

Slovenia

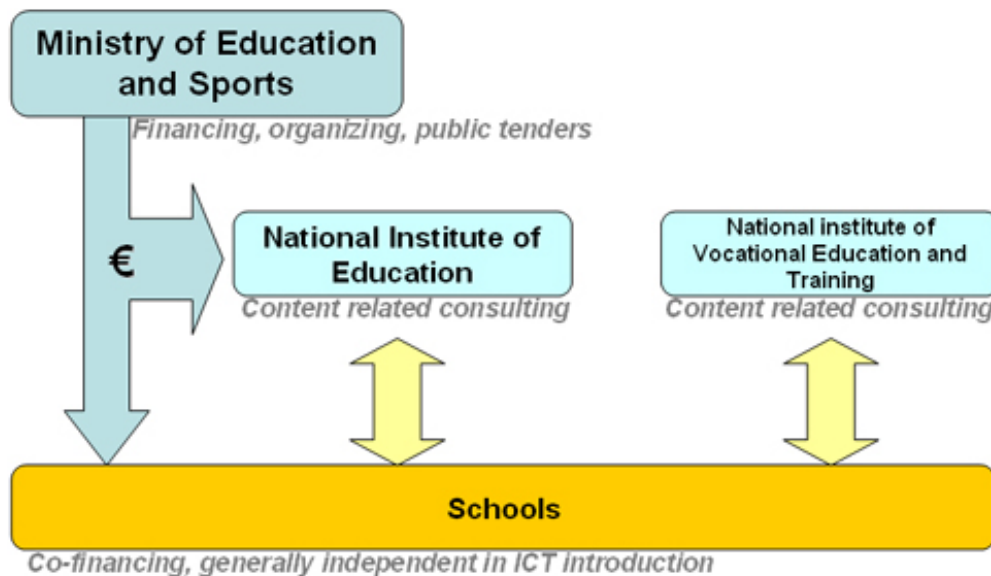
1. NATIONAL POLICIES FOR THE USE OF ICT IN EDUCATION

Responsibilities for ICT in schools

There are three main players that are responsible for the development in education process in primary and secondary schools in Slovenia.

1. **The Ministry of Education and Sports (MES)**
2. **The National Education Institute of The Republic Of Slovenia (NIE)**
3. **The National Institute for Vocational Education and Training (NIVET).**

Responsibilities for ICT in schools in Slovenia are generally divided among all three of them, while at the same time, schools have enough freedom to suggest and implement specific ICT technologies, services and content in their environments.



MES is responsible for **the financing of introduction of ICT** in primary and secondary schools through public tenders. The majority of resources are intended for connectivity and infrastructure, though the focus is changing towards e-content financing in the end of the year 2005. The year 2006 proved to be the breaking point as MES, along with the European Structural Funds funded more than 20 e-content related projects for elementary and secondary schools. This continued in 2007 and 2008.

NIE is responsible for **ICT content and services related consulting to schools and teachers**. There are specialists (consultants) employed in NIE, responsible for each of the primary and secondary schools subjects curricula monitoring and development. In this respect they are developing new methods of education that include introduction of ICT. They are also responsible for teachers training.

NIVET has mainly the same role as the NIE. The only difference is that they are specialized in curricula monitoring and development of **vocational subjects in secondary schools**.

Both institutions (NIE, NIVET) have only an advisory role. Schools are mostly independent in their choices of ICT introduction. They suggest technologies, services or content they wish to use to the Ministry and co-finance their introduction.

In the period 2000 – 2004 the Ministry of Information Society played an important role in introduction of ICT in the Slovenian education system. However the Ministry was discontinued in 2004, its responsibilities were transferred to Ministry of Higher Education, Science and Technology and Ministry of the Economy.

Today the Ministry of Higher Education, Science and Technology takes care of ICT related issues of higher education, but not in primary and secondary school (MES takes care of them).

MES (<http://www.mss.gov.si/>), NIE (www.zrss.si), NIVET (www.cpi.si)
Contacts: Marko Papić (marko.papic@ltfe.org), Janez Čač, Borut Čampelj (name.surname@gov.si)

ICT Policy

The main background for the ICT introduction in schools is the **“Act about the Basic Research and Development Programmes”**, approved by the Slovenian parliament in November 2004, with a special section on ICT introduction in schools, putting the focus on improving the quality of education with ICT means. The act states, among other things, that schools should perform ICT supported curricula wherever feasible and that the graduates, after completing primary and secondary schools in Slovenia should be ICT literate.

In 2002, MES started three main **Targeted Research Programmes** with the aim to develop strategy of ICT introduction in schools from the technical, didactical and organizational points of view. These programmes were performed by experts from universities in Slovenia and resulted in technical and didactical recommendations development, complete national e-learning strategy development and several e-learning pilot deliveries. However, neither the strategy, neither action plans nor recommendations were formally accepted by any of the responsible institutions in Slovenia.

MES has started a programme called **“Računalniško opismenjevanje (RO)” (eng. Computer Literacy)** in 1996. It is an ongoing programme that includes financing of teachers training, content development and strategic goals development. The last one is performed by the **“Programme Council”** that consists of experts from MES, NIE and Slovenian universities. Experts have multidisciplinary knowledge

(technology, didactics and organizational aspects). Members of the council propose different ICT related strategic orientations that should eventually result in introduction of ICT in schools.

Above that, MES has established **the "Bureau for Education Development"** with the wider aim of improving the quality of education in primary and secondary schools in Slovenia. Members of the bureau (multidisciplinary experts) discuss ICT introduction as well, thus giving the bureau similar role as the Programme Council.

It should be noted that the Programme Council performed its role from 1996 until 2001 successfully as it was the time of rapid ICT introduction in schools in Slovenia. After that, so called "enthusiastic" period, the responsible institutions (MES, NIE and NIVET) didn't find the means to put the focus from the ICT infrastructure introduction to the ICT content and services introduction on the large, national scale.

- sio.edus.si (Slovenian Schoolnet), <http://www.mss.gov.si/>, www.zrssi.si, www.gov.si;
- Contacts: Borut Čampelj (borut.campelj@gov.si), Marko Papić (marko.papic@ltfe.org)

There is no specific ICT related initiative with well defined aims and expected outcomes. The introduction of ICT in Slovenian schools is a long term ongoing process that enables teachers as well as students to use ICT in schools extensively.

The broadband infrastructure is expanding. ICT terminals are available for use in schools and at home. Multidisciplinary knowledge needed for large scale ICT use is also available in universities and research institutes in Slovenia.

Apart from the well developed infrastructure and knowledge available, financing of ICT introduction is not the problem. Until recently assets were invested mostly in infrastructure, while e-learning content and services were never in the forefront.

Having in mind all the factors mentioned above, one can ascertain that there are many resources that haven't been used and that the ICT could be integrated in Slovenian schools on the larger scale and the challenge lies in putting all the pieces together.

Internet Safety Policy

There is no specific policy program concerning internet safety in schools. The general Internet Safety policy is included in the strategy "Information Society in Slovenia" developed by the former Ministry of the Information Society of Slovenia (Ministry of the Information Society of Slovenia was abolished).

Academic and Research Network of Slovenia (ARNES), with its main task of development, operation and management of the communication and information network for education and research, gives special focus on the Internet Safety, providing all the schools in Slovenia with manuals, recommendations and filters about Internet Safety.

Another initiative for internet safety called Family Filter was launched by Slovenian biggest internet search engine Najdi.si in collaboration with Ministry of Education and

Sport, The Slovenian Office for Youth in 2003. Family Filter disables access to pornography related web pages. User has to download a free Najdi.si toolbar and switch on the filter. First version of filter blocked only explicit content found via Najdi.si but the second version filters out all explicit content no matter how user accesses web. The filter is intended for families, schools and other educational institutions.

Contacts:

- Academic and Research Network of Slovenia (www.arnes.si, arnes@arnes.si)
- Slovenian Office for Youth (www.uradzamladino.gov.si, uradzamladino.mszs@gov.si)

Broadband projects

The MES has financed the introduction of broadband connectivity to schools since 2003. For this purpose MES spent 400 million SIT (1.7 million €) in 2005. Broadband is expanding rapidly and is being promoted by MES as well as Ministry of the Economy.

The latest public tender of the Ministry of Economy was in October 2005 and consisted of purchasing public infrastructure of optical fibers that will link schools with the ARNES (Academic and Research Network of Slovenia) access points.

While the MES finances infrastructure, schools are responsible for financing the costs of the bandwidth.

Broadband connected schools use the following technologies:

- Optical fibers (100 Mb)
- ADSL (2Mb, 4Mb, 8Mb)
- Cable TV operators (bandwidth varies 2Mb – 5 Mb)

www.arnes.si,

http://www.mg-rs.si/indexn.php?akcija=cela&id_novica=491

Contacts: Janez Čač MES (janez.cac@gov.si), Tomi Dolenc ARNES (tomi.dolenc@arnes.si)

Initiatives and good practice linking school and homes and school/ external organizations (community organisations, museums, libraries, archives)

In the beginning of 2005 MES started **PHARE “Lifelong Learning” programme** that had the main aim to accelerate the use of ICT in informal and formal education, as well as to encourage connections between schools and external education organizations (especially libraries and museums). The programme resulted in several ongoing projects that foster delivering ICT based e-content from external organizations to schools and vice versa. The success of the programme can not be defined yet, as the deliverables of the projects are expected in the first half of the year 2006. It is also worth mentioning that only smaller number of projects cover the primary schools environment. Most of these are focused on teachers as the main target group of users (teacher training, use of e-content), whereas students are

involved in the results of the projects indirectly.

Additionally, the former Ministry of Information Society launched the **e-School initiative** in 2001. This resulted in establishing multimedia information infrastructure in selected schools (currently 30 schools) all over Slovenia (proportionally throughout the country). Multimedia equipped classrooms are to be used not only for curricula activities within schools, but also for external public in order for the computers and the infrastructure to be used optimally. Any Slovenian citizen can use the technology, access Internet or use additional ICT services (videoconferencing, etc) free of charge.

Moreover, the government (MES, Ministry of Culture) financed the introduction of ICT in organizations such as museums and libraries (e-libraries). This resulted in the possibility of extensive ICT based collaboration between schools and external organizations. There is no up-to-date research on the extent and practice of this collaboration, nevertheless, it can be said that schools mostly collaborate with **local** external organizations. Visits to these organizations are being organized and multimedia materials from them are being used in the learning process.

- <http://mid.gov.si/> (Ministry of Information Society - former)

- <http://www.mvzt.gov.si/> (Ministry of Science and Higher Education)

Contact person: Andrej Tomšič (andrej.tomsic@gov.si)

2. ICT IN THE CURRICULUM

General national curriculum framework

The Slovenian parliament adopted new legislation about education in Slovenia in February 1996. It covers all aspects (from organizational up to financing) of the educational system in Slovenia. It defines methods of organizing education as well as the mechanisms of adopting curricula. It defines the **National Curriculum Council** which has appointed the **commission** to prepare and adopt programmes of education in Slovenia on all levels of education (pre-school, primary and secondary school level).

The curriculum in Slovenia is **goal oriented**. It is **decentralized**, as the schools and teachers have much freedom to use materials that they expect will produce the best results in the education process.

However, for the purpose of this questionnaire, we conducted a small scale survey of the teachers' opinion about real possibilities of implementing new methods of education within existing curriculum. The survey included teachers and schools that would like to be partners within eMAPPS.com project on one hand and consultants from NIE on the other. Results of the survey show that teachers think they have limited possibilities of adapting new methods of education, whereas NIE consultants on the other hand, assure that teachers have all the freedom in adapting of the educational process. Presumably, the issue is in the expectation of the teachers that they should have more support from the consultants and that all materials used in curricula should be somehow certified that they are in accordance with the curriculum.

The national curriculum was renewed several times afterwards. From the ICT usage point of view, the most important renewal was the one that focuses on the teachers' training unlike in the past, when teacher training was mentioned, but never given too much focus. The renewal uses the term teacher education, which stresses that training of the teachers is not only the set of short (1 day up to 1 week) courses about the use of ICT (in education) but a well defined ongoing process with the combination of didactical, organizational and technical knowledge. This gave the possibility to teachers to adapt their teaching methods and to use ICT in the learning process extensively.

- National curriculum council (<http://www.mss.gov.si/>)

ICT integrated into the curriculum

The Primary school curriculum is formed of compulsory and optional subjects. Students have to pass the entire compulsory subjects and to choose optional subject in third triad of the primary schools. There are no ICT related subjects on compulsory subject list. However there are two ICT related subjects on the optional subjects list. First is "Information Literacy" and the second is "Computer Science, Multimedia, Computer Networks, Text Editing".

"Informational Literacy" is an 35 hour subject, which aim is to enable pupils to acquire, select, analyze, evaluate, use and present information.

"Computer Science, Multimedia, Computer Networks, Text Editing" is 105 hour subject. Pupils gain basic knowledge to understand and use computer and computer networks.

Both subjects are performed in the third triad of the ninth grade of the primary school (seventh, eighth and ninth grade which means 12, 13, 14 years of age).

ICT competences are mandated in the national curriculum. Due to the fact that ICT related elementary school subjects are optional, it is difficult to state that competences after finishing elementary school are alike for all students throughout the country. According to that, there are no ICT competence assessment schemes for students on the national level in the form of certification or credits. Teachers are obliged to send weekly reports about the progress and compliance with the curriculum. Their reports are subject to evaluation within their school or on the national level. Electronic assessment in the form of e-portfolios are planned to be introduced in the second part of the 2008/09 school year. This depends on the state of the Slovenian National Educational Portal, which is going through redesign at the moment, and will support the technical means to accomplish e-assessment on the national level. Details are not yet known.

The Secondary school curriculum is also formed of compulsory and optional subjects. In this case, the ICT related subjects depend on the programme. Most four grade secondary schools have compulsory ICT related subjects, whereas the content of these subjects and their name depends on the content of the programme. Unlike technical schools, that have ICT related subjects in all four grades, gymnasiums and other schools have only one or two years of ICT related subjects. The goal of these

subjects (e.g. "Computer "Science and Informatics", "Basics of computer Science") is to teach students about the basics of information literacy. Their content is similar to the content of ECDL (European Computer Driving Licence), but not as extensive.

We should also state that teachers are encouraged to use ICT into their teaching process where possible.

- Secondary schools: www.mss.gov.si, Mr. Anton Slanc (anton.slanc@gov.si)
- Primary schools www.zrssi.si

Curriculum reforms

The new Government has put into Parliamentary procedure Amendments to the Basic Education Act. The changes will affect the following aspects: The national assessment of pupils at the end of the first triad (after 3 years of primary education), which is optional, shall be abolished. The obligatory state wide external examination at the end of basic education (at the end of 9th grade) shall no longer be certified. Pupils' final grade shall be based on the marks and the work over the school year only. The examination results shall be used for information and school evaluation purposes only. Those upper secondary schools which usually limit the enrolment shall be allowed to use also the external examination results as an additional criterion for ranking candidates. The examinable subjects at the end of basic education shall be mother tongue, mathematics and a third subject. The Minister in the consultation with the National Council of Experts shall determine each school year, which third subject (chosen among the set of compulsory subjects only) shall be assessed. The 10th optional year of basic education shall be abolished.

- <http://www.mss.gov.si/>, Mr. Borut Chwatal (borut.chwatal@gov.si)

3. ICT IN PRACTICE

Barriers affecting the use of ICT:

ICT in the curriculum: There is no evidence of any barriers that would affect the use of ICT in schools. The use depends on the skills and enthusiasm of the teachers as well as the support given by the principals of each school.

Games: Different games were already used in primary school education. Some ICT based games were purchased by the MES or produced in the past, however, there was no systematic survey or fostering of the use of games. There is no barrier in the curriculum or any act related to the use of games in the primary schools.

Mobile phones in schools: Usage of mobile phones among pupils behind the school walls is **regulated by internal acts** of each school. There are no uniform regulations on national level. Usually internal acts force pupils to set their mobiles to the silent mode, but they can be switched on at all times.

- www.zrssi.si, National Institute of Education, Mr Igor Lipovšek (igor.lipovsek@zrssi.si)

Autonomy of schools to integrate ICT in schools

Primary schools have complete autonomy on ICT integration in everyday school practice. Teachers are not limited to how the subject is presented to the pupils. The materials used don't need any special certification about compliance with the

curriculum from NIE. Teacher's decisions can only be guided, supported by the consultants of the NIE.

- www.zrssi.si, National Institute of Education, Mr Igor Lipovšek (igor.lipovsek@zrssi.si)

ICT integration in schools (for primary and secondary) education:

Primary education:

There are estimates by the rule of thumb that **on average there is 1 computer equipped classroom** in every primary school. Such classroom has typically **16 computers**. Those estimates say that **1 lesson out of 70 lessons** (1.4%) take place in those computer rooms. However we can estimate that **around 25% of school lessons** are presented with the support of computer, projector and internet in "plain" classroom.

Most schools used computers in the eighth grade at the "Technical education" class (277 schools). 30,3% of schools used computers within social subjects whereas the use of computers at the natural-sciences subjects shows interesting decline: from 34,1% of schools using computers in 1998 to 26,9% in 2003. The reason for this is probably general lack of systematic introduction of ICT on the national level.

If the use of computers in schools is looked upon from subject by subject comparison, most common use of computers is at the "Mathematics" class, whereas computers at the "Music" class are not used at all. The research, conducted by the Faculty of Education, University of Maribor shows, that reason lies in the commonly accessible local Slovenian software, financed by MES, e.g. "Basics of mathematics".

Schools also answered questions about planning of purchasing new computers and IT infrastructure. In the year 2003, 83,4% of schools planned replacing their ICT infrastructure in the forthcoming period. This shows awareness about the necessity of providing modern infrastructure for students in schools.

- Survey: Current situation and trends in the use of computers in Slovenian schools; Ivan Gerlič, Ph. D. (ivan.gerlic@uni-mb.si)
- <http://www.pfmb.uni-mb.si/raziskave/os2003/plana.htm>

Known uses of games

There is an initiative called Happy School (Vesela šola). Happy School brings all kinds of topics to pupils via popular weekly newspaper called Pil. The content that covers all possible kinds of subjects is presented in a more relaxed and humorous manner supported with many illustrations, photos and real world examples. To name a few topics: football, advertising and media, mobile telephony, world religions, the zoo. The goal of Happy School is to supplement and variegate school lesson and to deepen and build further on knowledge.

It is recommended to use Happy School as additional learning material at regular lessons. Every year Happy School competition is taking place at local, regional and national level. These competitions are very popular among pupils.

There were also several tests performed about using games in primary school level (first triad). These tests were not followed by any extensive survey, therefore it is difficult to discuss the pedagogical effects of using games in primary schools in

Slovenia. Several, locally produced desktop games about Geography and Mathematics were used within curriculum in the 1994, 1995 and 1996.

- www.veselasola.net

Use of online learning resources, tools and provision of virtual learning environments

Online learning resources are available for use from different vertical portals that are either oriented on the specific subject area or the level of education. Slovenia School Net (SIO – Slovensko izobraževalno omrežje) unfortunately doesn't comprise information about all the resources, so it is up to teachers to find and use the resources.

We can find out that many subject areas are well covered, especially Mathematics, Chemistry, Physics and English for primary school level.

ICT tools are provided on behalf of MES which purchases tools and licences for use within schools. Suggestions about which tools are to be provided comes from schools or consultants of NIE. In most cases MES provides all schools with licences for tools to be used. These tools cover following subjects: Mathematics and Physics.

Virtual learning environments are also available for use within schools. Again, their use is not financed systematically, so it is up to schools to find a way to use virtual environments. Currently following virtual environments are used in Slovenian schools:

- **E-CHO** is LMS (Learning Management System) and LCMS (Learning Content Management System) software, completely developed at the Faculty of Electrical Engineering, University of Ljubljana (<http://dl.ltfe.org/>, <http://sola.ltfe.org/>). Faculty offers complete support to teachers who want to use the system. E-CHO is an LSP (Learning Service Provisioning) platform as well, so most schools use it as a hosting service – they have their own graphical user interfaces, users, content, e-learning deliveries, whereas the system is located at the premises of the Faculty of Electrical Engineering that guarantees complete technical support and good connectivity. This is being financed exclusively by the Faculty itself.
- **Moodle** is appearing as one of the virtual learning environments that were installed in many schools across Slovenia (<http://www.moodle.si/>). However, no systematic analysis of its use was performed yet. General opinion is that the Moodle environment is used in two ways:
 - o As an information system for uploading files (e.g. pdf exams, teacher instructions, etc)
 - o As a Demo LMS (with one course only)
- Other tests about virtual learning environments were conducted in the past. Systems like IBM Learning Space, eISyTos and other commercially available LMS were tested but later never used.

- <http://zupca.net>
- <http://www.nevednez.net>
- <http://www.praktik.org/>
- <http://sio.edus.si>
- <http://sola.ltfe.org>
- <http://qube.d-ddm.mb.edus.si/df/>
- <http://sole.nevron.net>

Learning Resource Repositories

SIO: Slovenian School Net – Slovensko izobraževalno omrežje (<http://sio.edus.si>)

SIO was developed in the 1996 and was designed as the national learning repository. It provides information and materials for parents, teachers and students. It also offers different communication methods, such as forums, newsletters, etc.

SIO is currently going through a redesign period with new functionalities to be added. In the 2008 massive reconstruction of the SiO will be underway. SiO should become the national educational portal with more than 15 different modules available to students, teachers, parents and all other interested parties. According to the plans of MES, all available resources will be included in SiO until the end of 2008.

E-CHO e-learning system (<http://www.egradiva.si/>, <http://sola.ltfe.org>)

E-CHO e-learning system has seven bi-semester interactive courses about Mathematics, Physics, wood engineering, Natural Sciences, English and Slovenian Language for primary and secondary school education. There are also courses about digital photography and astronomy available. All these courses are available for free use to all teachers and students in Slovenia.

Web Based Educational Television (<http://www.SiTV.tv>)

SiTV is a project which brings together school video production groups and other creators of video educational contents. The main focus point of SiTV is represented in its web page, where creators have the ability to post and publish their contributions, whilst visitors get the opportunity to view and watch them. The web page is primarily intended for publishing contents which are within the framework of educational programs of primary and high schools. However SiTV also welcomes other appropriate contents of educational, informative or entertaining character.

E-content projects (<http://www.egradiva.si/>, http://www.mss.gov.si/si/delovna_podrocja/ikt_v_solstvu/e_gradiva/)

The MES and ESF funded development of e-content to support different curriculum areas. More than 20 different courses were developed. Courses were inserted in LMS systems and packaged in the SCORM compliant format.

Kvarkadabra (<http://www.kvarkadabra.net/>)

Kvarkadabra is “newspaper for explanation of science”. It is a comprehensive web portal with articles on a variety of subjects, e.g. astronomy, physics, biology, mathematics, history, philosophy and other. Users can also ask questions on those subjects, play games connected to science, have discussions on forums. The portal is partially supported by MES.

Computer distribution (in primary and secondary education)

Primary education:

Recommendation is that every primary school needs at least **one computer classroom (computer lab)** with Local Area Network and connection to the internet (**approx. 90% of all computers in schools are connected to the Internet**). Schools also have one or more notebooks and projectors in order for them to be used in regular classrooms. The recommendation for schools is to have each of the classrooms equipped with one computer. Schools that don't have computer labs

should have one computer per classroom. MES is trying to keep up with the standard of having 13 students per computer.

Additionally schools are being encouraged to use digital cameras or digital video cameras that have also been purchased in the past.

No handheld devices are part of any recommendations, or have been purchased in the past.

Secondary education:

Situation is similar to primary education. The only difference is that in reality there are more computers in regular classrooms and fewer notebooks per teacher.

- <http://www.mss.gov.si/>, Mr. Janez Čač (janez.cac@gov.si)

Support (technical and pedagogical) in primary/ secondary education:

Primary schools:

Formally every school in Slovenia has an employee (full time or part time teacher) called the "Organizer of Information Activities". His task is to maintain ICT infrastructure at schools, teach ICT related subjects and suggest introduction of new ICT infrastructure.

The latest survey shows that 48.6% schools have full time employees, 42.7% of schools have half time employees and the rest are outsourcing services and activities related to ICT. Only 4 % of schools don't have this kind of support. Majority of these schools are small rural branches of bigger primary schools.

Pedagogical support is provided by the consultants of the NIE and Faculties of Education at University of Ljubljana and University of Maribor. This support is not provided systematically and is up to teachers to use it depending on their interest.

Secondary schools:

It is also obligatory for secondary schools to have an ICT support within teacher's staff. The way they perform is left to schools. Usually, technical support is provided by ICT related subjects teachers. Technical and ICT related secondary schools with lot of equipment usually outsource maintenance of ICT infrastructure.

Pedagogical support is provided by Faculties of Education at University of Ljubljana and University of Maribor. This support is more extensive than in primary schools and experts from universities research and develop new pedagogical approaches more intensively.

- www.zrss.si (National Institute of Education)
- <http://www.pfmb.uni-mb.si/raziskave/os2003/zaposlenost.htm>
- <http://www.pef.uni-lj.si>

4. RESEARCH AND ICT

Impact of ICT on learning outcomes

There has been a recent survey on the relation between computers and other

educational technologies elements. Teachers were asked to give their opinion on the impact and efficiency of ICT on learning outcomes. 73,5% of asked teachers from all schools in Slovenia answered that computers have positive impact on the learning outcomes, which proves awareness of teachers on importance of ICT in education.

These teachers established following reasons for their positive opinion on the impact of ICT:

- students are very fond of attending computer classes
- motivation and self dependence increases in ICT based education
- students like searching for information over the Internet

<http://www.pfmb.uni-mb.si/raziskave/os2003/oracost.htm>

Impact of ICT on lesson planning and teaching methodologies

The extensive study on the impact of ICT on teaching methodologies (study performed by the Faculty of Education, University of Maribor - more results can be found at <http://www.pfmb.uni-mb.si/raziskave/os2003/oracost.htm>) provided the following conclusions:

- Computers and ICT already play an important role in the second and third triad of the primary schools. Situation in secondary schools varies from school to school. Latest improvements show step forward in the first triad, where biggest advantage in use of ICT is expected in the forthcoming period.
- Computers are more and more used for individual form of education and less for group form (frontal classes), as the new educational methods are being used more frequently.
- ICT is used in most subjects only partially, there is no systematic approach to ICT use throughout the subject in existence.
- The use of multimedia and internet has increased lately, computers are widely used as an administrative tool (writing, calculating...) and not so much as an educational tool.
- Teachers and students have positive attitude towards using computers and ICT in the educational process
- The lack of pedagogical knowledge is visible at most of the teachers and principals of schools, therefore the ICT is not used as much as it could be.

These answers of the ICT impact show that schools in Slovenia are more or less at the beginning of systematic introduction of ICT in schools. Teachers most commonly use traditional methods of education and introduce computer to these methods as a supplement. At the same time they wonder why results of such work are not really improved when compared to traditional education, also computer supported classes require much more preparatory work.

Schools are not paying enough attention to the interiors where computer labs or computers themselves are installed. Usually these are regular classrooms, intended for traditional methods of education where large groups of students attend classes. When computers are installed in such premises, their impact on learning outcomes is not substantially bigger then the impact of other educational technologies.

<http://www.pfmb.uni-mb.si/raziskave/os2003/oracost.htm>

5. IMPLEMENTATION DATA OF ICT IN SCHOOLS

Number of	Data	Year and Reference
GENERAL SCHOOLS' DATA Please distinguish between Overall, Primary and Secondary education (O, P, S)		
Schools	618, 448, 170 * note: some schools have their branches (small, one or two classrooms only), not included in the number of schools (approx 300 branches)	2005 (MES)
Students	540000, 280000, 260000	2005 (MES)
Teachers	29000, N/A, N/A	2005 (MES)
INFRASTRUCTURE - If possible, please distinguish between overall, primary, secondary and vocational (O, P, S)		
Number of Schools connected	690, 520, 170 * note: primary school branches are also included	2005, ARNES
Number of Schools with broadband	428, 297, 131	2005, ARNES
Number of schools with wireless networks	N/A * note: schools are introducing wireless networks on their own; an estimation is that 10% of schools have WLAN; one secondary school has fully functional EduRoam network which will be standard, starting to implement in 2006!	2005, ARNES
Number of schools with satellite	0	2005 ARNES
Number of schools offering GPRS connections	0	2005 ARNES
Teachers with laptops	1500, 800, 700 * note: many more laptops are being used in schools, as teacher purchased privately owned notebooks	2005 MES
Students with laptops	N/A	2005 MES
Students per internet connected computer	11,7 students per computer * note: the same in primary as secondary schools	2005, MES
Students per computer	13 students per comp. * note: the same in primary as secondary schools	2005, MES
School-home connections	N/A * note: there is no need for specific school home connections as almost all schools	2005, ARNES

	are connected to the internet and more than half of the households are connected to the internet as well. ARNES provides services (dial up, www, e-mail, antivirus, videoconf.) that can be accessed independently of the location; in case of accessing resources from intranet in schools, schools independently setup VPN clients or IPSEC clients	
Age of computers	3-4 years average	2005 MES
USAGE- If possible, please distinguish between overall, primary, secondary and vocational (O, P, S, V)		
Schools having a website	520, 350, 170, N/A	2005, ARNES
Schools using a Virtual Learning Environment (includes intranets)	21, 15, 6 (without intranets), N/A or 170, 80, 90, N/A (intranets included)	2005, NIE, ARNES
Schools using videoconferencing	70, 40, 30, N/A * note: multipoint videoconferencing facilities are provided by ARNES and Faculty of Electrical Engineering, for use free of charge for schools. Schools have only the terminal equipment to access or use video conferencing from time to time.	2005, ARNES
Teachers with email	All	2005, ARNES
Students with email	N/A	

eMAPPS project impact

The project has been disseminated to the national policy makers in the form of several live meetings and presentations. It was presented to the MES and NIE. Representatives of MES were invited to participate in one of the game plays and their response was positive.

The main idea that was presented was to fund dissemination activities after eMAPPS project completion, mostly following:

- Teachers training about Educational Games (pedagogical aspects, Game Creation, Game Playing)
- Games development (content development)

University of Ljubljana will also organize regional policy making and industry conference about mobile educational games in March 2008 in order to define future steps to integrate eMAPPS concept and games into curriculum more deeply.

Potential impact of the eMAPPS project

The modern educational system is changing and needs more adaptability to answer the needs of the modern information society. Pedagogical approaches should foster

creative thinking, knowledge construction and integration into the real world and mobile educational games, or game based mobile learning are one of the easiest way to accomplish these goals. On the policy making level, there should be concrete recommendations developed for teachers to promote new, innovative methods of teaching using ICT (games should be clearly stated). These recommendations should be made public to teachers and schools and integrated into other MES activities, such as funding schemes for project and for teachers training. By doing that, teachers and schools would have enough means to develop mobile educational games in the future and to make this project sustainable in the long term.

Teachers that already developed and played the games intend to continue on playing as well as developing and improving games. Teachers have ideas, especially to enlarge the group of players of the existing games (e.g. the society of teachers of geography in Slovenia is keen on using existing games. This means potentially several thousand players of the Ljubljana game in the future). Another important thing is teachers training. Our teachers are prepared to train other teachers in the future through the set of workshops and seminars.