish Ministry of Education 1997, By Sigmund Lieberg, Nasjonalt læremiddelcenter in Norway and Jeff Morgan, National Council of Educational Technology in UK, <http://eng.uvm.dk//publications/14ict/>
- Figures on the Danish Information Society 2005 - Danish Figures, Statistics Denmark 2005, [http://www.dst.dk/HomeUK/Statistics/ofs/Publications/KFICT\\_DK.aspx](http://www.dst.dk/HomeUK/Statistics/ofs/Publications/KFICT_DK.aspx)

### **Examples**

Some examples of the Sektornet Schoolnet can be found under the following websites:

**Skolekom**, <http://www.skolekom.dk>

The SkoleKom is without comparison the largest and most important service. The SkoleKom is a nationwide mail and conferencing system for teachers and students below university level in Denmark. The service is included in the Sektornet package, but is not limited to this. At present there are approximately 600.000 registered users, 60.000 closed conferences and approximately 2.000 open conferences. Perhaps more important, is that the

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<sup>4</sup> For detailed figures please refer to the main report.

registered users are active, and there is considerable activity in the conferences.

**EMU**, <http://www.emu.dk/>

The EMU (electronic meeting place for the educational world) is an ambitious portal project. The idea is to establish one access to the entire educational world. As the educational world comprises teachers and students of many different categories of education, the EMU is divided into universes; for instance a basic school universe and an upper secondary school universe. Across these universes there can be themes and events. An example of a cross-universal theme is 'web ethics'. Via the EMU there is an access to the services that are available to the educational world, including Sektornet's services.

At present the EMU is among the 25 most frequently visited web sites in Denmark.

**<http://www.person.emu.dk>**

person.emu.dk is a server, offering a free web site to teachers and students. The only requirement is that they also have access to the SkoleKom.

**<http://skoda.emu.dk/>**

The SkoDa is the short form for the Database Service of Schools in Denmark. It is a basic collection of databases, which can be used in education by teachers and students. The SkoDa is a subscription service, and at present approximately 2.400 schools are registered.

## **References**

Further references concerning the Danish educational system can be found under following online resources:

Sektornet, The Danish School Network, UNI-C 2003 by Kurt Bøge

The Ministry of Education, <http://eng.uvm.dk//publications/10InformationCom/1.htm>  
Information and Communication Technologies in the Education System, Action plan for 1998-2003

National Council of Educational Technology in UK, <http://eng.uvm.dk//publications/14ict/>  
Information and Communication Technologies in the Danish School System, A State of Art Evaluation in 6 Areas of Government Action, The Danish Ministry of Education 1997, By Sigmund Lieberg, Nasjonalt læremiddelcenter in Norway and Jeff Morgan

Statistics Denmark 2005,  
[http://www.dst.dk/HomeUK/Statistics/ofs/Publications/KFICT\\_DK.aspx](http://www.dst.dk/HomeUK/Statistics/ofs/Publications/KFICT_DK.aspx), Figures on the Danish Information Society 2005 - Danish Figures

The Danish Ministry of Education, <http://eng.uvm.dk//publications/engonline.htm>, Online Publications

UNI-C, [www.uni-c.dk](http://www.uni-c.dk)

Sektornet, [www.sektornet.dk](http://www.sektornet.dk)

### 1.3 France

Education opinion leaders see schoolnetworks as a tool for establishing electronic connection between schools and pupils improving teaching and learning.

The following paragraphs give a summarised outline of the French report.

#### **Schoolnet and policy**

Together with the Ministry for Research and Technology (MENRT) since 1995 education programmes have been carried out focusing on developing the use of communication and information technologies (ICT) in schools and universities.

Objectives are enabling pupils/students to make extended use of ICT in technical, cultural and economic environments and provide effective training initiated by curricula reform. To achieve these goals **PAGSI** (governmental information agency) and **S3IT** (strategic diagram of telecommunication and information systems) were founded, **DUI** (department for the use of Internet) and **SDTICE** (sub-directorate for ICT-use) have launched numerous programs and projects (e.g. "digital resources for school and higher education teaching", "use of ICT in teaching", "ICT quality/security").

Government initiatives further included increased pupil/computer ratio, providing free web site access, increasing number of ICT experts in schools, ICT pilot projects in 1500 schools, colleges, universities, creating B2i5 providing portable digital sets for education authorities and inspectors, permanent surveying and upgrading of materials.

#### **“Reasons” for Schoolnets**

The French Schoolnets were developed under the purpose of transforming data into a powerful tool to improve teaching and learning, to improve the education system and to help districts, educators and students.

#### **Schoolnet content**

Schoolnets are designed for administrative services, teaching activities (e.g. course preparation, electronic office, ICT pedagogy, information exchange, improved educational communication), education authorities (statistical analysis, concepts, evaluation, pilot projects) and pupils/students (creative activities, subject-related data banks, virtual sightseeing etc.). Consequently they offer audio-visual resources, multimedia functions, e-learning applications, web-lists, server access, learning programs, games and a wide range of digital materials.

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<sup>5</sup> B2i: Data-processing and Internet Patent,  
<http://bd.educnet.education.fr/B2j>

### **Schoolnets in schools**

Primary and secondary schools use the ICT in 5 areas of activities:

- To exchange, communicate, collaborate, cooperate
- To produce, create, publish
- To search for documents
- To form themselves, for self training,
- To animate, organise, lead

Pupils have access to software for:

- Office applications
- Learning
- Game-based applications

### **Organizational and financial aspects**

The head office of technology organizes many conferences and seminars, requests studies and reports/ratios, orders tools of accompaniment for projects concerning ICTE in universities. In addition, the ministry for education is very present in two other fields:

- digital resources for teaching
- research on educational use

In addition to this the ministry clearly identified legislation and laws which can block the generalization of the use of the ICT:

- The statute of the educational researchers of higher education;
- The creation of operations by public agents.

Concerning the financing of Schoolnets the state grants subsidies within the framework for specific experimental projects.

Some examples of financing:

- Attribution of 9,15 ME to the University IUFM Institutes of Training of the Masters
- 12,12 ME for the creation of Campus "numériques" 20,58 ME for the creation of a innovating network, audio-visual and multi-media equipment to support the co-operation between the companies and the public research teams in the field of audio-visual and multi-media at school.
- In the year 2000 15,25 ME were spent to start C-Source. State and private investors support young companies in the educational, multi-media sector (as share holders).

Also several companies and associations like ALCATEL, APPLE, IBM, INTEL,

MICROSOFT FRANCE etc. decided to contribute to the achievement to the objective.<sup>6</sup>

### **ICT in Schools**

In the French educational system ICT is used at every stage. Following list indicates some examples:

Primary education: Interesting lesson profiles, courses (e.g. Charlemagne and Carolingian Empire, Creating a sound landscape, Kidsmart: Forms and positions, creating a comic strip, Internet site - Local Inheritance, Cartography).

Higher education: Digital university (UMVF - Virtual Medical University, UNT - Engineering), Digital Campuses (Open Universities).

### **Research**

Research activities focussed on digital equipment in schools, use of ICT in class, eLearning and costs, digital documentation, network application and cultural changes caused by ICT education.

User-related investigation<sup>7</sup> revealed that ICT technologies gain ground, 49% of pupils (6 - 14) and almost 100% of students above 15 use PCs in school, 75% have access to Internet. Half of them use electronic communication at least once a week, 92% use it for classwork, 73% for information. At home 15-19 year olds mostly play games (75%) and listen to music (53%).

Further examples of studies, research and inquiries can be found under following websites:

<http://www.ac-poitiers.fr/1prof-1micro/>

<http://www.educnet.education.fr/aiedu/guide-charte.htm>

<http://www.educnet.education.fr/dossier/manuel/> Digital Handbook)

### **Examples**

- <http://www.educnet.education.fr/documentation> (index)
- <http://bd.educnet.education.fr/urtic/primICTE/> - ICT for primary education
- <http://www.educasour.education.fr> – Educasource (digital teaching)
- <http://www.educasup.education.fr> – Educasup (multimedia)
- <http://www.cerimes.education.fr> + <http://www.legamedia.education.fr> + <http://www.univ-enligne.prd.fr> (multimedia/universities)

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<sup>6</sup> A full list of all supporting companies and associations can be found in the main report.

<sup>7</sup> INSEE 2002, <http://www.insee.fr>

- <http://www.formasup.education.fr> - eLearning
- <http://www.sciences.gouv.fr> <http://www.lamap.fr> (science teaching/primary level)
- <http://www.conso.net> <http://www.orme-multimedia.org>

### **References**

Further references concerning the French educational system can be found under following online resources:

Ministry of Education, [www.education.gouv.fr](http://www.education.gouv.fr)

Educnet, [www.educnet.education.fr](http://www.educnet.education.fr)

Ministry of Education, [www.science.gouv.fr](http://www.science.gouv.fr)

Ministry of Education, [www.formasup.education.fr](http://www.formasup.education.fr)

Gate of applied e-learning and digital campuses, <http://www.conso.net>

Gate of consumption, <http://www.lamap.fr>

The site the "hand with the paste" is intended to help teaching, formative, scientific and institutional to set up a teaching of sciences of quality at primary school level, <http://www.orme-multimedia.org>

## 1.4 Hungary

The Hungarian Schoolnet is named "Sulinet" and is an educational initiative implemented by the Education Ministry of the Hungarian Government.

The following paragraphs give a summarised outline of the Hungarian report.

### **Schoolnet and policy**

Sulinet is a government initiative, it was launched in 1996, extensively developed in 2003 with main objectives of providing schools with Internet connection and computer labs, supporting teachers with structured teaching materials, organising teacher training and courses for students/system administrators. Content development climaxed in Sulinet Digital Knowledge Base thus creating a digital curriculum covering the national core curriculum of secondary level 7-12. To use the interactive, multi-media based portal the government infrastructure project is to provide all elementary schools with Internet and broadband connection. Furthermore the Ministry of Education plans to use schoolnets to determine effective educational policy in the field of ICT for quality improvements in general and professional education.

### **"Reasons" for Schoolnets**

To success of future development depends to a high extent also on Schoolnets. Schoolnets offer a large scale of opportunities for various activities for learners and their supporting staff. Schools easily can have a cheap access to the World Wide Web (Sulinet provides the structure) and teachers are to be more familiarized with educational use of ICT in various subjects. Schoolnets also provide equal opportunities for all learners which have access to the Internet.

### **Schoolnet content**

Interactive network systems philosophy and traditional forms of education support of teaching and learning, creating a communication forum and simply fun are to be combined. Users (teachers/students/parents) get access to enormous amounts of information (at present several terabytes). All institutions involved are offered up-to-date information and essential data for everyday work and life. So it presents the promising opportunity of a cyber-communication space supporting the continually changing decentralized education system. Teachers and students of 2000 participating institutions have their personal e-mail accounts enabling them to communicate by text and picture, joining mailing lists, select from various newsletters or create Web sites. The basis for effective Virtual Learning Environments and a LMS<sup>8</sup> is also provided by the Sulinet network.

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<sup>8</sup> Learning Management System

### **Schoolnets in schools**

Schoolnet services are extensively used with 8400 visitors of education area, 5400 subscribers of the weekly newsletter and 4000 users of the new freemail service. Interactive applications like forums, on-line games or chat-channels are popular. Future plans focus on linking all schools to Sulinet, continuous development of connection speed, e-book, eLearning, increased interactivity. Numerous particular services include an introduction to national parks, the ministry`s online page "In higher education" with a search machine for universities/colleges, Internet university preparation course, mailing lists of teachers, online coaching, Hungarian poets gallery, subject-related practice sheets/exercises with answer keys/reading lists, Chatorna, the chat channel, voting machine, interactive games. The Education Subportal is the most widely used with 40,000 enquirers per month. Its structural backbone are 11 curricular and 2 knowledge sections covering most subject areas supporting students for classwork and entrance exams at universities. It has impressively caught up with paper-based educational tools. The Languages Column section developed a data bank for foreign language teaching including Internet materials and digital lesson plans (currently English, German, Spanish, French), Sulinet Interactive Test Machine contains about 2500 tests with answer keys (English only), there are e-books for vocabulary development, interesting" fun pages". There is a News column, international language websites in a regular slot, user competitions (e.g. Newsweek translation competition). The Mathematics section offers a database of digital exercises and regularly presents useful educational animations, student motivation is enhanced by competitions. The Geography section offers animations and interactive elements particularly to demonstrate dynamic processes like continent expansion, atmospheric circulation and volcanic eruption. The Students Subportal is the second most visited site providing users with information about a wide range of free time activities and entertainment. There is a special Motion Picture section, Music section, "What to do" providing info about scholarships/courses, "Bits and Pieces" listing scientific and technological novelties, especially girls might go in for Lifestyle. The Message illustrates school life, schoolpapers and web pages. Teachers Subportal offers Digital Pedagogy, there is the Educational Research section, planning of extra-curricular activities is supported, Interactive Teacher Site supports keeping in touch online. Parents Subportal offers substantial material related to education, the School Database lists public educational institutions, there is the Register of Private Schools and Family Database informing about social criteria.

### **Organizational and financial aspects**

Sulinet network is organised by a program office of the Hungarian government. It is financed by the Ministry of Education. The connections to industry and others are to be developed in the future that schools and other educational organisations benefit.

### **ICT in Schools**

Hungarian schools mostly connect ICT as technological tool, not as a teaching or learning approach. Since a national government initiative ICT has been implemented as an individual subject since 1997 in Hungarian Primary and Secondary Schools. Interdisciplinary use of ICT in public schools is quite unusual because in most cases there is a lack of appropriate equipment (hardware and software), but the standard of quality has been improved during the last years.

### **Research**

Many research activities about "ICT in education", "Educational Policy" have been implemented in Hungary. Specific research programs about schoolnets could not be found in any form.

### **Examples**

Sulinet, <http://www.sulinet.hu> (from this site all sub-portals of Sulinet are accessible)

### **References**

Further references concerning the Hungarian educational system can be found under following online resources:

ENIS, European Network of Innovative Schools, <http://enis.eun.org/>

Magyar Innovatív Iskolahálózat (Hungarian Innovative Schoolnet), <http://www.hkt2000.hu/>

ESP (Education Sponsorship Programme), <http://bocs.hu/esp.html>

## 1.5 Italy

The Italian ICT-based schoolnet version is INDIRE<sup>9</sup> – blending eLearning with online activities mainly offering structured education material and advanced communication tools.

The following paragraphs give a summarised outline of the Italian report.

### **Schoolnet and policy**

Schoolnet policy in Italy focuses on ICT availability across all sectors of public and private life. This has profoundly changed education and teaching. Thus a transnational knowledge area is to be set up to demonstrate the significance of schoolnets across the European Union, to create a digitally literate Europe. Connecting users, providing access to resources and World Wide Web will eventually result in better teaching and learning opportunities, sharing experience, online discussion. Connecting schools can add significantly to teachers` professional standards and children`s learning in order to raise educational standards.

### **“Reasons” for Schoolnets**

New technologies have entered the field of schools all over Europe. In the traditional educational sector many shiftings are carried out concerning the role and the functions of the involved institutions and subjects.

There is a requirement for an interface to new technologies that makes the innovative use more effectively, in order to support needs, educational or not, concerning what happens inside of schools and in the society as a whole.

To support all needs it is necessary to create a net of connections on an European level in order to act as a meeting point and to exchange educational experiences occurred in the EU.

### **Schoolnet content**

Main uses are communicating information, sharing resources and providing educational material. Additionally teacher training, didactic innovation, research activities, file sharing, international exchange, online registration information are increasingly effective. Italian schoolnets are mostly state-funded, occasionally sponsored by private companies and international institutions.

### **Schoolnets in schools**

Schoolnet cures the development of activities like collection, elaboration, valorisation and spreading of information as well as the production of a documentation to support the didactic innovation and autonomy. It supports

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<sup>9</sup> See <http://www.indire.it>

the development and the spread of information technologies and furthermore the documentation and communication in schools. Schoolnet is a useful tool for schools. In fact they use it to inform, to inquire, to search and to plan.

### **Organizational and financial aspects**

The Schoolnet is promoted by the National Institute of Documentation for the Innovation and Educational Search (INDIRE) and by its students, teachers, leaders and schools. Vocational training is up to date concerning the innovations in the educational field.

To fulfil their tasks Schoolnets are supplied by

- Ordinary contributions from the state
- Eventual extraordinary contributions from the state
- Eventual contributions and allocations from domains of subjects, from private or public, Italian or foreign agencies
- Eventual other incomes, deriving from activities that are coherent with their aims

### **ICT in Schoolnet**

The Italian education is in a phase of rapid change. The reform of shifting has been realized with innovative techniques like information and communication technologies.

If we do not pay enough attention on the development of computer science technologies in education, we will find ourself on the last place in the European context. The MIT highlights that the computer / pupils ratio was 1:28 in 2001 and 1: 10,9 in 2004.

The Eurydice report 2004 points out that the computerization rate in Italian schools is turned out clearly better than the average of European schools. The same report attributes Italy a medium of 1 computer per 10,9 students, which is quite good toward the fixed European relationship of 1: 20.

### **Research**

In 2004 a research was carried out in order to analyse the scholastic computerization rate of the last years.

The results preview a comparison in scholastic computer science structures of different countries, based on 35 pointers, subdivided in 5 sub categories: Context, structures and organisation, equipment, teachers, processes.

### **Examples**

<http://etwinning.indire.it> - Italian version of the European etwinning initiative

<http://www.istruzione.it> - Ministry of Education site, information, research.

<http://www.invalsi.it> - research project

<http://puntoeduri.indire.it> - communication portal for didactic, best practice, experience exchange.

<http://www.bdp.it/eda/> - adult education site.

### **References**

In the main report no references were mentioned.

## 1.6 Latvia

The core of Schoolnets is The Latvian Education Informatization project, **LIIS**<sup>10</sup> covers the whole information grid: education content, management, information services, infrastructure and user training at several levels - schools, school boards, Ministry of Education and Science<sup>11</sup>. LIIS also coordinates the Latvian eTwinning programme<sup>12</sup>, an EC-initiated program for schools.

The following paragraphs give a summarised outline of the Latvian report.

### **Schoolnet and policy**

The Latvian Schoolnet It is regarded an efficient tool to be used by teachers, students, parents providing information, teaching materials, pedagogical applications. Networking promotes cooperation among schools to reach common goals. Also computer science teaching programs have been designed. More details about this program can be accessed on <http://informatika.liis.lv/>. For teaching ICT skills teachers have to pass European Computer Driving Licence (ECDL) tests.<sup>13</sup>

Additionally within LIIS school management applications have been designed, so called data register containing continuously updated information about staff and students with only authorized users. LIIS is coordinated by the University of Latvia. Approx.500 experts were involved developing programs. The project is state funded, use of materials is free, and websites are maintained by various institutions.

### **“Reasons” for Schoolnets**

Since the beginnings of LIIS in 1997, information about LIIS has been spread in schools. Numerous publications were released. Information was broadcasted on radio and TV in Latvia and abroad.<sup>14</sup>

Each institution, which is according its initiative, develops and maintains schoolnet homepages as well as disseminates information about them.

### **Schoolnet content**

Referring to the ICT promotion in Latvia the Schoolnet include:

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<sup>10</sup> LIIS, <http://www.liis.lv>

<sup>11</sup> Ministry of Education and Science, <http://www.izm.gov.lv>

<sup>12</sup> eTwinning, <http://www.etwinning.net>

<sup>13</sup> ECDL, <http://www.ecdl.com>, <http://www.ecdl.lv>

<sup>14</sup> <http://rex.liis.lv/liis/vesture.nsf/main!OpenView>

- infrastructure (computers, servers, local networks, Internet connection) - in each school there is at least one classroom equipped with 6 interconnected computers, each school has Internet access, net-fastness is being upgraded,
- virtual network of schools is based on ICT infrastructure, there is no single, centralized education portal. Numerous specialized homepages, portals providing specific education material, homepages of educational institutions constitute this extensive virtual network,
- within the LIIS framework a school management application has been developed. With the help of this application information about teachers and students has been collected, creating the so called data register. Each educational institution of Latvia provides the Ministry of Education and Science with updated information about teachers and students using a common data base. This way the Ministry is always able to operate with the most updated information about the situation in the educational institutions. Only authorized persons have access to these data.

Furthermore included is a large document library for educational resources, school projects, discussion forums, software as well as the Schoolnet offers also training activities.

### **Schoolnets in schools**

Schoolnets encourage the possibilities offered by ICT for teaching different subjects. This possibilities concern not only informatics, but also languages, physics, chemistry, etc.

Through Schoolnets every school of Latvia has equal access to qualitative, free of charge teaching and methodological materials, applications and information. In this way the gap between urban and rural schools is covered. LIIS also pays attention to numerous ways to develop the abilities of talented students by offering advanced level exercises and supplementary materials.

### **Organizational and financial aspects**

LIIS is coordinated by the University of Latvia. Approx. 500 experts were involved developing programs. The project is state funded, use of materials is free, and homepages are maintained by various institutions.

LIIS is a state funded project. All developed materials resulting from the LIIS project, are accessible free of charge. Each institution, which is according its own initiative and which develops and maintains Schoolnet websites is responsible for its funding source. In the moment the Latvian Schoolnet is in a restructure process and therefore presently no more details about organisation and structure can be presented.

### **ICT in Schools**

Computer science is a compulsory subject in Latvian schools. Students are

instructed about the role of information technology in modern society, rapid ICT growth, how to apply IT in learning, the importance and necessity of IT for further education. It is taught mainly on secondary level and upgraded course profiles are being developed. Standards correspond with varying skills of ECDL modules - <http://www.ecdl.lv>. Teachers are obliged to apply ICT inter-linking subjects and developing projects. The educational use of ICT in Latvian schools must be increased, i.e. primary school pupils have only one hour per week the opportunity of computer science lesson which has also financial reasons.

### **Research**

There are numerous, different publications about LIIS. Most of them have been collected and published on the LIIS website<sup>15</sup>.

### **Examples**

- LIIS homepage providing the most extensive data base of teaching materials, <http://www.liis.lv> , <ftp://ftp.liis.lv>
- Portal for teaching computer science in schools, <http://informatika.liis.lv/>
- Homepage for teachers maintained by Microsoft, promoting cooperation among teachers, headmasters, heads of education boards, pedagogical potential of ICT technologies, <http://www.skolotajs.lv>
- Education portal developed by Fridis Sarcevic, teacher at Auce Secondary School "Knowledge, Information, Technologies", <http://www.zit.lv>
- Latvian i-society technologies exposition "LatSTE", <http://www.latste.lv/>
- e-Skola - Portal developed for "Riga Education Informatization System", <http://www.e-skola.lv>
- Portal of Riga State Gymnasium No1, <http://www.r1g.edu.lv>

### **References**

Further references concerning the Latvian educational system can be found under following online resources:

Homepage of the Ministry of Education and Science of Latvia, <http://ww.izm.gov.lv>

M.Treimanis, A.Andzans, I.Medvedis, U.Straujums, The Latvian education informatization system, *Baltic IT Review*, No.2(9), 1998, pp.24-30.

Latvian Education Informatization System LIIS, <http://www.liis.lv>.

LIIS sub-portal, <http://informatika.liis.lv>

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<sup>15</sup> See <http://rex.liis.lv/liis/vesture.nsf/main!OpenView>

## **1.7 Liechtenstein**

“Schoolnet Liechtenstein” includes the Schoolnetwork Liechtenstein (technology), the school intranet Liechtenstein (education and information) and the school administration Liechtenstein.

The following paragraphs give a summarised outline of the Schoolnet report Liechtenstein.

### **Schoolnet and policy**

At the end of the 1990s, the School board / Office for Education in Liechtenstein was required to consolidate and restructure the previously uncoordinated ICT developments at individual schools. The Government and consequently the country of Liechtenstein have pledged their full ideal and financial support of the innovative package based on the pillars network, hardware, support (technical and pedagogic), information, administration and continuing education.

### **“Reasons” for Schoolnets**

It was necessary to establish the Schoolnet Liechtenstein because till the late 1990s the use of ICT and other didactic developments have been coordinated by a large number of professions. The Principality of Liechtenstein would offer students and teachers’ best conditions for learning and teaching and therefore the Schoolnet Liechtenstein has been founded.

### **Schoolnet content**

#### **a) The school network Liechtenstein (Technology)**

The school network Liechtenstein includes approximately 1500 PCs, 230 printers, 30 server systems as well as numerous other system components. Individual schools are connected with each other via fibre optic cables (1000 MBit). Among the customers of the School Information Technology Office (assi) are approximately 5000 users who are provided with various services such as an extensive program offer, e-mail address, file storage, internet access as well as other information systems services. Furthermore, teacher can log on to their schoolnet account both at school and at home and have access to all schoolnet resources around the clock.

#### **b) The school intranet Liechtenstein (education and information)**

The school intranet provides a platform that supplies students and teachers alike with lesson and school-related materials. Contrary to databases on the public education servers, the school intranet Liechtenstein mainly consists of information and collected materials pertaining to our own schools. In addition to this, country-specific services (e. g. the School Psychological Service of the Principality of Liechtenstein, the Office for Social Services, etc.) have been included in the offer. The teacher can access the data at home via password

protected online access.

Moreover, the constant availability of a large collection of materials on a school's own intranet will facilitate the future design of open learning situations such as instruction outside of school, project-related instruction or writing assignments.

#### c) The school administration (SVL) Liechtenstein (Administration)

Any school-related data such as student's data, class lists or lists containing names of teachers can be accessed directly via the schoolnet Liechtenstein by means of a web-based application.

#### **Schoolnets in schools**

The schoolnet Liechtenstein supports and enables teachers and learners to

- get access to a modern teaching and learning environment,
- have an access to a centralized school administration,
- use a large-dimensioned data-base with varied resources,
- establish interactive cooperation,
- work in a protected environment (technology)

#### **Organizational and financial aspects**

The School Information Technology Office (assi) is the main responsible organ for the schoolnet, the school intranet and the school administration. Various persons or groups are responsible for the created contents, depending on subject matter, intention and target audience.

Both the Government and the Parliament of the Principality of Liechtenstein have approved a corresponding report in the spring of the year 2000 and have consequently agreed to establish a country-wide schoolnet. The start-up credit and associated expansion and maintenance expenses have been approved herewith. A few companies have sponsored the state of the art fibre optic network for all public schools.

#### **ICT in Schools**

Individual schools form organisational units with autonomous user and resource administration organized by Super Users. The operating system as well as additional software can be installed automatically via network. Management tasks involving server systems and network components are largely performed via network, thus saving expenses and improving reaction time. There is preventive monitoring using network monitoring systems. Data security and data protection are administrated centrally. Antivirus programs are automatically installed and continuously updated. Creating favourable pedagogic and didactic conditions mandatory training in "personal computer literacy" and "ICT skills inn the classroom" has been impressively expanded

since 2004. At every school assi supports one ICT coordinator who is in charge of promoting practically tested applications and modules for respective grade levels based on specific lesson concepts. The long-term objective is effective application of standard software (e.g. Office) and gradual acceptance of web-based solutions (eLearning).

By the end of 2004 357 students on secondary level as well as 74 teachers have earned an ECDL certificate (European Computer Driving Licence).

#### Research

An ICT survey (Dec. 2004) based on filled in questionnaires (282 / 60 %) provided satisfactory results. The continuing education ICT offer for teachers was rated excellent/good – word processing in class, Power Point (focus on animations), advanced level spreadsheet, use of internet during class and digital camera handling have been particularly popular. Internet is mainly used for practical applications, to access information, for personal training and continuing education. Most teachers check their mailbox daily, most are in favour of ICT as natural part as everyday school life, students are highly motivated to use new media. Teacher`s regular information is provided by Newsletter, training courses for teachers, short inputs during regular team sessions.

#### Examples

Schoolnet Liechtenstein, <http://www.schulnetz.li>

#### References

In the main report no references were mentioned.

## 1.8 Norway

The Norwegian Schoolnet is the Directorate for Primary and Secondary Education`s (Utdanningsdirektoratet) Internet portal designed for pupils/students, teachers, school administrators, parents and others interested in schools and education.

The following paragraphs give a summarised outline of the Norwegian report.

### **Schoolnet and policy**

The Norwegian Schoolnet has been a part of Action Plans for ICT since 1996, now main segment of "Program for digital kompetanse" (Program for Digital Competence 2004-2008)<sup>16</sup> both initiated by the Ministry of Education and Research.

### **“Reasons” for Schoolnets**

The Norwegian schoolnet was established by the National centre for educational resources in 1996 as part of the follow-up actions regarding the action plan for ICT, which started in the same year. In the autumn of the year 2000 the portal was re-launched for the first time. Needs and expectations change over time and this fact is also true for the Norwegian schoolnet. Therefore some major changes and updates to the portal were made in the autumn of 2004, as well, now as part of the Directorate for primary and secondary education`s activities. As a publishing aid there have been adopted Topic Maps.

### **Schoolnet content**

The Norwegian schoolnet`s content areas, links, news and activities form an important part of what we can offer to those, who are associated with schools or to those, who are themselves at some stage of the 13 years of primary and lower secondary education.

- The Norwegian Schoolnet as a meeting place

As well as a resource bank, the Norwegian Schoolnet offers four login services for schools:

- School Post (Skolepost) is a free, spam mail protected, online email service.
- Schoolbag (Skolesekk) allows you to store your own documents.

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<sup>16</sup> Program for digital competence,  
<http://odin.dep.no/ufd/norsk/tema/satsingsomraade/ikt/045011-990066/dok-bn.html>

- School Common Room (Skolestue) allows people to work together via the Internet.
- School Newsletter (Skoleavis) is a service, which allows schools to publish one or more school newsletters, in which they can present their school, a project the school is working on or anything else they want to tell others about.

### **Schoolnets in schools**

The statistic shows approximately 150.000 Schoolnet page views per day. Surveys show, that teachers are the largest user group, although pupils are active as well. For example they use the interactive login service.

### **Organizational and financial aspects**

The Norwegian Schoolnet is organised by the Directorate for Primary and Secondary Education. The Norwegian schoolnet's central editorial staff consists of a team of 7 members, including one editor and information manager, editorial staff and technical service workers. In addition, there is a large number (50-60 members) of editors supplying the portal and theme areas with editorial content.

The Norwegian schoolnet is funded by the directorate for primary and secondary education. No sponsors or private companies are involved.

### **ICT in Schools**

There are a number of projects initiated by the Ministry of education and research in Norway (Utdannings- og forskningsdepartementet)<sup>17</sup>

Starting with the action plan for ICT in the years 1996-1999, followed by new action plans and finally the program for digital kompetanse 2004-2008 (programme for digital competence 2004-2008). ICT initiatives have resulted in increasing implementation in Norwegian schools accepted as an effective tool for innovation and creativity in education and grown to a natural part of education.

### **Research**

A vast number of researches and projects in relations to the Norwegian schoolnet have been made. Some links with references to the Norwegian schoolnet are

- Nordic Schoolnet, <http://www.nordskol.org/>
- NICE – News and Information about Consumer Education No. 23 – 2005: [http://www.infoconsumo.es/escuela/web/nice/eng/nice\\_23.pdf](http://www.infoconsumo.es/escuela/web/nice/eng/nice_23.pdf)

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<sup>17</sup> <http://odin.dep.no/ufd/english/bn.html>

- National Strategy for Digital Learning Resources Presentation ICT League Rovaniemi 13/05/05, Maren Hegna, Norwegian Ministry of Education and Research  
<http://www.menntagatt.is/default.aspx?PageID=106>
- Benchmarking Educational Websites: EdNA Online:  
<http://www.educationau.edu.au/research/benchmarking/> - (Results)

### **Examples**

Norwegian Schoolnets:

<http://www.utdanningsdirektoratet.no/>

<http://www.skolenettet.no/>

### **References**

Further references concerning the Norwegian educational system can be found under following online resources:

Utdanningsdirektoratet, Gry Hammer Neander, <http://www.utdanningsdirektoratet.no/>

Norwegian University of Science and Technology (NTNU), Jens Haugan, <http://www.ntnu.no/> - <http://www.plu.ntnu.no/>

## 1.9 Poland

Similar to European networking projects for advancing ICT with partners in 23 countries Schoolnet is the network of national education networks and portal integrating national education portals. The Polish education portal "Interkl@sa"<sup>18</sup> established by the Ministry of Education (MENiS) advances Polish schoolnetworks.

The following paragraphs give a summarised outline of the Polish report.

### **Schoolnet and policy**

In "Aims and trends of developing information society in Poland" designed by State Committee for Scientific Research the government intended to speed up development resulting in "e-Poland" based on "e-Europe 2002 - An Information Society for All" aiming at linking Europe to global information society. Tasks for developing information technology in Poland till 2006 were set in "Strategy of Polish Information Technology- e-Poland from 2004-2006" by Council of Ministers followed by an updated five year plan concerning communication tools development and economic/social effects. Among them assuring worldwide access to technology including support for old/disabled and underprivileged people, including public administration, assuring internet quality standards, extending ID applications.<sup>19</sup> Considerable efforts have already been made since 2001 equipping Internet classrooms in schools and universities, teacher training and qualifications, technology standards. More details can be found on the website of the Polish Ministry of Education<sup>20</sup>. Introducing ICT comprised various activities and programs like Rural Development Program co-financed by World Bank focussing on acquiring educational software, establishing an Internet Based Educational Resource Center and teacher training in rural areas. An example of useful public-private partnerships is one between MoNES (Ministry of National Education and Sport) and Intel organizing teacher training ("Intel Teach to the Future"). An agreement between MoNES and TPSA (Polish Telecom) guarantees special Internet fees for Polish schools entitling schools to 40 free hours of Internet connection

### **"Reasons" for Schoolnets**

The strategy of united Europe initiated together with e-Europe programme has its main aim in creating conditions of rapid economic growth based on dissemination of digital technologies. One of the basic means of achieving this

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<sup>18</sup> <http://www.interklasa.pl>

<sup>19</sup> Details: <http://www.mi.gov.laczosc/polski/dokumenty/index.html>

<sup>20</sup> <http://www.men.waw.pl>

aim is investment in education. Tomorrow society is seen as "information society", "education society"; "where education process does not end at school but last for all our lives". At present we are dealing with the education reform in Poland. That means: arduous transformation of 20 centuries module of education into bringing up and adjusting to active learning (life long learning). The determinants of the progress are the following three elements:

- Area of commonly accessed (digital) information
- Creative activity by people in his area
- Ability of co-operation with other partners.

### **Schoolnet content**

Interkl@sa has been equipped with Teachers Internet Bookshop (operated with CODN) and Interactive Map. The "Social Network of Education Libraries" project's aim is to transform school libraries and others into multimedia and Internet info centers with its central library server<sup>21</sup>.

There is a European project partner: European Treasury Browser (ETB)<sup>22</sup>. The Institute of National Heritage supervises Polish Culture Portal as a starting point for the Internet Encyclopaedia of Polish Culture<sup>23</sup> and the National Cultural Information Service - KIOSK. Polish Gates is planned as an integrated information system for public administration. Finally IKONKA is to activate Public Internet Access Points (PIAP) in public libraries to ensure easy, free access to Internet in local communities. Educational organisations contribute regular news bulletins. In 2002 content was enlarged with Eduseek<sup>24</sup> and 6plus<sup>25</sup>, thus becoming the biggest non-commercial educational Internet portal in Poland

### **Schoolnets in schools**

Students and teachers use PCs and Internet to search, select and assess information. Multi-media centres in school libraries offer access to Internet as well as education and information sources. Didactical use of information technology by teachers is intensified. Students take part in inter-school competitions and contests, computing and Internet-related tasks. Students design and operate school websites. Computer classrooms are not only used for conventional teaching but also for extra-curricular projects

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<sup>21</sup> <http://www.biblioteka.edu.pl>

<sup>22</sup> <http://etb.eun.org>

<sup>23</sup> <http://www.culture.pl/culture>

<sup>24</sup> <http://www.eduseek.interklasa.pl>

<sup>25</sup> <http://www.6plus.interklasa.pl>

### **Organizational and financial aspects**

The schoolnet Interkl@a is a nationwide network programme of thousands of schools, teachers, pupils, educational NGOs, it is non-governmental cooperating closely with MENiS and supported by IT-companies. There is intense cooperation with media, Public TV, Public Radio, Gazeta Wyborcza (biggest daily). The program is operated by a Task Force with 26 representatives of MENiS, local government, educators, companies and NGOs. There is large-scale cooperation with renowned experts. Users also include local institutions and students` parents. It is funded by various institutions but most of the regular budget is provided by the Ministry of Education.

### **ICT in Schools**

In all school types (primary, secondary, vocational) ICT is integrated into curricula as a separate subject. It is furthermore integrated into other subjects in the "core curriculum" use depending on teachers` decision and school equipment. The number of all types of public schools with computer laboratories has increased between 2000 and 2004 from 8.000 to 18.000. Students use the laboratories mainly during science technology classes. Computers are occasionally used during other subject`s classes. The reasons are complex: There are 20 students per 1 computer. Teachers of other subjects do not know how to use the computers during their classes. Monitoring is based on official lists of approved educational software but schools and teachers are free to use appropriate materials. Efforts in improving infrastructure/hardware include equipping schools (primary, secondary) with 100,000 PCs and computer classrooms in all lower secondary schools, training 40,000 teachers, of an overall of 30,568 schools 14,000 are connected, the overall student/ computer ratio was 42 in 2003 varying in schooltypes

### **Research**

The use of information-communication technologies in enterprises and households in 2004,

[http://www.stat.gov.pl/dane\\_spolgosp/spoleczenstwo\\_informacyjne/2004/](http://www.stat.gov.pl/dane_spolgosp/spoleczenstwo_informacyjne/2004/)

Computers for students in schools and colleges during the school year 2003/2004

[http://www.stat.gov.pl/urzedy/zg/publikacje/rocznik\\_woj/edukacja\\_wychowanie/04w10\\_09.pdf](http://www.stat.gov.pl/urzedy/zg/publikacje/rocznik_woj/edukacja_wychowanie/04w10_09.pdf)

The premises of information technology plan,

[http://www.mnii.gov.pl/mnii/index.jsp?place=Menu06&news\\_cat\\_id=862&layout=2](http://www.mnii.gov.pl/mnii/index.jsp?place=Menu06&news_cat_id=862&layout=2)

Schedule of information society development for 2001-2006

<http://www.kbn.gov.pl/cele/epolska.html>

## Examples

- Interkl@sa, [www.interklasa.pl](http://www.interklasa.pl)
- Interkl@sa sub-portal, [www.6plus.interklasa.pl](http://www.6plus.interklasa.pl)
- Educational research, [www.eduseek.interklasa.pl](http://www.eduseek.interklasa.pl).
- Educational document library, [www.biblioteka.edu.pl](http://www.biblioteka.edu.pl)
- Polish Culture Portal, [www.culture.pl/pl/culture](http://www.culture.pl/pl/culture)

## References

Further references concerning the Polish educational system can be found under following online resources:

EPoland – The Action Plan for the Information Society Development in Poland for the years 2001 – 2006, <http://www.mi.gov.pl/lacznosc/polski/dokumenty/index.html>

Ministry of Science and Information Technology, <http://www.mnii.gov.pl>

The Polish Chamber of Information Technology and Telecommunications, <http://www.piit.org.pl>

Pro- Europe – European Multimedia Academy of Youth, <http://www.proeuropa.org.pl>

Polish Education Portal Interkl@sa, <http://www.interklasa.pl>

Library of Interklasa, <http://www.biblioteka.edu.pl>

Ministry of National Education, <http://www.menis.gov.pl>

Polish Culture Portal, <http://www.culture.pl>

Committee of Scientific Research, <http://www.kbn.gov.pl>

## **1.10 Romania**

The most precise Romanian definition of SchoolNet is "connecting schools by Internet". Furthermore schoolnets constitute partnership of national and local authorities, educational institutions and the private sector promoting continuous learning by ICT use.

The following paragraphs give a summarised outline of the Romanian report.

### **Schoolnet and policy**

There are two levels of the Romanian education system - pre-university (pre-school, primary, secondary, high school) and university. There are 6099 primary schools (urban: 485 / rural: 5614), 7583 secondary schools (1996/5582), 1309 high schools (1121/188). Modern education concepts require new methods of teaching and communication, ICT being essential as a source of information and communication tool for teachers and students. There have been isolated efforts and regional initiatives at the beginning but no national ICT policy. This was started by the Ministry of Education introducing "Technology of Education and Information" as subject in pre-university curricula. The corresponding ICT project included three stages:

- an ICT-based curriculum advancing gradual application in teaching
- intensified teacher training
- providing infrastructure (computer labs, educational software) - organized and developed by a ministry-appointed working team of educational experts. 75% of government funding in the pilot stage will be spent on equipment and software.

### **“Reasons” for Schoolnets**

Schoolnets are needed in the educational system in order to help the institutions to stay in contact, to help establishing partnerships, to change ideas and educational software and to get the latest news in education. Schools can promote their own educational politics. Teachers can establish partnerships and they can take part in various online projects. They can exchange ideas about new teaching and learning methods or types of evaluation. Pupils improve their level of performance. They can virtually visit different schools and they get help in choosing a career.

### **Schoolnet content**

The principal goals of RoEduNet are to provide modern data communication infrastructure connecting all educational, research and cultural institutions in Romania as well as Internet connectivity. This includes a full range of services, such as DNS, HTTP, SMTP, FTP, web cache (proxy), newly implemented IP protocol, Ipv6 for testing upcoming technologies. Focus on

human resources resulted in Cisco Networking Academy Program each NOC<sup>26</sup> also constituting a Regional Academy. Schoolnets are mainly financed by the Ministry of Education, some NGOs and sponsors (PPP).

Main didactic services of RoEduNet are offer of learning materials, career guidance services, information services, educational link dossiers, curricula resources, discussion forum for different subjects, mailing lists.

### **Schoolnets in schools**

Schoolnets wants to support schools and the type of schools plays no role.

Schools use schoolnets regarding aims like:

- to develop and run school partnerships and projects
- to exchange information regarding the educational policy
- for online testing ,assessments and evaluation
- basic tools for elaboration of electronic contents
- to get access to digital data-bases
- to get teaching/learning materials
- indicators for the individual educational situation

### **Organizational and financial aspects**

The main Romanian Schoolnet, RoEduNet (Romanian Education Network), organized as a data communication system connecting a large number of local area networks thus forming a national WAN data communication infrastructure operated by Network Operation Centers in Bucharest, Galati, Iasi, Targu-Mures, Cluj, Timisoara and Craiova. Objectives are to offer users - universities, schools, cultural, scientific and NP research institutions - IT tools to communicate as well as Internet access. There is also TVET (Technical Vocational Education and Training), schoolnets focusing on professional training and social integration developed to meet students` expectations and job demands.

Schoolnets are financed by the ministry of education, non-governmental organisations and few economical agents.

### **ICT in Schools**

Next to traditional educational use the information and communication technologies have several functions in Romanian schools. There are several roles, e.g. ICT can work as a neutral mediator between the person who learns and the knowledge that has to be taught (Evaluator, Tutor, Partner).

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<sup>26</sup> Network Operating Center

In the teaching process the ICT may be regarded as an instrument of transmission and assimilation. Once the content of teaching is transferred in the memory of the computers, the soft usage for teaching may also help in applying new methods of evaluation and it may help in serving the students progress in an objective way:

- Instruments for teachers to prepare individual work e.g. lessons, courses and tests.
- The student can use the instruments for independent and flexible learning methods as well as administrative tool (organisation etc.).
- Demonstrative basis: ICT systems offer an excellent basis for demonstrations and implementation of knowledge, either by taking over laboratory work or by completing laboratory demonstrations.
- Interactive medium: It is able to ask and accept questions, to sustain a conversational way of teaching, to practice a dialogue with the students, to become a real help in solving certain complex problems; it can help to assimilate knowledge through specific techniques of programming.

### **Research**

Various research activities have been carried out related to educational use of IT and ITC. The main report includes several details about research but it is mentioned that no research concerning the Romanian Schoolnet has been carried out yet.

### **Examples**

- <http://www.e-scoala.ro>  
is an educational site for teachers and students. On-line lessons, career advice, info about European programs, on-line forum, on-line games and educational news are offered.
- <http://www.didactic.ro>  
offers didactic materials, programs for school financing, Information of the Ministry of Education.
- <http://www.intuitext.ro>  
a site dedicated to e-learning, contains also interactive lessons, information about educational software.
- <http://www.edu.ro>  
The official site of the Ministry of Education presenting educational policy/strategies.
- A lot of other examples can be obtained from the main report which is

available on the project website.<sup>27</sup>

### **References**

Further references concerning the Romanian educational system can be found under following online resources:

Ministry of Education, [www.edu.ro](http://www.edu.ro)

Romanian Education Network, [www.iasi.roedu.net](http://www.iasi.roedu.net)

National Center for Technical and Vocational Education and Training Development, [www.tvet.ro](http://www.tvet.ro)

Emil Onea, [www.didactic.ro](http://www.didactic.ro)

S.C. Kapital S.R.L., [www.finantare.ro](http://www.finantare.ro)

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<sup>27</sup> <http://www.eu-ripides.net>

## 1.11 Slovenia

The most popular and best developed educational network is Slovenian Education Network – SIO<sup>28</sup> also with links to the portal of the National Education Institute of the Republic of Slovenia, the national computer literacy project, eTwinning sites, research project web-sites as well as European sites.

The following paragraphs give a summarised outline of the Slovenian report.

### **Schoolnet and policy**

SIO was founded in 1995 with the aim to provide access to individual educational servers and to the materials they offer. In the document: "Strategy of the Republic of Slovenia" from the year 2003 Slovenia described beside other statements that digital platforms should be developed for pupils, that educational materials should be offered online, that support should be available and that virtual classrooms should be established.

Concerning all benefits and achieved principles listed bellow, Schoolnet SIO and the whole Slovenian Educational Network fit very well to the educational policy of Slovenia.

### **"Reasons" for Schoolnets**

Educational users need a safe online environment, which they can trust. Nowadays we can not imagine being without such an educational network, which offers new ways and possibilities for e-learning. The Schoolnet should be oriented to progress, described in Education and Training 2010 program. It should also support the role of teacher and her/his lifelong learning. Furthermore it should prepare students for their life. Slovenian Education is aware of the importance in building knowledge-based activities. For this reason eight key competences are considered as an absolutely necessity in the educational system. The biggest emphasis is developing digital and ICT skills competences.

### **Schoolnet content**

The main function of SIO is to collect, maintain and provide information about educational resources and services. IT is based on the catalogue system TRUBAR<sup>29</sup> by which different materials e.g. photos, drawings, texts, maps, programs, data, sounds are collected. Besides usual clients (students, teachers, headmasters, institutions) also the press and economy (integration, sponsorship, visiting tours) are to be integrated. Services are also to be offered to adult education, educational provisions for social risk groups and student groups with special educational needs.

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<sup>28</sup> <http://sio.edus.si>

<sup>29</sup> <http://www.educa.fmf.uni-lj.si/trubar/>

Among the eight competences necessary for knowledge-based society's digital literacy and ICT skills are emphasized. Main services of SIO include educational information, a wide range of learning materials, lists of servers and portals referring to education in Slovenia and the world, educational news, communication tools (mailing lists, bulletin boards, forum) and support materials (teacher training, expert reference, distance learning, didactic supplies). To improve SIO's functions the support system TRUBAR based on MS Windows was developed organizing catalogues and property areas e.g. dictionaries, directories, encyclopaedias, inventories, glossaries etc. Tools like TRUBAR support the idea that every user should also contribute to the growth of the network. Additionally SIO is decentralized, standardized, non-mandatory for users and open to any server with educational content.

### **Schoolnets in schools**

Students need to learn how to adapt and adopt a range of skills to be truly effective learners. Information and Communication Technology provides the glue to link these skills together. It is also highly motivating for most young people.

Schools use Schoolnets with the following aims:

- to get information
- to prepare lessons (information about the organization of lessons, using ICT, how to implement project work, experiences, researches)
- Using good practise examples as a model for their work.

### **Organizational and financial aspects**

It is expected that the new portal <http://info.edus.si> will become the main entry point in Slovenia for educational purposes. So far SIO represents the entry point for users within the educational field since its establishment in 1995. It was organised and promoted by the Ministry of Education and Sport and the National Education Institute of the Republic Slovenia. During last years also other relevant educational sites have been used frequently. During the last few years promotion was done by media and electronic newsletters, which are being sent each month to all teachers in Slovenia.

The new Slovenian educational portal <http://info.edus.si> is co-financed by the Ministry of Education, the National Education Institute of the Republic Slovenia and by EU Structural Funds. It is expected that SIO will be financed partly by European project Calibrate and will also be supported by the Ministry of Education and Sport.

### **ICT in Schools**

So far working Computer Literacy Programs exist – RO Programme (1994-2000) has been upgraded in higher level to enlarge quality of teaching and

learning.<sup>30</sup>

The main focus is on managing school leaderships and preparing e-learning materials as well as on the following goals:

- digitalization of education should enable continuously computer and information training for teacher,
- building up a friendly informational and communicational learning environment of pupils and teacher,
- development of new e-methods of teaching, learning and playing,
  
- Connection to the internet should be effective, user-friendly and cheap,

### **Research**

Two research activities about Slovenian Schoolnets have been carried out:

Batagelj, V., Brodnik, A., Lokar, M , Janez Čač: Slovenian Education Network, 1996, <http://www.educa.fmf.uni-lj.si/ro/izomre/novice/html/sen96.htm>

Žibert, Alenka, Batagelj, Vladimir and Rajkovič, Vladislav:

Comparative Analysis of Educational Networks, 2003

The abstracts and conclusions of these surveys can be found in the main report.

### **Examples**

- <http://sio.edus.si>, main Schoolnet SIO
- <http://www2.arnes.si/> web-sites of educational institutions
- <http://ro.zrsss.si/projekti.htm>, national computer literacy site
- <http://info.edus.si>, sub-portal of SIO
- <http://www.arnes.si>, ARNES backbone , Internet access for all Slovenian schools
- <http://oko.edus.si>, Slovenian portal for Open source Software

### **References**

Further references concerning the Slovenian educational system can be found under following (online) resources:

Batagelj, V., Brodnik, A., Lokar, M , Janez Čač: Slovenian Education Network, 1996, <http://www.educa.fmf.uni-lj.si/ro/izomre/novice/html/sen96.htm>

Vladimir Batagelj, Vladislav Rajkovič: Computer Literacy Project in Slovenian Schools (poster). WCCE'95, Sixth IFIP world conference Computers in education, 23-28. July 1995,

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<sup>30</sup> Details of the „RO Programme“ and further developments can be found in the main report.

Birmingham

Vladimir Batagelj, Vladislav Rajkovič: Information Technology Project in Slovenian Schools. Euro Education'96, May 22-25, 1996, Aalborg

Dr Slavko Gaber, Minister for Education: Making IT work for schools, European Schoolnet Conference, Brussels, September 8-9, 1998.

Žibert Alenka, Batagelj Vladimir and Rajkovič Vladislav: Comparative Analysis of Educational Networks, 2003

Implementation of "Education and training 2010" work programme – Framework for key Competences in the Knowledge-based Society, working group report, November 15, 2004

Dr Cheryl Morgan: The Learning and Skills Development Agency in Wales, proceedings, MIRK 2005 conference

Strategija RS v informacijski družbi (feb 2003)

## 1.12 Spain

The Spanish partner of European Schoolnet is Centro Nacional de Información y Comunicación Educativa<sup>31</sup> mainly offering ICT-based search tools and services providing educational information and connectivity for teachers, educators and students worldwide. It is a networked Internet platform for developing modern education strategies increasingly using multimedia technology.

The following paragraphs give a summarised outline of the Spanish report.

### **Schoolnet and policy**

It is projected to achieve that all learners and teachers become involved in the growing information and communication society through a vast number of governmental programmes as well as by means of Schoolnets. The main strategies to achieve these objectives are that all schools have to be equipped with facilities for accessing ICT, to use Schoolnets developing educational services, organise trainings for educational staff and the development of interactive educational tools (forums, magazines etc.). The Ministry of Education, Culture and Sport is responsible as regards contents and the Autonomous Communities of Spain are responsible for providing the structure.

### **“Reasons” for Schoolnets**

By means of Schoolnets it is planned to adapt educational methods used in Spanish institutions according to the information and communication society of the 21st century. Without doubt, this contributes to an improvement in communication and to an increase of tolerance. These facts make it easy to convince the local school associations, provincial communities because the benefits for the target group of Schoolnets are visible. Spanish educational institutions benefit from Schoolnets in establishing new cooperation's with other educational organisations, they exchange, share information and experiences. Furthermore a development and strengthening of collaborative learning as well as an improvement in digital skills took place by the use of Schoolnets.

### **Schoolnet content**

Schoolnets in Spain consists mainly of:

- Educational resources and support material for primary, secondary schools and higher secondary courses (languages, science/mathematics, social science, humanities and communication, arts, PE, multifunctional - image bank, thematic web sites).

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<sup>31</sup> <http://www.cnice.mecd.es>

- Educational resources for vocational training (trade and marketing, management, graphic arts, communal sociocultural services).
- Materials for adult teaching and teacher-training, (diversity, educational guidance, school for parents, school libraries, interculturality).
- Research resources
- User services (free mail accounts, info-portal).
- Digital magazine<sup>32</sup>
- General information (scholarships, courses, projects)

### **Schoolnets in schools**

Network-based education provides ICT tools improving learning standards and enabling unlimited communication and cooperation. Schoolnets also enable cooperation of schools in joint projects and activities. Administrative linking is more effective as well. Schoolnet platforms offer an environment for collaboration enabling access to high quality resources, learning materials and online activities, knowledge transfer between schools and outreach to parents and the community setting up a European knowledge area.

### **Organizational and financial aspects**

The National Schoolnet is operated by a sub-directorate of the Ministry of Education, Sport and Culture. Regional Schoolnets are operated by the respective Autonomous Community. The network infrastructure (in several communities by state of the art technology - fibre optic connections) was built and maintained by a private firm. The Schoolnets are mainly financed by contributions of the Ministry of Education, Sport and Culture, other departments of the Spanish government, Autonomous Communities and Sponsors.

### **ICT in Schools**

ICT application in educational institutions is still limited by unstructured didactic approach, unsuitable teacher training and inadequate digital literacy. It is gradually improved by better infrastructure, raised software standard, special educational resources and curriculum development. Every autonomous region of Spain has the competence for education and therefore the implementation of ICT depends on the autonomous government and therefore the situation differs from region to region.

### **Research**

A vast number of researches and studies of Schoolnets and educational use of ICT have been implemented in Spain. Examples of research topics were

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<sup>32</sup> <http://reddigital.cnice.mec.es/5/index.html>

- Communication networks in education,
- The network as an instrument of education,
- Potential and educational resources of Internet;

and more. For detailed insight of research studies and analysis please refer to the main Schoolnet report of Spain.

### **Examples**

- National Education Centre, <http://www.cnice.mecd.es> (school portal)
- Averroes, <http://www.juntadeandalucia.es/averroes/> (regional education portal)
- The social education portal, <http://www.eduso.net/>
- Education information portal for applied use of ICT and Media , <http://www.eduteka.org/>

### **References**

Further references concerning the Spanish educational system can be found under following online resources:

National Education Centre, <http://www.cnice.mecd.es>

Government of Andalusia, <http://www.juntadeandalucia.es/averroes>

University of Seville, <http://www.us.es/us/enlaces>

FETE-UTG, <http://www.aulaintercultural.org>

Education Department Madrid, <http://www.educa.madrid.org>

Regional Education Department Gijon, <http://www.gijon.es/rece>

Centre d'Educació i Noves Tecnologies (CENT) de la Universitat Jaume I de Castell, <http://www.cent.uji.es/octeto>

EDUTEKA, <http://www.eduteka.org/SeisElementos.php>

### **1.13 United Kingdom**

Regional and National Schoolnets in the United Kingdom have a long tradition, several national educational networking initiatives have been established. The following paragraphs give a summarised outline of the Schoolnet Report United Kingdom.

#### **Schoolnet and policy**

The UK has a national ICT strategy that is based on infrastructure, content and practice. These aspects are inter-connected through the establishment of networks of schools and networks of computers. At the heart of this activity there have been a number of core Schoolnet developments, which enable these three aspects to be delivered online throughout the country. In 1998 the Government launched the National Grid for Learning (NGfL). It aimed to increase levels of ICT in schools, with target pupil to computer ratios for 2002 of 11:1 and 7:1 for primary and secondary schools respectively. By 31st March 2002, pupil to computer ratios had improved to 9.7:1 in primary and 6:1 in secondary schools (DfES, 2002)<sup>33</sup>. The NGfL strategy drives a programme of funding and support for education addressing the key areas of infrastructure, content and practice.

The NGfL strategy aims to:

- raise standards through the application of ICT across all areas of teaching and learning, particularly as part of national educational key priorities such as literacy, numeracy and Key Stage 3
- support innovation in schools, improving the effectiveness of schools and teachers, in particular, by using ICT to reduce the burdens placed on teachers and to modernise delivery
- equip school leavers with ICT, information and learning skills needed for employability and lifelong learning and enable them to engage in a technological society
- include all learners through ICT ability to provide access to learning.

#### **“Reasons” for Schoolnets**

The following challenges had been set out as the NGfL targets concerning Schoolnets:

- Connecting all schools, colleges, universities, public libraries and as many community centres as possible to the Grid
- Ensuring that serving teachers feel confident and competent to teach using ICT within the curriculum, and that librarians are similarly trained

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<sup>33</sup> Government Department for Education and Skills, United Kingdom

- Enabling school leavers to have a good understanding of ICT with measures in place for assessing their competence in it
- Ensuring that general administrative communications between educational bodies and the Government cease to be largely paper-based
- Making the UK a centre of excellence in the development of networked software content and a world leader in the export of learning services.

### **Schoolnet content**

A vast range of resources is available through national and regional networked sites. Many of these have been developed by professional organisations and publishers, but increasingly from media providers like television companies like the BBC and Channel 4. These result in highly interactive relevant materials targeted at pupils of different ages. The nationally approved providers normally offer an extensive range of Internet services, facilities and resources, integrated under one offer. An example of high bandwidth resources accessible to schools is the 'Community Intranet' from NTL. This allows access through PCs or digital television via the company's cable network.

It is claimed that this initiative confers the benefits of increased continuity in the learning experience between home and school, increased communication between schools and parents, the ability to work on projects out of school hours, and access to a greater range of electronic-based educational content (NTL 2000). Parents and students have been able to access the school Intranet from home by using authentication passwords. The servers storing the intranet are maintained centrally by the company, in addition to support services. The core service provides the school with intranet tools to publish material on its intranet, such as timetables, homework diaries, and a school directory. In addition to a core intranet subscription, schools can purchase additional services such as web hosting and e-mail filtering.

### **Schoolnets in schools**

A recent Government report (Becta, 2005) reviews the state of networked classrooms and wireless networks. The pattern shows a marked infrastructure and networking improvement over recent years. An increasing number of institutions have access to classroom networks. However, as with other areas of infrastructure provision, there remains a minority of primary schools that have limited classroom networking who are starting from a low base in terms of embedding ICT. In terms of realising the potential for ICT to enable links between home and school/college, the ICT in Schools Survey 2004 found that 29 per cent of secondary schools and 12 per cent of primary schools operated networks that were accessible beyond the school premises. This seemed to be a fairly low figure. However, this type of facility appeared mainly related to school size. For example almost half of the large secondary schools provided

remote access to the school network. It is likely that larger institutions are more likely than smaller ones to have the technical capability to deliver this. The use of virtual learning environments has also been on the increase as a means of encouraging networked-based learning

### **Organizational and financial aspects**

Schoolnets in the United Kingdom are led and financed in various ways e.g. they are central government or regional initiatives but in some cases industry plays also an important role.

### **ICT in Schools**

In the UK, since 1998 there has been significant strategic investment by the Government in ICT in schools through the National Grid for Learning Programme. This has led to a position where ICT policy has now become a key aspect of an ambitious educational reform agenda.

According to the DfES (2004), by 2003,

- over 99% of schools were connected to the Internet, of which over 25% have a fast 'broadband' connection
- the NGfL has been developed into the world's largest portal of indexed educational content while customised portals are being created for key groups such as young people, teachers, parents and school governors;
- the average number of computers in schools for teaching and learning has virtually doubled while the proportion over three years old has decreased by a third;
- continuous professional development (CPD) and leadership programmes for ICT have been put in place with over 99% of schools having signed up for or completed training;
- teacher confidence in the use of ICT in the curriculum has improved and over 100,000 teachers have received a computer through centrally-funded initiatives;
- Curriculum Online has been launched, providing teachers with a showcase of high quality digital resources from public and private sector suppliers;
- over 6,000 UK online centres have been established to provide access to ICT in the community;
- over 2,000 Learndirect centres are now in operation, some of which are based in schools and in the community.

The UK Government has set aims for the next stage of development will be to ensure that for all schools:

- ICT makes a significant contribution to teaching and learning across all subjects and ages, inside and outside the curriculum

- ICT is used to improve access to learning for pupils with a diverse range of individual needs, including those with Special Education Needs and disabilities
- ICT is used as a tool for whole-school improvement;
- ICT is used as a means of enabling learning to take place more easily beyond the bounds of the formal school organisation and outside the school day; and
- ICT capabilities are developed as key skills essential for participation in today's society and economy.

### **Research**

A vast number of research activities of educational use of ICT and Schoolnets have been carried out in the United Kingdom. Below a few examples:

DfES. (2002), *Statistics of Education: Survey of ICT in Schools 2002*. London TSO, <http://www.dfes.gov.uk/rsgateway/DB/SBU/b000360/sb07-2002>

DfES (2004), *Establishing a network of schools*, [http://publications.teachernet.gov.uk/eOrderingDownload/nlc\\_cdc\\_wawla02\\_01\\_Establishing-a-network-of-schools.pdf](http://publications.teachernet.gov.uk/eOrderingDownload/nlc_cdc_wawla02_01_Establishing-a-network-of-schools.pdf), accessed September 17 2005

Scrimshaw, P. (2004). *Enabling teachers to make successful use of ICT*. Becta. [http://www.becta.org.uk/page\\_documents/research/enablers.pdf](http://www.becta.org.uk/page_documents/research/enablers.pdf)

Teachernet (2005), *Making ICT Work*, [http://www.teachernet.gov.uk/\\_doc/4382/ICTiS%20directions.doc](http://www.teachernet.gov.uk/_doc/4382/ICTiS%20directions.doc)

Becta (2004a), *Survey of LAN Infrastructure and ICT Equipment in Schools*, Becta, Coventry. [http://www.becta.org.uk/page\\_documents/research/lansinschools2003.pdf](http://www.becta.org.uk/page_documents/research/lansinschools2003.pdf), accessed 20 September 2005

Besa (2002). *ICT in UK State Schools 2002: A summary report*. <http://www.besanet.org.uk/ict2002/summary.htm>, accessed 20 September 2005

### **Examples**

Here are a few examples of educational networks:

- Teachernet, <http://www.teachernet.gov.uk>
- Schoolnet, <http://www.schoolnet.co.uk>
- Becta Schools, <http://schools.becta.org.uk>
- Learning and Teaching Scotland, <http://www.ltscotland.org.uk>

### **References**

Further references concerning the educational system of United Kingdom can be found under following online resources:

Government Department of Education and Skills, United Kingdom, <http://www.dfes.gov.uk>

Becta, <http://www.becta.org.uk>

Clarke C (2003), Fulfilling the Potential Transforming teaching and learning through ICT in schools. Department for Education and Skills, UK,  
<http://publications.teachernet.gov.uk/eOrderingDownload/FulfillingthePotential.pdf>

Ofsted (2004), ICT in Schools: The Impact of Government Initiatives Five Years On, HMI 2050, Ofsted, London.  
<http://www.ofsted.gov.uk/publications/index.cfm?fuseaction=pubs.displayfile&id=3652&type=pdf>

Teachernet, <http://www.teachernet.gov.uk>

## 1.14 Austria

The basic structure for the Austrian Schoolnet is called "Austrian School Network Plus" or short "ASN+" operated by the Austrian Ministry of Education, Science and Culture and the Telekom Austria.

The following paragraphs give a summarised outline of the Austrian report.

### **Schoolnet and policy**

According to the report: "ICT and e-learning in Austrian Schools" from the year 2000:

The European Council decided on a European itinerary called "e-Europe" for further accelerating the use of ICT in all areas of life. All European citizens should be able to master and use new media in a meaningful way. The European strategy will be put into practise in Austria through the project "e-Austria". A detailed work plan was agreed on by the government. The taking of inventory was carried out by the Federal Minister of Education, Science and Culture, Ms. Elisabeth Gehrler.

According to the catalogue of measures a steering committee has been established to make propositions how to make best use of the budget.

Objectives:

- All schools should have access to the Internet and to multimedia learning resources.
- All teachers should be individually equipped and skilled in the use of the Internet and multimedia resources.
- The European Computer Driving License (ECDL) as standard, intensified expansion of specific ICT-training and establishment of innovative training centres.

### **"Reasons" for Schoolnets**

Without doubt school nets have impact on education and society in Austria:

- supports new levels of student creativity and research,
- collaborations that bring students, teachers and researchers together,
- change the role of teachers,
- create content;

Therefore it is necessary to raise the usage of ICT, new media and school networks.

Schoolnets are primarily published via web pages. Also promotional brochures and flyers have been produced.<sup>34</sup> The participation or even better to win

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<sup>34</sup> [http://www.bmbwk.gv.at/medienpool/12612/asn\\_flyer\\_small.pdf](http://www.bmbwk.gv.at/medienpool/12612/asn_flyer_small.pdf)

competitions or implemented awards results to publicity.

### **Schoolnet content**

There are two different types of Schoolnets in Austria - national and regional schoolnets. The ministry of education is responsible for the national school networks and projects.

With focus on the content, one of the biggest networks is <http://www.bildung.at> - it offers:

- Separate sections with comprehensive educational content called "pupils", "teacher" and "eScience",
- Classroom platform<sup>35</sup>, offering tasks from the PISA study,
- Guestbook,
- Kidsweb – a website especially for children,
- L@rnie-award – demonstration of good practices,
- SbX (Schoolbook Extra) – it is possible to download digital content that belongs to schoolbooks;

Similar important is <http://www.schule.at> . This network offers:

- Eduthek – Materials, links, software, articles, etc ordered by subjects,
- Special websites for primary education and polytechnic schools,
- Link dossiers for different subjects,
- Personal mailbox and virtual hard disk,
- Access to forums and communities,

Furthermore there are regional school networks.

These networks contain access to educational content, forums, communities, chat, web mail with address book, virtual hard disk, search functions, collection of links, Newsletters and calendar of events, Special websites for children, parents, pupils and teachers, e-Learning platforms, help desks and other services.

### **Schoolnets in schools**

Schools and educational institutions primarily use the connection to the Internet, offered by ASN+ and AConet, to create homepages, to use e-mail services and to have access to educational content. Generally there is the educational and the administrative sector. Furthermore the possibility to gain information and to publish something is important. Depending on the curriculum, teachers themselves decide on the teaching methods to be used and the content of work in the classroom.

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<sup>35</sup> <http://www.classroom.at>

### **Organizational and financial aspects**

Responsible for the clean running of regional school networks is an administrator, an administrating team or a staff unit. For example in case of the Carinthian school network it is the "Carinthian media lab for education and school". There is also the possibility of outsourcing.

Responsible for the national networks is the Ministry of Education, Science and Culture. The organisation of the individual networks is similar to the regional networks. For the usually bigger, national networks more effort must be made. The Telecom Austria Corporation has to ensure the smooth operation of ASN+. Strategic decisions concerning ACOnet are made by the mentioned steering committee. Operational decisions are outsourced to the central informatics service (ZID) of Vienna. There is a strong cooperation with all institutions, where ACO-routers are placed.

The Schoolnets for Compulsory general schools, comprising primary schools, general secondary schools and pre-vocational schools (polytechnic schools) are financed by the municipalities, municipal associations and the Federal states. Lower and upper secondary academic schools and full-time technical and vocational schools and colleges receive their funding from the federal authorities. Beside the funding from the public sector there are private sponsors and partnerships as well:

- Vocational education, in particular, has enjoyed a long association with companies such as Siemens or Philips (for example, the industrial sector can be represented on the committees of these schools).
- In Vienna, there is cooperation between schools providing compulsory education and the city aimed at ensuring that schools are supplied rapidly with computers and secure Internet access.
- Within schools for vocational training (excluding vocational training centres), there are numerous partnerships with the private sector in the field of the humanities, depending on where particular schools are located.
- Training for teachers in cooperation with Intel: "Intel – Teach to the future"

### **ICT in Schools**

- 63 % of schools had access to the Internet in the year 2000. Today 100 % have a connection to the Internet.
- Within the school year 2003/04, 131 schools offered notebook-classes to 9.400 pupils.
- Until December 2004, 470.000 ECDL-exams have been graduated. 100.000 using the eFit initiative.
- In primary education there is a computer / pupils ratio of 8/100, in vocational schools of 25/100. The average ratio in Austria is 12 / 100.

- 5 % of schools had a broadband access to the internet in the year 2000.  
35 % of schools had such a connection in March 2005. In the same time the data transfer rate raised from 3.300 GByte to 13.500 GByte per month.

### Research

Research and policy development in field of learning with new technologies,  
<http://www.efit.at/eeducation>

Ministry of Education, Science and Culture, Closing report of the reform concept "future school",  
[http://www.klassezukunft.at/statisch/zukunft/de/zukunftskommission\\_kurzfassung\\_2005.pdf](http://www.klassezukunft.at/statisch/zukunft/de/zukunftskommission_kurzfassung_2005.pdf)

Austrian Academic Computer Network, Report,  
<http://www.aco.net/downloads.html?&L=0>

### Examples

- <http://www.schule.at> (Austrian school portal)
- <http://www.bildung.at> (Austrian education portal)
- <http://www.klassezukunft.at> (Project concerning educational quality)
- <http://www.bmbwk.gv.at> (Information portal of the Austrian Ministry of Education, Science and Culture)
- <http://www.e-lisa-academy.at> (Austrian eLearning network)
- <http://www.aco.net> (Austrian Academic Computer Network)
- Regional Schoolnets:
  - <http://www.ksn.at> (Carinthian schoolnet)
  - <http://www.eduhi.at> (Education highway)
  - <http://www.tsn.at> (Tyrolean schoolnet)
  - <http://www.schulen.wien.at> (Website concerning schools from Vienna)
  - <http://bildung.salzburg.at> (Education net from Salzburg)
  - <http://www.eb-stmk.at> (Education network from Styria)
  - <http://www.bildungserver.com> (Education server Burgenland)
  - <http://www.bildung4you.at> (Education platform from Lower Austria)
  - <http://www.vobs.at> (Education server from Vorarlberg)

### References

Further references concerning the Austrian educational system can be found under following online resources:

Ministry of Education, Science and Culture, <http://www.bmbwk.gv.at>, <http://www.efit.at>,

<http://www.bildung.at>

Education Highway, Innovation Centre for Education and New Technologies,  
<http://www.schule.at>

## 2 Comparative Analysis of Schoolnets

Through collection of data in 14 European Countries it was possible to develop a comparative analysis of European schoolnets.

Schoolnetworks can be defined such as to be:

- designed around an idea or specific purpose
- focus on pupil learning rather
- create new opportunities for learning
- run and have dedicated leadership and management

The technical heart of a Schoolnet is the networked computer linked to the Internet. It not only shares information with other computers, but also offers the power to communicate with others around the world. This offers a range of benefits to learning, management and deployment of resources by:

- connecting people by synchronously and asynchronously by for example email, forum, chat and conferencing
- providing access to the resources and the World Wide Web
- helping to combine administrative and curriculum functions across schools
- sharing data and application software
- simplifying management by having central and remote maintenance usually managed by a service provider

### 2.1 Schoolnets and policy

There are a wide range of policies influencing the use of ICT and Schoolnets in Europe. Several actions adopted by the European Council since its Lisbon 2000 meeting in the endeavour to set up a European knowledge area, demonstrate the significance of Schoolnets across the whole European Union. Most of the strategic initiatives to establish Schoolnets have been developed since the year 2000 but in a few countries (e.g. Norway, Denmark, United Kingdom, and Liechtenstein) Schoolnet programs started earlier. At first view the policy in terms of education and ICT is very similar in Europe influenced by objectives of the European Union. A lot of countries have made great progress to achieve these objectives (through national strategies and different programmes) what is an important success for sustainable development. The situation between "old" and "new – and accession" countries differs a little. In some cases there occurred structural problems due to financial straits. At the beginning of 21<sup>st</sup> century a few countries underestimated developments of Schoolnet initiative which resulted in a delay of the launch of the Schoolnet program.

## **2.2 „Reasons“ for Schoolnets**

On the question for the reason for having Schoolnets more than 50 % of the answers mentioned in a similar way “to contribute to the overall development of education by providing user-friendly environment for cooperation, information and experience exchange among teachers, students, educational decision-makers, which will greatly facilitate the progress of schools towards achieving the goals stated in the Lisbon strategy of EU”.<sup>36</sup> It was also mentioned that Schoolnets are a very useful tool for teaching and learning with regard to there offers. In some cases Schoolnets provides technical infrastructure for schools what is very important for schools. To organise collaborative projects and establishing of connections between are also topics of the importance of Schoolnets. A main reason for establishing Schoolnet was to improve the education system as well as to develop new skills in the new knowledge based society of 21<sup>st</sup> Century.

## **2.3 Schoolnet content**

Schoolnets usually embrace a multifunctional approach comprising technology issues (connectivity and infrastructure), curriculum integration processes, pedagogical assessment, professional teacher training, developing suitable content and software and creating online communities using ICT in practice. Schoolnets may even be capable of reshaping education policy supporting research and innovation. The offer of services and contents is in many European Countries well developed and offers a vast range of services and contents. Pioneers of a qualitative content development are Scandinavian Countries and United Kingdom. Summarised the main features and contents of schoolnets are communicating of information, sharing resources and to publish educational materials. A lot of Schoolnets are very comprehensible, for more detailed information please refer to the country section or to the full papers which can be found on the project website.

## **2.4 Schoolnets in schools**

Embedding effective innovation across the education system is a key challenge, how we can develop strategies for delivering change in institutions in different circumstances is the key to implementing Schoolnets.

Network-based education provides an organisation tool that provides a method for evaluating the progress of students. They equip teachers with the tools needed to build effective learning approaches for pupils and opportunities to share things with their colleagues.

Teachers (and learners) therefore can access high quality resources, learning

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<sup>36</sup> Extracted from the Bulgarian Report, other countries mentioned comparable answers.

materials and online activities. They also connect others in the learning process, such as librarians, parents, administrators and others. Such developments are sometimes referred to as Educational Learning Communities.

Most Learning Communities are used for collaborative projects. Schoolnet platforms are normally developed to offer an environment for collaboration. They enable pupils to use ICT as a means for co-operation, independent learning, constructing their own learning and exchanging information and ideas, so that their own learning process is backed and reinforced.

## **2.5 Organizational and financial aspects**

Transforming the use schools make of ICT can only take place when there is effective support that integrates ICT into national and local strategies and programmes and involves all major educational agencies and bodies. This means that the roles of local, regional and national education organisations need to be clarified together with the support that they should be providing to schools they are responsible to. Schoolnets thus will need to collaborate with the ICT industry and other professionals to ensure that the digital learning resources available to schools take full advantage of the teaching and learning possibilities offered by ICT. Co-operation between the Ministry and these agencies including teacher training, inspection, quality assurance and curriculum development will be important and specialists who understand and recognise the potential of learning environments and relearning will be central to the system. At the same time research and evaluation needs to be undertaken to inform policy and practice at all levels. In some cases Schoolnets have been organised by subject specialists or professional associations, such as the Teaching English as a foreign Language group. Mainly schoolnets are organised by departments or sub-directorates of the National Education Ministry. In some cases, Non-Government Organisations (NGOs) play a central role. This is the case for many European national and regional Schoolnets in European countries.

Schoolnets are supported financially in many different ways. In some cases they are central or regional Government initiatives, in others they are developed by schools and in some cases they are either sponsored by or developed by industry and business concerns<sup>37</sup>.

## **2.6 ICT in Schools**

Information and communication technology (ICT) is increasingly playing a significant role in classrooms across Europe. What is less clear is the impact that ICT can have through different learning approaches. Tools that empower learners are starting to change the way that learning activities are carried out

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<sup>37</sup> e.g. Microsoft, Intel, Cisco Systems

in Europe. It is likely that the development of e-twinning of schools in Europe and the promotion of teacher training actions in this area will support and further develop networking in schools, to make it possible for all schools in Europe to build pedagogical partnerships with schools elsewhere. Innovative cooperation methods can and should be promoted. The need to incorporate information and communication technology (ICT) is now inescapable, largely as a result of the enormous growth of the virtual society (Internet) at the last years. There have been already set up many actions from national as well as transnational bodies to improve and develop the strategies and processes to bring ICT in the classroom.

At primary education ICT is part of the compulsory minimum curriculum in all involved partner countries.

General objectives of the educational use of ICT at primary education mainly for all countries are:

- to learn to use a word processor or a spreadsheet,
- to learn to search for information in the Internet,
- to communicate via a network,
- to use ICT to enhance subject knowledge;

At secondary education ICT forms part of the compulsory curriculum in all countries except for Bulgaria (lower secondary level). In most cases, national curricula combine two approaches to ICT (as a separate subject and its use as a tool for other subjects), and recommend or lay down that the teaching of ICT as a subject should be supplemented by its use for introducing other subjects or carrying out interdisciplinary projects. This trend is more pronounced at upper secondary than at lower secondary level. ICT is only taught as a separate subject in its own right in Hungary. In Norway it is used exclusively as a tool for other subjects at lower secondary level.

Most countries employ specialist teachers for ICT, even in cases where ICT is not a separate subject but used as a tool for other subjects but used as a other tool for other subjects. ICT specialist teachers support the other subject teachers and participate in cross-curricula projects.

In most involved countries, in-service education in ICT is part of a national programme for improving the ICT skills of teachers. The programmes provide courses for teachers for all three levels of education. In some countries teachers are only a target group of national programmes aiming at enhancing ICT knowledge of pupils as well as teachers. In general this are programmes with longer duration, and normally teachers are not obliged to participate in these programmes.

## **2.7 Research**

Approximately in half of the countries which are involved research and studies

concerning Schoolnets are already implemented. Research concerning the educational use and educational technologies has been carried in all involved countries. For detailed descriptions of research initiatives please refer to the country section of this report or to the full papers which are published on the project website.

## **2.8 Examples**

This report includes a vast number of Schoolnet examples. To give an overview of best practice examples of Schoolnets concerning structure, content and services, organisation, development and technology it is possible to highlight a few of the compared initiatives:

- Danish Schoolnet Sektornet, [www.sektornet.dk](http://www.sektornet.dk) (structure, contents and services, organisation)
- Schoolnet Liechtenstein, <http://www.schulnetz.li> (organisation and technology)
- Norwegian Schoolnet, <http://www.skolenettet.no> (content and services)
- Hungarian Schoolnet, <http://www.sulinet.hu> (development)
- Latvian Schoolnet, <http://www.liis.lv> (limited financial sources)
- Schoolnet UK, <http://www.teachernet.gov.uk> (structure and services)

There are many similar Schoolnet examples compared to above mentioned which can be found in the country reports. This is an indication for the fast development in the field of Schoolnets and educational ICT policies.

### 3 Annex 1

#### Structure of basic research in involved countries

Please research and gather information about Schoolnets in your countries – summarise it in English in the spaces provided. This should be returned to Thomas Daxkobler (projects@schulgemeindeverband.at) by October 1st, 2005 at the very latest. An early return would be appreciated.

What is a Schoolnet? – how are they described in your language/country?

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Schoolnets and policy – how do Schoolnets fit into the education system (policy) in your country?

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Who are Schoolnets designed for? – are they for teachers, school managers? headteachers? Schools? Pupils? Educational experts?

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What do Schoolnets contain? What do they offer? What features do they have in general? (Forum, information, education resources)

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Who is involved? – who manages or runs the Schoolnet? Who supports and promotes? Who supplies information and tools?

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What research has been done about Schoolnets? – who has written about Schoolnets in your country/language? What did they say? PLEASE make sure the reference is provided (author, year, title, publisher and Web address if relevant)

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Schoolnets in Schools - What do Schoolnets do? How are schools using them?

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Financial aspects of Schoolnets – who finances Schoolnets? Who sponsors or supports them? Is industry involved? Is it Government funded or private companies? Who are the sponsors? For example Microsoft, Intel etc.

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Organisational aspects of Schoolnets – how are they organised? Who manages them? Who promotes and advertises them?

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Examples of Schoolnets – provide Web sites and information about them

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Use of ICT in schools

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Why should we have Schoolnets? – what has been said about Schoolnets?  
Is there any publicity or are there press releases/advertising about Schoolnets in your country? Have they run or organised any special projects or campaigns? What are they?

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Any other information or examples or research on Schoolnets

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Examples of European Schoolnets for schools

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References – provide a list of references (where you got the information from) and any links in here

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## **Publication Proposed Structure**

This is a key part of this project, without which the outcomes cannot be successfully achieved. It is anticipated that this report will consist of five parts:

- Introduction
- Context, desk research and country situations
- Innovative aspects of Schoolnets and ICT and Learning
- Questionnaire survey and analyses and recommendations of results
- Presentation of project partners
- Other data presentation

This document provides a proposed structure to the report and some guidance and an example of writing style. It is produced for comment, discussion and finalisation. It is likely that as the research is undertaken new topics and sections may need to be added and some might need to be removed. Please send any comments and additions to this document to Thomas Daxkobler (projects@schulgemeinerverband.at) by June 30th 2005.

## **Publication Proposed Structure**

### 1) Introduction, context and desk research

- Executive Summary
- Schoolnets
- Definitions of Schoolnets
- Schoolnets and policy in Europe
- What do Schoolnets contain?
- Who is involved?
- What research has been done about Schoolnets?
- Schoolnets in Schools
  - What role has Schoolnets play in education
  - The role Schoolnets could play in education
- Financial aspects of Schoolnets
- Organisational aspects of Schoolnets
- The European Schoolnet Concept
- European Situation
- ICT and schools in Europe

- Making a case for Networks
- Schoolnets in European Schools
  - Primary Schools
  - Secondary Schools
- Examples of European Schoolnets for schools

### **Context, desk research and country situations**

#### Country Reports

- Austria
- Bulgaria
- Denmark
- France
- Hungary
- Italy
- Latvia
- Liechtenstein
- Norway
- Poland
- Romania
- Slovakia
- Slovenia
- Spain
- United Kingdom

### **Structure of basic research in involved countries**

- What is a schoolnet
- Schoolnets and policy
- Who are Schoolnets designed for?
- What do Schoolnets contain?
- Who is involved?
- What research has been done about Schoolnets?
- Schoolnets in Schools
- Financial aspects of Schoolnets
- Organisational aspects of Schoolnets
- Examples of Schoolnets

- Use of ICT in schools
- Why should we have Schoolnets?
- Information or examples or research on Schoolnets
- Examples of European Schoolnets for Schools
- References
- Innovative aspects of Schoolnets and ICT and Learning
- e.g. Results of the project conference
- Contributions from researchers
- Articles of project partners or associated partners

### **Questionnaire survey, analyses and recommendations of results**

The development of this questionnaire will take place in the next weeks and the questioning will be carried out electronically via the project website. Project partners and members are asked to disseminate it as much as possible to the target group of schoolnetworks. The analysis and recommendations of this survey will be published in the final publication.

### **Presentation of project partners**

**A maximum of 200 words / project partner**

### **Other data presentation**

### **Writing style**

Below is provided a short section on the anticipated writing style. It is reasonably formal, with some academic aspects for credibility, but written in a simple and straightforward style punctuated with short summaries for decision makers, with significant items clearly highlighted. These short summaries could be translated into several languages for effect.

## **Schoolnets**

### **1.1 Definition of Schoolnet**

Schoolnets usually embrace a multifunctional approach comprising technology issues (connectivity and infrastructure), curriculum integration processes, pedagogical assessment, professional teacher training, developing suitable content and software and creating online communities using ICT in practice. Schoolnets may even be capable of reshaping education policy supporting research and innovation. Size and structures of schoolnets may be different regionally, nevertheless case studies the booklet is based on show substantial accord of best practice ICT use in education.

Source: P. Stauber, SGV Wolfsberg, Press Release 17 May 2006, on the occasion of start of the project "Improvement of national SchoolNets in Europe"

VERY IMPORTANT!

When gathering information IT IS ESSENTIAL that all the sources of information, data, opinions, facts and examples from Web sites, books, articles and ALL other things need to be fully sourced (referenced) so if they need to they can be followed up if need be.

Please provide the referenced details when answering the questions posed. If there are no suitable comments or examples to be added then please say so – do not leave blank.