

Schoolnet Report –ROMANIA

What is a Schoolnet?

The simplest translation of the word Schoolnet into Romanian is “school connection through internet”. In fact, we may describe the term Schoolnet in Romanian as a connection between schools, realized with the help of international means, especially the internet.

Schoolnets can be seen also as a partnership between national and local authorities, the educational community and the private sector. This promotes continuous learning, using informational means.

Schoolnets should also contain, among schools of all levels, open libraries that are a source of direct information for the users. We consider the Romanian Education Network, or RoEduNet, as one of the Schoolnets in Romania.

RoEduNet is an organization and in the same time it is a data communication system, which connects a large number of local area networks to a national WAN data communication infrastructure. This infrastructure is operated by Network Operation Centers (NOCs) in Bucharest, Galati, Iasi, Targu-Mures, Cluj, Timisoara and Craiova. The aim of these technical complexes is to offer the participating universities, high schools, cultural, scientific, research and nonprofit institutions the means to communicate with each other, as well as to have access to the Internet and its informational resources.

Another one is TVET (Technical Vocational Education and Training)

Schoolnets are created in order to gain cooperation, focused on TVET objectives. These objectives are qualitative and professional development as well as social and professional integration, according to pupils' expectations and demands of the working field.

Schools cooperate together in order to use the resources more efficiently (human and material resources, equipments, workshops, etc) and to create viable partnerships (with the social partners).

Schoolnets and policy

The Romanian system of education consists of two level; pre-university education and university education:

- Pre-school children
- Primary school pupils
- Secondary school pupils
- Theoretical or professional high school pupils.

Pre-university education as well as primary and secondary school education are representing the basis of the general knowledge of young people and it is mostly financed by the public budget. High school education which is mostly financed from the public budget offers pupils the access to a career-oriented field of instructions. The training lasts 3 or 4 years for the following stages of study.

Number of public educational institutions:

6099 Primary schools (forms I-IV): 485 from urban area and 5614 from rural area.

7583 Secondary schools (forms I-VIII): 1996 from urban area and 5582 from rural area.

1309 High Schools: 1121 from urban area and 188 from rural area.

The basis for modern education requires a transformation of methods and ways used in education. By these educational procedures we mean ways of teaching and communicating. The role of computers becomes thus essential, both as an educational means and as a source of documentation as well as a quick access to information for pupils and teachers.

Regarding this, there are isolated preoccupations. Several schools benefit from programs of certain associations or non-governmental groups. But this does not have a national character and it is not oriented towards the act of modernization of the teaching act, concerning the use of computers. The Ministry of education introduced "the technology of education and information" as a school subject in pre-university education for all levels of study.

The project suggests a three-direction development:

- The elaboration of a new curriculum that will monitor the introduction and the gradual application of ICT in teaching pre-university subjects
- Teacher's training in the field of the practical use of ICT in education
- Providing laboratories with educational software and equipment that will facilitate education based on ICT and to become a turntable of communication within a national network of knowledge.

The project proposes a three-stage development, which will ensure the efficient use of resources and to obtain a great benefit. The first stage lasting a period of two years is intended to pilot the project. The main focus is addressed to the conception and elaboration as well as on evaluation and improvement. The Ministry of Education will produce a working team formed by:

- Councillor of the State Secretary for the pre-university education
- The manager responsible for the management of the pre-university education
- Informatics inspectors
- A representative of the direction informatics (MNE)
- A representative of the coordination service RoEduNet
- Regional informatics inspectors
- Teachers with experience in this type of projects
- A representative responsible for curriculum matters

- A representative, responsible for teaching development
- A representative of the Institute of educational knowledge

NGO representatives, who are qualified in subjects of the work area and representatives of ICT companies can take part in the mentioned working group. The group will approve and evaluate the evolution of each stage.

The project will last 4 years. The goal is the gradual implementation of ICT (information and communication technologies) in pre-university education.

The project will cover the institutional network of pre-university education at a national level, during three stages: 15% during the first two years, 35% in the third year and 50% during the last year.

The budget mentioned below covers the starting costs and the first project stage for two years and for 15% of the educational institutions (2250 schools).

- Basic equipment and software 75%
- Laboratory for instruction and communication 45%
- Mobile multimedia and multi disciplinary laboratory 17%
- Metrological laboratory 13%
- Development of the RoEduNet network of communication 2%
- Development of the infrastructure superior level 0,5%
- Local knot of communication-150 knots 1,55
- Instruction 10%
- Making up projects, plans, strategies, documentations 0,5%
- Teachers training 1%
- Instruction and mass courses 5%
- Instruction network administrators 0,5%
- Documentation materials, courses, publications, handbooks of utilisations 35
- Educational software 10%
- Communication costs plus additional ones 1,5%
- Expenses regarding the technical assistance 1%
- Expenses for evaluation 0,5%.

Who are Schoolnets designed for?

Schoolnets are designed for teachers, students, school managers and experts operating in education and schools. Each category is part of the schoolnet. Informational resources can be found within it.

Teachers exchange experiences between themselves regarding new methods for evaluation, teaching and learning. Also students can communicate and improve their linguistic abilities.

Schools can present their educational activities, in which they take part.

The main actors are the management teams, which contain the expert of the curriculum, the orientation advisor, the manager responsible for the quality check and the manager of the social partnership (This is the link to the hiring staff).

What do Schoolnets contain?

Schoolnets must contain an educational portal, which offers developed curricula, teaching programmes, lessons, educational software created by teachers, students and researchers.

The main goal of RoEduNet is to provide a modern data communication infrastructure that connects all educational, research and cultural institutions in Romania and to provide Internet connectivity for all concerned institutions.

RoEduNet provides a full range of IP services, such as DNS, HTTP, SMTP, FTP, web cache (proxy), NTP, but also a couple of services implementing the new IP protocol, Ipv6, acting as a test for new and upcoming technologies.

Another aspect of RoEduNet activities is the development of human resources needed for the use of ICT. Since 1998 RoEduNet is a part of the Cisco Networking Academy Program. The hierarchical structure fits well on the RoEduNet structure. Each RoEduNet NOC is a Regional Academy (Bucharest NOC hosts in fact a CATC).

Also other connected institutions, like secondary schools, schools and universities joined the program as it is necessary concerning their internal network structure.

Main services of the RoEduNet are:

- Learning materials
- Educational resources – (equipments, workshops, professional development facilities, human resources)
- Informational resources – e.g. information about the local and regional demand of working forces
- Connections (list of servers and portals related to education in Romania and the world)
- News, information about national and international events, news in the educational field
- Communication, chat, forum, mailing lists, conferences
- Curricular resources – composition of the curriculum within the local development

Who is involved?

Schoolnets are managed by educational experts. Their promotion and support depends on educational associations or governmental support. Persons, who are involved in Schoolnets provide the necessary information. Teams especially founded for these networks and responsible people from each network partner are involved.

What research has been done about Schoolnets?

www.iasi.roedu.net

www.e-scoala.ro

www.edu.ro

www.didactic.ro

www.invata-ma.ro

www.tvet.ro

www.intuitext.ro

www.amoba.ro

At the beginning of the year 1997, the name Romanian Education Network, or short RoEduNet, appears officially for the first time, replacing RDIS by an order by the minister of education (3629/March 25th 1997). In April of the same year the international connection of RoEduNet has been upgraded to 1,5 Mbps.

In a short period, from November to June 1994, more than 30 institutions from main Romanian cities were connected to the new emerging network via dial-up and later via low speed, analogy, leased lines.

In late 1994 this network gathered an official status and was called the “Romanian Higher Education Network” (Reteaua de date a invatamantului superior-RDIS) by an order of the Minister of education (8964/November 24th 1994).

Although RoEduNet was founded officially in August 1998, the history starts earlier in 1990, when a project about data processing and communication was started between the “Politehnica” University of Bucharest and the Technical University of Darmstadt, Germany. The goal of the project was to develop a data communication infrastructure and an experimental e-mail system, which is connected to international data networks.

In October 1990 the e-mail system started to operate using donated equipment from the technical University of Darmstadt. The connectivity was accomplished via dial-up means.

In 1991/1992 the basics for a Romanian national academic network were founded with great help of “Deutches Forschungsnetz Verein (DFN-Verein)”. The main purpose of this new project was to install a communication server and a X25 switch, connected to German Scientific Network-WIN.

At the end of 1992 a X25 dedicated line has been used between Bucharest and Germany. Now the establishment of new connections inside the country was possible.

Another important milestone was the first local area network at the Polytechnic University Bucharest, which was installed in November 1993. This communication infrastructure (LAN) is connected to EuropaNet through a 9,6 Kbps dedicated line. The other endpoint was the Europanet's access node of Düsseldorf, Germany.

After establishment of this first internet point of presence in the academic world of Romania, the process of growing in the data communication infrastructure sector has been started. In the same year two network connections started providing access to the internet in the country: Bucharest-Cluj and Bucharest-Iasi.

In June 1995 a new communication channel was realised between Bucharest and EuropaNet(DanteNet) access node in Amsterdam. This was also an upgrade from 9,6 to 64 Kbps. This new communication channel was saturated at the end of the same year (more than 70 institutions connected).

Therefore increasing the bandwidth was necessary. This has been done in February 1996 with an additional 256 Kbps VSAT connection to TaideNet.At. In this time all cities with universities got a connection to the Romanian education network.

After the official foundation of RoEduNet according to a Romanian government decision, all 6 NOCs were equipped with high-end routers, servers and digital communication hardware, as the minimal configuration to be able to support a large network.

Due to the increasing demand of network resources, in December a new 4 Mbps connection started working simultaneous with the existing link. The new connection works via LORALORION and the funding was approved by the Education Ministry.

The years 1999/2000 were not the best for RoEduNets development. Many problems occurred, regarding bills for the internal connection between NOCs and between NOCS and Pops. Having good reasons, the local carrier RomTelecom suspended to lease digital lines to RoEduNet for a couple of long periods.

In 2001, RoEduNet closed the satellite connection, which was expensive. Also big transmission delays occurred. A terrestrial 8 Mbps link via RDS/GTS has been chosen by RoEduNet.

In the year 2003 the capacity was 622 Mbps.

This year the connection from RoEduNet to GEANT will be established, by means of a 34Mbps capacity connection.

Schoolnets in Schools

Schoolnets want to help schools. The level of the school plays no role. The schools use schoolnets to suggest ideas for educational projects.

Schools use schoolnets regarding aims like:

- To run partnerships for school projects such as Socrates-Comenius, Leonardo da Vinci, etc. and to promote educational events to take part in.
- Exchange of information regarding educational policy.
- Practical use of educational patterns
- On-line testing, assessments and evaluation
- Basic tools for elaboration of electronic contents.
- Access to databases
- Curricula and schedule by study hours
- Teaching/learning materials
- Information of the national educational structure
- Indicators for the educational situation.

Financial aspects of Schoolnets

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

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

During the project UIP, www.tvet.ro was very important. Furthermore schools have their own websites and promote themselves mostly through their actions.

Schoolnets are organized as a school network. A team, coordinated by a general manager, oversees the schoolnet. Schoolnets are promoted through different channels but also through educational companies.

The strategy of Schoolnets is promoted by:

- The Ministry of education
- Councillor of the State secretary for the pre-university education
- The manager responsible for the management of the pre-university education
- Informatics inspectors
- Regional informatics inspectors
- Teachers with experience in diverse projects
- A representative responsible for curriculum matters
- A representative, responsible for teaching development
- A representative of the Institute of educational knowledge

Examples of Schoolnets

www.e-scoala.ro is an educational site for teachers and pupils. There you can find on-line lessons, career advice, information of European programmes, an on-line forum, on-line games and news about education.

www.didactic.ro is a site dedicated to modern teachers. It contains information related to didactic materials needed in schools, programs of school financing, and orders from the Ministry of Education.

www.intuitext.ro is a site dedicated to e-learning, containing interactive lessons and the latest news about educational software.

www.edu.ro is the Ministry of Education official site, which displays the educational strategies and politics of the Ministry.

www.amoba.ro is a site that promotes and organizes ICT training activities for the Hungarian minority in Romania.

www.invata-ma.ro

Teach-me.ro displays educational programs, which are promoted by Romanian companies and Romanian teachers or pupils.

www.tvet.ro is a site that promotes development of professional and technical education. This site includes a network of 122 professional and technical schools.

Use of ICT in schools

The information and communication technologies have several functions in schools. There are several roles: For example they work as a neutral mediator between the person who learns and the knowledge that has to be taught, evaluator, tutor and partner.

In the teaching process ICT may be regarded as an instrument of transmission and assimilation. Once the content of teaching is stocked 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 the teachers to prepare their individual work like preparing of lessons, courses and tests.
- The student can use the instruments for his/her individual work: The computer makes the curriculum more flexible and helps in organizing and guiding individual learning.

- **Demonstrative basis:** The computer offers an excellent basis for demonstrations and materialization of knowledge, either by taking over the 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.

Why should we have Schoolnets?

Schoolnets are needed in the educational system in order to help institutions to stay in contact, to help establishing partnerships, to exchange 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 on-line 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.

Examples of European Schoolnets for schools

www.eun.org

www.educa.ch

www.schule-bw.de

www.infoguide.emu.dk

www.gogab.se

References

www.edu.ro

www.iasi.roedu.net

www.tvet.ro

www.didactic.ro

www.finantare.ro