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ICT-BASED EDUCATION SYSTEM: S.E.I. PROGRAMME IN ROMANIA



Evaluation Research Report
EVAL SEI 2008

University of Bucharest, Faculty of Psychology and Education Sciences
Institute for Education Sciences
TEHNE - Centre for Innovation in Education
Association for Education Sciences (ASTED)

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Evaluation Research Report - EVAL SEI 2008

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I. REFERENCE FRAMEWORK

The evolution of society towards the amplification of its **knowledge-based** character poses some problems to the education and training systems which need radical solutions. In order to prepare students so as to ensure the integration of all citizens in tomorrow's society, we need to change the traditional paradigm centred on teaching/teacher with a **new paradigm**, **centred on learning/student**, through **lifelong learning**, in decentralised education, whose interface is ensured not only by the educator, but also by the **wide range of opportunities provided by information and communications technologies.**

In the European countries, the "knowledge society" horizon has imposed the use of ICT as a reference for reforms/major changes in the education systems: as early as 2001, a report al the European Commission underlined that "*the incorporation of information and communications technology into the European education systems is a process which, in the long run, will have major consequences on the learning organisation and the teaching methods*"[1]; the "ICT use" issue has been gradually detailed, with an increasing weight on the development and validation of strategies and tools which are able to add to the efficiency of the educational process for a number of beneficiaries as large as possible.

In order to achieve the objectives set in the National Plan for Accession to the EU, the Romanian Government approved *The Project for the Implementation of the Alternative System of Computer-Assisted Education through the Provision of the Romanian Schools with ICT-based Laboratories.*[2] The short-term priority of the project is "*the provision of the Romanian schools with computerised laboratories and, in connection with them, the implementation of an alternative system of computer-assisted education and thus obtaining an integrated module made of computers, educational software and human resources development programmes.*" At the same time, is mentioned that through this supply of computers to the Romanian schools "*the system is intended neither to replace, nor to diminish the role of teachers, textbooks or traditional school laboratories".*

The project has been carried out in several stages, being monitored by the Ministry of Education, and remarkable results have been obtained, recognised at an international level, and attested by many diplomas and other awards.[3]

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[1] European Commission, Directorate General for Education and Culture. *Basic Indicators on the Incorporation of ICT into European Education Systems. Facts and Figures.* 2000/01 Annual Report.

[2] Nota de fundamentare - H.G. nr. 1108/25-09-2003 (Explanatory Memorandum – Government Decision no. 1108/25-09-2003). *Hotărârea Guvernului nr.1108/2003 privind autorizarea Ministerului Educației, Cercetării și Tineretului de a achiziționa tehnică de calcul și servicii prin intermediul unei finanțări de tip leasing financiar (*Government Decision no. 1108/25-09-2003 on the authorisation of the Ministry of Education, Research and Youth to acquire IT equipments and services through financial leasing-like financing), in the Official Journal of Romania no. 684/29-09-2003

[3] See http://portal.edu.ro

II. THE ICT-BASED EDUCATION SYSTEM PROGRAMME

1. Characteristics and Objectives

Launched in 2001, the SEI governmental programme (from Sistem Educational Computerizat – ICT-Based Education System) is a nation-wide initiative whose objective is to computerise the education system by providing schools with the necessary equipment, by developing a wide range of computer applications meant to ensure the interaction between students and curricular contents, by re-professionalising teachers from a psychological and pedagogical point of view in a student-centred vision, and by establishing the premises of a ICT-based network in support of modern management[4].

SEI is not an alternative solution to traditional teaching (teacher-centred); it is rather a complementary one, with teachers making the decision on the educational process – strategy, method, resources – so as to enable as many students as possible to meet curricular objectives[5].

AeL is an integrated teaching/learning and content management system that facilitates the activities of the actors involved in the educational process and its design – teachers, students, content developers, evaluators, managers etc. The AeL Platform, designed in a multi-layer system, is a standard client application, web browser type, and an application server based on Java platform. The content re-use concept is based on formats of packaging description in XML, with the implementation of elements necessary for import and export operations in compliance with MathML, SCORM, SVG, ChemML standards.

The system has a flexible knowledge centre, which plays the role of a content and management solutions storage device. The knowledge base offers the following possibilities to its users:

- content creation: HTML editors incorporated; mathematical formulas editors incorporated; test and tutorial editors; glossary/dictionary editors;
- text import and export from files, archives/resource folders, format based on such standards as SCORM, MathML, SVG, ChemML;
- content adaptation and modification;
- content organisation in courses;
- creating new lessons from standard content components;
- directed teaching and monitoring of educational content;
- student testing.

---

[4] Ministry of Education and Research. *Programul SEI, Sistem Educațional Informatizat – De la reformă la dezvoltare 2001-2008 (The SEI Programme – From Reform to Development 2001-2008)*. București, 2006 ☼ ILIA, Florin. *AeL – O tehnologie de vârf a Sistemului Educațional Românesc (AeL – A Top Technology in the Romanian Education System)*. În *CNIV, Noi tehnologii de eLearning (New eLearning Technologies)*. Bucharest, University of Bucharest Publishing House, 2003

[5] JUGUREANU, Radu. *AeL – Learning and Content Management System*. În: CNIV, Noi tehnologii de eLearning. *(New eLearning Technologies)*. Bucharest, University of Bucharest Publishing House, 2003 ☼ JUGUREANU, Radu. *AeL – didactica utilizării (AeL – Use Didactics)*. În: *Virtual learning. Virtual Reality, Software & Management educațional*. Bucharest, University of Bucharest Publishing House, 2004

AeL offers HTML editors, mathematical formulas editors, editors for chemistry, geometry, physics, and tutorials for the on-line content. The educational software is designed so as to respect a methodology which is continuously improved based on data obtained from school practice.

For the Romanian education system, the educational portal http://portal.edu.ro was established within the project. The portal has different components for students, teachers and parents, as well as elements of connection with higher education. The portal has over 80,000 registered users and a collection of incorporated web sites.

2. Stages of Implementation

In the **SEI implementation**, several stages could be distinguished:
SEI-1 (2001-2002): the pilot period – design and experimental use of the main components, adjustments at different levels based on the data that were obtained.
SEI-2 and SEI-3 (2003-2004): the transition period – the communication lines and technical support were established, the general methodology for implementation was developed and the favourable area was covered at high-school level; the methodology for construction, approval and distribution of multimedia educational contents.
SEI-4 (2005-2008): period of the construction and generalisation of ICT in the education system.

The results of this process could be presented in a synthetic form (December, 2006):
a) equipment: 76,000 computers and servers; 4,780 laboratories, auxiliary equipment included;
b) ICT-based centres at the Ministry of Education and the 42 county school inspectorates and teacher centres;
c) computers for administrative use,
d) educational software in every laboratory for teaching, testing and assessment, school management, educational content management.

The multimedia educational content distributed in each school includes 1650 lessons for grades 5 – 8 (*gymnazium*) and 9 – 12 (high-school), 8500 lesson moments for: Biology, Mathematics, Computer science, Languages, History, Geography, Chemistry, Physics, Technology etc.; encyclopaedias, dictionaries, glossaries[6]. Some 25,000 high-school teachers and 40,000 *gymnazium* teachers have been trained in the use of ICT.

The results of the 4th stage: 3270 laboratories in schools; 42 laboratories for the teacher centres; updates for the laboratories established in 2001; 1255 multimedia lessons; multimedia English lessons for grades 1 - 8; 40,000 teachers included in the training programmes.

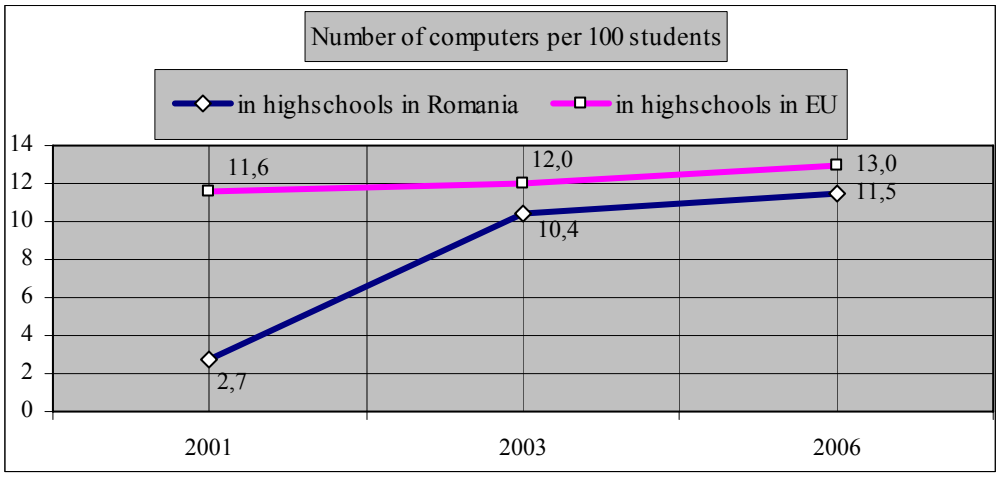
[6] JUGUREANU, Radu. *Proiectare pedagogica a soft-ului educational. Taxonomia lui Bloom si Bloom-Anderson (Pedagogical Design of Educational Soft. Bloom Taxonomy and Bloom-Anderson)*. În: e-Learning Technologies and Virtual Reality. Buc.: Bucharest, University of Bucharest Publishing House, 2005 ☼ JUGUREANU, Radu *et alii. Componente didactice (Didactic Components)*. În: *Virtual learning. Virtual Reality, Software & Management educațional*. Bucharest, University of Bucharest Publishing House, 2006

Laboratory distribution for each stage:

- stage 1: 120 ICT-based laboratories;
- stage 2: 1100 high-schools;
- stage 3: 290 ICT-based laboratories;
- stage 4: 3270 laboratories.

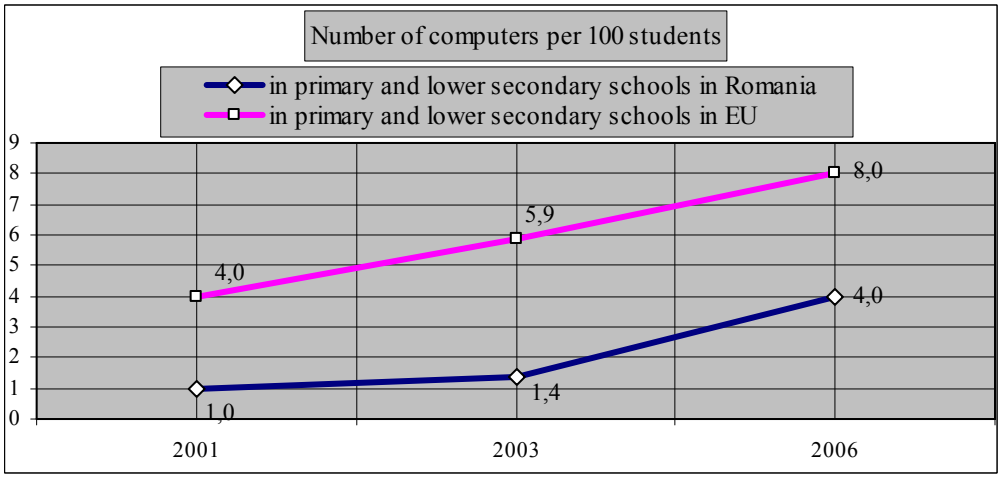
During the first 3 stages of SEI Programme (high-school computerisation), the dynamics of the computerisation initiative was more pronounced than the European growth rate.

Figure 1. Evolution of the number of computers in schools in high-school education



The 4th SEI stage brought the Romanian schools closer to the European level of computerisation in primary and lower secondary education[7].

Figure 2. Evolution of the number of computers in basic education



The SEI programme will continue to support the development of education in Romania, to contribute to the democratisation of the education system trying to meet the objectives for the RURAL, VOCATIONAL and PRIMARY areas, to support the consolidation of the e-learning community developed through SEI, the complex pedagogical re-professionalization for teachers and the provision of modern technologies to the Romanian schools.

[7] Europe's Information Society. Online: <http://ec.europa.eu/information_society/ index_en.htm>.

III. THE INVESTIGATIVE APPROACH OF EVALUATION

1. Objectives

Our evaluative research serves a triple purpose:

1. To determine to which the extent the SEI objectives have been met.
2. To estimate the value and the effects of the SEI Programme.
3. To collect information and to make recommendations with regard to the continuation and/or the improvement of the SEI Programme and other similar programmes.

This investigations reveals the following aspects: **(a)** to what degree different types of schools are provided with computers and other equipment, **(b)** students' and teachers' access to the new technologies, **(c)** to what extent these technologies are used **(d)** the impact the use of the new technologies had in the beneficiaries' view (managers, teachers, students), including different kinds of problems which require interventions/ solutions, as well as human/ technological/ financial resources.

Through its objectives, this investigation continues, within a broader context, the research carried out at the end of the 3rd stage (when the sample was more reduced), which allows us to see the evolution of the computerisation process in the Romanian education system[8]. Moreover, similar data collected during subsequent evaluations will the picture of the SEI impact and will serve as landmarks to the development of new programmes.

2. Sampling

The evaluative research has been carried out in the schools that were included in the SEI Programme.

From a statistical point of view, the sampling firstly involved the selection of schools, followed by the selection of teacher and student samples in each school. Therefore, we can say that this research was carried out based on three distinct samples: the headteacher sample – equal to the number of selected schools -, the teacher sample and the student sample.

The criteria for the selection of schools and the size of each sample have been established with a view to ensure a correct statistical representation of the

[8] NOVEANU, Eugen & Olimpius ISTRATE. *Impactul formativ al utilizării AEL în educație (The Formative Impact of AEL in Education)*. Bucharest: TEHNE – The Centre for Development and Innovation in Education, 2004.

population that benefited from the computer and soft provision. Considering the curriculum characteristics in school education for different levels, as well as the social and economic factors which influence teaching/learning and education achievement, we chose as sampling criteria the type of residence area (where the school is situated) and the school type. The size of the school sample was based on the experience from other national research initiatives (with regard to variability in different population segments), and, from a technical point of view, we proceeded to a mixed sampling combining layered sampling – when choosing schools and managers -, with random sampling for the other two samples.

The three categories of subjects to investigation – potential beneficiaries of the computerisation programme (students, teachers and headteachers) – have made a representative sample of the target population. (Detailed information: Annex 1)

3. Data Collection Tools

From a methodological point of view, the investigation was carried out with the help of specific questionnaires for each of the three categories of potential beneficiaries (students, teachers and school managers), that were applied to a representative sample in each category.

1. Headteacher's questionnaire (Annex 2.1.) – 195 valid questionnaires;
2. Teacher's questionnaire (Annex 2.2.) – 1588 valid questionnaires;
3. Student's questionnaire (Annex 2.3.) – 3953 valid questionnaires.

IV. THE DEGREE OF COMPUTERISATION PROVIDED BY THE SEI PROGRAMME

In the report made at the end of the previous period[9] of the programme, the contact point with the school managers' vision was given by the question about the main contribution of computers in schools. The headteachers' answers (to the questionnaires and from interviews – 59.6% said "they make teachers' work easier") showed, for most of the managers involved, a vision which was built based on *extra muros* information. After several years of getting used to the new technologies and the gradual integration of their specific capacities in a sort of personalised vision of the educational approach, managers seem to consider that the use of ICT increases the teachers' responsibility for their professional status. This responsibility is also supported by the establishment of an area of a specific organisational culture, both at school level and at the level of the education system.

The results of the evaluative research of the computerisation of the Romanian education system through the SEI Programme offers an image of the degree of implementation of the new technologies in terms of supply, access to ICT, how teachers use equipment and educational soft, some effects on students, teachers and schools, as well as the opinions on computer-assisted education of those involved in the educational process. The data presented here are nationally representative for the schools included in the SEI Programme by November 2007.

1. Computer Provision in Schools

The question from the contact point (H01) required data on both the provision in schools and the number of computers used in activities with students and by students. The 192 schools included in the sample (88 from rural areas + 104 from urban areas, one third of them being high-schools and Schools of Arts and Crafts) show different situations with regard to computer provision: between 7 and 68 computers in rural areas and between 10 and 157 computers in urban areas. For various reasons, the percentage of computers used in activities with students and/or by students significantly drops. (Details in Annex 3.2, item H01).

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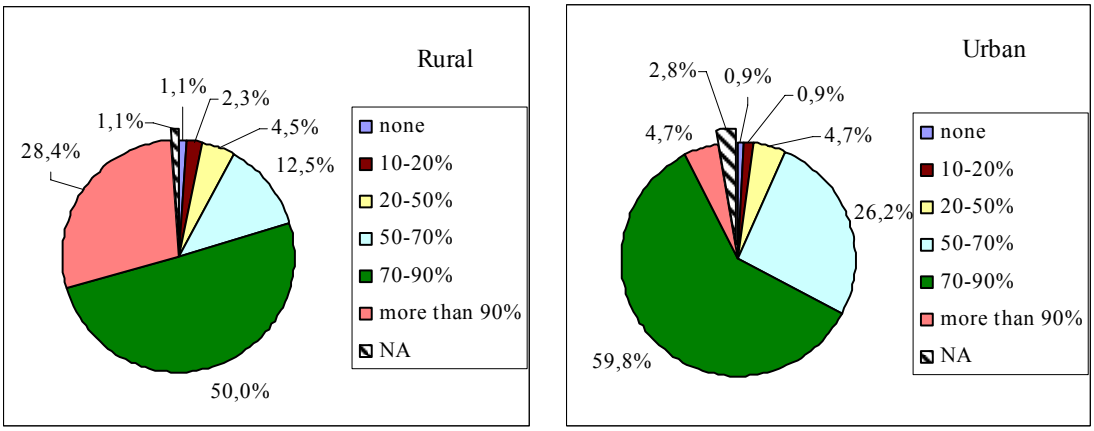
[9] *** *Impactul formativ al utilizării AeL în educație (The Formative Impact of AeL in Education)*. Bucharest: TEHNE – The Centre for Innovation and Development in Education, 2004. Available online: <www.tehne.ro>

Figure 3. The share of computers in a school used by students. Representations for rural and urban areas



Besides asking for more computers, among the most rated difficulties encountered in the use of the new technologies, the first one is by far "the lack of qualified staff for the maintenance of the network": ("to a large degree" – said 102 out of the 188 headteachers). A significant number of schools (between 1/4 and 1/3 from those included in the survey) consider they encounter "to a less extent" such difficulties as "soft installation - 84", "access to the Internet - 55", "running the programme/ the network", and most mentioned are those like "technical problems during lessons - 114". (Details in Annex 3.2: H08)

How the administrative and technical problems are solved is revealed by the answers to questions about the responsibilities for the administration and management of the school network, about responsibilities and resources necessary to ensure technical support to the provision of ICT to the school (items H13, H14 and H15 in the headteacher's questionnaire - Annex 3.2). Data gathered show that:

a) the administration of computers and networks is done by computer science teachers (rural – 71.6%, urban – 45.8%), by a system administrator employed by the school (rural – 15.9%, urban – 43%) or by a specialised company (Rural – 4.5%, Urban – 12.1%);

Table 1. Administration of IT equipment in schools

Who is responsible with the administration of computers and the network and soft installation? (H13)	Total		Rural	Urban
A teacher/ teachers (computer science teachers)	57.4%		71.6%	45.8%
A system administrator employed by the school	30.8%		15.9%	43.0%
A specialised company based on a contract	8.7%		4.5%	12.1%
A student/ Students	1.0%		1.1%	0.9%
Other	12.3%		12.5%	12.1%

b) centralised technical support (provided by a specialised company) is for free (R – 45.5%, U – 27.1%), on request (R – 25%, U – 32.7%) or is based on a subscription (R – 9.1%, U – 21.5%).

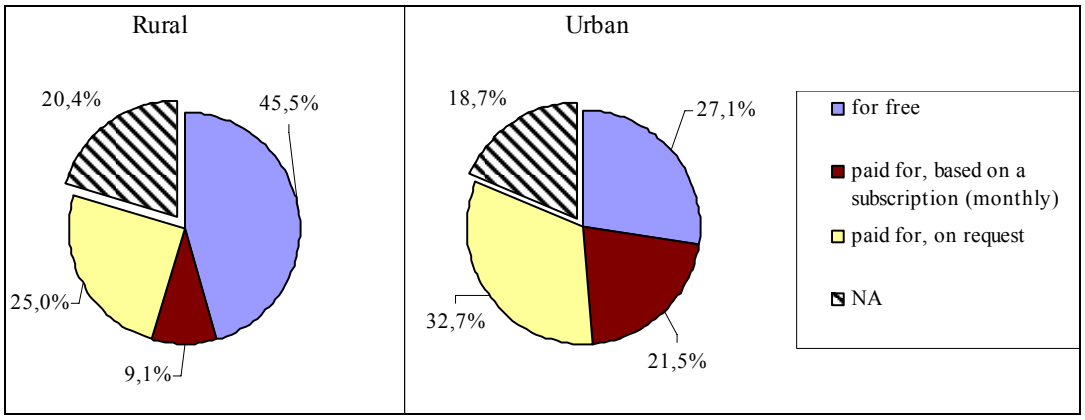
Table 2. Type of technical support accessed by schools

Centralised technical support provided by a specialist company is: (H14a)	Total		Rural	Urban
- for free	35.4%		45.5%	27.1%
- paid for, on request	29.2%		25.0%	32.7%

- paid for, based on a subscription (monthly)	15.9%		9.1%	21.5%
No answer	19.5%		20.5%	18.7%

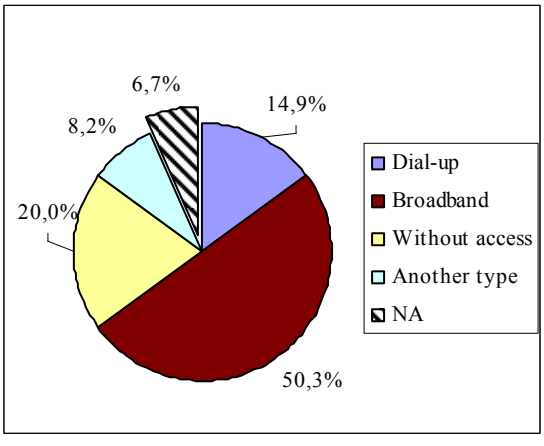
At the same time, although almost 50% of the headteachers did not mention how technical support is funded in their school (answer to item H14a), when it comes to the promptness of the intervention (item H14b), only a low percentage of them described the technical support services as "fast" (R – 11.4%, U – 19.6%) and "satisfactory" (R – 30.7%, U – 29.9%). In order to solve the technical problems related to the use of the SEI laboratories, the schools used the phone (R – 46.6%, U – 43.9%), the e-mail (R – 10.2%, U – 35.5%), the specific forum (R – 10.2%, U – 32.7%) or other ways (R – 15.9%, U – 10.3%). We should mention the share of schools that didn't have to look for technical support services (R – 26.1%, U – 15.0%).

Figure 4. Type of technical support accessed by schools - rural-urban differentiation



The connection of schools to the Internet has been registering a fast progress, the SEI laboratories showing significant figures, both in rural schools – Dial up 18.2%, Broadband 27.3% - and in urban ones - Dial up 12.1%, Broadband 69.2% (Figure 5). According to data provided by headteachers, 73.4% of the SEI laboratories are connected to the Internet, and the percentage of computers used for secretarial activities or those for teacher use connected to the Internet is 83.5%. (Details: Annex 3.2: H11)

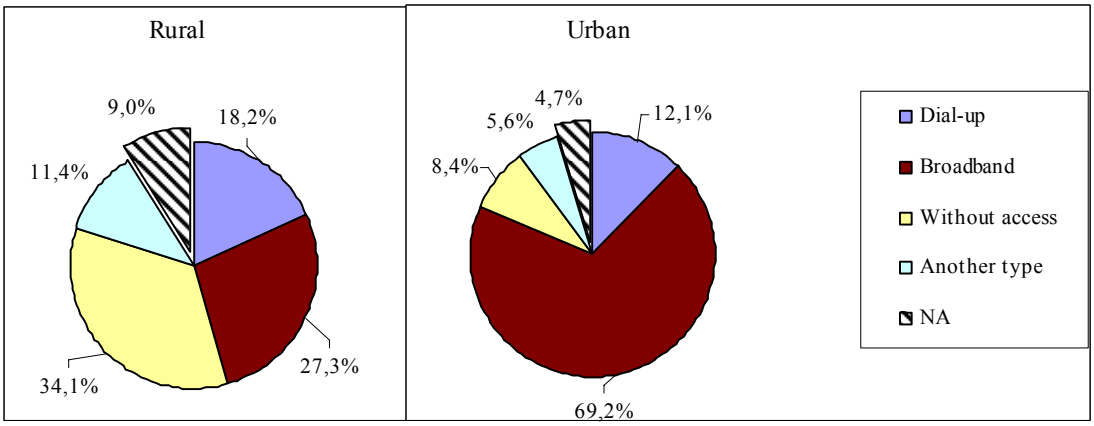
Figure 5. Access to the Internet in SEI laboratories; differentiation based on the type of access



The connection to the Internet is still a problem, especially in rural areas where 40% of the computers accessed by students and 20% of those accessed by teachers are not connected. (Details: Annex 3.2: H12) We should say that access to the Internet was not an objective of the SEI Programme, the Internet connection

being provided with efforts from headteachers, parents, teachers and, in some cases, through contributions from companies or local authorities.

Figure 6. Access to the Internet in SEI laboratories; differentiation based on residence area



2. Access to New Technologies

As regards the teachers' and students' access to ICT, there are several different situations which are worth being paid attention to in the context of the new educational technologies and the data from this investigation in order to measure the degree of computerisation. Therefore, access to new technologies can be seen ad a factor which sums up several conditions such as the availability of specialised training, skills related to the use of computers, the actual degree to which teachers and students have access to computers and to the Internet, both at school and at home, the time allotted to teachers' and students' access to the SEI laboratories. These conditions are described separately below.

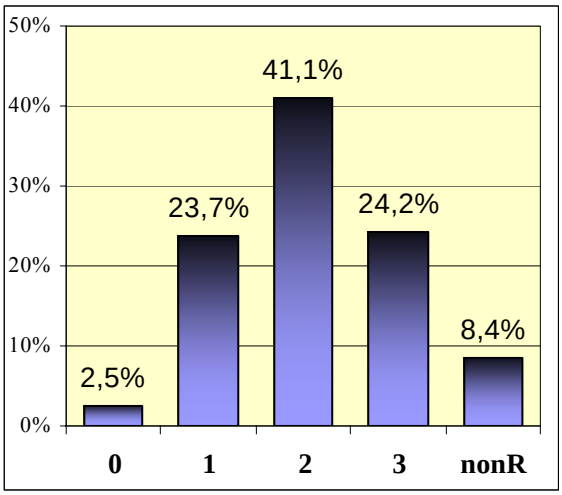
While the schools which are subject to this investigation represent a network of schools provided with computers in recent years, the purpose of this chapter is to evaluate the specific economic and social conditions in terms of opportunities for using computers and the Internet facilities by the beneficiaries in the education system. The educational environment and, in this context, the existing local conditions, will be dealt with in a chapter dedicated to the analysis of the use of ICT resources.

The first observation is concerned with the justification for the use of the term *programme beneficiaries* in this context. This category included not only the students – who, through the specific skills they developed, show to what degree the programme is an effective one, but also the teachers, who have more opportunities for improvement and in-service training, as well as opportunities to modernise their teaching and assessment methods. In addition, this chapter refers to the information technology exclusively as a physical resource available to teachers and students and not from the point of view of their contribution to its acquisition and extension.

2.1. Teacher Access to ICT Courses

With regard to the ICT skills, a quarter of the teachers say that their skills are very good (3, on a scale of 0 to 3), and almost half consider that their use of computers is at least satisfactory. There are not many differences between rural and urban areas in this respect; a significant difference could be that between high-school teachers (29% say that they are very good at using computers) and *gymnazium* teachers (21%). (Details in Annex 3.3: T01)

Figure 7. The level of computer use as judged by the teachers



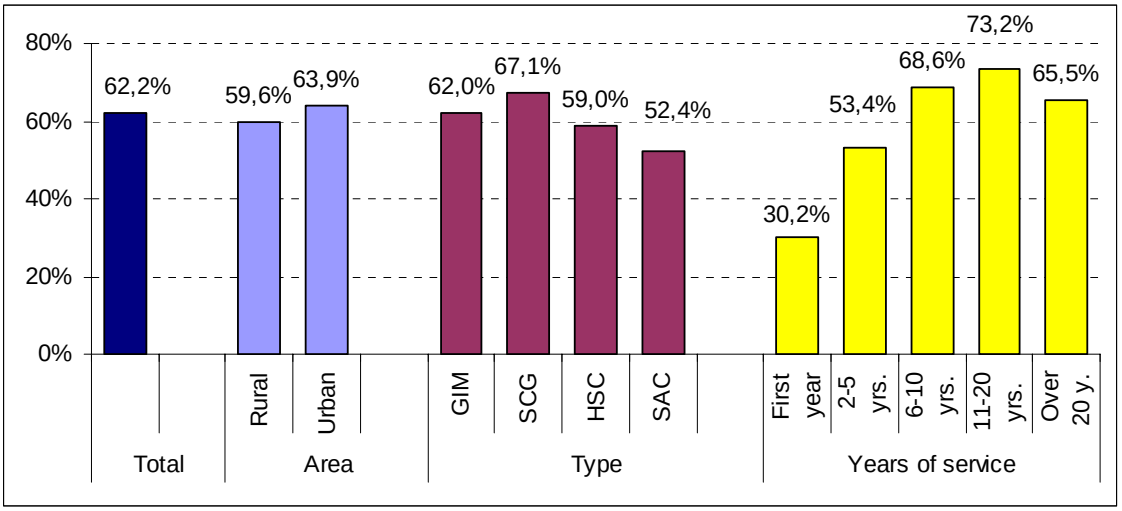
The attendance of ICT courses by teachers is also equitably distributed among areas of residence and education levels (Figure 8). One third of the teachers did not attend any course on the new technologies, which is surprising when considering the early initiatives, projects, and programmes for the introduction of ICT in the Romanian education system.

We can see a significant difference between the number of teachers who say that they do not know to use a computer and the number of those who never attended an ICT training course. This is why there should be more concern with the recognition of ICT skills acquired in non-formal ways. Such recognition would be more necessary as it would support a more clear distinction between the "use of new technologies" and the "use of new technologies for education".

Table 3. Distribution of teachers based on their participation in ICT courses

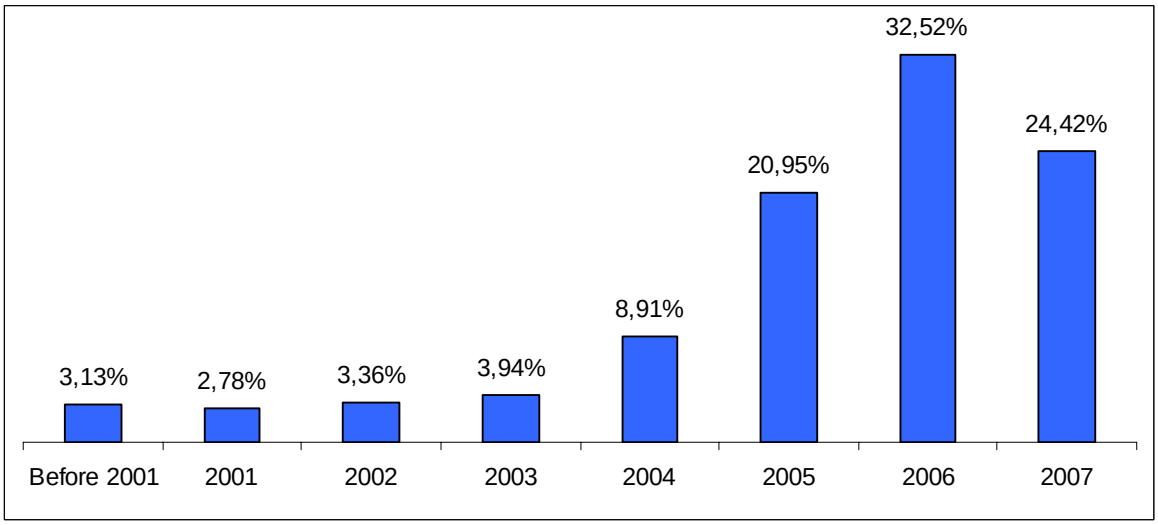
	Total		Rural	Urban
Yes	62,2%		59,6%	63,9%
No	35,8%		38,3%	34,3%
No answer	2,0%		2,1%	1,8%
Total	100,0%		100,0%	100,0%

Figure 8. Teacher participation in ICT courses, diferentiated by factors
(Annex 3.3: T21)



Among the teachers who attended at least one training course in the use of ICT, over three quarters (77.89%) say they completed the last course recently, in the last 3 years.

Figure 9. Participation in ICT training courses (the last course attended)



We can see that in-service training in this field has registered a rising trend since 2001. Moreover, it's interesting to notice the fact that differences between teachers from rural areas and those from urban areas diminished in the last year, the percentage of teachers attending ICT courses in 2007 in the two types of areas being equal.

The increased access to ICT courses among teachers from rural areas in 2005 and in 2006 is explained by the training component of the SEI Programme – the data coming next will show that a significant difference comes from the number of teachers who participated in AeL courses: 30% in rural areas compared to 23% in urban areas (Table 5), when more than half of the teachers who say that they attended a training course they refer to AeL courses (Figure 12).

Table 4. Participation in ICT training courses; differentiation based on area of residence *(Annex 3.3: T23a)*

	The year when the last ICT course was completed	Total	R	U
1.-5.	Before 2001	3.13%	2.85%	3.28%
6.	2001	2.78%	1.58%	3.47%
7.	2002	3.36%	1.27%	4.56%
8.	2003	3.94%	2.53%	4.74%
9.	2004	8.91%	3.80%	11.86%
10.	2005	20.95%	23.73%	19.34%
11.	2006	32.52%	39.56%	28.47%
12.	2007	24.42%	24.68%	24.27%

Figure 10. Participation in ICT training courses – the last specific course completed by teachers from rural and urban areas

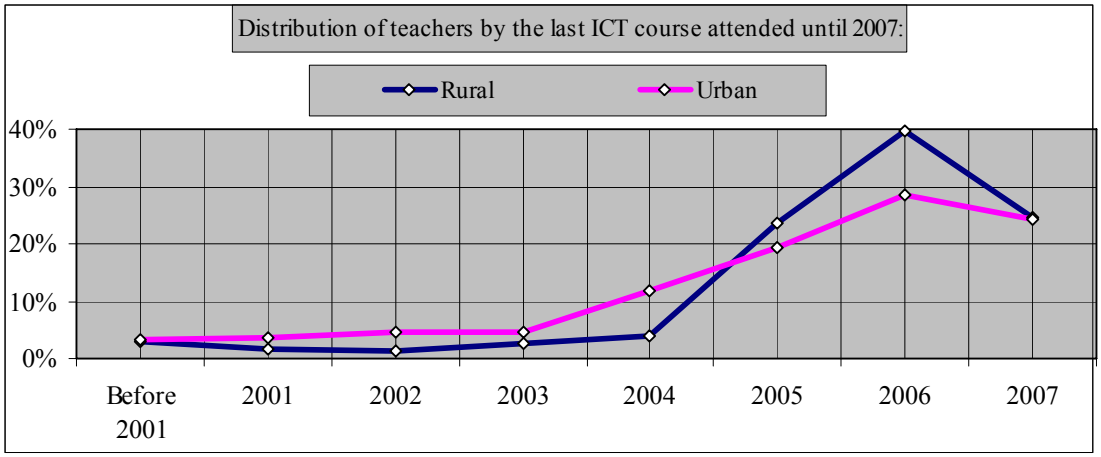


Table 5. The last ICT training course; differentiation based on area of residence

	Training course in the use of ICT	Total	R	U
1.	Initiation/ use of PC/ ICT courses	15.0%	12.1%	16.8%
2.	AeL (course)	26.3%	30.8%	23.4%
3.	ECDL/ ICDL	1.0%	0.7%	1.2%
4.	Course/ programming (Forte, C++, Pascal, Oracle, databases, php, MySQL etc.)	0.6%	0.3%	0.7%
5.	Network administration/ SEI laboratory use and administration	0.4%	0.7%	0.3%
6.	Module 3 (of the training programme)/ A training course	1.6%	2.3%	1.2%
7.	A postgraduate course	2.6%	1.8%	3.1%
8.	Other	3.4%	2.1%	4.2%
	No answer	49.1%	49.3%	49.0%
	Total	100.0%	100.0%	100.0%

Therefore, the AeL course is for a large part of the Romanian teachers the first step towards using computers in the education process.

An analysis of the teachers' open answers also shows less encouraging aspects, unacceptable at this stage of computerisation of the education system. We hardly find (or even don't find at all) training programmes related to the pedagogical aspects of the use of ICT in the teaching-learning process – those "computer-assisted instruction" courses. At the beginning of 2008, we can say that

we still are in an incipient stage with regard to teachers' use of new technologies for teaching, learning, and assessment.

Figure 11. The last ICT training course – percentages of teachers from the schools participating in the SEI Programme

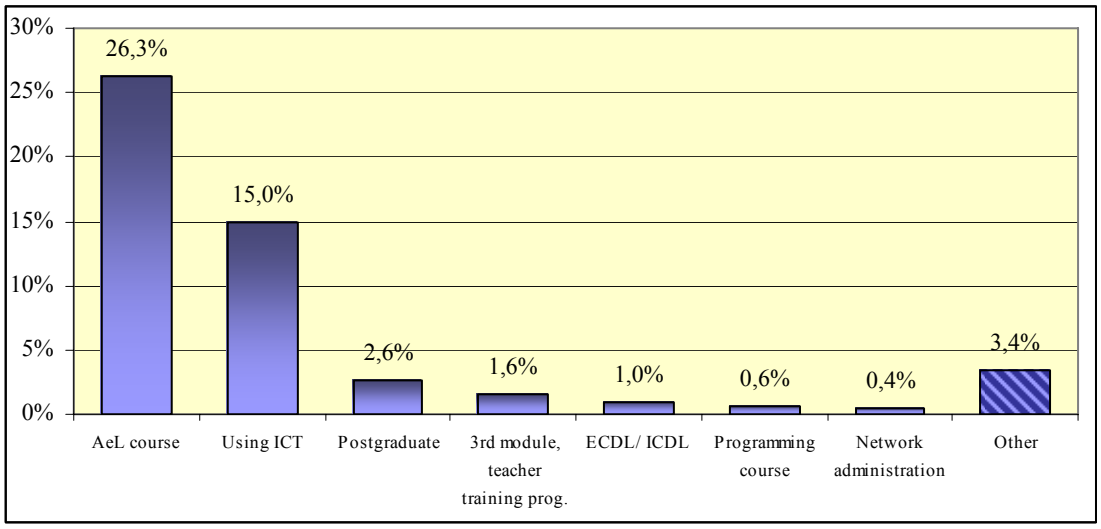
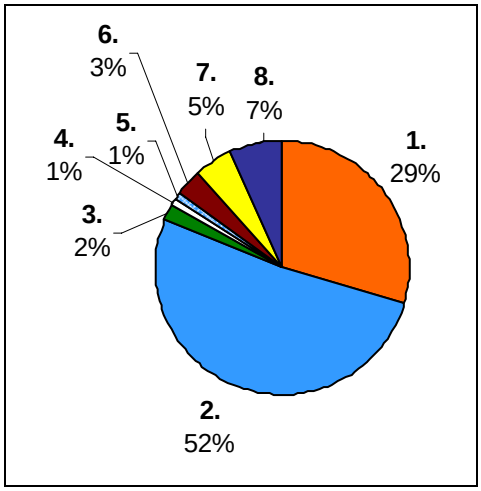


Figure 121. The last ICT training course - percentages of teachers who attended ICT courses out of the total number of teachers who attended a training course

1. PC use (29%)
2. AeL course (52%)
3.-8. Other courses (19%)



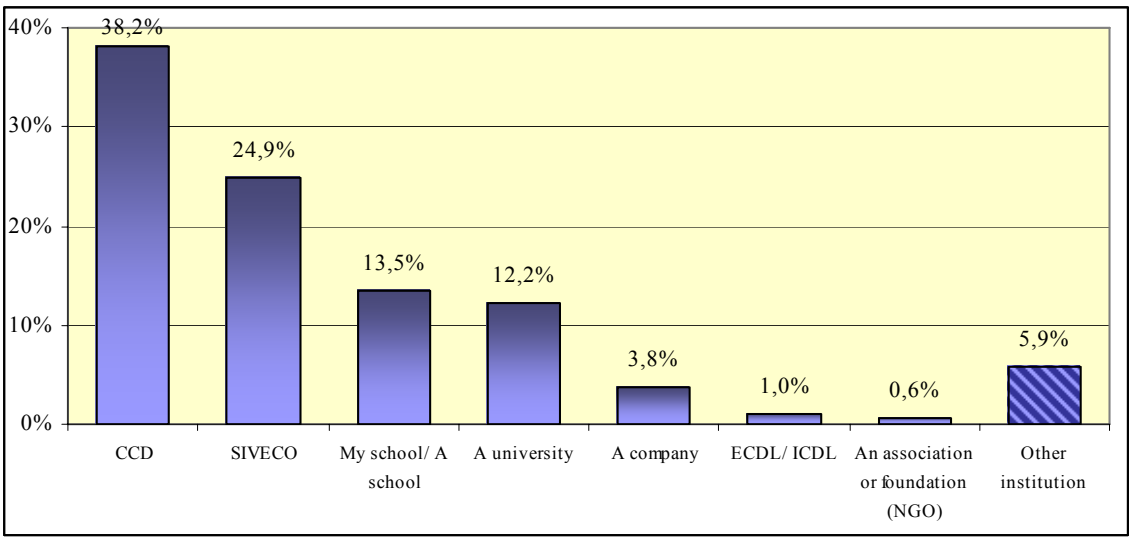
(Other data: Annex 3.3: T23b)

Compared to the Teacher Centres (CCD), whose training offer attracted more teachers from urban areas (44.8% compared to 27% in rural areas), SIVECO carried its training mission mainly in rural areas (35.57% compared to 18.46% in urban areas) (Table 6Table). This aspect adds to the previous argument referring to the usefulness of the SEI Programme to teachers from rural areas.

Table 6. The institution that organised the last ICT training course – percentage out of the total of teachers who attended training courses

	Organizing institution	Total		R	U
1.	CCD (Teacher Centres)	38.22%		27.07%	44.82%
2.	SIVECO	24.85%		35.67%	18.46%
3.	ECDL (Romania)/ ICDL	0.95%		0.64%	1.13%
4.	A company	3.79%		5.10%	3.01%
5.	An association, foundation (NGO)	0.59%		0,64%	0.56%
6.	A university	12.19%		11,15%	12.81%
7.	My school/ a school	13.49%		12.10%	14.31%
8.	Other institution	5.92%		7.64%	4.90%

Figure 13. The institution that organised the last ICT training course
(Annex 3.3: T23c)



With regard to the usefulness of the existing training programmes, when compared to the concrete needs for classroom activities, most teachers (58.3%) think they are appropriate for start, but the development of efficient learning activities based on the new technologies requires direct experience and a lot of practice. 7.4% of the teachers consider that the initial and in-service training programmes should be improved.

Table 7. Opinions on the usefulness of training programmes for the use of computers in the classroom

To what extent do you think that the initial and/or in-service training programmes in which you participated are appropriate when considering the practical use of computers for classroom activities? (T20)	
They are appropriate in a first stage, but I still need more practice	58.3%
They are appropriate and meet the requirements of real use; I don't need more other courses so as I can carry out efficient learning activities with the help of ICT	17.2%
They are inappropriate; the courses I attended are not enough for me to design and carry out learning activities with the help of ICT	7.4%
I don't know/ I have no opinion.	11.4%
No answer	5.7%
Total	100.0%

The introduction of more simulations and practical exercises is one way in which the teacher training programmes for the use of ICT could be improved (indicated by 10.8% of them). In addition, the organization of cyclic training activities, in phases from simple to complex (16.4%), differentiated based on subjects or level of difficulty (6.5%), supported by adequate teaching materials (7.7%) is considered by teachers an initiative which would support more efficient training, with real benefits for the improvement of pedagogical practices in the use of ICT.

Table 8. Proposals for training design so as to increase efficiency

How do you think the training activities should be designed so as the new technologies to be used efficiently in education? (T24)	
Training modules, from simple to complex./ In several phases./ Regularly./ At regular times (once a year, once in 2 years).	16.4%
More practice/ Based on practice (not theory)	10.8%
In computer laboratories (with access to the Internet)./ They should have course materials/ They should be accompanied by soft (useful soft)	7.7%
Differentiated across subjects./ across education levels (*gymnazium* teachers separated from high-school teachers)	6.5%
They should be carried out by competent trainers (who should also know how to communicate with the participants)./ They should be serious.	2.8%
In small groups (less than 20-25 teachers)	2.3%
They should be free.	1.1%
They should allow enough time for solid learning. The duration of courses should be longer.	0.8%
They should be compulsory.	0.7%
Other answers	9.0%
No answer	10.8%
Total	100%

Continuing to analyse the usefulness of training courses, one significant difference can be seen between teachers who attended a specialised training programme and teachers who didn't attend such a programme, more teachers from the first category saying that their use of new technologies in the classroom had a positive impact on their students – both on highly-achieving students (83.3% compared to 64.5%) and on low achievers (65.3% compared to 48.2%).

Table 9. Teachers' opinions on the impact ICT has on school achievement, differentiated across student categories

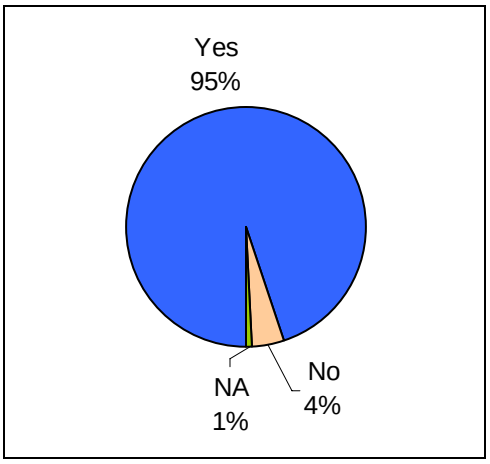
Target group	*Has the teacher attended an ICT course?*	Impact:			Don't know	No answer
		positive	negative	none		
On highly-achieving students	**YES**	83.3%	0.4%	3.4%	10.2%	2.6%
	NO	64.5%	1.2%	5.3%	21.5%	7.5%
On low-achieving students	**YES**	65.3%	3.9%	14.4%	12.8%	3.6%
	NO	48.2%	5.2%	13.7%	23.3%	9.7%

There is also relevant that the no-answer rate and the percentage of those who cannot estimate such an impact are lower among teachers who attended ICT courses. (Details in Annex 3.3: T19)

2.2. Students' Interest in ICT

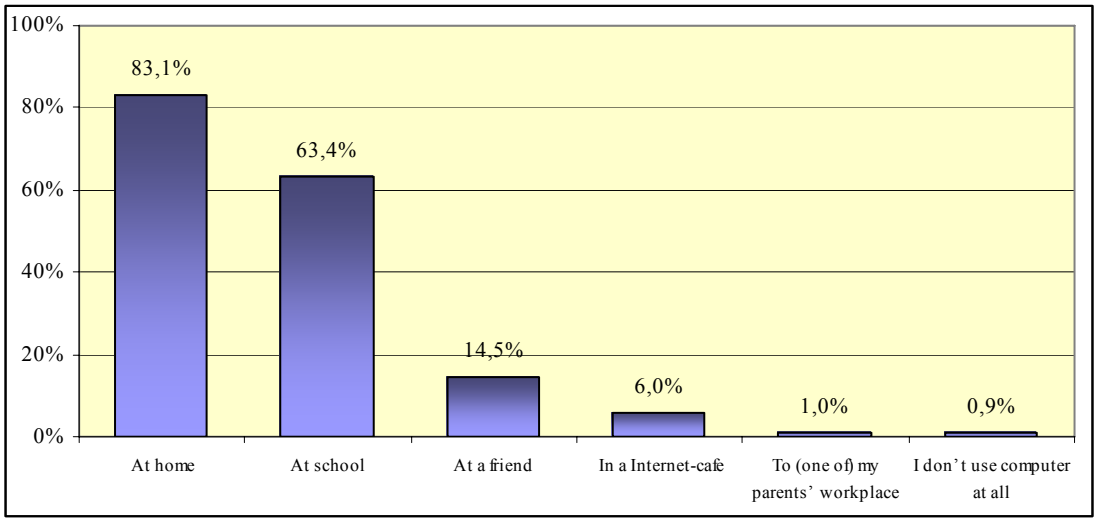
Students' attitude to the use of computers in teaching – learning is largely positive, as they want to use more the computer and the Internet for lessons at different subjects (95.1%). Only 4.2% show a negative attitude to the increased use of computers for learning purposes.

Figure 14. *Would you like to use more the computer and the Internet for lessons at different subjects?* (Annex 3.4: E17)



The interest in ICT[10] has also been evaluated based on information about the use of computers in different places: at school, at home and other places outside schools. The item aiming at the identification of the conditions in which computers are used has showed that the majority of students (83.1%) use a computer at home, and 63% have access to a computer at school. There are also a percentage of students who go to a friend's place, to their parents' work place or to an Internet-café. Only 0.9% of the students surveyed said they didn't use a computer at all.

Figure 15. Student distribution based on conditions related to computer use



[10] With a view to the analysis of indicators for the student sample we remind you that in a local evaluation, not monitored by an external operator, the information resulting from students' questionnaires can be slightly over-evaluated. It is possible that the selection of students in a school could have been aimed at those students who have computers at home and/or an increased interest in technology. Even in these conditions, the results that have been obtained are extremely important to the computerization process.

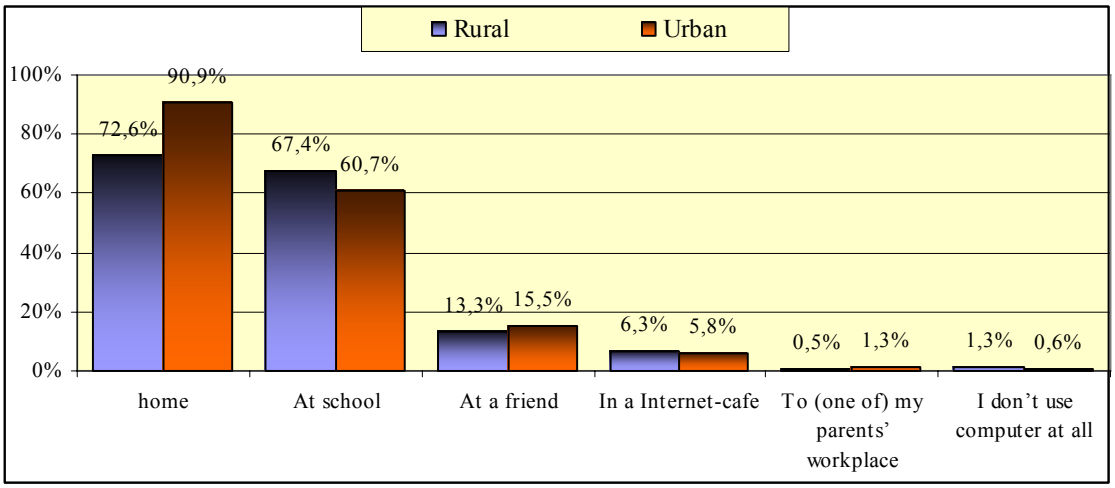
Table 10. Structures of the student sample based on conditions of computer use and factors

		School		Residence		Education level		
		Rural	Urban	Rural	Urban	*Gymnazium*	Voc. School	High-school
1.	Home	72.2%	87.8%	72.6%	90.9%	82.1%	49.5%	86.2%
2.	At school	68.8%	61.1%	67.4%	60.7%	62.8%	75.5%	62.8%
3.	At a friend's place	12.5%	15.4%	13.3%	15.5%	13.6%	5.2%	15.7%
4.	At a parent's work place	0.4%	1.2%	0.5%	1.3%	0.9%	0.5%	1.0%
5.	At an Internet-cafe	4.9%	6.4%	6.3%	5.8%	3.8%	7.8%	7.0%
6.	I don't use a computer	1.3%	0.8%	1.3%	0.6%	1.1%	1.6%	0.8%

The students gave one to three answer variants to this item, with an average of 1.69 answers (1.75 by students from urban areas and 1.62 answer variants by those from rural areas), and the most frequent pairs was at home and at school.

In the factor-based analysis, the share of computer users from rural schools who indicate school as "location" is larger than that of students from urban areas (68.8% compared to 61.1%), different from the use at home (72.2% compared to 87.8%). The same is true for students' residence.

Figure 16. Conditions related to the use of computers by students – differentiation based on the area of residence



With regard to the distribution by level of education, the students from the Schools of Arts and Crafts indicated mostly the school, less students from this category using a computer at home.

The interest in the use of computers has also been evaluated from a qualitative point of view, the students being asked to estimate *how often they use a computer* for several regular activities presented in a list.

Table 11. Distribution of answers on the frequency of computer use for the listed activities

Evaluation points	Very often 3	Often 2	Sometimes 1	Never 0	No answer	Average score
For communication (chat, forum, email)	21.5%	19.2%	14.3%	23.1%	22.0%	**1.499**
For games	9.5%	18.6%	33.2%	20.0%	18.7%	**1.217**
For learning activities (at different school subjects)	5.7%	22.2%	37.8%	13.1%	21.2%	**1.260**
For learning how to use different programmes/ a computer	6.3%	16.7%	36.6%	15.0%	25.4%	**1.193**
For information and documentation in various areas	5.9%	17.8%	33.5%	18.7%	24.1%	**1.144**

The distribution of answers shows that the activity used more often with a computer is communication (21.5%). The analysis of the average scores also indicates "communication" on the first place (1.5 points).

Surprisingly, approximately 15% of the students who have a computer at home don't use it at all, possible causes for this situation being either the lack of knowledge or adequate software, or a monopole from the other members of the family, or (least probably) a lack of interest or a lack of curiosity. With a view to the development of educational policies in this area, it is recommended that these causes are identified and investigated in order to take appropriate ameliorative measures.

According to the investigation data, the computer is a tool which facilitates learning at school: more than a quarter of the students (27.9% - very often and often) use computers for learning activities at different school subjects. (Annex 3.4: S04)

When we add the percentages of students who use computers very often and often for information and documentation purposes and for learning in general we get a percentage of 74.6% compared to 68.8% representing the use of computers for playing games or communication, which indicates an advantage in the current use of computers for educational purposes. Nevertheless, this should be understood while keeping in mind the premises we took that generally the use of computers for games or communication involves only information outside the curriculum and that documentation in other areas has a positive effect for the development of a "general culture" and useful skills which can be transferable to the professional life.

Students' interests in the use of computers have also been approached from another perspective. Not considering the frequency of the activity, we proceeded to a two-way codification of activities, indicating as "achievement" the activity in any of the first three groups or "non-achievement" in case it is not present or is mentioned as "never". Grouping and recoding the activities as follows, we could estimate the distribution based on students' interests.

	Category of activities	Answer variants
A1	**Computer games**	For games
A2	**Means for communication**	For communication (chat, forum, email)
A3	**Information and documentation**	For information and documentation in diverse areas
		For learning activities (at school subjects)
A4	**Getting familiar with different soft and programming techniques**	For learning how to use different programmes/ a computer

Table 12. Use of computers by students for the mentioned activities – differentiation based on the main influence factors

		Total of students	Activities			
			A1	A2	A3	A4
	Total	**3953**	**61.3%**	**54.9%**	**73.7%**	**59.6%**
School	Rural	**1193**	63.6%	26.0%	60.3%	55.3%
	Urban	**2760**	60.4%	67.4%	79.6%	61.4%
Home	Rural	**1674**	61.4%	29.9%	61.9%	54.9%
	Urban	**2252**	61.6%	73.6%	82.8%	63.4%
Education level	*Gymnazium*	**1319**	70.8%	37.9%	68.9%	60.7%
	School for Arts and Crafts	**192**	41.1%	21.9%	37.0%	33.9%
	High-school	**2442**	57.8%	66.7%	79.2%	61.0%
Gender	Boys	**1783**	74.8%	58.5%	75.0%	64.6%
	Girls	**2142**	50.4%	52.1%	73.0%	55.8%

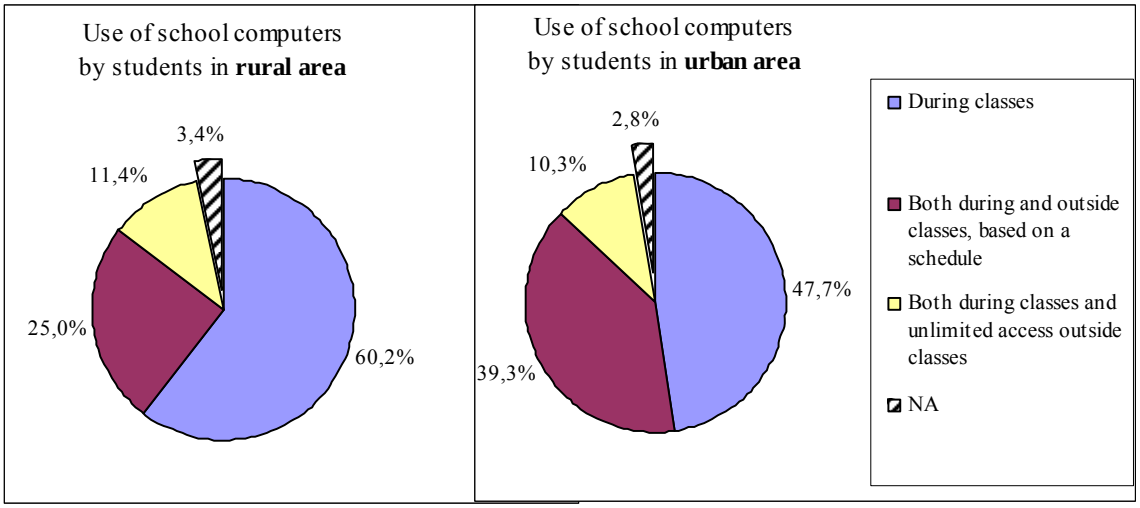
2.3. Access to SEI Laboratories

Headteachers say that the use of computers by students in their schools takes place mostly during classes (53.4%); in many schools, students can use computers outside classes too, following a class schedule (32.8%). There are also schools that provide unlimited access outside classes (10.8%).

Table 13. Use of a school's computers by students

1	only during classes	53.3%
2	Both during and outside classes, based on a schedule	32.8%
3	Both during classes and unlimited access outside classes	10.8%

Figura 17. Use of a school's computers by students - rural-urban differentiation



The data provided by headteachers also show that in the 2006-2007 school year, the SEI laboratories were occupied by students in a (average) percentage ranging from 53.5% in *gymnaziums* and almost 70% in Groups of Schools and high-schools.

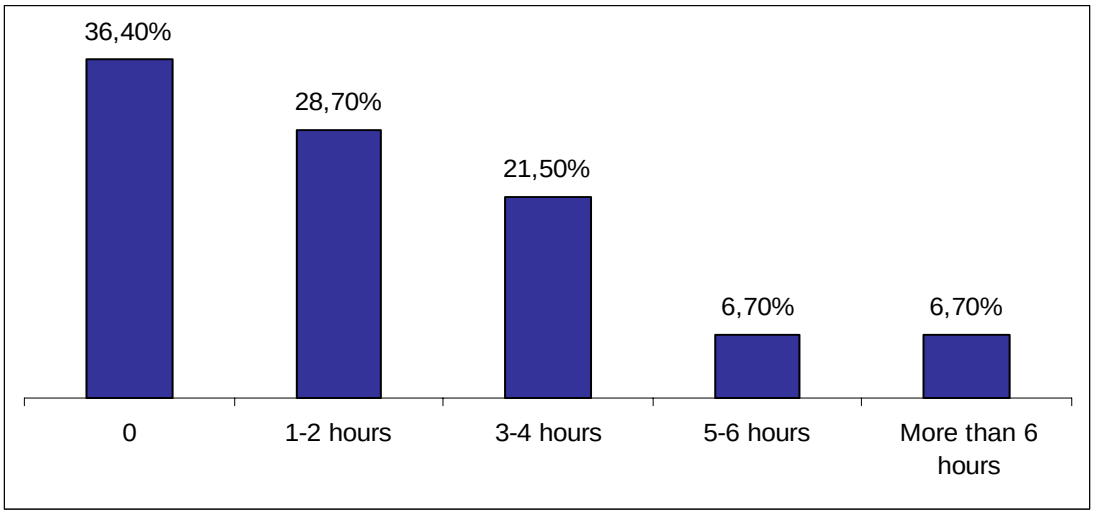
Table 14. Student occupancy of SEI laboratories

Area	
rural	55,7%
urban	61,6%

Type	
Gymnazium	53,5%
Group of Schools	70,0%
High-school	68,8%

The organisation of the use of SEI laboratories on one hand, and the increased students' interest in ICT on the other hand have ensured free weekly access to computers in different variations from 1-2 hours/week (R – 28.4%, U – 29%) to 7 or more hours (R – 4.5%, U – 8.4%).

Figure 18. Number of classes per week allotted to students' free access to the SEI labs



Among the students who have access to a computer at school, 68.1% say they use computers only during lessons and only 30.3% say they can access computers outside classes. The degree of access to computers in a school, outside classes, is 4 percents higher in urban areas (31.4%) than in rural ones. Analysing the differences in point of access outside classes at different education levels, we can see that it is higher in high-schools (33.6%), followed by *gymnaziums* with 25.6% and Schools of Arts and Crafts with only 19.8%.[11]

Table 15. Students' access to ICT outside classes; distribution across areas of residence and types of school

			Residence		Type of school		
		Total	R	U	Gymnazium	SAC	High-school
1.	Yes	30.3%	27.6%	31.4%	25.6%	19.8%	33.6%
2.	No	68.1%	71.5%	66.6%	73.5%	77.1%	64.5%
	NA	1.6%	0.9%	2.0%	0.8%	3.1%	2.0%
	Total	100%	100%	100%	100%	100%	100%

[11] With the authors' reservation on the causes for the difference of extra-school time for students in urban areas compared to the time students from rural areas spend using a computer, there are also the conditions related to the transport to/from school – in point of duration and local infrastructure. In the same context, we should not ignore the high percentage of students who can access ICT at home, who are less interested in using the school's computers, even students from rural areas.

2.4. Access to Educational Software

The educational soft for subjects included in the curriculum is obtained in many ways as follows:

a) for free: through the SEI Programme from the Ministry of Education/ the school inspectorate/ SIVECO (97.7%);
b) for free, downloaded from the Internet (13.4%);
c) bought by schools (12.3%);

We should also mention the steps taken by some schools towards the design and production of their own soft, which were done by teachers and students from those schools, an initiative also supported by the competitions organised by SIVECO and other supporting institutions. This type of information is found in the variant 5 of open answer to headteachers' questionnaire:

Table 16. Sources for the soft available in schools

		Total		R	U
1	free, distributed through the SEI Programme by the Ministry of Education/ the school inspectorate/ SIVECO	97.4%		97.7%	97.2%
2	Bought by the school	12.3%		0.0%	22.4%
3	free, in Romanian, downloaded from the Internet	10.3%		2.3%	16.8%
4	free, in English/French, downloaded from the Internet	3.1%		0.0%	5.6%
5	*Other*	3.1%		1.1%	4.7%

If educational soft distributed free of charge through the SEI Programme is to be found in rural and urban schools to the same extent (97%), the situation is different when it comes to the level of school's investment in educational soft. No rural school included in the SEI Programme bought educational soft from its own funds compared to 22.4% of the urban schools that did so.

Teachers (not involved in school management) are less informed or show less interest in how the educational soft is obtained. Only 65% of the teachers know that the soft in their school is provided through the SEI Programme. Moreover, in cases where soft was bought by schools, only a quarter of the school's teachers were informed about its availability in school.

Table 17. Sources for the soft available in schools – differentiation between teachers' answers and headteachers' answers

		Headteachers	Teachers
1	free, distributed through the SEI Programme by the Ministry of Education/ school inspectorate/ SIVECO	97.4%	65.0%
2	Bought by the school	12.3%	3.7%
3	free, in Romanian, downloaded from the Internet	10.3%	9.8%
4	free, in English/French, downloaded from the Internet	3.1%	5.1%
5	*other*	3,1%	3,9%

Surprisingly, in high-schools, where the number of electronic lessons developed through the SEI Programmes is the largest, teachers are less aware of their availability (52.3%) than their colleagues from *gymnazium* (72.6%). We should also notice that 23.1% of high-school teachers say they get the necessary soft from the

Internet compared to only 10.9% of *gymnazium* teachers – which can be partially explained by the fact that high-schools had an earlier start in the SEI Programme and connected earlier to the Internet.

Table 18. Sources for the soft available in schools – differentiation across types of schools *(Annex 3.2: H16 and Annex 3.3: T15)*

		Through SEI	Bought by the school	Downloaded from the Internet	Obtained in other way
		1	2	3+4	5
Total		**65.0%**	**3.7%**	**14.9%**	**3.9%**
Type	**Gymnazium**	72.6%	2.5%	10.9%	2.6%
	Group of Schools	61.3%	4.3%	15.0%	4.9%
	High-school	52.3%	5.9%	23.1%	5.7%
	School of Arts and Crafts	76.2%	0.0%	4.8%	4.8%

2.5. Access to ICT outside School

If the schools which were subject to this investigation have less or more extended computer networks, a problem for teachers and students is the access to technology outside school.

One first observation related to the analysis of economic and social factors is the structure of the two samples, including representatives from all the schools included in the survey, and the share of "no answer" for this item, which is very low: 0.7% for teachers and 0.3% for students.

Given the conditions for the directed selection of teachers for the sample and the subjects they taught, we can see that only 7.4% of the teachers teach ICT/computer science, and the rest cover a wide range of other subjects of the basic curriculum or optional subjects.

As for the students, additional information was required in their questionnaires about their residence. In this case, the evaluation considers to a greater extent the social and familial conditions of the student population.

When asked if they have a computer at home, most teachers (86.6%) answered yes, only 13% saying that they don't have one. An analysis based on the area where the school is situated shows that 80.8% of teachers from rural schools have a computer at home, with a higher percentage (90.3%) of teachers from urban schools, where 9 in 10 teachers have a computer at home. (Details in Annex 3.3: T02)

Table 19. Structure of student and teacher samples based on the availability of home computers

	Teachers			Students		
	Rural	Urban	Total	Rural	Urban	Total
Computer available at home	**80.8%**	**90.3%**	**86.6%**	**74.6%**	**92.2%**	**84.6%**
No computer available at home	18.6%	9.5%	13.0%	25.0%	7.7%	15.1%
No answer	0.7%	0.1%	0.3%	0.4%	0.1%	0.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Test z			**5.37**			**14.27**

For the students, the high share (84.6%) of families who have computers should be considered with reservation. On the one hand, this percentage does not reflect the share of such goods in the population in general and, on the other hand, we should also take into account the social programme supporting disadvantaged families to buy computers. Another hypothesis is that the schools included in the survey preferentially selected precisely those students known for their interest in computers and related skills. Such a hypothesis is also supported by the high percentage of *gymnazium* students who said they used a computer at school, almost two thirds of the total sample, given the fact that computer science is an optional subject at this level. With the reservations about the representativeness of the students who have a computer at home, three quarters (74.6%) of the students living in a rural area, and 92.2% of those from urban areas have a computer at home. (Details in Annex 3.4: S02)

Eight in ten teachers who confirmed they had a computer at home (79.4%) said that they also had a broadband connection to the Internet (three quarters of them) or dial-up (one quarter of them), with a higher percentage among teachers from urban schools. In the sample for this survey, hardly more than half of the teachers from rural areas (56%) have an Internet connection at home, while among the teachers from urban schools the percentage is 77%. When reported to the category of teachers who have a computer at home, the percentages become 69.4% for rural schools, and 85.1% for teachers from urban schools.

Table 20. Structure of student and teacher samples based on the availability of an Internet connection for home computers

	Teachers			Students			
	Rural	Urban	Total	Rural	Urban	No answer	Total
Total number of teachers/ students	614	974	1588	1674	2252	27	3953
Computer available at home	496	880	1376	1249	2076	19	3344
Number of computers connected to the Internet	344	749	1093	444	1695	11	2150
Percentage of computers connected to the Internet in the total number of computers	56.0%	76.9%	68.8%	26.5%	75.3%	40.7%	54.4%
Percentage of computers connected to the Internet in the total number of home computers	69.4%	85.1%	79.4%	35.5%	81.6%	57.9%	64.3%

The share of students who have access to the Internet at home is much lower. Approximately two thirds of the student sample confirmed they had an Internet connection, but the difference in percentages between urban and rural areas grew at 45 percents for those who had a computer at home (35.5% in rural areas and 81.6% in urban areas) or 49 percents when considering the whole sample (26.5% in rural areas and 75.3% in urban areas).

To draw a conclusion, with regard to the teachers, most of them have a computer at home, but the 10 percent difference between urban and rural areas is significant. The value of the test z=5.37 indicates a considerable statistical difference between teachers based on their area of residence. The difference between the two types of residence areas grows to 20 percents when it comes to access to the Internet. The test z=14.3 statistically demonstrates the difference between students from the two areas reaching 18 percents. (Details in Annex 3.3: T02, T03 and Annex 3.4: S02, S03)

If the structure of the student sample based on their area of residence is known, if we assume that teachers who teach in rural schools also live there, the local infrastructure can be the source of disadvantage for this category of teachers with regard to access to the Internet. Moreover, differences created by the local infrastructure can also be present in school conditions.

3. Use of New Technologies

Thanks to the ICT initiation courses and the AeL courses organised within the SEI Programme, the majority of teachers can now use a computer, at least at a beginning level, the schools in the urban areas registering higher rates compared to the rural schools (U-77%, R- 68%), so as the high-schools (79%) compared *gymnaziums* (69%). (Annex 3.2: H02)

3.1. Use of SEI laboratories

With regard to the percentage of teachers who use the SEI laboratory for activities with their students, the data presented by the headteachers show that only the Group of Schools go over 50%[12]. (Details in Annex 3.2: H03.)

If we continue to explore the information related to teachers and the use of SEI laboratories, we find that the situation is pretty good in *gymnaziums* and in high-schools (both in the urban areas and in the rural ones), with lower percentages in primary schools (U-82.1% and R-58.7%), a situation that can be objectively explained by such factors as the gap in the provision with specific equipment.

[12] We should say that the percentages for the vocational schools and schools with few people cannot be considered representative because of the small number of such schools included in the sample.

Table 21. Use of SEI laboratories by teachers – differentiation based on education level

	The laboratories in your school are used by:		Total		Rural	Urban
1	primary school teachers	PRM	69.%		58.7%	82.1%
2	*gymnazium* teachers	GIM	97.0%		100.0%	93.7%
3	School of arts and crafts teachers	SAC	95.7%		90.9%	100.0%
4	high-school teachers	HSC	98.4%		100.0%	98.1%

According to the data presented by the teachers, more than three quarters of them organise at least one lesson per semester in the SEI laboratory, and 17% use the laboratory for lessons more than 6 times per smester. In this respect, the differentiation rural-urban is the opposite of that found in other situations with the urban schools at a disadvantage due to the fact that they have more students: 24.8% of the teachers in urban schools say they have never used the SEI laboratory for lessons compared to 19.5% in rural schools; moreover, only one third (32.7%) of the teachers from urban schools have carried out more than 3 lessons per semester in the laboratory compared to almost half (48.1%) of the teachers from rural schools. (Annex 3.3: T12)

Figure 19. Use of SEI laboratories by teachers – differentiation based on education level

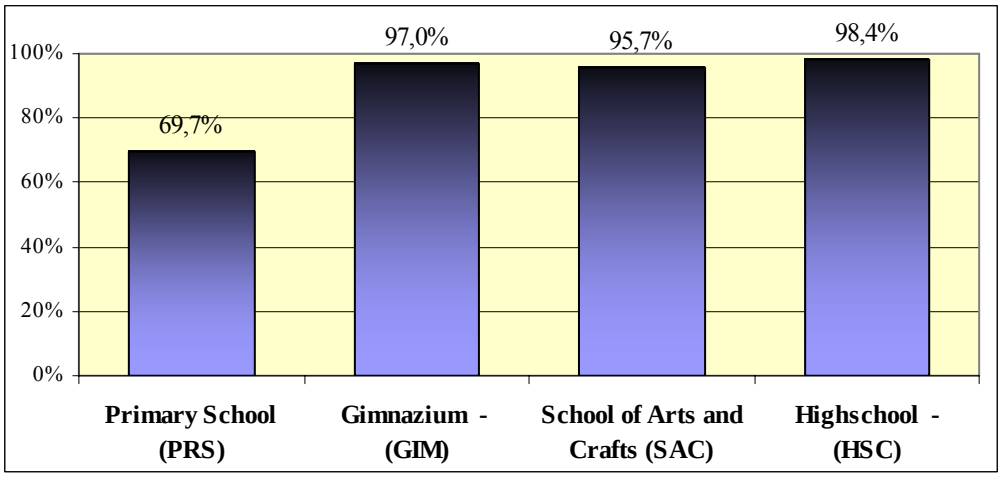
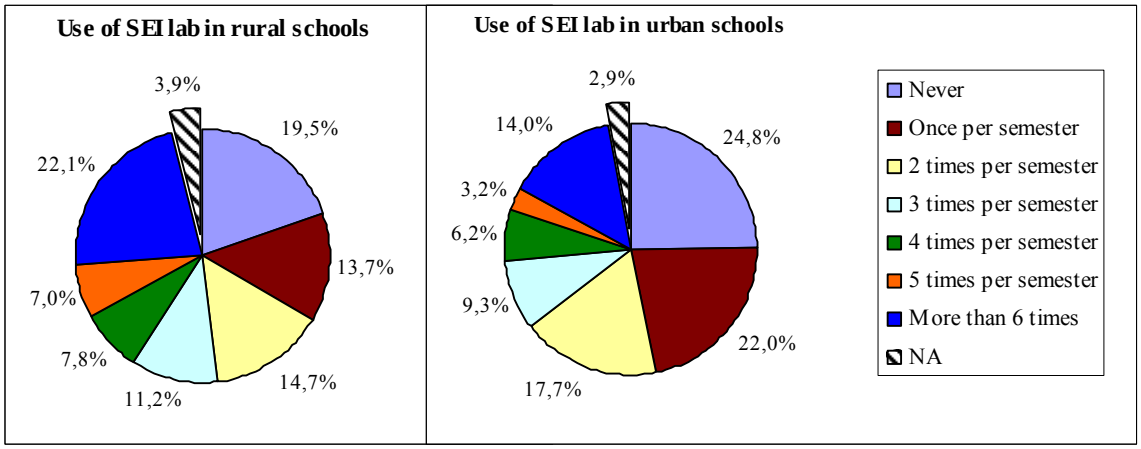


Figure 20. Frequency in the use of SEI laboratories by teachers for lessons with students – rural-urban differentiation



From the total number of students who had the possibility to use a computer at school, 81.4% say they have access to a SEI laboratory with an AeL

platform, the percentages being different in rural and urban areas 87.5% in rural schools, and 78.7% in urban schools; 14.8% have access to a computer laboratory without the AeL resources, 8.7% in rural schools and 17.5% in urban schools; 3.2% have access to a computer and a video projector in a classroom, and 2% in other situations (the counselling office etc.).

Table 22. Types of ICT access in schools; distribution across areas of residence

		Total		R	U
1.	In the SEI laboratory with AeL	81.4%		87.5%	78.7%
2.	In acomputer laboratory without AeL	14.8%		8.7%	17.5%
3.	In a classroom with one computer and videoproiector	3.2%		2.7%	3.4%
4.	Other situation	1.9%		1.5%	2.0%
	No answer	3.1%		1.3%	3.8%
	Total	100%		100%	100%

Although the programme for the supply of computers for high-schools has finished, and that for *gymnaziums* will finish soon, the percentages of students who don't have access to computers are explained either by the fact that the laboratories are exclusively or mainly reserved for computer science classes, and the schools did not allot time to other specialisations or classes, or by a large number of student classes in the school, which cannot afford an equitable distribution among classes. This fact is also proved by the higher percentage of students in the rural areas who have access to SEI laboratories, a situation that can be explained by less students in the rural schools and therefore more access to computers. This is however compensated by the large number of laboratories developed based on other sources in the urban areas, the percentage of students who have access these laboratories not established through the SEI Programme is almost double (17.5%) compared to the sitation in rural areas (8.7%).

Analysing the distribution of the SEI laboratories based on the type of school, we can see that the most frequent use is registered with gymnazium students (88.8%), followed by students from general and technological high-schools (78.5%) and those from the School of Arts and Crafts (with only 66.1%). As regards the distribution of computer laboratories developed from other sources, the Schools of Arts and Crafts are the first to ensure access to 29.2% of the students, followed by high-schools with access for 18.7% and *gymnaziums* with only 5.7%.

Table 23. Types of access to ICT in schools; distribution based on the type of school *(Annex 3.4: S05)*

		GIM	SAC	HSC
1.	In the SEI laboratory with AeL	88.8%	66.1%	78.5%
2.	In a computer laboratory without AeL	5.7%	29.2%	18.7%
3.	In a classroom with one computer and videoproiector	3.1%	7.8%	2.8%
4.	Other situation	3.0%	1.0%	1.3%
	Total	100%	100%	100%

3.2. Use of ICT with various subjects

The experience gained already makes headteachers consider that the computerisation programme is, overall, more useful for subjects that traditionally do not involve computers (R – 59.1%, U – 62.6%) than it is for computer science (R – 23.9%, U – 39.3%), with the computer initiation courses in the middle (R – 55.7%, U – 43%).

Table 24. The usefulness of the SEI Programme for different categories of subjects

	The computerisation programme is more useful for:	Total		Rural	Urban
1	for computer scieence	32.3%		23.9%	39.3%
2	for computer ititiation courses	48.7%		55.7%	43.0%
3	for other subjects	61.0%		59.1%	62.6%

If in the 2004 report, the first five subjects which were advantaged by the use of AeL were biology, (computer science), physics, chemistry, mathematics, and geography, the order has remained unchanged this time too: biology (R – 61.4%, U – 61.7%), physics (R – 51.1%, U – 48.6%,) chemistry (R – 50%, U – 43%), mathematics (R – 40.9%, U – 33.6%), geography (R – 37.5%, U – 37.4%).

Table 25. Subjects favoured by the SEI Programme

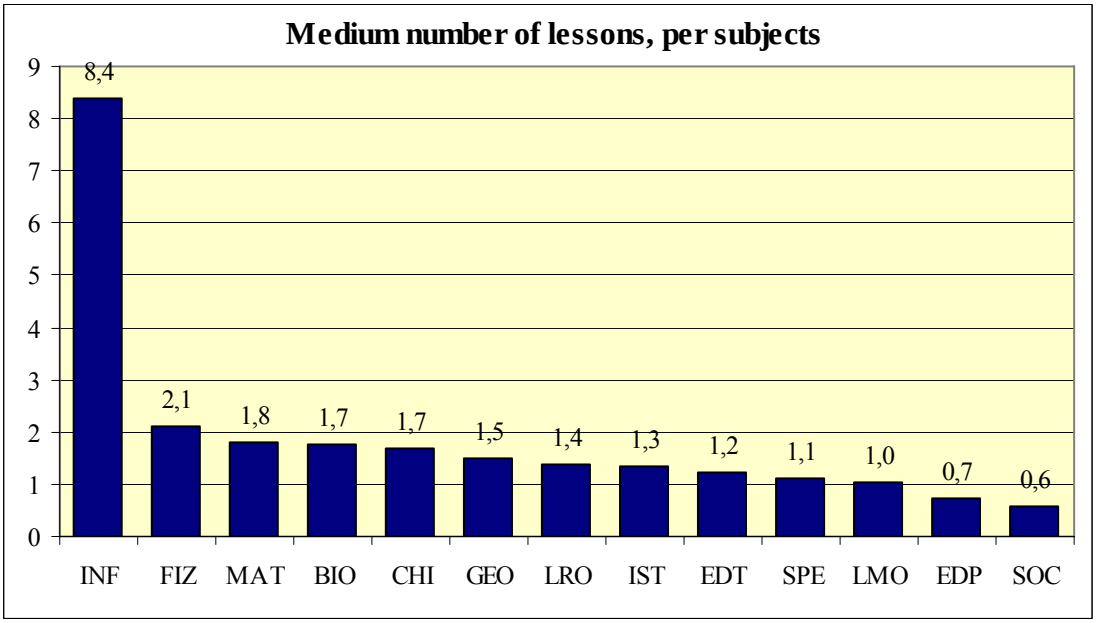
No.	Subject	Total
1	Biology	61.5%
2	Physics	49.7%
3	Chemistry	46.2%
4	Geography	37.4%
5	Mathematics	36.9%
6	History	15.9%
7	Specialised subjects	13.3%
8	Technological education	9.7%
9	Languages	9.7%
10	Romanian language / Mother tongue	7.7%
11	Social and humanistic subjects	2.6%
12	Drawing	2.1%

On average, based on the students say, the range of subjects which involved lessons in the SEI laboratory in the 2006-2007 school year is the following: first comes computer science with more than 8 lessons, followed at a distance by physics (2.1), mathematics (1.8), biology (1.7), chemistry (1.7), geography (1.5), Romanian (1.3), history (1.3), technological education (1.2), specialised subjects (1.1), languages (1), design (0.7) and social and humanistic subjects (0.6) (Figure 21).

We can say there is a clear domination of computer science classes over technology equipment to the expenses of the other subjects. Obviously, the solution is not to reduce the number of computer science classes taking place in

the computer laboratory, but rather to continue the computer provision programme so as students can use laboratories and existing soft equally for the other subjects. The rest of subjects make a compact group, although the first subject after computer science (physics – 2.1) has four times more classes in the computer laboratory compared to the last group of subjects (social and humanistic subjects – 0.6).

Figure 21. Number of lessons per subjects



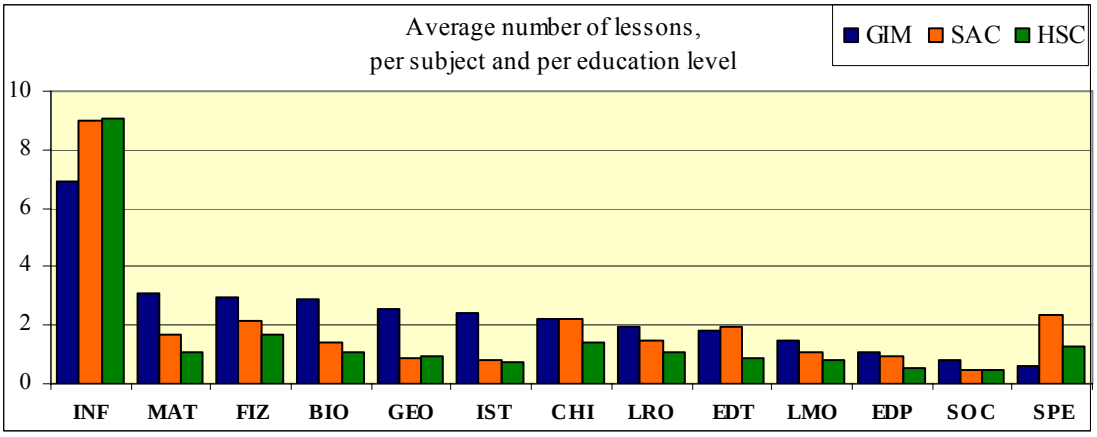
Code	Subject
INF	Computer science
FIZ	Physics
MAT	Mathematics
BIO	Biology
CHI	Chemistry
GEO	Geography
LRO	Romanian / Mother tongue

Code	Subject
IST	History
EDT	Technological education
SPE	Specialised subjects
LMO	Modern languages
EDP	Design
SOC	Social and humanistic subjects

In spite of the latest developments of type web2 technologies, we can see that the social and humanistic subjects still come last with regard to the use of computers for lessons.

The students in *gymnaziums* had seven computer science lessons in the laboratory on average in a school year, while the students in high-schools and the Schools of Arts and Crafts had nine. For physics, there have been twice as many lessons in the computer laboratory in *gymnaziums* (3) compared to high-schools (1.6); for mathematics and biology there have been three times more lessons in the computer laboratory in gymnaziums (3 and 2.9 respectively) than in high-schools (1); for social and humanistic subjects there have been two times more lessons in the computer laboratory in *gymnaziums* (0.8) than in high-schools (0.4). (Details in Annex 3.4: S08)

Figure 22. Number of lessons per subjects and education level



3.3. Use of ICT by Teachers

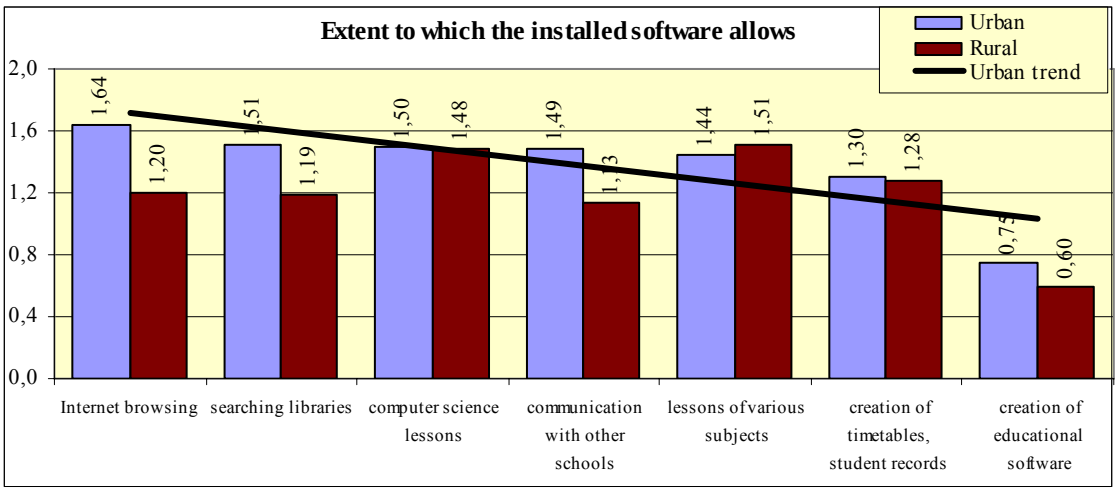
The extent to which teachers are aware of the possibilities for using the educational soft in their school, offered for free through the SEI Programme was directly inquired through an item which listed the main types of activities that can be carried out with the support of the new technologies.

Bearing in mind that access to the Internet was not included in the SEI Programme and it depends on the possibilities of each school, the existing soft supports all of the following activities:

- computer science lessons and/or lessons for learning how to use a computer
- lessons at other subjects than computer science
- the creation of educational soft by teachers
- Internet browsing for information and documentation purposes
- searching through educational resource libraries, dictionaries, encyclopaedias etc.
- communication with other schools/ the school inspectorate/ the Ministry of Education
- the creation of timetables, student records.

Few teachers know however that the soft available in their school includes dictionaries and encyclopedias, that they can adjust the educational soft from AeL or that they can create their own educational soft by re-combining *reusable educational objects* or that AeL can be used for administrative purposes such as creating timetables and keeping student records. (Details and differentiation on residence in Annex 3.3: T06)

Figure 23. Teachers' opinions on the use of the use of the educational soft available in the SEI laboratories



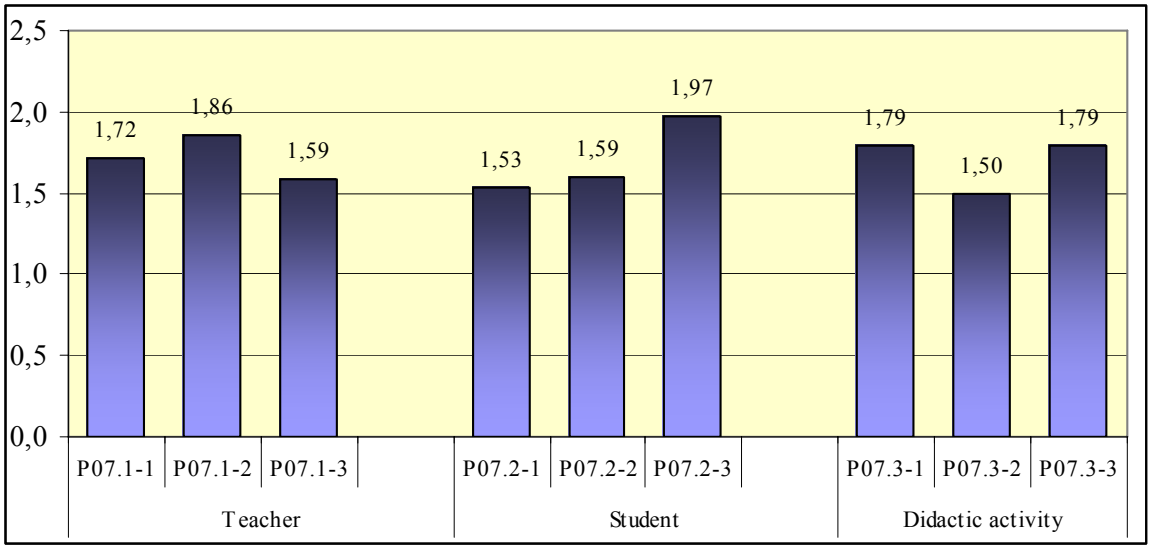
With regard to the effects of ICT use for learning-teaching-assessment, the teachers ranked some potential benefits (Table 26), from several points of view:

- With regard to teachers, ICT contributes first to the facilitation of learning objectives, and then to the facilitation of teacher's activity; the modernisation of the educational process is not seen by teachers as an important argument for using ICT in designing, teaching and assessment activities.
- With regard to students, teachers consider that classes in the SEI laboratory are useful first because they facilitate students' understanding. Then, they mentioned the development of computer use skills, and last they pointed to the role of the new technologies in attracting and motivating students for higher achievement.
- With regard to the organisation of the educational process, the benefits of ICT are seen by teachers especially in connection with active, participative learning, as well as with cooperative learning; the contribution of ICT to individual or personalised learning is surprisingly ranked last, although the majority of educational applications are more suitable for individual learning.

Table 26. Positive effects of using SEI laboratories in teachers' view

Segment	*Poz*	*Estimated effects*	*Average place*
Teacher	1	facilitates teacher's activity (design-teaching-assessment)	1.717
	2	facilitates the learning objectives	1.856
	3	encourages innovation/ modernisation of the teaching process	1.585
Student	1	improves the learning outcomes/ attracts students, develops interest in studying	1.534
	2	develops computer use skills	1.593
	3	facilitates understanding of different phenomena	1.973
Activity	1	allows cooperative learning, develops team work abilities	1.785
	2	allows individualised/ personalised learning	1.501
	3	Favours active, interactive, participative learning	1.787

Figure 24. Positive effects of using SEI laboratories in teachers' view (on a 0-3 scale)

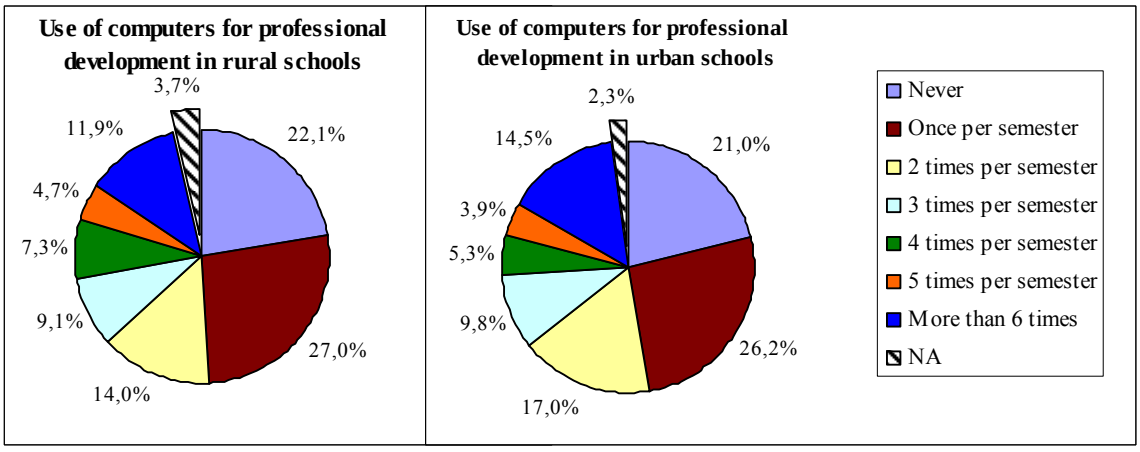


A comparative analysis based on several factors reveals the following differences:

- Compared to high-school teachers or to teachers from Group of Schools or from Schools of Arts and Crafts, the teachers from *gymnaziums* appreciate more the contribution of ICT to the facilitation of their work, the facilitation of students' understanding and to the promotion of cooperative learning.
- The male teachers are more interested in the ICT benefits in connection with the modernisation of the educational process than the female teachers.
- Compared to the teachers who attended specialised courses, those teachers who did not take such courses indicate more as beneficial effects of the SEI laboratory the development of students' computer use skills and less the facilitation of students' understanding of different phenomena. (Details in Annex 3.3: T07)

With regard to their own professional development, teachers begin to see the value of the Internet and computers for information and documentation activities, for distance courses, for exchanges of experience, for learning computer programmes, for publication of articles etc. (Details in Annex 3.3: T13)

Figure 25. Use of computers for teachers' professional development – rural-urban differentiation



The use of the new technologies for professional development looks pretty much the same in rural and urban areas, teachers being equally aware of the opportunities of the computerisation process.

However, we can see that the use of ICT is still at the beginning and still far away from the quality and competitiveness promoted by the Ministry of Education and the strategy documents and recommendations of the European Commission: in early 2008, one in five Romanian teachers had never used the new technologies for information and documentation purposes, and one in four teachers said they had used only once in a semester a computer or the Internet for such activities.

3.4. Use of ICT by Students

On average, a little past half (53.1%) of the students who participate in lessons taking place in the computer laboratory have access to an individual computer, 34.9% share a computer with a classmate at the same time, 7.1% share a computer with other two classmates and 1.3% work together with other three collegues on the same computer, and 1.7% of the students work in groups even larger on the same computer.

Differences between educational levels are considerable in point of the number of students using a computer at the same time during classes in the computer laboratory as follows: most of the students who work alone on a computer are high-school students (67.8%), only 55.2% in the Schools of Arts and Crafts and only 25% of *gymnazium* students.

Table 27. Number of students per computer

		Total		GIM	SAC	HSC
1.	A student	53.1%		25.5%	55.2%	67.8%
2.	Two students	34.9%		54.5%	29.7%	24.7%
3.	Three students	7.1%		12.9%	9.4%	3.8%
4.	Four students	1.3%		2.0%	1.0%	0.9%
5.	Other:	1.7%		3.2%	0.0%	1.1%
	No answer	2.0%		1.9%	4.7%	1.8%
	Total	100.0%		100.0%	100.0%	100.0%

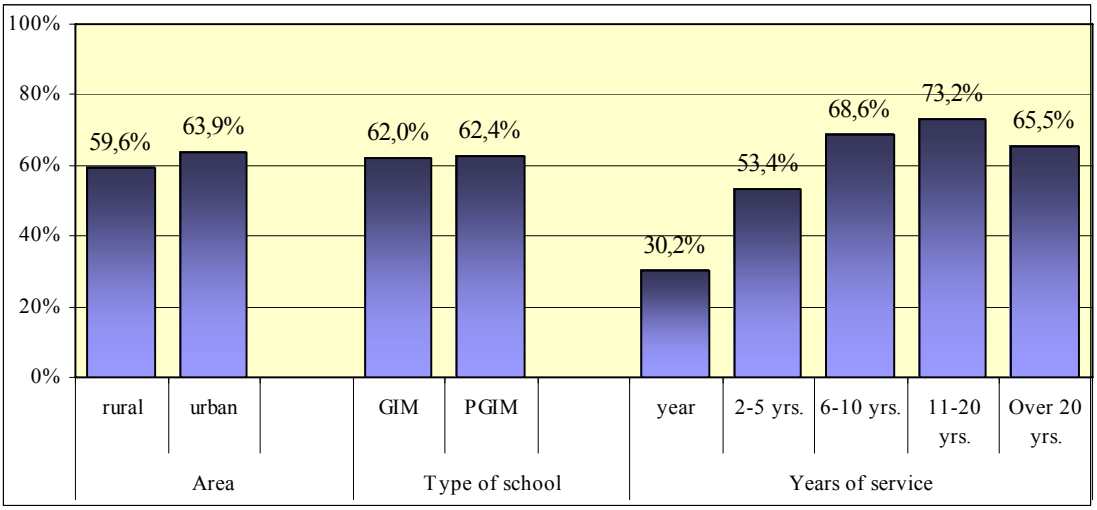
In this situation, it is obvious that the most significant inconveniences encountered by students during classes in the SEI laboratory are the limited time for computer use during classes, indicated by 35% of the students, and the number of students per computer, mentioned by 21% of the students. (Annex 3.4: E11)

3.5. Ways of Using ICT

A percentage of 21.3% of the teachers do not use the new technologies with the lessons. The other 78.7% use ICT in different situations: (a) in the SEI laboratory, with AeL, (b) in a computer laboratory without AeL, (c) in a regular classroom with one computer and a video projector or (d) in other situation. If we differentiate among the 78.7% teachers based on factors such as area of residence

(rural-urban), level of education (*gymnazium-postgymnazium*) or the educational experience of teachers, differences are insignificant. Only the share of teachers in their first year of teaching is sensibly smaller, 54.7%.

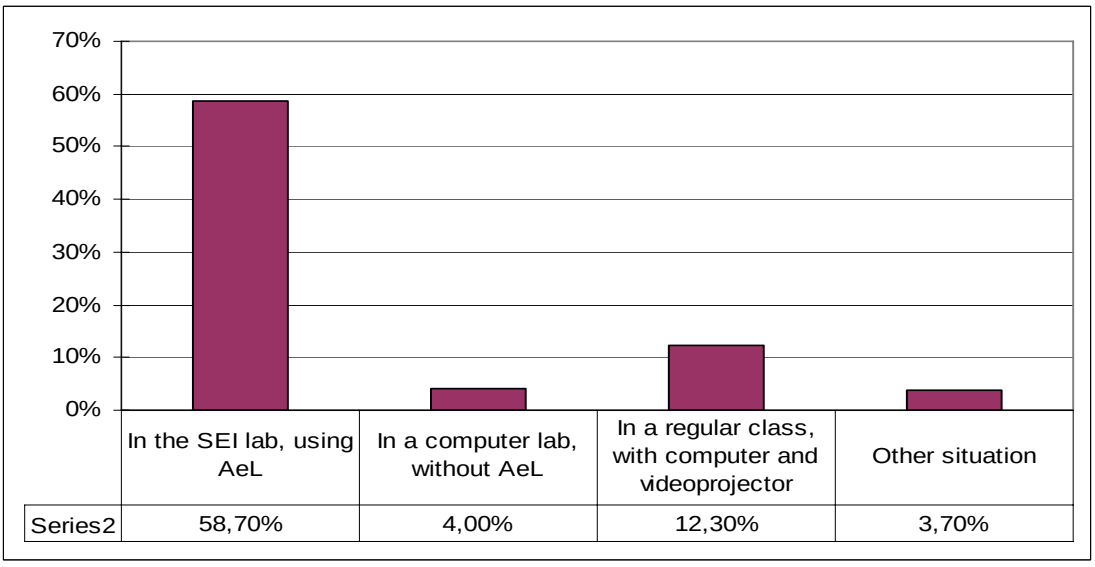
Figure 26. Teachers who use ICT in the teaching learning process – differentiation based on factors



The most frequent situations involving the use of ICT for teaching-learning-assessment purposes are in the SEI laboratory with AeL (58.7%), followed by the use of computers with a video projector, in a regular classroom (12.3%). The other situations – lessons in laboratories without AeL or lessons with other types of ICT use are less than 8%. (Figure 27)

We can already say that the SEI Programme establishes in the Romanian schools working practices based on 1:1 student-computer interaction model. In time, "lessons in the SEI laboratory" will become regular lessons – as frequent as the other lessons – where each student has access to an individual computer.

Figure 27. Situations in which ICT is used for teaching-learning-evaluation



Maybe also because urban schools have more students and (in most of the cases) the same number of SEI laboratories, differences from rural schools are

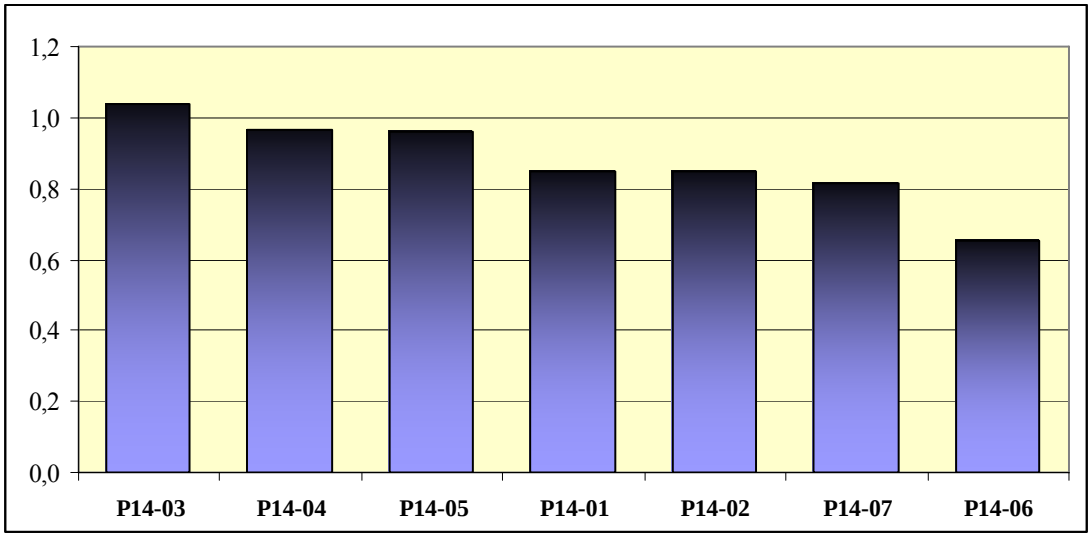
significant: only 53% of the teachers from urban schools mark as most frequent the lessons in the SEI laboratory, compared to 67.8 in rural areas. On the other hand, 17.2% use the video projector for lessons, compared to only 4.4% in schools from rural areas. (Details in Annex 3.3: T04)

With regard to the type of learning activities carried out with students, it's relevant to mention the average scores[13] which are higher for diversified activities in urban schools, especially with regard to those activities that encourage creativity (P14-07 and P14-06) and for activities which use the Internet (P14-02).

Table 28. Types of teaching-learning activities involving the use of ICT

		Total		R	U
P14-03	Sequences when teaching and learning involve the use of electronic lessons (for my subject)	1.036		1.000	1.092
P14-04	Tasks when the students work individually using ITC	0.965		0.912	1.051
P14-05	Tasks when the students work in groups using ICT	0.958		0.929	1.003
P14-01	Sequences when the students learn to use computer programmes (editing, computing, Internet browsing)	0.851		0.875	0.836
P14-02	Sequences when the students use the Internet look for information	0.848		0.559	1.026
P14-07	Activities when the students are required to be creative, to explore and to innovate, using especially ICT resources and/or the Internet	0.816		0.682	1.028
P14-06	Activities having as a result a multimedia product (a film, a web page, a presentation)	0.655		0.539	0.833

Figure 28. Types of activities which use ICT



Extending the range of possibilities for using the computers available in the school to a series of current activities carried out by teachers (Figure 29 and Table 30), we find out that the equipment and the Internet connection are mainly used by teachers for:

[13] Based on the average which resulting from the transformation into a 0-1-2 scale of the ranking of activities based on their frequency (never-rarely-often).

- consulting the school legislation or the news on the Internet (T05-04): 54.4%
- creating worksheets for students, informative materials, sketches, assessments (T05-06): 50.1%
- searching information to help them prepare the lessons (T05-05) – 46.4%.

At the opposite end, teachers use the new technologies least for creating educational soft (56.9% saying they don't use at all a computer for this activity), for communicating with students after school hours (49.2%) or with their parents (64.7%). (Details in Annex 3.3: T05)

Figure 29. Activities for which teachers use ICT

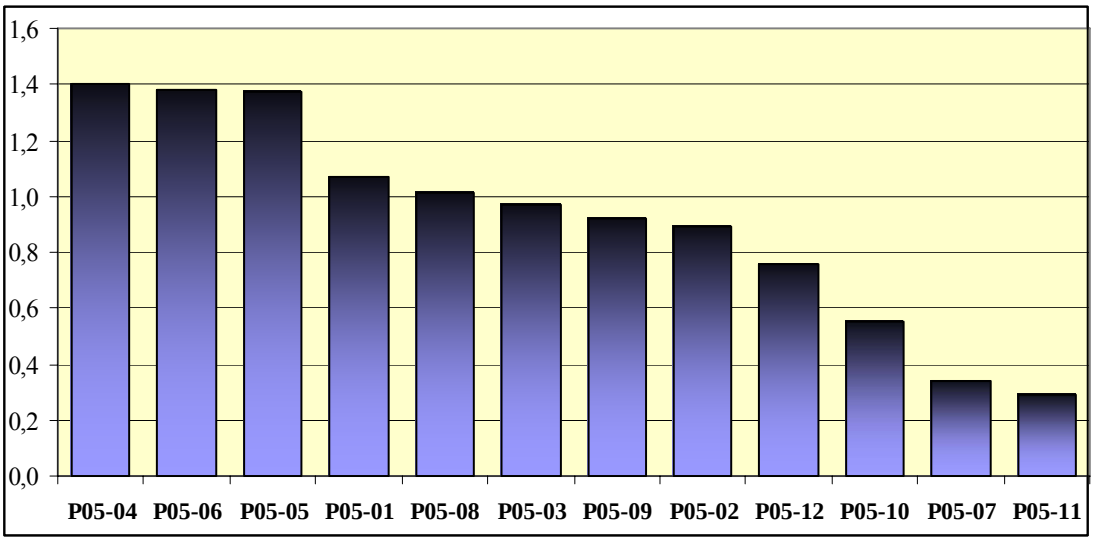
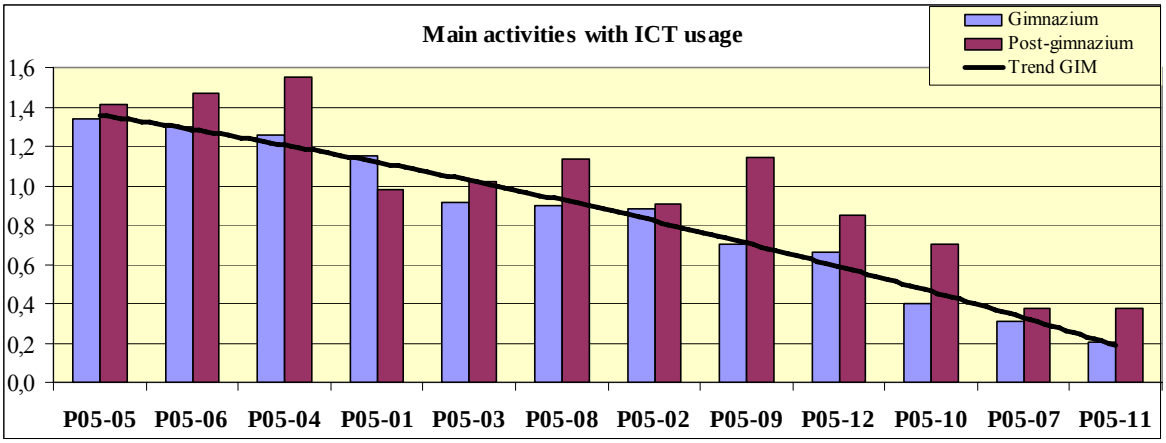


Table 29. Types of teaching-learning activities involving the use of ICT

	Activities carried out with the use of computers	*Average*
P05-01	teaching-learning activities in the SEI laboratories	**1.067**
P05-02	computer-based assessment tests for students	**0.892**
P05-03	use of educational resources (enciclopedias, picture libraries, dictionaries etc.), delivered and installed by MERY/ school inspectorate/ SIVECO	**0.967**
P05-04	consulting school legislation or news on edu.ro, portal.edu.ro, forum.edu.ro etc.	**1.403**
P05-05	information to prepare the lesson	**1.375**
P05-06	creating worksheets for students, informative materials, sketches, assessments etc.	**1.384**
P05-07	creating educational soft	**0.342**
P05-08	administrative activities: student records, filling-in pedagogical and psychological forms etc.	**1.015**
P05-09	communication with teachers from other schools, via email, chat or the Internet	**0.920**
P05-10	contact with your students, outside school hours	**0.549**
P05-11	contact with your students' parents via email or the Internet	**0.291**
P05-12	designing development projects for your school	**0.755**

Figure 30. Activities for which teachers use ICT – differentiation based on education level



With regard to the communication with students outside school hours, we can see a significant difference between the use of ICT for this purpose by teachers from urban areas (16.7%) and those from rural areas (5.5%), as well as between high-school, School of Arts and Crafts and Group of Schools teachers (*postgymnazium* – 17%) compared to *gymnazium* teachers (8%). (Figure 30)

The same differences is found with the use of the new technologies for communicating with teachers from other schools (average scores: U- 1.099 compared to R- 0.632, as well as PGIM- 1.141 compared to GIM- 0.702). (Details in Annex 3.3: T05)

Analysing on a three point scale (0-2) the way computers are used in schools, the computer science classes excluded, the information provided by students show that computers are most frequenly used for lessons at various subjects (1.1), followed by the search for information, pictures etc (0.9), preparing different materials required by teachers (0.8), for testing and assessing knowledge (0.7) and communicating with other students and participating in extra-school projects, each with 0.4.

Table 30. Types of teaching-learning activities involving the use of ICT carried out by students at school

		Largely **2**	Less **1**	Not at all **0**	Don't know	No answer	Average
E09a	for lessons in the computer laboratory, at subjects other than computer science	35.0%	33.8%	15.7%	6.6%	8.9%	1.139
E09b	for testing/ assessing knowledge	14.2%	30.6%	31.4%	5.1%	18.7%	0.726
E09c	for searching for information, pictures etc.	25.3%	29.9%	23.7%	4.0%	17.1%	0.971
E09d	for preparing materials required by teachers	23.0%	24.4%	29.6%	4.2%	18.7%	0.867
E09e	for communication with students from other schools, via email, chat, forums etc.	10.3%	16.7%	49.0%	4.1%	19.9%	0.467
E09f	for participating in projects (extra-school)	9.3%	19.2%	45.0%	5.5%	21.1%	0.477

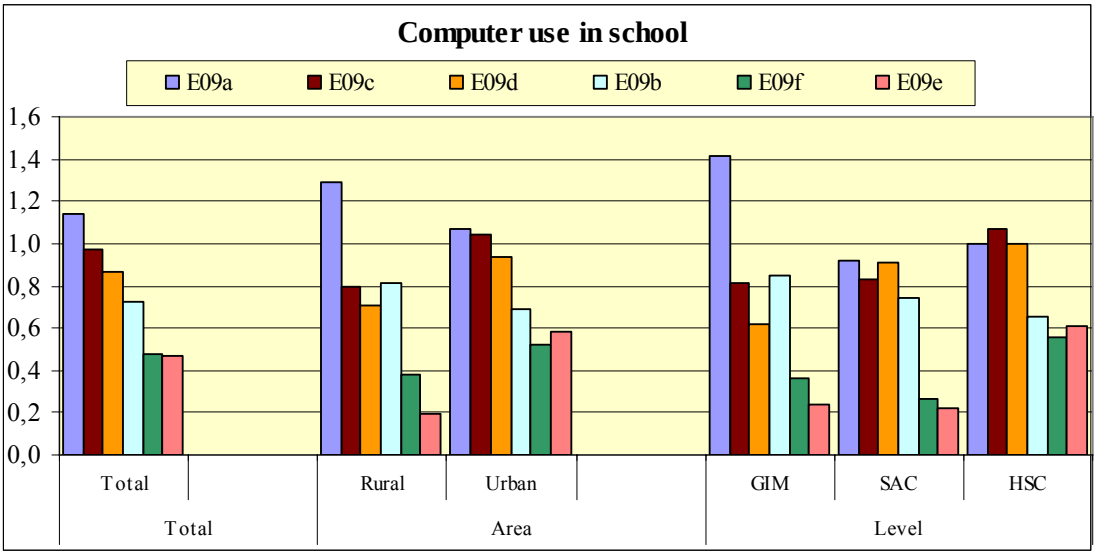
There are some rural-urban differences with regard to the types of activities carried out with students as follows: in rural areas, the "conventional" teaching-learning activities (E09a) and assessing/ testing activities (E09b) are more frequent, while in urban areas project based learning activities, individual work and communication with the use of Internet are more frequent. There are also differences between the education levels: the use of ICT for "conventional" lessons is much more frequent in *gymnazium* (1.4) than in high-school (1.0). (Table 31)

In *gymnaziums*, participation in lessons at different subjects is the most frequent activity – average score 1.4 – compared to only 0.2 for communication. In high-schools, computers are used less variably for lessons, information, and homeworks on one hand (average around 1), and on the other hand for communication, assessment and extra-school activities (average around 0.6).

Table 31. Types of teaching-learning activities involving the use of ICT carried out by students at school
(Annex 3.4 - S09)

	Total	Area		Type of school		
		R	U	GIM	SAC	HSC
a lessons in the computer laboratory, at subjects other than computer science	1.139	1.295	1.070	1.411	0.917	1.002
c for searching for information, pictures etc.	0.971	0.796	1.047	0.814	0.834	1.068
d for preparing materials required by teachers	0.867	0.705	0.935	0.621	0.911	0.999
b for testting/ assessing knowledge	0.726	0.817	0.686	0.849	0.744	0.654
f for participating in projects (extra-school)	0.477	0.376	0.520	0.362	0.266	0.554
e for communicating with students from other schools, via email, chat, forums etc.	0.467	0.195	0.582	0.241	0.221	0.606

Figure 31. Types of activities involving the use of ICT carried out by students at school



3.6. Use of ICT for Extra-Curricular Activities

Educational activities with the help of ICT organised by the school outside school hours are different in rural areas from urban areas, based on existing necessities: initiation courses for the use of computers are more frequent in rural areas (25% compared to 11.1%), and extra-curricular projects in which students use ICT are more frequent in urban areas (43.9% compared to 19.7%).

Table 32. Educational activities for students outside the classroom

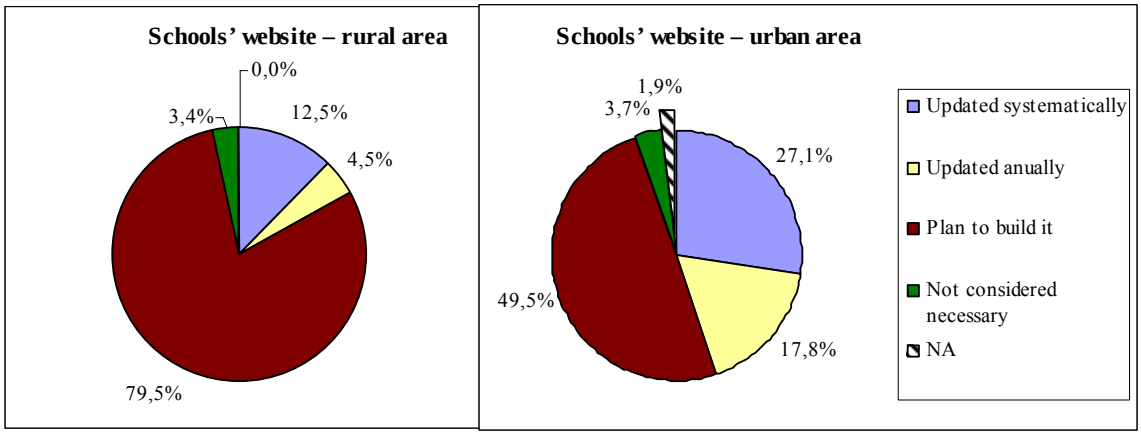
		Total		R	U
P16-01	Projects where students use ICT	34,6%		19,7%	43,9%
P16-02	Initiation courses for the use of computers	16,7%		25,6%	11,1%
P16-03	Distance collaboration activities (via Internet) with other schools	10,1%		4,2%	13,9%
P16-04	Competitions	15,7%		12,1%	18,0%
P16-05	Creation of web pages	6,0%		2,4%	8,2%
P16-06	Publications issued in schools by students	20,4%		19,1%	21,3%

Beside the rural-urban difference in the use of ICT for extra-curricular activities, there are also several differences between the levels of education. For example, the educational projects where students are encouraged to use new technologies are used as a teaching method by 25% of the *gymnazium* teachers compared to 50% at high-school level. (Details in Annex 3.3: T16)

3.7. School Web Pages

Many of the schools benefitting from the SEI Programme have presentation sites on the Internet (R – 17%, U – 44.9%), but most of them intend to have one by the end of the 2007-2008 school year (R – 79.5%, U – 49.5%). Only a small number of schools (less than 3.7%) consider that such presentation sites are not useful for the moment.

Figure 32. School web pages – rural-urban differentiation



A school's web site contains general information about the school, its teachers, school documents, information for parents, forums for students and teachers, as well as other kinds of information according to the students' interests. (Details in Annex 3.2: H17 şi H18)

3.8. Development Priorities

The computerisation of the educational process has brought a series of problems for the head-teachers who need a clear vision and a coherent long-term strategy to solve them. The situation of such a strategy related to the use of ICT looks like that:

a) it is included in the school's development project (R – 56.8%, U – 71%)
b) it is presented in a separate document (R – 1.1%, U – 4.7%)
c) it exists, but it is not written formally (R – 5,7%, U – 11,2%).

We should also say that there are a few managers who consider that the development of such a strategy is not a priority for their school.

At the same time, the head teachers consider[14] that their schools need the following development priorities with regard to ICT:

Table 33. Development priorities

How much do you consider the following developments in the use of ICT as a priority for your school? (H21)	Average rank
- as support for teaching-learning-assessment for various subjects	1.777
- for computer science lessons or/and initiation in the use of computers for students	2.345
- for information and professional development for teachers	2.776
- for administration, management, school records	2.823
- for the development of educational projects in cooperation with other schools or institutions (including companies-employers)	3.403

In the facilitation of the integration of ICT with the intended activities, the head-teachers say they encounter many obstacles, the most frequent being simetrically ranked in rural and urban areas: 1) equipment provision: R-31, U-49; 2) financial resources: R-27, U-26; 3) access to the Internet: R-29, U-17. (Details in Annex 3.2: H22)

[14] Information obtained by ranking the five types of development priorities.

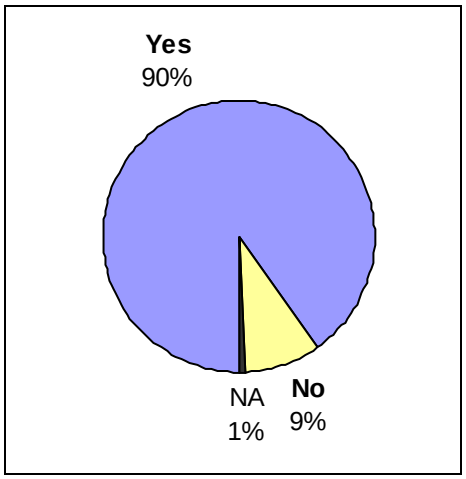
4. The Impact of New Technologies

As a generic term, the "impact" approached in this chapter is revealed through an analysis of the beneficiaries' opinions – headteachers, teachers and students – on the usefulness and necessity of the information technology in the education process.

Probably the most significant answer with regard to this aspect is the generalised students' opinion on the legitimacy of using new technologies, which was argued by the fact that it can help avoid social and professional marginalisation. Most of the students think that those who do not have access to a computer will find themselves at a disadvantage later on (90.4%), while only 8.7% consider that access is not an essential factor in this sense.

Figure 33. Students' vision on the legitimacy of ICT use

Will children who do not have access to a computer be disadvantaged in the future?
(Annex 3.4: S18)



The impact plans of the new technologies with regard to the educational process and to the education system are multiple, their determination being a complex process which requires a lot of work, and it is not an objective of this study.

Anyway, we have discovered some incidences in our evaluation related to some aspects of school institutional development, implications for teachers' professional development, as well as beneficiaries' perceptions of the effects the use of ICT has on educational achievement and the development of computer skills.

4.1. The Impact of Information Technology on the Beneficiaries

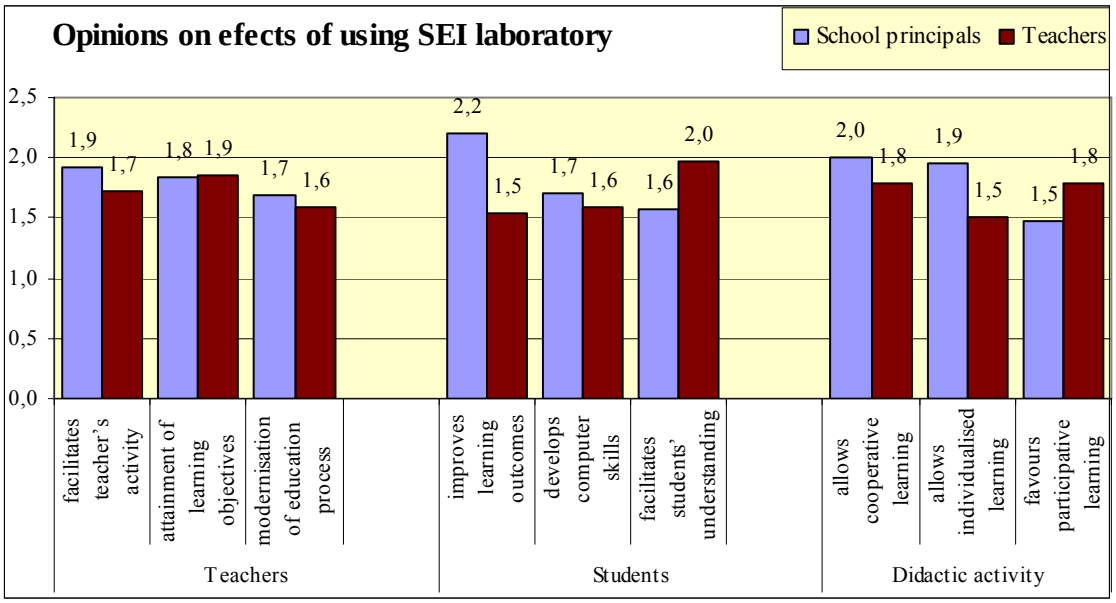
The first aspect approached is the headteachers' and teachers' opinions on the impact of ICT use expressed through a ranking of its possible beneficial effects arranged in categories in a list.

Table 34. Teachers' and headteachers' opinions on the beneficial effects of using the SEI laboratory in relation to students, teachers, and learning activities (a place on a 0-3 scale) *(Annex 3.2: H04 and in Annex 3.3: T07)*

Segment	Position	**Estimated effects**	Average place given by:		**Test z**
			Headteachers	Teachers	
Teacher	1	it facilitates the teacher's activity (design-teaching-assessment)	1.928	1.717	**3.54**
	2	it facilitates the learning objectives	1.845	1.856	0.18
	3	it encourages innovation in teaching/ the modernisation of the teaching process	1.684	1.585	1.53
Student	1	it improves the learning outcomes/ it attracts students, develops interest in studying	2.208	1.534	**11.96**
	2	it develops computer skills	1.711	1.593	1.96
	3	it facilitates students' understanding of different phenomena	1.565	1.973	**7.83**
Learning activities	1	it allows cooperative learning, it develops team work abilities	2.000	1.785	**3.75**
	2	it allows individualised/ personalised learning	1.948	1.501	**7.73**
	3	it is favourable to active, interactive, participative learning	1.477	1.787	**6.37**

Generally, the opinions converge, the beneficial effects of computer use being unitary in school managers' and teachers' views. Only few differences can be noticed. The headteachers are more optimistic than the teachers about the potential of the new technologies to attract students, to develop their interest in studying and to improve educational achievement. On the other hand, the teachers indicate more the advantages of using computers during lessons for facilitating the understanding of phenomena presented in those lessons.

Figure 34. Teachers' and headteachers' opinions on the beneficial effects of using computers in relation to students, teachers, and learning activities



If we assimilate the ranking to a qualitative scale reflecting the intensity of the perception, this scale would include the categories unsatisfactory – satisfactory – good - very good. From this point of view, the most favourable opinion was expressed by headteachers, that on average (2.208) is above "good", even at a quarter of unit from "very good" between "good" and "very good", with reference to the positive influence on educational achievement. The headteachers also express the least favourable opinion, placing the facilitation of participative learning, with a 1.477 average, below the mid-way between "satisfactory" and "good".

Comparing the average positions indicated by the headteachers and teachers included in the sample, we can see the following:

- With regard to the beneficial effects for teachers, two opinions are convergent (positions 2 and 3), while teachers are more sceptical about the "facilitation" of their activity through the use of new technologies. On a four step scale (0-3), the 0.2 points difference is revealed as a significant one by the test z, which with a 95% probability indicates significant differences between the two average opinions.

- With regard to the effect on students, except for the computer skills – where opinions are slightly different (test z indicates a minimum level of differentiation, equal to that of the critical point z=1.96), the other elements seem to express obviously different opinions. The seven tenths difference between the opinions seem to suggest either a headteachers' over-evaluation of ICT contribution to the improvement of school achievement, or the teachers' reservation on this matter, although the third element which was evaluated would support the headteachers' view. Although "improving achievement" and "facilitating students' understanding" should be directly connected, none of the categories of respondents indicated this connection. The statistical correlations are very low and insignificant in both samples (R13=0.052 for headteachers and R13=0.094 for teachers), and the resulting average places are different in the ranking for the two segments.

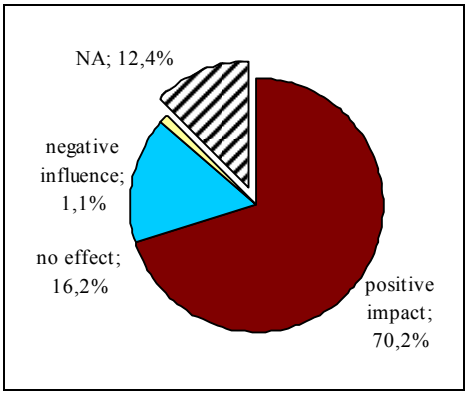
- The effects on learning activities are seen in a significantly different way by the two samples. The headteachers are more optimistic about the possibility for development of team work abilities and individualised learning, while teachers are more optimistic about ICT contribution to participative learning.

4.2. The Impact of Information Technology on the Education Process

If we look to the effects of SEI laboratories on educational achievement, teachers ranked it just at a level above satisfactory (midway between satisfactory and good – 1.534), while the opinion referring to the influence of ICT is much better. Seven in ten teachers (70.2%) notice the positive impact of ICT on the students' outcomes for their subject.

Figure 35. The effects of ICT use on school achievement as estimated by teachers

(Annex 3.3: T17)



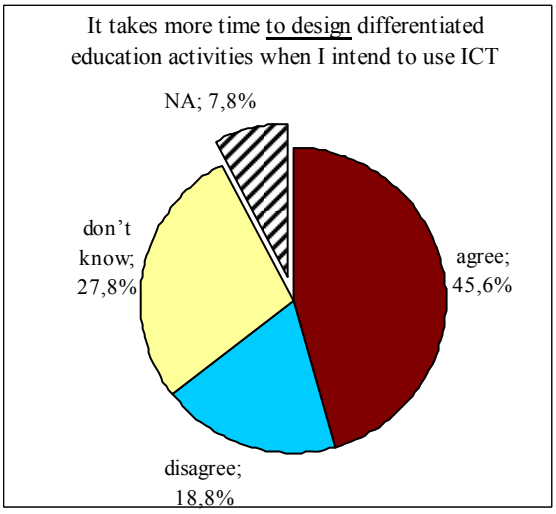
Another aspect with regard to the use of ICT is that related to the opinion on the facilitation of differentiated education from two points of view: the development of strategies and techniques for differentiated education and the application of these strategies.

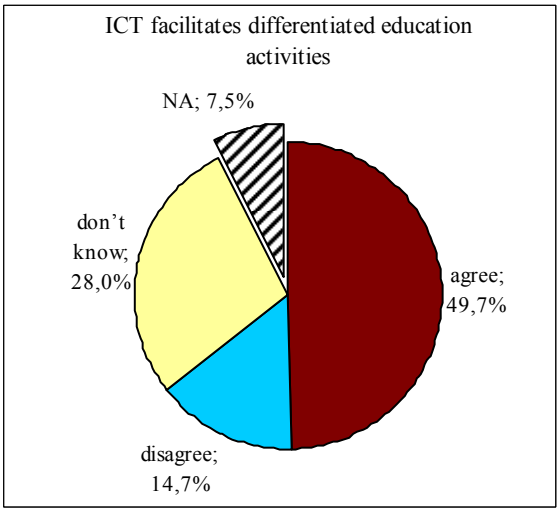
Half of the teachers consider that the use of new technologies has a substantial contribution to the provision of differentiated education, but the design of such an approach is a time consuming activity: the development of strategies and adequate tools requires a greater effort when there is an intention to use ICT in the classroom.

Table 35. The contribution of ICT to differentiated education
(Annex 3.3: T18)

	Agree	Disagree	Don't know	No answer
I need more time to develop strategies and tools for differentiated education when I intend to use ICT than when I design an activity in a traditional way	45.6%	18.8%	27.8%	7.8%
It's more easy to provide differentiated education when I teach with ICT help	49.7%	14.7%	28.0%	7.5%

Figure 36. The contribution of ICT to differentiated education: it takes more time to design it (left), but it significantly facilitates differentiated learning activities (right)





Beyond the well-known advantages of differentiated education in traditional learning contexts, the design and implementation of educational strategies with

the use of new technologies which include differentiated activities based on students' achievement levels could also be justified by the observation made by education practitioners who think that the use of ICT has a positive impact to a greater extent on "good" students (49.1%) and less on "weak" ones (37.5%).

Table 36. Influence of ICT-supported teaching and learning on students differentiated based on their achievement levels
(Annex 3.3: T19)

		Impact			Cannot say	No answer
		Positive (+)	Negative (-)	None (0)		
a.	good students	49.1%	0.3%	2.2%	8.6%	39.7%
b.	weak students	37.5%	2.5%	9.1%	10.4%	40.5%

A supportive element for teachers in this regard could be the educational soft which has been developed in a different way for each topic of the formal curriculum: for different levels of difficulty and appropriate to several learning styles.

Students were also asked about their opinion on the effects of computers on the education process. Students think that the most important effect of using computers in classes is that they learn more easily and then, close behind, that they understand more easily and that they feel attracted to learning how to use a computer. There are no significant differences between the students' opinions on using computers for lessons based on the education level, the area of residence or the place where computers are used (at school or at home). (Annex 3.4: S10)

Otherwise, the item we used can be assimilated to that referring to the effect on students from teachers' point of view:

Table 37. Teachers' and students' opinions on the positive effects of computer use on students (on a scale of 0 to 3)
(Annex 3.3: T07)

Estimated effects	Average place given by:		Test z
	Teachers	Students	
the improvement of learning outcomes/ the attraction of students, the development of interest in studying	1.534	2.028	**21.83**
the development of computer use skills	1.593	1.956	**15.78**
the facilitation of students' understanding of different phenomena	1.973	1.958	0.67

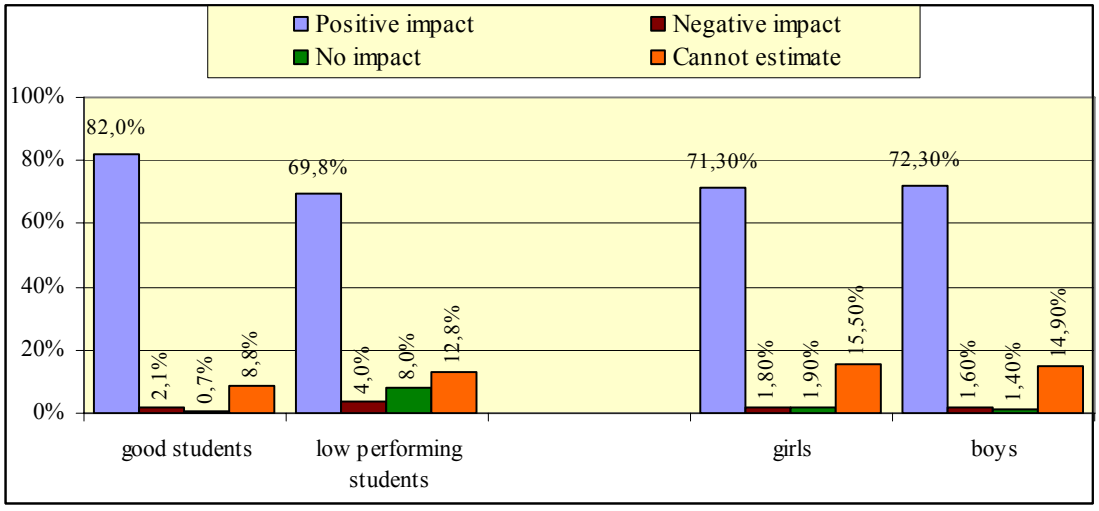
Except for the opinion referring to the positive effect of facilitating students' understanding, where teachers' and students' views converge, the other two elements are differently perceived. Students are much more open to computer use than teachers, the average scores of their results indicating a favourable opinion.

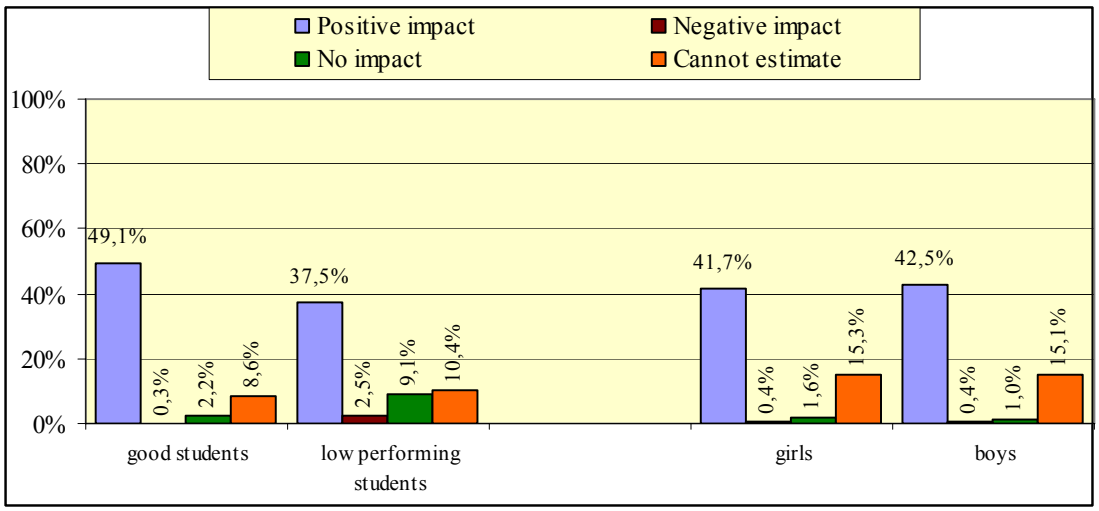
A similar conclusion is drawn from comparing students' answers with regard to the usefulness of lessons taking place in the computer laboratory (Annex 3.4: S16) with teachers' opinions on a similar item (Annex 3.3: T19). Students are more optimistic about the positive effects of ICT both on good students and on weak students, but the difference is maintained, like in teachers' case, between the impacts on the two categories, about 12 percents more indicating a favourable impact.

Table 38. Teachers' and students' opinions on the impact of ICT on students

	Effects estimated on the following categories:							
	good students		**weak students**		**girls**		**boys**	
	teachers' opinions	*students' opinions*	*teachers' opinions*	*students' opinions*	*teachers' opinions*	*students' opinions*	*teachers' opinions*	*students' opinions*
Positive impact	49.1%	82.0%	37.5%	69.8%	41.7%	71.3%	42.5%	72.3%
Negative impact	0.3%	0.7%	2.5%	8.0%	0.4%	1.9%	0.4%	1.4%
No impact	2.2%	2.1%	9.1%	4.0%	1.6%	1.8%	1.0%	1.6%
Cannot say	8.6%	8.8%	10.4%	12.8%	15.3%	15.5%	15.1%	14.9%
No answer	39.7%	6.4%	40.5%	5.4%	41.1%	9.6%	41.1%	9.7%

Figure 37. The impact of computerisation on students; the student perspective (first figure) and the teacher perspective (second figure)





The large majority of students (82%) consider that the lessons in the computer laboratory help good students and approximately 70% consider that they help weak students too. This can indicate (for 12% of the students) an increased level of difficulty for the educational soft compared to the students' level of achievement. The percentage of sceptics with regard to the use of computers in

classrooms is pretty low: 2.1% of the students considering that lessons in the computer laboratory do not help good students, while 4% think they do not help weak students. It's interesting that not less than 8% of the respondents think that computers actually confuse weak students.

Some of the questions in the student's questionnaire were designed to differentiate between the subjects based on the impact on students of the lessons carried out with the help of new technologies. The results should be considered with reservation having regard to the fact that access to computer laboratories is not equally distributed among all subjects in the curriculum, as well as the fact that educational soft does not equally cover all school subjects or all education levels.

The subjects at which the students most enjoyed working in the computer laboratory are in order: computer science (53%), biology (17.9%), chemistry (14.9%), physics (13.4%), mathematics (12%), geography (11.3%); while the least preferred are drawing (1.5%) and social and humanistic sciences (1.1%).

More consistent differences between different levels of education are found for the following subjects: computer science - preferred by approximately two thirds of SAC and high-school students unlike one third of *gymnazium* students; biology – preferred by 31.6% of *gymnazium* students compared to only 6.3% of the SAC students and 11.5% of the high-school students; mathematics – preferred by 24.6% of *gymnazium* students compared to only 2.1% of the SAC students and 5.9% of the high-school students; geography – preferred by 21.2% of the *gymnazium* students compared to only 1.6% of the SAC and 6.8% of the high-school students respectively; history - preferred by 20.5% of the students in *gymnazium* unlike only 1% of the SAC students and 2.7% of the high-school students; physics – preferred by 18.1% of the students in *gymnazium* compared to 3.1% of the students in SAC and 11.7% in high-school.

The differences found between education levels with regard to the students' preferences for different programmes follow the same ranking as for the preferred subjects. The students like most the soft for the following subjects: computer sciences (34.2% of the students), biology (15.9%), mathematics and physics (10.6%), chemistry and geography (9.7%), history (7.1%), Romanian language (5.2%), and last come the social and humanistic subjects (0.8%) and drawing with only 0.7%. (Details in Annex 3.4: S13 and S14)

The students think that the subjects for which the lessons in the laboratory support most their learning are in order: specialised subjects (58.4%), biology (28.8%), computer science (27.1%), modern languages (25.6%), chemistry (22.1%), physics (21.4%), Romanian language (14.7%), geography (11.6%), social and humanistic subjects (10.9%), history (8.8%) and technological education (8.1%), and they place last drawing with 4.9% and mathematics with 2.7%. (Annex 3.4: S15)

We can see a major discrepancy between, on one hand, the preference expressed by students for the opportunity of teaching mathematics in a laboratory (12%) and for the soft designed for studying mathematics (10.6%) and, on the other hand, the efficacy perceived with regard to the use of computer for learning mathematics (only 2.7%). This might suggest a necessity to re-think the way soft is produced based on concrete necessities, the current pedagogical principles of computer-assisted learning and the focus on formative feedback when soft is used. (Annex 3.4: S13, S14, S15)

More consistent differences in the students' perception of the efficacy of laboratory lessons for different subjects are found for: biology (42.6% of the

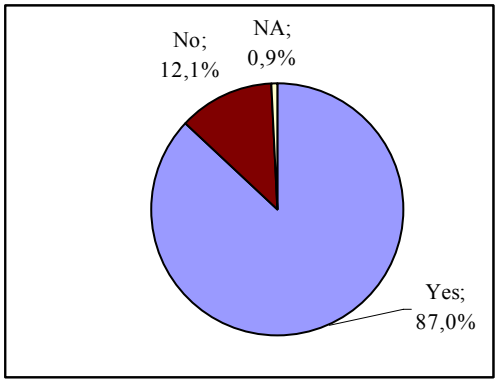
gymnazium students compared to 22.6% of high-school students and 11.5% of SAC students); physics (37.2% in *gymnazium* compared to 18.2% of the SAC students and 13.1% of the high-school students); chemistry (30.4% in *gymnazium* compared to 18.6% in high-school and 9.9% of the SAC students); Romanian language (27.2% of the *gymnazium* students compared to 8.8% of high-school and of 3.6% SAC students). For the SAC and high-school students, the subjects that most benefit from the advantages of computer-assisted teaching are the specialised subjects (71.2% of the high-school students and 50% of the SAC students):

Table 39. Subjects favoured by laboratory classes (in students' view)

	TOTAL		GIM	SAC	HSC
Specialised subjects	58.4%		35.9%	50.0%	71.2%
Biology	28.8%		42.6%	11.5%	22.6%
Computer science	27.1%		30.3%	16.1%	26.2%
Modern languages	25.6%		25.2%	17.2%	26.4%
Chemistry	22.1%		30.4%	9.9%	18.6%
Physics	21.4%		37.2%	18.2%	13.1%
Romanian language (Mother tongue)	14.7%		27.2%	3.6%	8.8%
Geography	11.6%		15.8%	15.6%	9.0%
Social and humanistic subjects	10.9%		11.2%	14.1%	10.4%
History	8.8%		10.8%	5.7%	7.9%
Technological education	8.1%		1.0%	9.9%	11.8%
Drawing	4.9%		2.8%	2.1%	6.2%
Mathematics	2.7%		1.0%	1.0%	3.8%
All	1.2%		0.8%	2.6%	1.3%

Although the positive effect of ICT is appreciated, most of the students (87%) admit the danger of using computers without limitation, only 12.1% of them considering that excessive use of computers cannot have negative effects.

Figure 38. *Could the uncontrolled use of computers be harmful?* (Annex 3.4: S19)



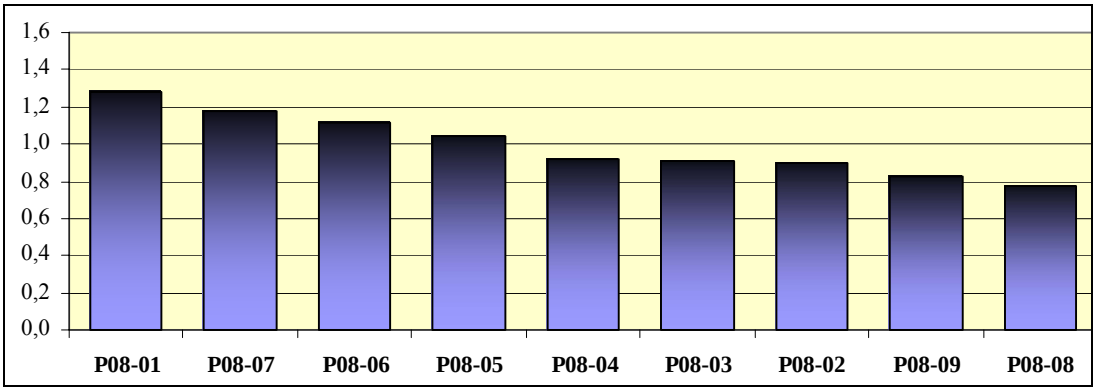
4.3. Difficulties in the SEI Laboratory

Together with the successes and the positive impact on students' activities, teachers also indicate some difficulties in the use of SEI laboratories, which they rank starting with the insufficient number of computers (considered as the most important problem – average score 1.276), insufficient time for preparing the teaching sequence with the help of ICT (1.172) and insufficient educational soft (1.112), and finishing with soft installing (0.779).

Table 40. Difficulties encountered by teachers when using the SEI laboratory

		Average
P08-01	insufficient computers/ laboratories	1.276
P08-07	insufficient time for preparing lessons or tests; difficulties in their creation	1.172
P08-06	insufficient educational software	1.112
P08-05	insufficient training for teachers in the use of educational soft	1.045
P08-04	lack of qualified personnel for the maintenance of the network	0.914
P08-03	(slow) running of the AeL programme/ network	0.904
P08-02	technical problems (during lessons)	0.897
P08-09	access to the Internet	0.829
P08-08	soft installing	0.779

Figure 39. Difficulties encountered by teachers when using the SEI laboratory
(Annex 3.3: T08)



An important issue to remark is the difference between the urban and rural areas for two aspects:

- the lack of qualified staff for the maintenance of the network is considered a problem by almost 40% of the teachers in rural areas compared to only 24.4% of the teachers in urban areas;
- access to the Internet is also a problem signalled by 32% of the teachers in rural areas compared to only 17.2% in urban areas.

An open question addressed to the teachers: *Which is for you the most difficult problem encountered when using the SEI laboratory?* had less various answers (from 1,231 teachers, that is 78% of the sample), which we centralised and ranked in the following table:

Table 41. The most difficult problem (for teachers) when using the SEI laboratory

		Total		R	U
P09-01	insufficient computers/ laboratories	29.4%		27.2%	30.8%
P09-07	insufficient time for preparing lessons or tests; difficulties in their creation	8.5%		9.6%	7.8%
P09-05	insufficient training for teachers in the use of educational soft	5.4%		6.8%	4.4%
P09-06	insufficient educational software	5.1%		5.2%	5.0%
P09-04	lack of qualified personnel for the maintenance of the network	3.5%		3.4%	3.5%
P09-13	few information about the AeL laboratory, the educational soft and their correct use	2.9%		2.8%	3.0%
P09-02	technical problems (during lessons)	2.4%		2.9%	2.1%
P09-03	(slow) running of the AeL programme/ network	2.3%		1.8%	2.7%

P09-09	access to the Internet	1.8%		2.9%	1.1%
P09-11	electricity failure/ electricity oscillations	0.4%		1.0%	0.0%
P09-12	installing the AeL programmes/ AeL lessons (on the server).	0.3%		0.2%	0.3%
P09-08	soft installing	0.1%		0.0%	0.2%
P09-10	*other problems*	10.5%		7.8%	12.1%
P09-14	I don't have any problems!/ In general, there are no problems	5.0%		5.2%	4.9%

The inconveniencies found by students with the lessons in the computer laboratory are in order (on a three point scale 0-2): insufficient time for using the computer during classes, a factor indicated by 35% of the students (1.2); more students working on a computer, a factor mentioned by 21% of the students (0.7); some computer tasks (0.6); defects and lessons interruptions (0.5); the way the graphics of some programmes are designed (0.4); the clarity of pictures and graphs (0,3); colours used in the educational soft (0.2) and small character size (0.19).

Table 42. Inconveniences found by students when using the SEI laboratory

	To a great extent	To a little extent	Not at all	Don't know	No answer	Average
	2	**1**	**0**	**0**		
Insufficient time for using computers during classes	35.7%	29.7%	18.6%	3.2%	12.8%	**1.158**
More students working on a computer	21.1%	21.7%	40.2%	3.2%	13.8%	**0.742**
Some defects appear and lessons are interrupted (for a while)	10.2%	26.8%	41.6%	5.9%	15.4%	**0.558**
Some computer tasks	9.4%	33.0%	36.2%	5.1%	16.4%	**0.618**
The way the graphics of some programmes are designed	5.8%	22.2%	44.7%	9.1%	18.2%	**0.413**
The clarity of pictures and graphs	5.5%	17.1%	55.5%	4.4%	17.5%	**0.340**
Colours used in the educational soft	3.7%	14.6%	58.1%	5.3%	18.3%	**0.271**
Small characters	2.0%	11.6%	64.2%	4.1%	18.2%	**0.190**
Other	21.1%	21.7%	40.2%	3.2%	13.8%	**0.742**

With regard to the lessons at different subjects taking place in the computer laboratory, students have been asked if they encountered difficulties in following the teacher's explanations or in their interaction with the computer. More significant differences are discovered in a comparative analysis based on the level of education, the *gymnazium* students saying that they feel overwhelmed more that the older students. The biggest difference is found in biology classes, where the percentage of *gymnazium* students encountering difficulties is 11.1% compared to 1% for students in SAC and 2.4% for high-school students. For chemistry (10.8%), physics (13.8%) and mathematics (12.7%) the *gymnazium* students also encounter more difficulties than the older students (5%, 5.1%, and 5.3% respectively).

The only subject at which the high-school students (22.3%) or SAC students (22.9%) encounter more difficulties than the *gymnazium* students (7.1%) is computer science, a situation which can be explained by the fact that computer science is an optional subject at *gymnazium* level.

Table 43. Lessons in the SEI laboratory which are difficult for students; differentiation based on the type of school
(Annex 3.4: E12)

	TOTAL		GIM	SAC	HSC
Biology	5.2%		11.1%	1.0%	2.4%
Chemistry	7.1%		10.8%	9.4%	5.0%
Drawing	0.5%		0.5%	1.0%	0.4%
Technological education	1.4%		2.7%	2.6%	0.7%
Physics	8.2%		13.8%	9.9%	5.1%
Geography	3.1%		5.2%	0.0%	2.1%
Computer science	17.2%		7.1%	22.9%	22.3%
History	3.2%		6.8%	1.0%	1.4%
Modern languages	1.5%		2.0%	1.0%	1.3%
Romanian language (mother tongue)	1.8%		3.4%	1.0%	1.1%
Mathematics	7.9%		12.7%	8.3%	5.3%
Social and humanistic sciences	0.4%		0.1%	0.0%	0.6%
Specialised subjects	0.5%		0.1%	0.0%	0.8%
All	18.1%		16.8%	18.8%	18.7%
None	5.3%		6.0%	2.6%	5.2%

4.4. Aspects of Educational Software

The difficulties encountered by teachers with regard to the software necessary for lessons at different subjects refer equally to the access to educational soft (the availability of the necessary soft, its acquisition and installation) and its use in learning contexts. The main problem indicated by teachers is that the educational applications are insufficient compared to the teaching, learning and assessment needs:

Table 44. Problems with the educational soft signalled by teachers
(Annex 3.3: T10)

	Total		R	U
Insufficient lessons/ Soft only for some topics and subjects./ There is no soft (AeL) for primary/ *gymnazium* schools etc.	29.5%		28.2%	30.4%
Low performing/ difficult./ Different difficulties (technical) affect the lessons./ I trust more the traditional teaching methods/ lesson presentation.	9.4%		7.3%	10.8%
They contain errors, content inadvertences.	4.1%		2.8%	4.9%
They require a lot of time (for development, for understanding). The overloaded curriculum does not allow a frequent use of ICT.	3.7%		3.7%	3.7%
They are not appropriate for some students (/ they are not appropriate for weak students)	2.5%		1.6%	3.0%
There are not enough computers/ laboratories to use computer soft	1.5%		1.1%	1.7%
High costs of the soft on the market	0.6%		0.3%	0.8%
Other answer	3.2%		2.3%	3.8%
None/ there are no problems.	10.3%		9.0%	11.1%

There are also many positive aspects related to the educational soft which have been emphasized by 1300 teachers (82% of the sample) based on their experience with its use in the classroom.

Table 45. Positive aspects related to the use of educational soft in teachers' view *(Annex 3.3: T21)*

	Total
It facilitates understanding / quick access to information. It allows the intuitive presentation of some phenomena difficult to perceive or to explain in a traditional way. It is favourable to active learning.	22.7%
It captures students' interest./ It's attractive. / It has an uncommon character/ It stimulates students.	13.8%
Modelling, simulations. Practical applications. Virtual experiments (well designed). It brings students face to face with writers, critics etc.	11.4%
It's very good./ It's good./ It's well conceived./ It's well structured. It's easy to use. Educative. Rigorous.	11.1%
Good graphics. Clear drawings. Good pictures.	9.6%
It provides tests./ The soft includes computer tests./ Good, useful tests.	3.3%
It helps the teacher. It encourages innovation.	3.3%
It develops thinking. It develops visual memory etc.	1.8%
It develops computer skills.	0.9%
Other answers	4.0%

We should notice the attitude of teachers from urban areas, significantly more critical of the educational soft available in their school (Table 44), a situation which can be probably explained by a longer period of use and their analysis practice done on the occasion of computer science competitions or educational soft design competitions organised regularly by different institutions.

For this reason an increased emphasis on the creation of more such opportunities could lead to the development of more suggestions for improvement, as well as to a more responsible use of educational soft with regard to students and their skills, more precise from a curricular point of view, and more significant from a pedagogical point of view.

IV. CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

The data gathered from the sample and the methodology we employed allow the formation of a synthetic, general image on the state of implementation of the SEI Programme which reveals the following elements:

a) the implementation process is running in accordance with the Programme objectives, both with regard to the provision of schools with computers and equipment, and the users' training;

b) in comparison with the data from the first evaluation report (2004), we can see a significant increase in the number of teachers who have started to use ICT in the educational process, facilitating the structuring of a common pedagogical culture (organizational) for the majority of the teachers in a school, representing "the common factor" of the entire education system;

c) in the implementation process, there are many problems related to the provision of material resources which cannot be solved at a local level.

In the four sequences that have been investigated - provision, access to new technologies, the use of ICT and the impact of using ICT – the results of data analysis lead to the following conclusions:

1. **The provision of schools with computers and equipment** represents a very different range of situations due to the conditions in the period before the SEI Project. At this moment, the process is marked by a sensible **equalising trend/ uniformity** thanks to the SEI laboratories. The conditions in the schools from urban areas are better than in rural areas from this point of view, as they have more experience in looking for and asking for funds, finding support from communities with better financial possibilities. In the last two years, there has been a faster progress with regard to the schools' connection to the Internet, which still remains an unsolved issue for 40% of computers in rural areas.

The most important problem (indicated by more than 50% of the school managers is the **lack of qualified personnel for the maintenance of the network**; the current situation – when the computers and the networks are administered by computer science teachers, by network administrators or by a specialist firm – should be re-evaluated, opting either for a unitary solution, or for differentiated solutions based on local conditions.

2. **Access to new technologies** is differentiated according to the specific categories of the "beneficiaries" in the system.

For the category of "teachers", the first important issue in point of "access" is the "technical" training – the initiation courses for the use of AeL. Although the number of teachers who can use a computer has significantly grown in the last

years (approximately 50%, with explicable differences between high-school and *gymnazium*), the large number of teachers who still cannot use a computer is concerning. The same conclusion is valid for the number of teachers who have not participated in ICT training courses, although the data show an increase in teachers' participation in such courses.

Students' access to ICT is stimulated by the special interest of this category of beneficiaries, the overwhelming majority (95%) saying that they would like more lessons in which they use ICT. This affirmation is supported by the significant percentage of students who use a computer at home (83%) or in other places outside school (21.5%), with a difference between urban and rural as main location.

The most frequent independent use of computers by students is for communication purposes (chat, forum, email), but knowledge building activities (learning for school subjects, computerised initiation, information/ research) have a greater share in the total of activities included in the questionnaire.

Students' access to ICT is ensured most during the school hours, but there are already many schools where students have unlimited access outside school hours or based on a schedule (for classes), high-schools and the urban areas being advantaged.

The educational soft for school subjects is mostly obtained through the SEI Programme (free of charge), being completed by software downloaded from the Internet or bought with the school's funds. These are completed by soft created by teachers and students, a stimulating action supported through the competitions organised by SIVECO at a national level. In this process, the teachers from urban areas are advantaged compared to the teachers from rural areas due to the greater number of those who own a computer (85.1% U compared to 69.4% R), the difference remaining also for the access to the Internet.

3. **The extent to which teachers are familiar with ICT** and their use in the educational process is confirmed by the following findings: a) more than 95% of the teachers in high-school and *gymnazium* education, as well as almost 70% of the teachers in primary education use the SEI laboratories; b) 17% of the teachers organise more than 6 lessons per semester in the laboratory, the most frequent situation being that of the lesson (in *gymnazium*) in a SEI laboratory with AeL installed.

With regard to the number of students per a computer, the situations vary a lot: if a little past half of high-school students work one on a computer at a time, approximately 35% of them work in groups of 2, 7% in groups of 3, and approximately 1.3% in groups of 4. Obviously, this situation (with smaller indicators in *gymnaziums* and SACs) justifies the insistence of the headteachers who are asking for supplementary provision for the SEI laboratories.

The order of the first 5 "advantaged subjects" with regard to the use of AeL, except for the computer science, remains that revealed also in the 2004 Report: biology, physics, chemistry, geography, and mathematics. This situation is determined on one hand by the quantity and the quality of available soft and on the other hand by the "local" conditions – the teacher's capacity and interest in designing and creating software, his ability of looking on the Internet for

educational resources, and to engage his school in projects, collaboration, partnerships.

The types of learning activities carried out in the SEI laboratories cover a more large and diverse area than in the traditional teaching system, especially with regard to the development of skills required by the guidelines of education for the knowledge society. Therefore, there are many sequences of individual work, cooperative and collaborative activities, problem-solving tasks, tasks for editing, Internet browsing, exploring and creation, product/document presentation, report etc.

This extremely large range of curricular activities offers new possibilities for teachers to know better their students, and to involve them in stimulating extra-curricular activities: projects, collaboration with other schools, participation in competitions, publications, initiating contacts with the issues of local communities. This openness of the horizon beyond the limits of the formal curriculum may be a valuable starting point for school counselling and students' professional pre-orientation.

4. The school managers' and teachers' opinions converge, although with some minor differences, with regard to the **impact of ICT** on beneficiaries. They think that the main beneficial effects of using the SEI laboratories are the facilitation of the design activities and of the educational process, the assessment of learning outcomes (for students) and the cooperative learning/the development of team work abilities (for students). We should mention the impression of headteachers' optimism with regard to the potential of the new technologies for attracting students, developing their interest in studying and, implicitly, improving school achievement, as a counterpart to the main argument formulated by teachers – the facilitation of the understanding of subject contents.

Underlying the positive impact of ICT on school achievement, more than 50% of the teachers included in the sample consider that ICT has a substantial contribution to differentiated education, mentioning also that more effort is needed for the development of appropriate tools. At the same time, we should say that more than one tenth of the students encounter difficulties when interacting with subject specific soft due mostly to their low training level. We also remark the opinion (expressed by almost as many students as for the one before) that working/interacting with the soft not only does not help weak students at all, but it rather confuse them.

Among the difficulties encountered by teachers during lessons in the SEI laboratories, besides the main, general problem of "insufficient computers/laboratories", there are also in order:

a) insufficient time for preparing the lesson/ test;
b) insufficient educational soft;
c) specific training in the use of ICT.

In students' view, the inconveniences with these lessons are ranked as follows:

a) insufficient time for interacting with the computer/soft;
b) more students working on a computer;
c) the characteristics of some work tasks;
d) some soft graphics (clarity of pictures, inappropriate colours and fonts).

2. Recommendations

2.1. Framework Recommendations

The integrating elements (synthesised in the Conclusions) and the anecdotic sequences (detailed in the Annexes) can represent landmarks for different solutions based on the concrete characteristics of each situation.

Considering that the SEI Programme is a product of the education policy promoted by the Ministry of Education, we think that the recommendations resulting from the investigation into the implementation of the programme should be placed at the same level, offering to the ministry suggestions for measures/actions which will open new ways/ opportunities for increasing the efficiency of the education process and linking up Romanian education with the European reference framework.

1. **The development of a coherent strategy for the computerisation of education** – under debate organised by the Ministry of Education – the most urgent action at the moment, can be successful only if the reference framework is clearly formulated, and suitable to be translated in operational measures, without ambiguities and without labile limits of its scope. This means that the main document of educational policy should define in a clear way the **goals** to pursue, the **strategies** and the **resources** which will be used in order to meet the established objectives. The computerisation of education being one of the strategies for reaching the goals, **any major decision should be guided by the essential elements of the education policy.**

This is particularly important in this difficult period, when the education system is confronted on one hand with the **shift in the educational paradigm** from teacher/ **teaching**- focused to student/**learning**-focused, and on the other hand with the **linking up with the EU education coordinates**.

A detailed formulation of a fundamental document of education policy would allow the **re-thinking of syllabuses** and **curricular documents** following an appropriate vision both with regard to **subject contents**, and the **typology of student-content-teacher interaction,** also outlining the **ICT mission in the knowledge-building process**.

The development of a complex strategy for the computerisation of the education system can be done only in congruence with the positions/principles formulated in these documents[15].

2. The second urgent action at the moment is the **pedagogical re-professionalization of teachers.** Besides the general initiation in the use of

[15] See the discussion on the strategy: Ion IVAN - *O noua strategie de informatizare a sistemului educațional și de cercetare românesc (A New Strategy for the Computerisation of the Romanian Education and Research System)*. În: *Economie teoretică și aplicată*. 2006, nr. 8.

computers and the specific one for the use of the SEI laboratories, which involved a large number of educators, their experience being visible in the various ways they adjust the educational soft to the particularities of their school/ classes, the new strategies determined by the requirements of student-centred education which should facilitate students' building of their own knowledge as well as trans-disciplinary or social skills (such as collaborative abilities), imply **a new vision of the educator's roles**, roles for which they are not ready yet. Only when teachers are aware of the difference between teaching-focused and learning-focused education and only when they will design **a strategy for the student-content-resources interaction based on a validated position for knowledge-building**, the potential of information and communications technologies will be achieved.

In order to reach this desired state, there is a need to develop (by an **expert group** - pedagogues, psychologists, sociologists, computer science specialists, and teachers) a hierarchical structure for the issues, actions and necessary resources for solving each problem. A public debate will bring us closer to possible solutions.

3. With regard to the **training of teachers to be** it's necessary that all institutions that train education staff – kindergarten teachers, primary and secondary education teachers, school managers – include in their syllabuses sufficient courses related to the issues of the **change in the educational paradigm, the use of ICT and the new roles of educators.** The best solution would be **a common curriculum** (with the EU documents as reference for the skills to be developed), with particular versions for 3-4 types/levels of institutions.

Reconsidering the entire range of education issues at a national level and the development of fundamental documents of education policy based on the realities of the present and the requirements of the future could provide a **coherent framework for investigative actions (particularly for research & development), for the experimentation, validation and implementation of specific solutions** for the student population.

At the same time, the coherent framework of education policy fundamental documents could be a landmark and **a criterion for solutions, initiatives, local actions,** facilitating the establishment of development strategies by school managers.

2.2. Specific Suggestions

To continue the framework recommendations, a series of concrete suggestions, based on the analysis of data at national level, can provide some operational directions for improving the computerisation process in the Romanian schools:

- the connection to the Internet for schools (especially for the schools in rural areas)
- additional SEI laboratories in large schools
- improving the existing training programmes
- organising "computer-assisted instruction" courses for teachers, orientated towards the pedagogical aspects of the use of new technologies in teaching

- facilitating the access to ICT and computer-assisted instruction courses for teachers in rural areas
- organising training courses for the use of ICT in education:
  - differentiated based on difficulty levels and curricular areas
  - focused more on practice and less on theory
  - supported by appropriate teaching materials
- providing qualified staff for the maintenance of computers/ networks
- encouraging schools to develop strategies for the use of new technologies
- developing educational soft differentiated based on levels of difficulty and for several learning styles
- re-thinking the way educational soft is designed, based on the concrete needs in the education process and the current pedagogical principles of computer-assisted instruction
- establishing specialised authorities for the development of educational soft which should coordinate from a scientific and methodological point of view the activities for the creation of educational soft and should represent a critical filter for the applications designed for schools
- establishing some models in using ICT for teaching-learning-assessment/ good practices
- developing methodological guides adequate to the current technological level and the current possibilities for using ICT in every day educational practice, differentiated for each curricular area
- monitoring the way the equipment provided through the SEI programme and the associated training courses impact on the quality of the educational process – with a view to the ongoing efficiency of the computerisation process
- informing teachers about the educational soft available in school (distributed free of charge through the SEI Programme) and how it can be used
- promoting the possibilities offered by ICT for teacher in-service training
- creating opportunities for professional development with the help of ICT: virtual resource centres, online training programmes, virtual platforms for experience exchanges and for the publication of online articles etc.

ANNEX 1. Sampling and Methodology

A1.1. Sample Design

Based on the network of schools which benefited from the computerisation programme in the period 2000-2004 and their distribution with regard to the type of area and the type of school, the following sample was designed:

Table A01. The distribution of the schools included in the national computerisation programme and the sample in the 2007-2008 school year

		Rural	Urban	Total	Rural	Urban	Total
National network	GIM	1753	1189	2942	38.8%	26.3%	65.1%
	GRS	152	530	682	3.4%	11.7%	15.1%
	HSC	91	733	824	2.0%	16.2%	18.2%
	SAC	54	16	70	1.2%	0.4%	1.5%
	Total	2050	2468	4518	45.4%	54.6%	100.0%
Sample designed	GIM	79	54	133	**38.5%**	**26.3%**	**64.9%**
	GRS	7	24	31	**3.4%**	**11.7%**	**15.1%**
	HSC	4	34	38	**2.0%**	**16.6%**	**18.5%**
	SAC	2	1	3	**1.0%**	**0.5%**	**1.5%**
	Total	92	113	205	**44.9%**	**55.1%**	**100.0%**

We can say there are two types of samples: the sample resulting from the selection of schools and three other derived samples. The first derived sample is that of school managers with a headteacher from each selected school. For the other samples, a cluster selection was used with an equal number of subjects selected from each school. The investigation tools were applied as follows:

- For gymnazium schools (GIM):
  - the headteacher's questionnaire
  - the teacher's questionnaire: 6 teachers
  - the student's questionnaire: 10 students, 5 in the 7th grade and 5 in the 8th grade

- For high-schools (HSC) and Group of Schools (GRS):
  - the headteacher's questionnaire
  - the teacher's questionnaire: 12 teachers
  - the student's questionnaire: 40 students, 10 for each year of study (9th, 10th, 11th, 12th)

- For the School of Arts and Crafts (SAC):
  - the headteacher's questionnaire
  - the teacher's questionnaire: 6 teachers
  - the student's questionnaire: 20 students, 10 for each of the two years of study.

The difference between a gymnazium cluster and the clusters of high-school subjects or Group of Schools subjects comes from the differences between the two levels in point of computer science practice. Both the premise of curricular difference for various subjects and the different approach to computer science at the two education levels were taken into consideration.

The selection of the student sample targeted subjects from different years of study and classes, and thus the possibility of including in the sample students who use computer technology increased, considering that there are differences between teachers with regard to the use of ICT in the classroom.

With a view to the computerised approach to different school subjects, the sampling technique aimed to include in the sample teachers so as to cover a wide range of specialisations. For this purpose, the administration of the tools designed for teachers followed a spiral model and respected the sequence of subjects at the level of the whole population included in the investigation, and in each school. Concretely, using an exhaustive list of subjects from the core curriculum for each education level (with optional subjects and specialised subjects approached in a single category), and after constructing the distribution spiral for the whole sample and putting in order the sample schools, the list of subjects necessary to be included in the sample was made for each school. Therefore, the selection of teachers in a school was limited to the subjects which were determined for that school in accordance with the pre-established sequence. In the case of post-gymnazium education, computer science was included in the list of core subjects, while in gymnaziums, where it is an optional subject, computer science was added to the seventh questionnaire distributed to the teachers. This way, even the established sequence was not exactly respected, the spiral model allowed an increase of the fidelity of answers for most of the subjects in the education system. (See below, *The Distribution of the Teacher's Questionnaire Based on the Subject Taught*)

The increase of the fidelity of research results was also ensured by the way the investigation was administered at a local level, the evaluation for all schools being external. The administration of tools at local level was done with the support from a network of operators, who were hired and trained especially for this purpose. The operators were responsible both for the selection of sample subjects from schools and the monitoring of the way the tools were completed.

A1.2. Research Variables

The research variables, which were selected based on the analysis of the results provided by previous system evaluations, were the basis for the design of research tools. Technically, they refer to the operation of socio-educational factors which are thought to influence the perception of the new information technologies proposed by the education system. The list of factors starting with the sampling variables – the area of residence and the type of school – was completed with characteristics of the education environment, background educational characteristics for teachers or personal characteristics. Therefore, the following factors were considered in the analysis:

- **factors related to the social and economic environment**
  - the area of residence of the school (urban / rural)

- for students, the area of their residence town/village

♦ **factors related to the educational environment**
  - the characteristics of the school:
    - the type of school
    - the education levels covered by the school
    - the size of the school (the number of students)
  - the characteristics of the teachers:
    - the subject they teach
    - their training in the use of ICT
    - their teaching experience (years of teaching)

♦ **particularities of the students**
  - students' gender (girls / boys)

A1.3. Methodological Aspects of the Statistical Analysis

In the analysis of the questionnaire, the usual statistical indicators for the processing of nominal variables have been used, namely the distribution and the structure of answers.

For the quantitative items, the main statistical indicators which provide information on the characteristics' trends have been determined: areas, spreading, quartiles etc. Generally, we tried to make items operational through quantitative variables as far as possible. These variables allow more in depth statistical analyses and comparisons and correlations. Therefore, through the points corresponding to the qualitative categories, the ordinal scale was associated with a value scale – generally with five levels, which allows the determination of an average number of points to reflect the general trend of the answers. Another approach was to group the quantitative variables with a wide spread in answers, usually, by transforming them into quantitative variables associated to an ordinal scale.

An important category was that of the multiple choice answers, for which the subjects chose several variants from a list. In this case, an additional indicator has been determined to reflect the average number of answers for the respective item.

From a methodological point of view, the comparisons and correlations, like the analysis of the factors' influence, was done considering the nature of variables based on the chi-square tests or the z test for the difference between areas or percentages. Otherwise, the transformation of the ordinal scale in a quantitative scale has also been justified by the facilitation of statistical comparisons between variables.

Note: In the analysis of the tools, in order to emphasise some categories of items, specific marks/ notations have been used as follows:

- the "*****" mark indicates operational items though ordinal variables. For these, additionally to the answer distributions/ structures, their weighted average was also determined, following the assimilation of the ordinal scale with a quantitative one obtained through a number of points given for each level. The approach allows a clearer picture of the answer distribution comparatively to the sequence of percentages on levels indicating the average level around which it is concentrated. We should mention that the items which required a hierarchy of some answer variants are included in this methodological category.

- the "**" mark indicates multiple choice items, where the subjects chose two or more variants from a list. In this case, besides the answer distribution/ structure, the average number of answers for each variant was also determined, dividing the total number of answers to the number of subjects investigated.

ANNEX 2. Investigation Tools

A2.1. The Headteacher's Questionnaire (H)

Your school has been included in the programme for the computerisation of Romanian schools (SEI). In order to make this project more efficient, an investigation team of teachers and researchers from the University of Bucharest, the Institute of Education Sciences and TEHNE – the Centre for Development and Innovation in Education are conducting a national wide evaluation of the Computerised Education System Programme (SEI) initiated by the Ministry of Education.

In order to obtain information related to this programme in your school, we would like to ask you to answer the questions of the questionnaire providing data corresponding to the situation in your school. **For specific questions, we advise you to consult the teacher responsible for the maintenance of the SEI laboratories in your institution.**

We would like to assure you that the information obtained from this questionnaire are confidential and will be used by the investigation team only for the purpose of this evaluation.

Note: *In the questionnaire below, the **SEI laboratory** is understood to be a computer science laboratory equipped by the Ministry of Education with equipment and educational soft (AeL) in the period 2000-2007.*

H01. Please indicate **the number of computers** in your school, as follows:

Number of computers:	Total	Provided in the SEI Programme
- total	_____	_____
- used in administration (the headteacher's cabinet, the teachers' room, secretariat, library etc.)	_____	_____
- used exclusively by teachers	_____	_____
- used in activities with students and by students	_____	_____

H02. Please estimate the percentage of teachers in your school **who know how to use a computer** at least at a beginning level:

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	I cannot say
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**0**

H03. Please estimate the percentage of teachers in your school who use the SEI laboratory **for activities with students at their subject**:

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	I cannot say
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**0**

H04. Please estimate – on a scale from 1 to 3 – **the positive effects** of using the SEI laboratory for each of the segments below. *(1 most important... 3 – least important)*:

4.1 For teachers:

- facilitating teacher's activity (design-teaching-assessment) _____
- increasing the teacher's efficiency/ more efficient activities _____
- encouraging innovation in teaching/ modernising the teaching process _____

4.2 For students:

- attracting students, developing their interest in studying _____
- developing students' computer skills _____
- facilitating the students' understanding of different phenomena _____

4.3 For learning activities:

- promoting cooperative learning, developing team work abilities _____
- allowing individualised/ personalised learning _____
- favouring active, interactive, participative learning _____

H05. In your opinion, how do you see the usefulness of the computerisation programme for the subjects in the list? Order the subjects from this point of view by assigning them a place on a 1 to 10 scale (1-least advantaged, 10 most advantaged):

- biology	_____		- chemistry	_____
- drawing	_____		- physics	_____
- geography	_____		- computer science	_____
- history	_____		- Romanian language	_____
- modern languages	_____		- mathematics	_____

H06. Please indicate, from your point of view, **the difficulties encountered in the use of the SEI laboratory/ laboratories**.

		To a great extent	To little extent	Not at all	Don't know
a.	insufficient computers/ laboratories	**1**	**2**	**3**	**4**
b.	technical problems (during lessons)	**1**	**2**	**3**	**4**
c.	(slow) running of the AeL programme/ network	**1**	**2**	**3**	**4**
d.	lack of qualified personnel for the maintenance of the network	**1**	**2**	**3**	**4**
e.	insufficient training for teachers in the use of educational soft	**1**	**2**	**3**	**4**
f.	insufficient educational software	**1**	**2**	**3**	**4**
g.	insufficient time for preparing lessons or tests; difficulties in their creation	**1**	**2**	**3**	**4**
h.	soft installation	**1**	**2**	**3**	**4**
i.	access to the Internet	**1**	**2**	**3**	**4**
j.	Other, which:.....	**1**	**2**	**3**	**4**

H07. When do students have access to a computer (circle a variant):

1. only during the school hours
2. free access, with a class schedule
3. free access, with a schedule for the SEI laboratories
4. unlimited access

H08. Estimate **the average use by students** of the SEI laboratory in the 2006-2007 school year, as follows:

8.1 in the **teaching-learning process** (at lessons)

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	I cannot say
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**0**

8.2 in **students' free access**, estimate the average weekly duration

1-2 hours	3-4 hours	5-6 hours	More than 6 hours	I cannot say
1	**2**	**3**	**4**	**0**

H09. What type of **Internet connection** do you have in your school?

In the SEI laboratory **In the headteacher's cabinet/ secretariat/ teachers' room**

1	Dial up (through telephone)	**1**	Dial up (through telephone)
2	Broadband (through cable)	**2**	Broadband (through cable)
3	Don't have an Internet connection	**3**	Don't have an Internet connection
4	Other type, which:	**4**	Other type, which: .....

H10. What is **the percentage of Internet connection** for the computers in your school?

	Computers to which students have access		**Computers to which only teachers have access**
1	< 25%	**1**	< 25%
2	25-50%	**2**	25-50%
3	50-75%	**3**	50-75%
4	75-100%	**4**	75-100%
5	There is no connection	**5**	There is no connection

H11. In your school, who is in charge with the administration of computers and the network, with the installation of applications and with soling problems that might appear in general?

1. A system administrator hired by the school
2. A teacher/ the teachers (computer science teachers)
3. A student/ the students
4. A specialised company based on a contract
5. Other situation, which?.....

H12. The centralised technical support, provided by the specialised company, is in your case:

12.1	**1.** free of charge	**2.** based a subscription	**3.** at request
12.2	**1.** fast	**2**. satisfactory	**3.** unsatisfactory

H13. What type of support from the following variants have you requested at least once in order to solve problems with the SEI laboratory:

1. through telephone (green line: 0800.410.444)
2. through forum (http://forum.edu.ro)
3. through e-mail: (ael@portal.edu.ro)
4. Other, which?..... ....
5. I have never requested technical support services

H14. The educational soft (for subjects included in the curriculum) available in your school is:

1.	free of charge, distributed through the SEI Programme by the Ministry of Education/ the school inspectorate/ SIVECO
2.	bought with money from the school fund, amounting to ..... RON
3.	free of charge, in Romanian language, downloaded from the Internet
4.	free of charge, in English/ French, downloaded from the Internet
5.	Other, which?.....
6.	Don't know/ no answer

H15. Does your school have a presentation page/ web site on the Internet?

1.	Yes – information is update whenever necessary
2.	Yes – information is annually updated
3.	No, but we intend to develop one ion this school year
4.	No, and we don't think we need one for now

If Yes, what does the school's Internet page contain?

1.	General information about the school
2.	Information about the teachers
3.	Information about admission and/ or other examinations
4.	The school's rules, school documents
5.	Information about the students (in order to inform the parents)
6	A forum for students and teachers
7.	Other information: .....

H16. Some schools participate in diverse **projects which involve the use of the Internet and computers** (distance collaboration project with the help of the Internet, projects for the acquisition and/ or development of educational soft, projects related to students' participation in virtual learning communities or collaboration communities, projects designed to increase access to information and/ or Internet resources etc.).
In how many projects of this kind has your school been involved in the 2006-2007 school year?

None	One	Two	Three	Four	Five	More than 5	Other answer:
0	**1**	**2**	**3**	**4**	**5**	**6+**	.....

H17. Does your school have a strategy explicitly aimed at the use of new technologies?

1.	Yes, it is provided in a separate document.
2.	Yes, it is included in the school's development project.
3.	Yes, but it is not formal/ it is not written.
4.	No, but we intend to develop such a document during this school year
5.	No, because we don't think this is a priority of our school

H18. To what extent do you consider the following development directions for **the use of ICT** as priorities for your school? Please mark them in order, from 1 (priority) to 5 (least important):

- as support for teaching-learning-assessment at different subjects	_____
- for administration, management, school records	_____
- for information purposes and teachers' professional development	_____
- for teh development of educational projects in collaboration with other schools or other institutions of the civil society (including companies-employers)	_____
- for computer science lessons or/and computer initiation for students	_____

_____

Please fill in with information referring to your school:

The name of the school: .....
Education levels: **1.** Primary **2.** Gymnazium **3.** SAC **4.** High-school
Area of residence: **1.** Rural **2.** Urban
Total number of teachers .....
Total number of students .....
County: .....
Town/ Village: .....

We promise to use correctly the information you provided and we thank you for answering this questionnaire.

A2.2. The Teacher's Questionnaire (T)

Your school has been included in the programme for the computerisation of Romanian schools (SEI). In order to make this project more efficient, an investigation team of teachers and researchers from the University of Bucharest, the Institute of Education Sciences and TEHNE – the Centre for Development and Innovation in Education are conducting a national wide evaluation of the Computerised Education System Programme (SEI) initiated by the Ministry of Education.

In order to obtain information related to this programme in your school we would like to ask you to answer the questions of the questionnaire providing data corresponding to the situation in your school or to your opinion.

We would like to assure you that the information obtained from this questionnaire are confidential and will be used by the investigation team only for the purpose of this evaluation.

Note: *In the questionnaire below, the **SEI laboratory** is understood to be a computer science laboratory equipped by the Ministry of Education with equipment and educational soft (AeL) in the period 2000-2007.*

T01. On a 0 to 3 scale, try to estimate the level of computer use:

0 **1** **2** **3**

T02. Do you have a computer at home?

1.	Yes, I have my personal computer and I am the only person who uses it
2.	Yes, I have a computer, which is also used by other members of my family
3.	I don't have a computer at home

T03. If yes, o you have an Internet connection?

1.	Yes, a cable connection
2.	Yes, a dial-up connection (telephone line)
3.	I don't have an Internet connection

T04. Put in order the subjects which, in your view, are most advantaged by the implementation of the computerization programme by giving them a place on a 1 to 10 scale (1-least advantaged, 10 most advantaged):

- biology	_____		- chemistry	_____
- drawing	_____		- physics	_____
- geography	_____		- computer science	_____
- history	_____		- Romanian language	_____
- modern languages	_____		- mathematics	_____

T05. When you use Information and Communication Technologies (ICT) at your subject, which is the most frequent situation among the ones listed below?

1.	In the SEI laboratory, with AeL installed
2.	In a computer laboratory, where AeL is not installed
3.	In a regular classroom, with a computer and a video projector
4.	Other situation, which? .....

T06. Please estimate the percentage of teachers in your school who use the SEI laboratory/AeL **for activities with students at their subject**:

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	I cannot say
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**0**

T07. Please indicate to what extent you used the computers in your school (in the 2006-2007 school year) for the following types of activities:

		To a great extent	To a little extent	Not at all	Don't know
k.	teaching-learning activities in the SEI laboratories	**1**	**2**	**3**	**4**
l.	assessment tests for students, on computer	**1**	**2**	**3**	**4**
m.	use of the educational resources (encyclopaedias, image libraries, dictionaries etc.), provided and installed by the MERY/ school inspectorate/ SIVECO	**1**	**2**	**3**	**4**
n.	consulting the school legislation or news on edu.ro, portal.edu.ro, forum.edu.ro etc.	**1**	**2**	**3**	**4**
o.	information for preparing lessons	**1**	**2**	**3**	**4**
p.	creating work sheets for students, information materials, sketches, assessment forms etc.	**1**	**2**	**3**	**4**
q.	creating educational soft	**1**	**2**	**3**	**4**
r.	administrative activities: student records, filling in psychological and pedagogical forms on a computer etc.	**1**	**2**	**3**	**4**
s.	communication with teachers from other schools, through email, chat or Internet	**1**	**2**	**3**	**4**
t.	contact with your students, outside the school hours	**1**	**2**	**3**	**4**
u.	contact with parents, via email or Internet	**1**	**2**	**3**	**4**
v.	the creation of school development projects	**1**	**2**	**3**	**4**

T08. The soft available on the computers in your school allows:

		To a great extent	To a little extent	Not at all	Don't know
a.	computer science and/ or computer use lessons	**1**	**2**	**3**	**4**
b.	lessons with students at different subjects, other than computer science	**1**	**2**	**3**	**4**
c.	the creation of educational soft by you	**1**	**2**	**3**	**4**
d.	Internet navigation for information and research	**1**	**2**	**3**	**4**
e.	consulting educational resource libraries, dictionaries, encyclopaedias etc.	**1**	**2**	**3**	**4**
f.	communication with other schools/ the school inspectorate/ the Ministry of Education	**1**	**2**	**3**	**4**
g.	establishing the school programme, keeping student records	**1**	**2**	**3**	**4**

T09. Please estimate – on a scale from 1 to 3 – **the positive effects** of using the SEI laboratory for each of the segments below. *(1 most important... 3 – least important)*:

9.1 For teachers:

- facilitating teacher's activity (design-teaching-assessment) _____
- increasing the teacher's efficiency/ more efficient activities _____
- encouraging innovation in teaching/ modernising the teaching process _____

9.2 For students:

- attracting students, developing their interest in studying _____
- developing students' computer skills _____
- facilitating the students' understanding of different phenomena _____

9.3 For learning activities:

- promoting cooperative learning, developing team work abilities _____
- allowing individualised/ personalised learning _____
- favouring active, interactive, participative learning _____

T10. Please indicate the difficulties you encountered in the use of the SEI laboratory.

		To a great extent	To a little extent	Not at all	Don't know
a.	insufficient computers/ laboratories	**1**	**2**	**3**	**4**
b.	technical problems (during lessons)	**1**	**2**	**3**	**4**
c.	(slow) running of the AeL programme/ network	**1**	**2**	**3**	**4**
d.	lack of qualified personnel for the maintenance of the network	**1**	**2**	**3**	**4**
e.	insufficient training for teachers in the use of educational soft	**1**	**2**	**3**	**4**
f.	insufficient educational software	**1**	**2**	**3**	**4**
g.	insufficient time for preparing lessons or tests; difficulties in their creation	**1**	**2**	**3**	**4**
h.	soft installation	**1**	**2**	**3**	**4**
i.	access to the Internet	**1**	**2**	**3**	**4**
j.	Other, which:.....	**1**	**2**	**3**	**4**

T11. On average, in the 2006-2007 school year, considering only your subject, **how many times a semester did you have lessons with a class** in the SEI laboratory?

Never	Once a semester	Twice a semester	Three times a semester	Four times a semester	Five times a semester	More than six times a semester
0	**1**	**2**	**3**	**4**	**5**	**6**

T12. To what extent do you consider the following development directions for **the use of ICT** as priorities for your school? Please mark them in order, from 1 (priority) to 5 (least important):

- as support for teaching-learning-assessment at different subjects	_____
- for administration, management, school records	_____
- for information purposes and teachers' professional development	_____
- for teh development of educational projects in collaboration with other schools or other institutions of the civil society (including companies-employers)	_____
- for computer science lessons or/and computer initiation for students	_____

T13. To what extent do you think that the initial or in-service training you participated in are appropriate for the practical needs related to the use of computers for classroom activities?

1.	They are appropriate and meet the requirements of real use; I don't need more other courses so as I can carry out efficient learning activities with the help of ICT
2.	They are appropriate in a first stage, but I still need more practice
3.	They are inappropriate; the courses I attended are not enough for me to design and carry out learning activities with the help of ICT
4.	Don't know/ I don't have an opinion.

T14. How much do you use, on average, the computers available in the school for professional development activities (information, research, computer programme learning, distance courses, experience exchanges, publishing online articles etc.)?

Not at all	One hour a week	2 hours a week	3 hours a week	4 hours a week	5 hours a week	More than 6 hours a week
0	**1**	**2**	**3**	**4**	**5**	**6**

T15. How often do you use ICT for the following types of activities?

		Often	Sometimes	Never
a	Sequences where students learn to use computer programmes (editing, calculation, Internet)	**1**	**2**	**3**
b	Sequences where students search for information on the Internet	**1**	**2**	**3**
c	Sequences where teaching and learning involve the use of electronic lessons (at my subject)	**1**	**2**	**3**
d	Tasks where students work individually, using ICT	**1**	**2**	**3**
e	Tasks where students work in groups, using ICT	**1**	**2**	**3**

f	Activities resulting in a multimedia product (a film, a web page, an electronic presentation)	**1**	**2**	**3**
g	Activities where students are asked to be creative, to explore and to innovate, using ICT resources and/ or the Internet	**1**	**2**	**3**

The <u>impact</u> on students' achievement is understood here as the degree in which teaching and learning with the help of ICT tools influence students in their understanding, memorising information, developing abilities, developing specific skills at different subjects. Research shows that some students signal a positive impact, while others say they saw no impact or, on the contrary, the impact is a negative one.

T16. Based on your experience in your subject, to what extent teaching and learning with the help of ICT influence students' achievement?

1.	Following the use of ICT, I noticed a positive impact on students' achievement at my subject.
2.	ICT has no effect on students' achievement at my subject.
3.	ICT has a negative influence meaning it drops my students' achievement.

T17. To what extent do you think ICT helps you with differentiated education (for example: challenging good students in various ways and motivating at the same time weak students to participate in learning activities)?

		Agree	Disagree	I cannot say
a.	I need more time to develop strategies and tools for differentiated education when I intend to use ICT than when I design an activity in a traditional way	**1**	**2**	**3**
b.	It's more easy to provide differentiated education when I teach with ICT help	**1**	**2**	**3**

T18. Based on your experience, to what extent do you think teaching and learning with the help of ICT influence students, differentiated on achievement levels and gender?

		Positive impact (+)	**Negative impact (-)**	**No impact (0)**	**I cannot say**
a.	good students	**1**	**2**	**3**	**4**
b.	weak students	**1**	**2**	**3**	**4**
c.	girls	**1**	**2**	**3**	**4**
d.	boys	**1**	**2**	**3**	**4**

Information referring to the characteristics of your school:

The name of the school: .....

County: ..... *Town/ Village:* .....

Please provide the following information on your professional situation:

The subject you teach: .....

Education level: **1.** Gymnazium **2.** SAC **3.** High-school

What years of study do you teach (classes): .....

Teaching experience: .....

Number of ICT courses completed:.....

Referring to the last course in ICT use you attended, please indicate:

- *the date at which it was completed:*.....
- *the title of the course:* .....
- *the institution which organised the course:*.....

We promise to use correctly the information you provided and we thank you for answering this questionnaire.

A2.3. The Student's Questionnaire (S)

Your school has been included in the programme for the computerisation of Romanian schools (SEI). In order to find out how this programme is running in your school, an investigation team of teachers and researchers from the University of Bucharest, the Institute of Education Sciences and TEHNE – the Centre for Development and Innovation in Education are conducting a national wide evaluation of the Computerised Education System Programme (SEI) initiated by the Ministry of Education.

For this purpose, we would like to ask you to answer the following questions or to choose the variant which best describes the situation in your schools or your opinion and to assure you that the information obtained from this questionnaire are confidential and will be used by the investigation team only for the purpose of this evaluation.

Note: *In the questionnaire below, the **SEI laboratory** is understood to be a computer science laboratory equipped by the Ministry of Education with equipment and educational soft (AeL) in the period 2000-2007.*

S01. In what circumstances do you use a computer?

1.	At some subjects during the school hours and in my free time at home and at school
2.	Only at home
3.	Only at school, during classes / in the laboratory and in my free time
4.	I don't use a computer

S02. Do you have a computer at home?

1.	Yes, I have my personal computer and I am the only person who uses it
2.	Yes, I have a computer, which is also used by other members of my family
3.	I don't have a computer at home

S03. If yes, do you have an Internet connection?

1.	Yes, a cable connection
2.	Yes, a dial-up connection (telephone line)
3.	I don't have an Internet connection

S04. Please consult the list of activities currently carried out on a computer and estimate how often you use them

		AT HOME				**AT SCHOOL**	
		Never	Some-times	Often	Very often	YES	NO
a	For games	**1**	**2**	**3**	**4**	**1**	**2**
b	For communication (chat, forum, email)	**1**	**2**	**3**	**4**	**1**	**2**
c	For information and documentation in various areas, for finding out what are the news	**1**	**2**	**3**	**4**	**1**	**2**
d	For learning activities (at different school subjects)	**1**	**2**	**3**	**4**	**1**	**2**
e	For learning how to use different programmes/ a computer	**1**	**2**	**3**	**4**	**1**	**2**

S05. When you use Information and Communication Technologies (ICT) during classes, which is the most frequent situation among the ones listed below?

1.	In the SEI laboratory, with AeL installed
2.	In a computer laboratory, where AeL is not installed
3.	In a regular classroom, with a computer and a video projector
4.	Other situation, which? .....

S06. Please indicate to what extent have you used the computers available in your school (in the 2006-2007 school year) for the following types of activities:

		To a great extent	To a little extent	Not at all	Don't know
a.	teaching-learning activities in the SEI laboratories at subjects other than computer science	**1**	**2**	**3**	**4**
b.	assessment tests for students, on computer	**1**	**2**	**3**	**4**
c.	use of the educational resources: encyclopaedias, image libraries, dictionaries etc.	**1**	**2**	**3**	**4**
e.	information for preparing lessons	**1**	**2**	**3**	**4**
f.	assessment and testing on computer	**1**	**2**	**3**	**4**
g.	communication with students from other schools, through email, chat or Internet	**1**	**2**	**3**	**4**
h.	contact with your teachers, outside school hours	**1**	**2**	**3**	**4**
i.	participation in extra-school projects	**1**	**2**	**3**	**4**

S07. Please estimate which are, from your point of view, **the positive effects** of using the SEI laboratory. *Mark with 1 the statement which you consider the most appropriate for the first place; with 2 – the one on the second place; and with 3 – the one on the third place:*

a.	attracting students, developing their interest in studying
b.	facilitating the students' understanding of different phenomena
c.	developing students' computer skills

S08. Please indicate the difficulties encountered in the use of the SEI laboratory.

		To a great extent	To a little extent	Not at all	Don't know
w.	insufficient computers/ laboratories	**1**	**2**	**3**	**4**
x.	technical problems (during lessons)	**1**	**2**	**3**	**4**
y.	(slow) running of the AeL programme/ network	**1**	**2**	**3**	**4**
z.	lack of qualified personnel for the maintenance of the network	**1**	**2**	**3**	**4**
aa.	insufficient training for teachers in the use of educational soft	**1**	**2**	**3**	**4**
bb.	insufficient educational software	**1**	**2**	**3**	**4**
cc.	insufficient time for preparing lessons or tests; difficulties in their creation	**1**	**2**	**3**	**4**
dd.	soft installation	**1**	**2**	**3**	**4**
ee.	access to the Internet	**1**	**2**	**3**	**4**

S09. Put in order the subjects which, in your view, are most advantaged by the existence of computers and educational soft in your school by giving them a place on a 1 to 10 scale (1-least advantaged, 10 most advantaged):

- biology	_____		- chemistry	_____
- drawing	_____		- physics	_____
- geography	_____		-.computer science	_____
- history	_____		- Romanian language	_____
- modern languages	_____		- mathematics	_____

S10. How often do you use a computer **at school** for the following types of activities?

		Often	Rarely	Never
a	Learning how to use various computer programmes (editing, calculation, Internet)	**1**	**2**	**3**
b	Searching for information on the Internet	**1**	**2**	**3**
c	Teaching and learning at different subjects with electronic lessons (or AeL)	**1**	**2**	**3**

d	Individual computer tasks, during classes in the laboratory	**1**	**2**	**3**
e	Group computer tasks, during classes in the laboratory	**1**	**2**	**3**
f	Activities resulting in a multimedia product (a film, a web page, an electronic presentation)	**1**	**2**	**3**
g	Activities where teachers ask us to be creative, to explore and to innovate, using ICT resources and/ or the Internet	**1**	**2**	**3**

S11. To what extent do you think that activities carried out with the help of a computer at school prepare you for the requirements of the labour market (**minimal requirements for the use of a computer and basic programmes**)?

1.	They are appropriate and correspond to the real requirements of computer use; I don't need other courses in order to say that I know how to use basic computer programmes
2.	They are appropriate in a first stage, but I still need more practice
3.	They are inappropriate; the activities carried out at school are not enough for me to say that I know how to use a computer
4.	Don't know/ I don't have an opinion.

S12. On average, in the 2006-2007 school year, **how many times a semester did your class have lessons** in the SEI laboratory?

Never	Once a semester	Twice a semester	Three times a semester	Four times a semester	Five times a semester	More than six times a semester
0	**1**	**2**	**3**	**4**	**5**	**6**

S13. How often do you use, **on average, in a week**, the computers available in your school for independent activities outside the school hours (for homework, information, research, learning computer programmes, projects at different subjects etc.)?

Not at all	One hour a week	2 hours a week	3 hours a week	4 hours a week	5 hours a week	More than 6 hours a week
0	**1**	**2**	**3**	**4**	**5**	**6**

The <u>impact</u> on students' achievement is understood here as the degree in which teaching and learning with the help of ICT tools influence students in their understanding, memorising information, developing abilities, developing specific skills at different subjects. Research shows that some students signal a positive impact, while others say they saw no impact or, on the contrary, the impact is a negative one.

S14. From your experience in using computers at school, **to what extent teaching and learning with the help of ICT influence the achievement of your classmates and, in general, of your class**?

1.	Following the use of computers, I noticed a positive impact on my classmates/ class achievement.
2.	The use of computers has no effect on the achievement level of my class.
3.	ICT has a negative influence meaning it drops my classmates' achievement.

S15. From your observations, to what extent do you consider that teaching and learning with the help of ICT influence students, differentiated on achievement levels and gender?

		Positive impact (+)	**Negative impact (-)**	**No impact (0)**	**I cannot say**
a.	good students	**1**	**2**	**3**	**4**
b.	weak students	**1**	**2**	**3**	**4**
c.	girls	**1**	**2**	**3**	**4**
d.	boys	**1**	**2**	**3**	**4**

S16. Would you like to use more the new technologies for learning-teaching-assessment activities at different subjects? **1.** Yes **2.** No

If Yes, please say what or make any other observations: .....

:.....

Please provide the following information which are necessary for the statistical analysis:
(a) Data referring to your school:
The name of the school: .....County: .....Town/ Village:.....
(b) Data referring to you:
Education level: **1.** Gymnazium **2.** SAC **3.** High-school
Year of study / grade: ..... *Gender* **1.** Male **2.** Female
Area of residence: **1.** Rural **2.** Urban

We promise to use correctly the information you provided and we thank you for answering this questionnaire.

ANNEX 3.Information Resulting from the Investigation

A3.1. Investigated Population

(characteristics of the population investigated, results from research)

We remind you that in statistical terms the term "investigated population" refers to any of the statistical populations subject to the analysis. In this research, it refers to the following four statistical populations (which make the sampling base for the investigation): schools, headteachers, teachers and students.

If the design of the research was meant to obtain a sample of schools, the application of the investigation tools allowed the determination of the three derived samples which will be subject to the analysis. In the next pages, the main characteristics of the four samples – schools, headteachers, teachers and students – and the results of the investigation are presented, with the influence of the resources and the area of residence being outlined in the analysis of results and influence factors.

The research was done for a number of **5736 subjects** – **students, teachers and headteachers** – from **199 schools**, making three representative samples of the beneficiaries of the new technologies.

Headteachers	195
Teachers	1588
Students	3953
Total of subjects	**5736**

- *The school sample*

The sample designed included a number of 205 schools. Following the application and validation of tools, the number resulting was 199.

Table A02 Distribution of the school sample

		Rural	Urban	Total	Rural	Urban	Total
Designed sample	*GIM*	79	54	133	38.5%	26.3%	64.9%
	GRS	7	24	31	3.4%	11.7%	15.1%
	HSC	4	34	38	2.0%	16.6%	18.5%
	SAC	2	1	3	1.0%	0.5%	1.5%
	Total	92	113	205	44.9%	55.1%	100.0%
Final sample	*GIM*	77	55	132	38.7%	27.6%	66.3%
	GRS	7	23	30	3.5%	11.6%	15.1%
	HSC	3	31	34	1.5%	15.6%	17.1%
	SAC	2	1	3	1.0%	0.5%	1.5%
	Total	89	110	199	44.7%	55.3%	100.0%

The validation of the resulting sample was done based on the chi-square test. The value of the agreement coefficient (chi-sq=0.248) allows us to say with a 95% probability that, slightly different in volume, from the point of view of the

selection criteria, the school sample resulting from the research is not significantly different from the designed sample.

Note: The 199 schools means the number of schools where at least one category of subjects (headteacher, teachers or students) collaborated at this research by filling in the questionnaire. Therefore, if all 199 schools are represented in the teachers' and students' samples, for the headteachers the number of those who answered the questionnaire is 196 (3 questionnaires from headteachers from urban schools have not been received).

Note: *Similar to the school network, where independent Schools of Arts and Crafts have a low weight in the total of schools, the selection of schools lead to a small number of independent SAC (3 schools: two in rural and one in urban). Keeping this category for the types of schools is justified by the curricular characteristics of these schools and the interest in investigating the behaviour/ interest of beneficiaries from these schools in the new information technology. Accordingly, based on their specificity and significance, some indicators have been evaluated for the two education levels - gymnazium and post-gymnazium, other indicators have been approached based on the type of school. The levels of the latter must be considered with prudence with regard to the SAC, as the statistical significance or the degree of generalization cannot be confirmed with three sample schools.*

Except for the characteristics which served as basis for the establishment of **sampling criteria**, the design of the tool for headteachers also took into consideration other characteristics of the educational environment, made operational in the analysis with the research variables. Among these, there are number of students and the number of teachers – as main beneficiaries and users of the new systems, s well as the structure of education levels – each with its curricular characteristics.

The first characteristic necessary to the qualitative evaluation of the samples is the distribution based on the sampling variables of the beneficiaries of the new technologies.

Table A03 The distribution of teachers and students based on their area of residence and the type of school.

	Schools			**Teachers**			**Students**		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
School	**88**	**108**	**196**	**86**	**105**	**191**	**84**	**104**	**188**
GIM	76	53	129	1692	1844	3536	19524	25517	45041
GRS	7	23	30	244	1573	1817	3272	22553	25825
HSC	3	31	34	102	2022	2124	1351	26802	28153
SAC	2	1	3	53	45	98	600	708	1308
Total	88	108	196	2091	5484	7575	24747	75580	100327

Out of the 196 headteacher questionnaires, only 191 contain the number of teachers and only 188 the number of students in the school. In these conditions, we can estimate that in the sample schools there are almost 120,000 beneficiaries of the new technologies.

The centralised data show the difference between the numbers of students in the two types of residence areas, with three times more students in urban schools than in rural ones. This aspect, which is a characteristic of the national school network, is an important factor for this study due to the perspective for extending the programme for equipping schools with computers and educational soft. In the analysis, the number of students per school was reflected by the "school size"

indicator, obtained from introducing the schools on an ordinal scale based on the number of students.

The size of the schools included in the sample varies between 41 and 2258 students per school (for the 188 schools where information was provided).

The large variation of the mentioned characteristic and the distribution of schools based on this aspect are intuitively highlighted by the graph below, which describes the sample of selected schools, ordered according to their size.

Figure A01 The histogram of schools based on their size (number of students)

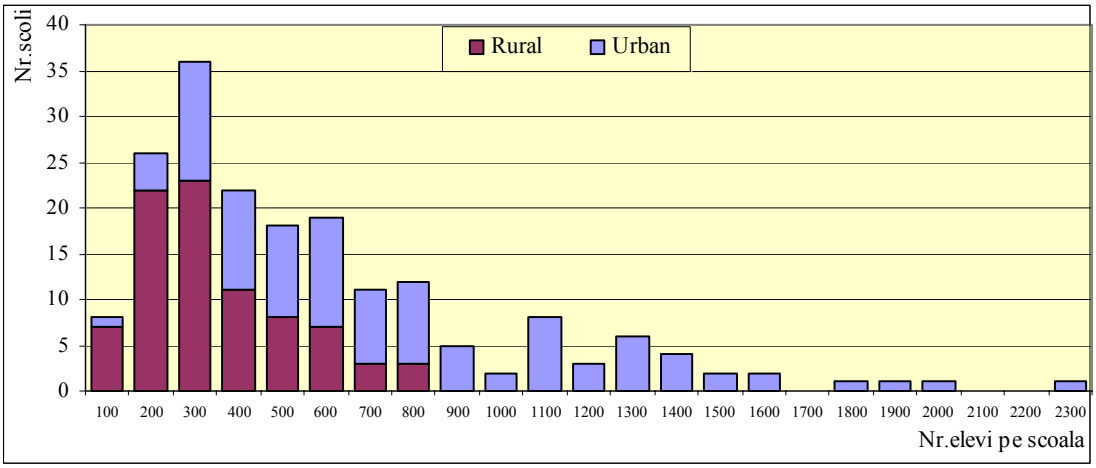


Table A04 The main statistical indicators with regard to the number of students per school and area of residence

	Rural	Urban	Total
Number of schools	84	104	188
Average number of students per school	**294.6**	**722.2**	**530.1**
Standard deviation	175.9	449.2	412.2
Variability	59.7%	59.7%	77.8%
Minimum number of students per school	41	96	41
Maximum number of students per school	760	2258	2258
Quartile 1	149.5	383.0	233.5
Quartile 2	247.5	600.0	400.0
Quartile 3	402.3	1031.0	693.5

Similar to the represented school network, the sample presents a wide spread for the number of students per school. Significant differences in size between urban and rural schools indicate a general average (530 students per school) less significant than the information provided by the same indicator for each of the two types of residence. Of course, this indicator is closer to reality in the analysis based on area of residence, the resulting averages reflecting real differences in the number of students in urban and rural areas. The distribution of schools based on their size is more clearly showed based on the histogram, a graph which also provides information on the frequency of schools with regard to their size.

Table A05 The distribution of schools based on area of residence and their size

Number of students	**Number of schools**			**Structures based on areas**		
	R	U	Total	**Rural**	**Urban**	**Total**
Less than 200 students	29	5	34	**33.0%**	**4.7%**	**17.4%**

200-400	34	25	59	**38.6%**	**23.4%**	**30.3%**
400-600	18	29	47	**20.5%**	**27.1%**	**24.1%**
600-1000	3	16	19	**3.4%**	**15.0%**	**9.7%**
Peste 1000	0	28	28	**0.0%**	**26.2%**	**14.4%**
NA	4	4	8	**4.5%**	**3.7%**	**4.1%**
Total	88	107	195	**100%**	**100%**	**100%**

The large variability of the schools from the point of view of their size lead (with a view to use the indicator as a factor of educational environment) to their grouping, with an ordinal scale in five steps representing very small, small, average, big and very big schools.

Table A06 The grouping of schools based on areas and size

Number of students per school	**Qualitative category**	**The average of student groups**		
		Rural	Urban	Total
Less than 200 students	Very small	130.6	134.6	131.2
200-400	Small	273.9	307.4	288.1
400-600	Average	522.7	545.7	536.9
600-1000	Big	746.0	799.1	790.7
Over 1000	Very big		1336.2	1336.2
Total		**294.6**	**722.1**	**530.1**

The fourth characteristic of the sample schools is the **education level structure**, with the observation that this research considered the curricular aspects related to the information technology starting with the gymnazium level.

Table A07 The distribution of education levels in the sample schools, on areas

	Primary	**Gymnazium**	**SAC**	**High-school**
	P	**G**	**S**	**H**
Total	142	164	47	63
Rural	75	85	22	10
Urban	67	79	25	53

Table A08 The distribution of schools based on the levels at which they provide education

Levels	Rural	Urban	Total	Rural	Urban	Total
3		9	9	**0.0%**	**8.3%**	**4.6%**
4	2	1	3	**2.3%**	**0.9%**	**1.5%**
2	10	7	17	**11.4%**	**6.5%**	**8.7%**
2,3		5	5	**0.0%**	**4.6%**	**2.6%**
1,2	54	46	100	**61.4%**	**42.6%**	**51.0%**
1,2,3	2	16	18	**2.3%**	**14.8%**	**9.2%**
1,2,4	12	1	13	**13.6%**	**0.9%**	**6.6%**
1,2,3,4,	7	5	12	**8.0%**	**4.6%**	**6.1%**
3,4	1	18	19	**1.1%**	**16.7%**	**9.7%**
Total	88	108	196	**100.0%**	**100.0%**	**100.0%**

The distribution of the selected schools based on the education levels provides a picture of the diversity of the schools included in the analysis, a diversity covering a multitude of situations characteristic of the school education network.

- *The headteacher sample*

This category includes teachers from the selected schools, or coordinating teachers from subordinated schools. For each selected school, the questionnaire was completed by a single person from its management, the resulting sample bearing the generic name of *headteacher sample*.

Table A09 The distribution of the headteacher sample based on residence and the type of school

		Rural	Urban	Total	Rural	Urban	Total
Designed sample	GIM	79	54	133	38.5%	26.3%	64.9%
	GRS	7	24	31	3.4%	11.7%	15.1%
	HSC	4	34	38	2.0%	16.6%	18.5%
	SAM	2	1	3	1.0%	0.5%	1.5%
	Total	92	113	205	44.9%	55.1%	100.0%
Final sample	GIM	76	52	128	**39.0%**	**26.7%**	**65.6%**
	GRS	7	23	30	**3.6%**	**11.8%**	**15.4%**
	HSC	3	31	34	**1.5%**	**15.9%**	**17.4%**
	SAM	2	1	3	**1.0%**	**0.5%**	**1.5%**
	Total	88	107	195	**45.1%**	**54.9%**	**100%**

Of the total 205 included in the designed sample of headteachers, 195 questionnaires have been validated, that is 95.1% of the expected total. The comparison between the final sample of the research and the designed sample was done with the chi-square test. The value of the chi-square coefficient (chi-square =0.15) allows us to say that there are no significant differences between the two samples. The final sample is representative of the target population from the point of view of residence and type of school. The representativeness of the sample for each of teh two criteria is also confirmed, the chi-square value resulting from the comparison of the distribution in the two types of residence areas being 0.002, and for the type of school 0.08.

- *The teacher sample*

From the total of questionnaires received from the 199 schools, following the validation, a sample of 1588 teachers resulted. When considering the school sample, the volume of teacher sample guarantees with a 95% probability a selection error of 2.2%. The distribution of the sample based on the sampling variables – the raea of residence for the school and the type of school – was the following.

Table A10 The distribution of the teacher sample based on residence and the type of school

	Rural	Urban	Total
GIM	483	331	814
GRS	72	274	346
HSC	47	360	407
SAC	12	9	21
Total	614	974	1588

Table A11 Structures of the teacher sample based on residence and the type of school

	Str.based on type of school			Str.based on area of residence			General structure		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
GIM	59.3%	40.7%	100.0%	78.7%	34.0%	51.3%	30.4%	20.8%	51.3%
GRS	20.8%	79.2%	100.0%	11.7%	28.1%	21.8%	4.5%	17.3%	21.8%
HSC	11.5%	88.5%	100.0%	7.7%	37.0%	25.6%	3.0%	22.7%	25.6%
SAC	57.1%	42.9%	100.0%	2.0%	0.9%	1.3%	0.8%	0.6%	1.3%
Total	38.7%	61.3%	100.0%	100.0%	100.0%	100.0%	38.7%	61.3 %	100.0%

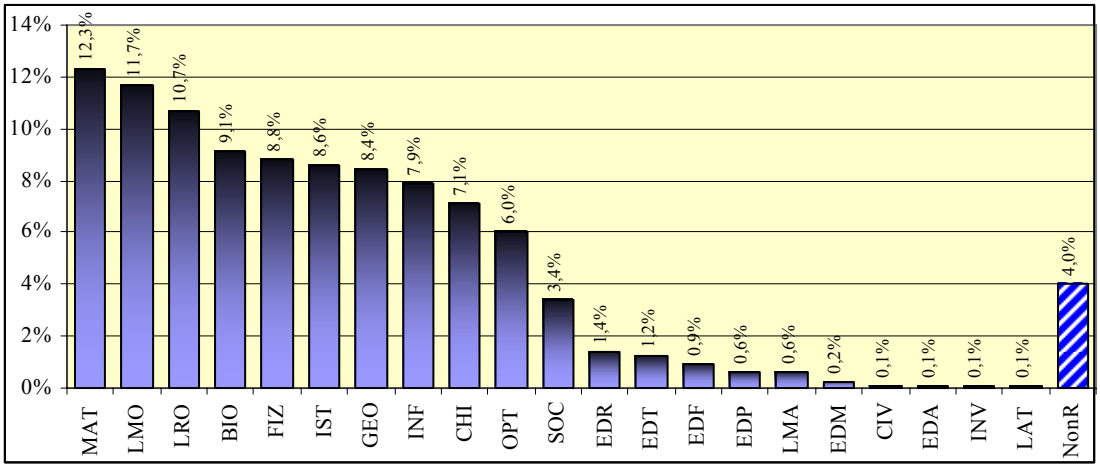
As a consequence of the sample design through a subject spiral, with the reservation that this requirement has not been respected by all local operators, the teacher sample covers all school subjects, both the subjects in the core curriculum and optional subjects.

Table A12 The distribution of teachers based on subjects and the area of residence and the type of school

		Area of residence		Type of school				Total	
	Subjects	Rural	Urban	GIM	GRS	HSC	SAC	No.	Percent.
BIO	BIOLOGY	66	79	85	23	34	3	145	**9.1%**
CHI	CHEMISTRY	47	66	64	26	23		113	**7.1%**
CIV	CIVIC EDUCATION	1	1	2				2	**0.1%**
EDA	ENTREPR. EDUCATION	1			1			1	**0.1%**
EDF	SPORTS	5	9	10	1	3		14	**0.9%**
EDM	MUSIC		3			3		3	**0.2%**
EDP	DRAWING	3	6	1	2	6		9	**0.6%**
EDR	RELIGIOUS EDUCATION	10	12	10	5	7		22	**1.4%**
EDT	TECHNOLOGICAL ED.	7	12	13	1	5		19	**1.2%**
FIZ	PHYSICS	48	91	78	32	28	1	139	**8.8%**
GEO	GEOGRAPHY	55	79	78	25	29	2	134	**8.4%**
INF	COMPUTER SCIENCE	37	89	49	28	48	1	126	**7.9%**
INV	PEDAGOGY	1		1				1	**0.1%**
IST	HISTORY	65	72	81	28	27	1	137	**8.6%**
LAT	LATIN		2			2		2	**0.1%**
LMA	MOTHER TONGUE	3	6	2	2	5		9	**0.6%**
LMO	MODERN LANGUAGES	82	104	105	29	49	3	186	**11.7%**
LRO	ROMANIAN LANGUAGE	71	99	95	28	45	2	170	**10.7%**
MAT	MATHEMATICS	76	119	116	33	44	2	195	**12.3%**
SOC	SOCIAL AND HUM. SC.	9	45	6	19	27	2	54	**3.4%**
SPE/OPT	SPEC./ OPTIONAL SUBJ.	32	63	26	54	14	1	95	**6.0%**
NonR	NA	29	34	37	11	12	3	63	**4.0%**
Total	Total	614	974	814	346	407	21	1588	**100.0%**

Covering the three education levels (starting with gymnazium) was also a research option. The sample includes teachers who teach at the three education levels, half in gymnazium (50.5%), half in post-gymnazium or/and gymnazium education (49.5%):

Figure A02 The distribution of the teacher sample based on subjects



The teaching experience has been evaluated based on the years of teaching. The sample includes teachers in their first year of teaching to teachers with a 42 years of teaching experience. The diversity of the distribution based on the teaching experience lead to their organization in several groups. In correlation with the object of the research, the grouping criterion allowed an analysis of the impact of the new technologies on different generations of teachers.

Table A12 The distribution of the sample teachers based on their teaching experience

		Rural	Urban	Total	Rural	Urban	Total
1.	First year	32	21	53	**5.2%**	**2.2%**	**3.3%**
2.	2-5 years	129	135	264	**21.0%**	**13.9%**	**16.6%**
3.	6-10 years	121	213	334	**19.7%**	**21.9%**	**21.0%**
4.	11-20 years	99	215	314	**16.1%**	**22.1%**	**19.8%**
5.	Over 20 years	156	288	444	**25.4%**	**29.6%**	**28.0%**
	NA	77	102	179	**12.5%**	**10.5%**	**11.3%**
	Total	614	974	1588	**100.0%**	**100.0%**	**100.0%**

Average number of experience years				**14.8**	**16.1**	**15.6**
Standard deviation				**12.3**	**11.0**	**11.5**

Approximately one teacher in tend id not say what is his/her teaching experience, the NAs rising to 11.3% in the total sample. The valid answers show differences between rural and urban, the average seniority in rural being 14.8 compared to 16.1 years in urban schools. Comparing the two averages based on the z test, we can see the difference is a significant one, the value z=1.98 which was calculated being by little higher than the critical z=1.96 for a probability of 95% in guaranteeing the results.

Figure A03 The distribution of the teacher sample based on their teaching experience

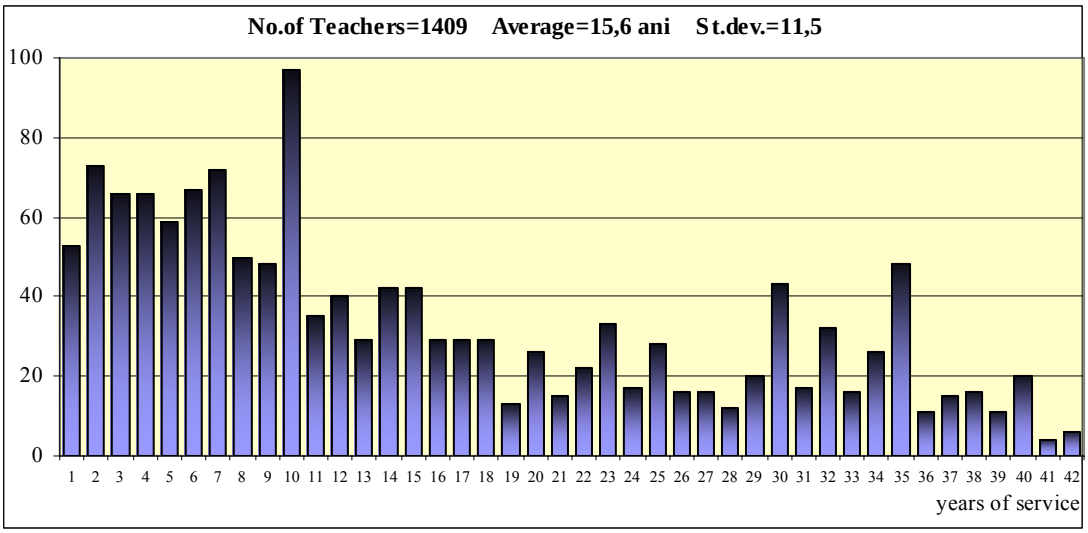
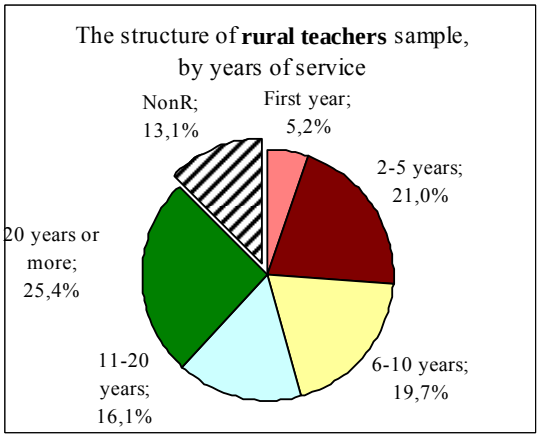
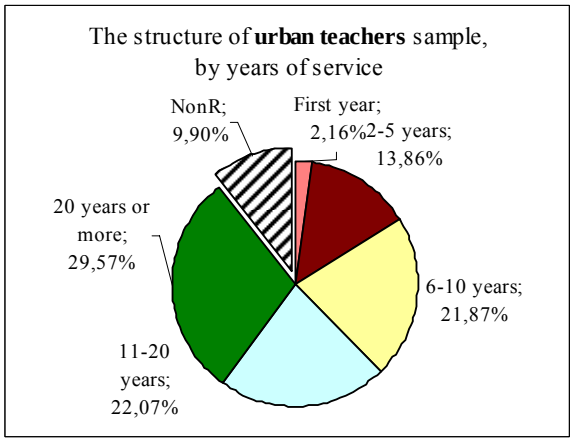


Figure A04 The structure of the teacher sample based on teaching experience and area of residence





If the five characteristics which have been presented are educational characteristics, the **gender** structure is an individual characteristic of the teacher sample. Of course, similar to the general situation in the system, the share of women is overwhelming, their percentage representing almost three quarters of the sample.

Table A13 The distribution of the teacher sample based on their gender

	Rural	Urban	Total	Rural	Urban	Total
Males	193	239	432	**31.4%**	**24.5%**	**27.2%**
Females	412	716	1128	**67.1%**	**73.5%**	**71.0%**
NA	9	19	28	**1.5%**	**2.0%**	**1.8%**
Total	614	974	1588	**100.0%**	**100.0%**	**100.0%**

- *The student sample*

The student sample covers the educational environment of the 199 selected schools. Out of the total of questionnaires, following the validation, there was a sample of 3953 gymnazium, high-school and School of Arts and Crafts students. The

distribution of the sample based on the sampling variables – area of residence and type of school – was the following:

Table A14 The distribution of the student sample based on area of residence and the type of school

	Rural	Urban	Total
GIM	759	527	1286
GRS	234	956	1190
HSC	159	1257	1416
SAC	41	20	61
Total	1193	2760	3953

Table A15 Structures of the student sample based on the area of residence and the type of school

	Str. based on type of sch.			Str. based on area of residence			General structure		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
GIM	59.0%	41.0%	100.0%	63.6%	19.1%	32.5%	19.2%	13.3%	32.5%
GRS	19.7%	80.3%	100.0%	19.6%	34.6%	30.1%	5.9%	24.2%	30.1%
HSC	11.2%	88.8%	100.0%	13.3%	45.5%	35.8%	4.0%	31.8%	35.8%
SAC	67.2%	32.8%	100.0%	3.4%	0.7%	1.5%	1.0%	0.5%	1.5%
Total	30.2%	69.8%	100.0%	100.0%	100.0%	100.0%	30.2%	69.8%	100.0%

Given the object of this study and the way the tools were designed and applied – including in the sample students from all education levels and years of study as possible beneficiaries and users of the new technologies – the following characteristics of this sample have been highlighted.

As a factor of the social and economic environment, taking into account the nature of the analysed indicator, for students either the area of residence of the school, or the student's area of residence has been considered. The latter was approached in the questionnaire as a condition factor from two perspectives. The first refers to the access to the information technology ensured by the economical situation of the family, and the second refers to the access to the internet, dependent of the local infrastructure.

Table A16 The distribution of the student sample based on the area of residence of the school and the students' area of residence

School's residence	Students' residence			
	Rural	Urban	NA	Total
Rural	1071	122		1193
Urban	603	2130	27	2760
Total	1674	2252	27	3953

Table A17 Structures of the student sample based on the residence of the school and the students' residence

Residence of the school	School environment based on the students' residence				Students' residence based on school			
	Rural	Urban	NA	Total	Rural	Urban	NA	Total
Rural	89.8%	10.2%	0.0%	100.0%	64.0%	5.4%	0.0%	30.2%
Urban	21.8%	77.2%	1.0%	100.0%	36.0%	94.6%	100.0%	69.8%
Total	42.3%	57.0%	0.7%	100.0%	100.0%	100.0%	100.0%	100.0%

A very low percentage of students (0.7%) did not mention their area of residence, so the structures describe the real situation of the sample. We can see that out of the total subjects residing in rural areas, one third learn in urban schools, while only 5.4% of the students residing in urban areas study in rural schools. For the whole sample, more than half of the subjects (57%) reside in urban areas and 42.3% reside in rural areas.

Table A18 The distribution of the student sample based on the education level and the area of residence

Education level	Residence				Residence			
	Rural	Urban	NA	Total	Rural	Urban	NA	Total
GRS	835	484		1319	63.3%	36.7%	0.0%	100.0%
SAC	120	70	2	192	62.5%	36.5%	1.0%	100.0%
HSC	719	1698	25	2442	29.4%	69.5%	1.0%	100.0%
Total	1674	2252	27	3953	42.3%	57.0%	0.7%	100.0%

The distribution on education levels and years of study supports the fidelity of the information obtained by covering all categories of students.

Figure A05 The structure of the student sample on years of study and education levels

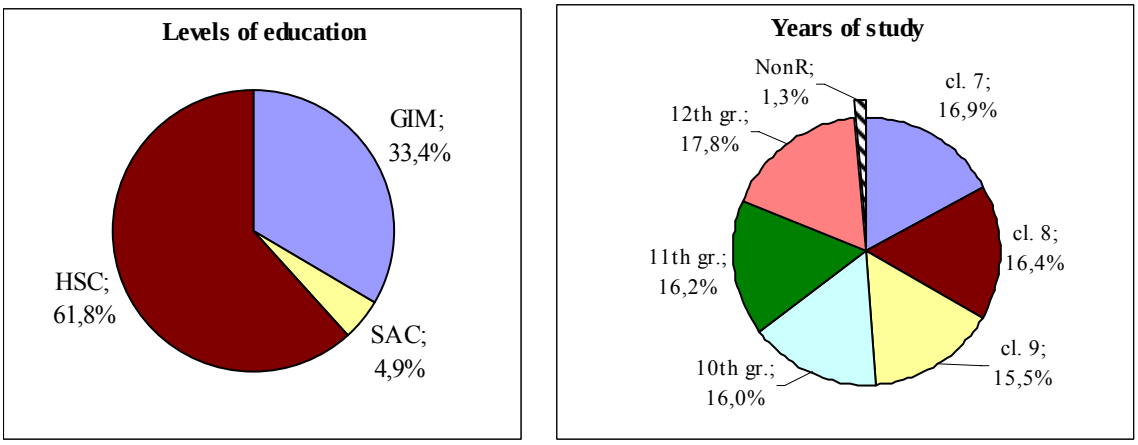


Table A19 The distribution of the student sample based on the area of residence and the education level

	Rural	Urban	Total	Rural	Urban	Total
GIM	779	540	1319	65.3%	19.6%	33.4%
SAC	71	121	192	6.0%	4.4%	4.9%
HSC	343	2099	2442	28.8%	76.1%	61.8%
Total	1193	2760	3953	100.0%	100.0%	100.0%

The student questionnaire also asked the student's gender in order to allow comparisons between boys and girls with regard to the impact of the new technologies.

Table A20 The distribution of the student sample based on the residence of the school and the subjects' gender

	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Males	559	1224	1783	46.9%	44.3%	45.1%	31.4%	68.6%	100.0%
Females	630	1512	2142	52.8%	54.8%	54.2%	29.4%	70.6%	100.0%
NA	4	24	28	0.3%	0.9%	0.7%	14.3%	85.7%	100.0%
Total	1193	2760	3953	100.0%	100.0%	100.0%	30.2%	69.8%	100.0%

A3.2. The Headteacher's Questionnaire: Information from the Statistical Analysis

H01. Please indicate **the number of computers** in your school.

Total computers in school:

Factors of influence		Total schools	Number of computers		
			Minimum	Maximum	Average
Total		**192**	**7**	**157**	**30.8**
Residence	Rural	88	7	68	**17.8**
	Urban	104	10	157	**41.8**
Type	GIM	128	7	51	**18.4**
	P-GIM	64	14	157	**55.6**
Size	Very small	34	10	29	**14.9**
	Small	59	7	57	**19.9**
	Average	46	10	79	**31.5**
	Big	18	12	104	**45.7**
	Very big	27	25	157	**65.1**
	NA	8	10	49	**25.9**

Computers used in activities with students and by students:

Factors of influence		Total schools	Number of computers		
			Minimum	Maximum	Average
Total		**191**	**0***	**138**	**22.8**
Residence	Rural	87	0	50	**13.3**
	Urban	104	0	138	**30.7**
Type	GIM	127	0	37	**13.1**
	P-GIM	64	10	138	**41.8**
Size	Very small	33	0	25	**11.2**
	Small	59	0	34	**14.0**
	Average	46	3	70	**23.6**
	Big	18	10	88	**30.8**
	Very big	27	15	138	**49.7**
	NA	8	10	44	**20.8**

Out of the total 195 schools included in the sample, only 192 provided answers to this item, 3 urban schools providing no answer.

Note: *The 0 value of the indicator of the minimum number of computers to which students have access refers to two GIM schools (a rural one with a total of 11 computers, and an urban one with a total of 20 computers) that did not fill in any number for the computers used with and by students. Two other rural gymnazium schools, with 20 computers, declared only 1 and 3 computers respectively to be used by students. Not taking into account the four schools just mentioned, the minimum level would be 10 computers used by/ with students, both in urban and in rural schools. Considering that the answers reflect the real situation in the school, with a possible lack of training for teachers, or their keeping as reserve, the average value is determined for the whole sample.*

The percentage of computers used with and by students on areas of residence

	Rural	Urban	Total	Rural	Urban	Total
None	1	1	2	**1.1%**	**0.9%**	**1.0%**
10-20%	2	1	3	**2.3%**	**0.9%**	**1.5%**
20-50%	4	5	9	**4.5%**	**4.7%**	**4.6%**
50-70%	11	28	39	**12.5%**	**26.2%**	**20.0%**
70-90%	44	64	108	**50.0%**	**59.8%**	**55.4%**
Over 90%	25	5	30	**28.4%**	**4.7%**	**15.4%**
NA	1	3	4	**1.1%**	**2.8%**	**2.1%**
Total	88	107	195	**100.0%**	**100.0%**	**100.0%**

H02. Please estimate the percentage of teachers in your school **who know how to use a computer** at least at a beginning level:

Structures of the school sample based on the share of teachers who use a computer and on factors

Factors		The percentage of teachers in the school who use a computer									
		Below 30%	30%	40%	50%	60%	70%	80%	90%	100%	NA
Number of schools		**1**	**7**	**6**	**14**	**19**	**26**	**49**	**46**	**21**	**6**
Total		**0.5%**	**3.1%**	**7.2%**	**9.7%**	**13.3%**	**25.1%**	**23.6%**	**10.8%**	**3.1%**	**2.1%**
Residence	Rural	1.1%	4.5%	4.5%	10.2%	11.4%	13.6%	23.9%	18.2%	8.0%	4.5%
	Urban		2.8%	1.9%	4.7%	8.4%	13.1%	26.2%	28.0%	13.1%	1.9%
Type	GIM	0.8%	4.7%	4.7%	7.8%	12.5%	17.2%	24.2%	14.8%	9.4%	3.9%
	GRS				3.3%	3.3%	10.0%	33.3%	40.0%	10.0%	
	HSC		2.9%		8.8%	5.9%	2.9%	20.6%	41.2%	14.7%	2.9%
	SAC							33.3%	33.3%	33.3%	
Size	Very small	2.9%	5.9%	5.9%	11.8%	11.8%	2.9%	20.6%	26.5%	5.9%	5.9%
	Small		1.7%	5.1%	5.1%	10.2%	18.6%	23.7%	15.3%	16.9%	3.4%
	Average		2.1%		8.5%	8.5%	25.5%	23.4%	23.4%	6.4%	2.1%
	Big		5.3%			21.1%	5.3%	31.6%	21.1%	15.8%	
	Very big		3.6%		10.7%	3.6%	3.6%	25.0%	42.9%	7.1%	3.6%
	NA		12.5%	12.5%				50.0%	12.5%	12.5%	
	Total	0.5%	3.1%	7.2%	9.7%	13.3%	25.1%	23.6%	10.8%	3.1%	2.1%

The average percentage of teachers in the school who use a computer, on factors

	Residence		Type of school				Size of school					Total
	Rural	Urban	GIM	GRS	HSC	SAC	Very small	Small	Average	Big	Very big	Total
No. of schools	88	107	128	30	34	3*	34	59	47	19	28	195
Percentage	68%	77%	69%	83%	79%	90%	66%	74%	74%	78%	77%	67%

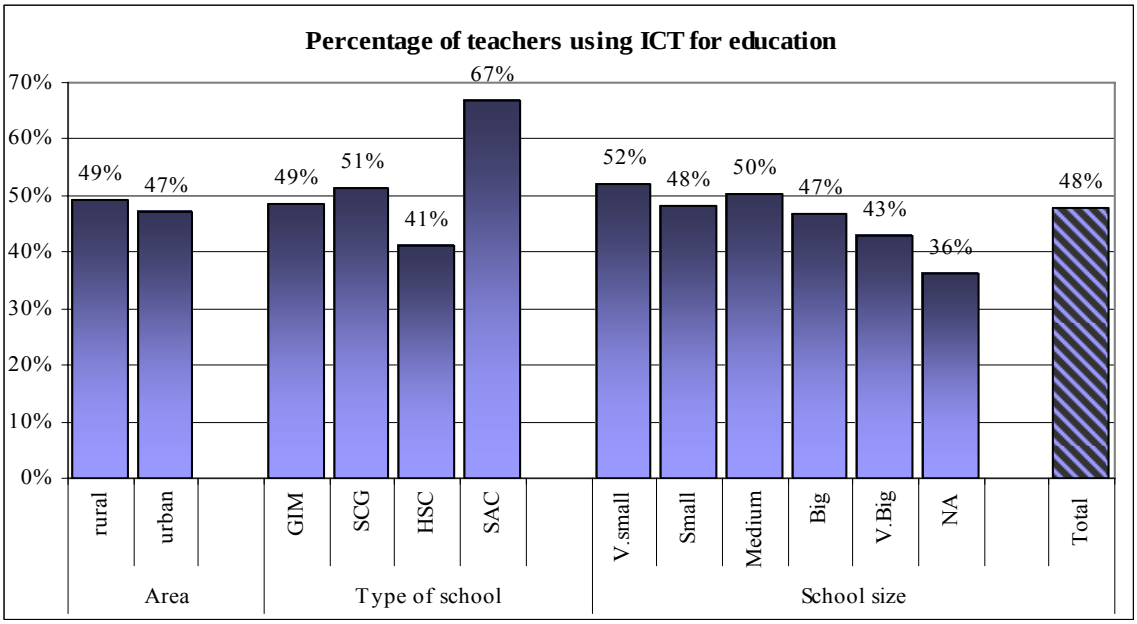
H03. Please estimate the percentage of teachers in your school who use the SEI laboratory **for activities with students at their subject**

Structures of the sample and the average levels based on the percentage of teachers who use the SEI laboratory

Factors		The percentage of teachers in the school who use the SEI laboratory										
		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	NA
Number of schools		7	11	29	34	30	29	24	16	6	1	8
Total		3.6%	5.6%	14.9 %	17.4 %	15.4 %	14.9 %	12.3 %	8.2%	3.1%	0.5%	4.1%
Resi-dence	Rural	2.3%	5.7%	11.4%	19.3%	18.2%	13.6%	11.4%	9.1%	4.5%		4.5%
	Urban	4.7%	5.6%	17.8%	15.9%	13.1%	15.9%	13.1%	7.5%	1.9%	0.9%	3.7%
Type	GIM	2.3%	4.7%	12.5%	17.2%	18.8%	15.6%	10.2%	10.2%	3.1%		5.5%
	GRS	3.3%		26.7%	13.3%	10.0%	16.7%	20.0%	3.3%	6.7%		
	HSC	8.8%	14.7%	14.7%	20.6%	8.8%	8.8%	14.7%	5.9%			2.9%
	SAC				33.3%		33.3%				33.3%	
Size	Very small	2.9%	2.9%	17.6%	14.7%	8.8%	17.6%	14.7%	11.8%	5.9%		2.9%
	Small	1.7%	6.8%	13.6%	16.9%	22.0%	8.5%	10.2%	11.9%	3.4%		5.1%
	Average			8.5%	25.5%	19.1%	23.4%	12.8%	6.4%			4.3%
	Big	5.3%	21.1%	15.8%	5.3%	5.3%	21.1%	21.1%			5.3%	
	Very big	10.7%	7.1%	21.4%	17.9%	10.7%	7.1%	7.1%	7.1%	7.1%		3.6%
	NA	12.5%		25.0%	12.5%	12.5%	12.5%	12.5%				12.5%
	Total	3.6%	5.6%	14.9%	17.4%	15.4%	14.9%	12.3%	8.2%	3.1%	0.5%	4.1%

The average percentage of teachers in the school, who use the SEI laboratory, comparison on factors

	Residence		Type of school				Size of school					Total
	Rural	Urban	GIM	GRS	HSC	SAC	Very small	Small	Average	Big	Very big	Total
No. of schools	88	107	128	30	34	3*	34	59	47	19	28	195
Percentage	49%	47%	49%	51%	41%	67%	52%	48%	50%	47%	43%	48%



H04*. Please estimate – on a scale from 1 to 3 – **the positive effects** of using the SEI laboratory for each of the segments below.

			Average
Teachers	**It.4.1-1**	- facilitating teacher's activity (design-teaching-assessment)	**1.928**
	It.4.1-2	- increasing the teacher's efficiency/ more efficient activities	**1.845**
	It.4.1-3	- encouraging innovation in teaching/ modernising the teaching process	**1.684**
Students	**It.4.2-1**	- developing students' computer skills	**1.711**
	It.4.2-2	- facilitating the students' understanding of different phenomena	**1.565**
	It.4.2-3	- improving learning results	**2.208**
Learning activities	**It.4.3-1**	- allowing individualised/ personalised learning	**1.948**
	It.4.3-2	- favouring active, interactive, participative learning	**1.477**
	It.4.3-3	- promoting cooperative learning, developing team work abilities	**2.000**

H05. The laboratories in your school are used by:

1. teachers in primary education: PRM
2. teachers in gymnazium education GIM
3. teachers in SAC SAC
4. teachers in high-schools HSC

Structures on education levels

	Education levels in the sample				Teachers using ICT on levels			
	PRM	**GIM**	**SAC**	**HSC**	**PRM**	**GIM**	**SAC**	**HSC**
Total	142	164	47	63	99	159	45	62
Rural	75	85	22	10	44	85	20	10
Urban	67	79	25	53	55	74	25	52

The degree to which the laboratories in the school are used, on education levels

	% use on level			
	PRM	**GIM**	**SAC**	**HSC**
Total	**69.7%**	**97.0%**	**95.7%**	**98.4%**
Rural	**58.7%**	**100.0%**	**90.9%**	**100.0%**
Urban	**82.1%**	**93.7%**	**100.0%**	**98.1%**

H06.** Based on your experience in the school, you can say that the computerization programme is more useful

		Percentage of respondents		
		Rural	Urban	Total
	Total subjects	**52**	**67**	**119**
1	for computer science	23.9%	39.3%	32.3%
2	for computer initiation/ use courses for students	55.7%	43.0%	48.7%
3	for other subjects	59.1%	62.6%	61.0%

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	88	107	195
Total number of answers	122	157	279
Average number of answers	**1.39**	**1.47**	**1.43**

H07.** How do you see **the usefulness of the computerisation programme** for the subjects in the list?

		Rural	Urban	Total	**Rural**	**Urban**	**Total**
1	**BIOLOGY**	54	66	120	**61.4%**	**61.7%**	**61.5%**
2	**GEOGRAPHY**	33	40	73	**37.5%**	**37.4%**	**37.4%**
3	**SOCIAL AND HUM. SC.**	2	3	5	**2.3%**	**2.8%**	**2.6%**
4	**CHEMISTRY**	44	46	90	**50.0%**	**43.0%**	**46.2%**
5	**PHYSICS**	45	52	97	**51.1%**	**48.6%**	**49.7%**
6	**ROMANIAN LANGUAGE**	7	8	15	**8.0%**	**7.5%**	**7.7%**
7	**MATH.**	36	36	72	**40.9%**	**33.6%**	**36.9%**
8	**DRAWING**	1	3	4	**1.1%**	**2.8%**	**2.1%**
9	**TECHN. ED.**	5	14	19	**5.7%**	**13.1%**	**9.7%**
10	**MODERN LANGUAGES**	9	10	19	**10.2%**	**9.3%**	**9.7%**
11	**HISTORY**	17	14	31	**19.3%**	**13.1%**	**15.9%**
12	**SPECIALISED SUBJECTS**	6	20	26	**6.8%**	**18.7%**	**13.3%**

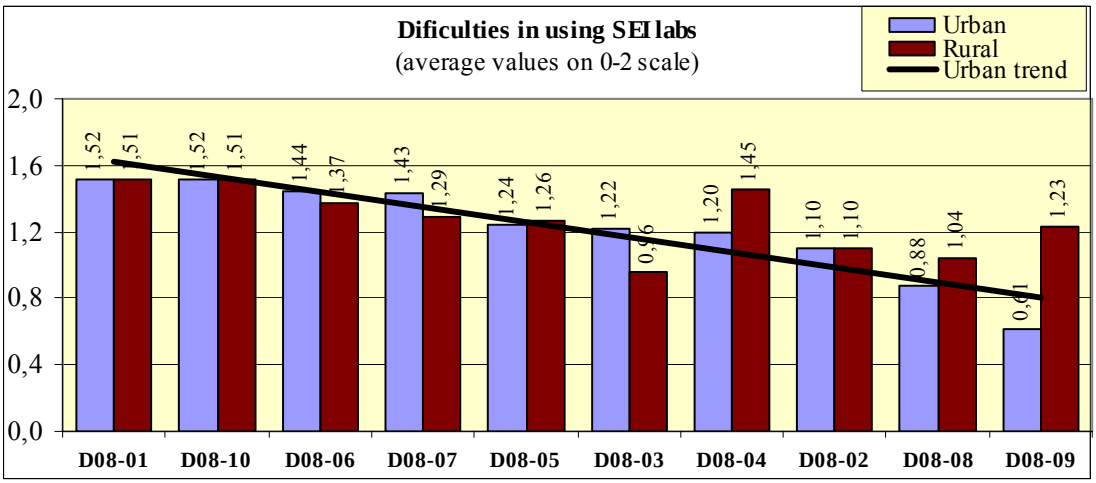
	The average number of answer variants		
	Rural	Urban	Total
Total subjects	88	107	195
Total number of answers	259	315	574
Average number of answers	**2.94**	**2.94**	**2.94**

H08*. Please indicate, from your point of view, **the difficulties encountered in the use of the SEI laboratory/ laboratories.**

		To a great extent	To little extent	Not at all	Don't know	NA
D08-01	insufficient computers/ laboratories	113	57	17	0	8
D08-02	technical problems (during lessons)	44	114	22	4	11
D08-03	(slow) running of the AeL programme/ network	55	91	35	1	13
D08-04	lack of qualified personnel for the maintenance of the network	102	43	42	1	7
D08-05	insufficient training for teachers in the use of educational soft	63	112	14	1	5
D08-06	insufficient educational software	90	78	12	3	12
D08-07	insufficient time for preparing lessons or tests; difficulties in their creation	87	85	14	3	6
D08-08	soft installation	45	84	50	4	12
D08-09	access to the Internet	54	55	73	1	12

D08-10-1	D08-10-2	D08-10-3	D08-10-4	D08-10-5	D08-10-6
computer viruses	reluctant teachers	overloaded curriculum	lack of a stable network administrator	frequent power breaks	lack of lessons in the mother tongue (Hungarian)
1	1	1	1	1	1

		To a great extent	To little extent	Not at all	Don't know	NA	Average
	Points	2	1	0			
TOTAL	D08-01	57.9%	29.2%	8.7%	0.0%	4.1%	**1.513**
	D08-02	22.6%	58.5%	11.3%	2.1%	5.6%	**1.098**
	D08-03	28.2%	46.7%	17.9%	0.5%	6.7%	**1.104**
	D08-04	52.3%	22.1%	21.5%	0.5%	3.6%	**1.314**
	D08-05	32.3%	57.4%	7.2%	0.5%	2.6%	**1.253**
	D08-06	46.2%	40.0%	6.2%	1.5%	6.2%	**1.410**
	D08-07	44.6%	43.6%	7.2%	1.5%	3.1%	**1.370**
	D08-08	23.1%	43.1%	25.6%	2.1%	6.2%	**0.951**
	D08-09	27.7%	28.2%	37.4%	0.5%	6.2%	**0.891**
	D08-10	57.9%	29.2%	8.7%	0.0%	4.1%	**1.513**
Rural	D08-01	58.0%	28.4%	9.1%	0.0%	4.5%	**1.512**
	D08-02	20.5%	62.5%	10.2%	1.1%	5.7%	**1.096**
	D08-03	19.3%	50.0%	21.6%	1.1%	8.0%	**0.963**
	D08-04	59.1%	23.9%	14.8%	0.0%	2.3%	**1.453**
	D08-05	34.1%	56.8%	8.0%	0.0%	1.1%	**1.264**
	D08-06	45.5%	38.6%	8.0%	2.3%	5.7%	**1.373**
	D08-07	40.9%	43.2%	11.4%	1.1%	3.4%	**1.294**
	D08-08	28.4%	39.8%	23.9%	1.1%	6.8%	**1.037**
	D08-09	45.5%	25.0%	23.9%	0.0%	5.7%	**1.229**
	D08-10	58.0%	28.4%	9.1%	0.0%	4.5%	**1.512**
Urban	D08-01	57.9%	29.9%	8.4%	0.0%	3.7%	**1.515**
	D08-02	24.3%	55.1%	12.1%	2.8%	5.6%	**1.099**
	D08-03	35.5%	43.9%	15.0%	0.0%	5.6%	**1.218**
	D08-04	46.7%	20.6%	27.1%	0.9%	4.7%	**1.196**
	D08-05	30.8%	57.9%	6.5%	0.9%	3.7%	**1.243**
	D08-06	46.7%	41.1%	4.7%	0.9%	6.5%	**1.440**
	D08-07	47.7%	43.9%	3.7%	1.9%	2.8%	**1.433**
	D08-08	18.7%	45.8%	27.1%	2.8%	5.6%	**0.881**
	D08-09	13.1%	30.8%	48.6%	0.9%	6.5%	**0.610**
	D08-10	57.9%	29.9%	8.4%	0.0%	3.7%	**1.515**



H09. How the students' access to computers is ensured?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
D09-1	only during the school hours	60.2%	47.7%	53.3%
D09-2	both during school hours and after based on a class schedule	25.0%	39.3%	32.8%
D09-3	both during school hours and unlimited access after the school hours	11.4%	10.3%	10.8%
	NA	3.4%	2.8%	3.1%
	Total	100.0%	100.0%	100.0%

H10. Estimate **the average use by students** of the SEI laboratory in the 2006-2007 school year

H10.1. in **the teaching-learning process** (at lessons)

Factors		**Use in the teaching-learning process**										
		10%	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**100%**	**NA**
Total		**8**	**7**	**26**	**22**	**20**	**20**	**28**	**18**	**19**	**23**	**4**
Total		**4.1%**	**3.6%**	**13.3%**	**11.3%**	**10.3%**	**10.3%**	**14.4%**	**9.2%**	**9.7%**	**11.8%**	**2.1%**
Residence	Rural	6.8%	1.1%	10.2%	18.2%	13.6%	11.4%	13.6%	10.2%	5.7%	8.0%	1.1%
	Urban	1.9%	5.6%	15.9%	5.6%	7.5%	9.3%	15.0%	8.4%	13.1%	15.0%	2.8%
Type	GIM	6.3%	3.9%	15.6%	14.1%	11.7%	11.7%	15.6%	8.6%	6.3%	5.5%	0.8%
	GRS			6.7%	6.7%	10.0%	6.7%	10.0%	13.3%	13.3%	26.7%	6.7%
	HSC		5.9%	11.8%	2.9%	5.9%	8.8%	11.8%	8.8%	17.6%	23.5%	2.9%
	SAC				33.3%			33.3%		33.3%		
Size	Very small	5.9%	2.9%	17.6%	26.5%	11.8%	11.8%	11.8%	2.9%	5.9%	2.9%	
	Small	5.1%	1.7%	22.0%	6.8%	6.8%	13.6%	16.9%	5.1%	13.6%	8.5%	
	Average		2.1%	8.5%	12.8%	23.4%	10.6%	12.8%	14.9%	4.3%	8.5%	2.1%
	Big	10.5%	5.3%	10.5%	5.3%	5.3%	5.3%	15.8%	5.3%	15.8%	15.8%	5.3%
	Very big		7.1%	3.6%	7.1%		3.6%	14.3%	10.7%	14.3%	32.1%	7.1%
	NA	12.5%	12.5%				12.5%	12.5%	37.5%		12.5%	

The average use of the SEI laboratory in the teaching-learning process, on factors

	Residence		**Type of school**				**Size of school**					**Total**
	Rural	Urban	GIM	GRS	HSC	SAC	Very small	Small	Average	Big	Very big	Total
No. of schools	88	107	128	30	34	3*	34	59	47	19	28	195
Percent.	55.7%	61.6%	53.5%	70.0%	68.8%	66.7%	48.8%	58.3%	59.4%	58.4%	71.1%	58.9%

H10.2*. in **students' free access**, estimate the average weekly duration

1-2 hours	3-4 hours	5-6 hours	more than 6 hours	I cannot say
1,5 hours	**3,5 hours**	**5,5 hours**	**7 hours**	**0**

Factors		No.schools	**1,5 ore**	**3,5 ore**	**5,5 ore**	**7 ore**	NA	Average
Total		**195**	28.7%	21.5%	6.7%	6.7%	36.4%	**2,018**
Residence	Rural	**88**	28.4%	17.0%	8.0%	4.5%	42.0%	**1,778**
	Urban	**107**	29.0%	25.2%	5.6%	8.4%	31.8%	**2,215**
Type	GIM	**128**	29.7%	18.8%	6.3%	3.9%	41.4%	**1,719**
	P-GIM	**67**	26.9%	26.9%	7.5%	11.9%	26.9%	**2,590**
Size	Very small	**8**	29.4%	14.7%	11.8%	5.9%	38.2%	**2,015**
	Small	**26**	30.5%	25.4%	3.4%	3.4%	37.3%	**1,771**
	Average	**76**	36.2%	21.3%	6.4%	6.4%	29.8%	**2,085**
	Big	**49**	15.8%	26.3%	5.3%	0.0%	52.6%	**1,447**
	Very big	**28**	25.0%	17.9%	10.7%	21.4%	25.0%	**3,089**
	NA	**8**	12.5%	25.0%	0.0%	0.0%	62.5%	**1,063**

H11. What type of **Internet connection** do you have in your school?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
SEI Lab.	Dial up (telephone)	18.2%	12.1%	14.9%
	Broadband (cable)	27.3%	69.2%	50.3%
	There is no connection to the Internet	34.1%	8.4%	20.0%
	Other type	11.4%	5.6%	8.2%
	NA	9.1%	4.7%	6.7%
Admin	Dial up (telephone)	27.3%	15.9%	21.0%
	Broadband (cable)	35.2%	68.2%	53.3%
	There is no connection to the Internet	19.3%	1.9%	9.7%
	Other type	12.5%	6.5%	9.2%
	NA	5.7%	7.5%	6.7%
	Total	100.0%	100.0%	100.0%

H11-1	**H11-2**	**H11-3**	**H11-4**	**H11-5**	**H11-6**	**H11-7**	**H11-8**
ADSL through telephone	modem Orange	click net express	through cable	optical fibre	wireless	zapp	Parabolic antenna
8	2	1	4	1	1	1	1

H12. What is **the percentage of Internet connection** for the computers in your school?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
Students	< 25%	14.8%	9.3%	11.8%
	25-50%	4.5%	3.7%	4.1%
	50-75%	5.7%	10.3%	8.2%
	75-100%	30.7%	68.2%	51.3%
	There is no connection	39.8%	6.5%	21.5%
	NA	4.5%	1.9%	3.1%
Teachers	< 25%	20.5%	8.4%	13.8%
	25-50%	6.8%	8.4%	7.7%
	50-75%	6.8%	3.7%	5.1%
	75-100%	34.1%	70.1%	53.8%
	There is no connection	20.5%	3.7%	11.3%
	NA	11.4%	5.6%	8.2%
	Total	100.0%	100.0%	100.0%

H13.** In your school, who is in charge with the administration of computers and the network, with the installation of applications and with soling problems that might appear in general?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	A system administrator hired by the school	15.9%	43.0%	30.8%
2	A teacher/ the teachers (computer science teachers)	71.6%	45.8%	57.4%
3	A student/ the students	1.1%	0.9%	1.0%
4	A specialised company based on a contract	4.5%	12.1%	8.7%
5	Other situation	12.5%	12.1%	12.3%

H13-05-1	H13-05-2	H13-05-3	H13-05-4	H13-05-5	H13-05-6	H13-05-7	H13-05-8
the computer science laboratory with AEL courses	the headteacher	a person outside the school, a computer specialist	the municipality	a computer programmer assistant	a specialised company only for problems that cannot be solved by the school	my son	nobody, we need an administrator
3	2	2	2	1	1	1	1

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	88	107	195
Total number of answers	93	124	217
Average number of answers	**1,06**	**1,16**	**1,11**

H14. The centralised technical support, provided by the specialised company, is in your case:

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
H14.1	free of charge	45.5%	27.1%	35.4%
	based on a subscription	9.1%	21.5%	15.9%
	at request	25.0%	32.7%	29.2%
	NA	20.5%	18.7%	19.5%
H14.2	fast	11.4%	19.6%	15.9%
	satisfactory	30.7%	29.9%	30.3%
	unsatisfactory	10.2%	4.7%	7.2%
	NA	47.7%	45.8%	46.7%
	Total	100.0%	100.0%	100.0%

H15.** What type of support from the following variants have you requested at least once in order to solve problems with the SEI laboratory

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	telephone (green line: 0800.410.444)	46.6%	43.9%	45.1%
2	forum (http://forum.edu.ro)	10.2%	32.7%	22.6%
3	e-mail: (ael@portal.edu.ro)	10.2%	35.5%	24.1%
4	Other way	15.9%	10.3%	12.8%
5	I have never requested technical support services	26.1%	15.0%	20.0%

H15-05-1	H15-05-2	H15-05-3
the company that installed the equipment	colleagues from other schools	telephone to the school inspectorate
2	2	1

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	88	107	195
Total number of answers	96	150	246
Average number of answers	**1,09**	**1,40**	**1,26**

H16.** The educational soft (for subjects included in the curriculum) available in your school is

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	free of charge, distributed through the SEI Programme by the Ministry of Education/ the school inspectorate/ SIVECO	97.7%	97.2%	97.4%
2	bought with money from the school fund	0.0%	22.4%	12.3%
3	free of charge, in Romanian language, downloaded from the Internet	2.3%	16.8%	10.3%

4	free of charge, in English/ French, downloaded from the Internet	0.0%	5.6%	3.1%
5	Other	1.1%	4.7%	3.1%

H16-05-1	H16-05-2	H16-05-3	H16-05-4	H16-05-5
Bought with our funds/ teachers' personal funds	Bought with the 100 Euro by teachers	Bought through the Phare Programme	From donation	Soft created by me/ teachers in my school
8	7	5	3	2

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	88	107	195
Total number of answers	89	159	248
Average number of answers	**1,01**	**1,49**	**1,27**

H17. Does your school have a presentation page/ web site on the Internet?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	Yes – information is update whenever necessary	12.5%	27.1%	20.5%
2	Yes – information is annually updated	4.5%	17.8%	11.8%
3	No, but we intend to develop one ion this school year	79.5%	49.5%	63.1%
4	No, and we don't think we need one for now	3.4%	3.7%	3.6%
	NA	0.0%	1.9%	1.0%
	Total	100.0%	100.0%	100.0%

H18.** If Yes, what does the school's Internet page contain?

		Rural	Urban	Total
	Total subjects	**15**	**48**	**63**
1	General information about the school	93.3%	100.0%	98.4%
2	Information about the teachers	40.0%	66.7%	60.3%
3	Information about admission and/ or other examinations	6.7%	37.5%	30.2%
4	The school's rules, school documents	13.3%	35.4%	30.2%
5	Information about the students (in order to inform the parents)	26.7%	35.4%	33.3%
6	A forum for students and teachers	6.7%	25.0%	20.6%
7	Other information:	26.7%	12.5%	15.9%

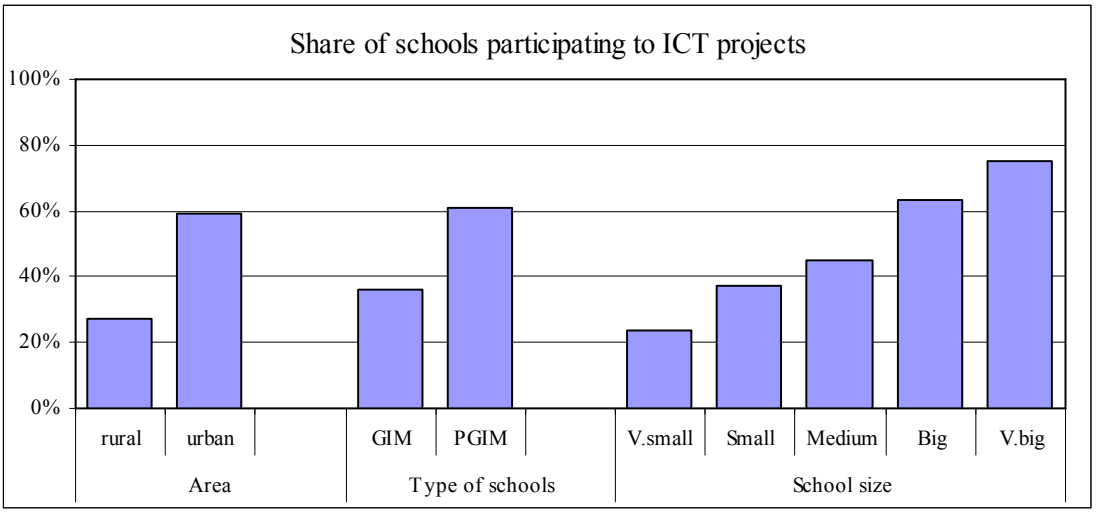
H18-05-1	H18-05-2	H18-05-3	H18-05-4	H18-05-5	H18-05-6	H18-05-7
School offer/ school curriculum	Extra-school activities (projects, events)	The report and the operational plan of the commission for the evaluation of the quality of education	The village's magazine	Useful links	Materials created by students (online personal portfolios)	A presentation page of the students' council
3	3	4	1	1	1	1

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	88	107	195
Total number of answers	41	177	218
Average number of answers	**0,47**	**1,65**	**1,12**

H19*. Some schools participate in diverse **projects which involve the use of the Internet and computers.** In how many projects of this kind has your school been involved in the 2006-2007 school year?

None	One	Two	Three	Four	Five	More than 5	Other answer:
0	**1**	**2**	**3**	**4**	**5**	**6+**	.....

Factors		**No. schools**	None	One	Two	Three	Four	Five	Over 5	Other ans.	Average
			0	**1**	**2**	**3**	**4**	**5**	**6**	**0**	
Total		**195**	**108**	**34**	**18**	**13**	**1**	**4**	**4**	**13**	
Total		**195**	**55.4%**	**17.4%**	**9.2%**	**6.7%**	**0.5%**	**2.1%**	**2.1%**	**6.7%**	**0.805**
Residence	Rural	**88**	72.7%	14.8%	4.5%	0.0%	0.0%	2.3%	0.0%	5.7%	**0.352**
	Urban	**107**	41.1%	19.6%	13.1%	12.1%	0.9%	1.9%	3.7%	7.5%	**1.178**
Type	GIM	**128**	64.1%	16.4%	7.8%	3.1%	0.8%	1.6%	0.8%	5.5%	**0.570**
	P-GIM	**67**	38.8%	19.4%	11.9%	13.4%	0.0%	3.0%	4.5%	9.0%	**1.254**
Size	Very small	**34**	76.5%	11.8%	5.9%	0.0%	0.0%	0.0%	0.0%	5.9%	**0.235**
	Small	**59**	62.7%	22.0%	3.4%	1.7%	0.0%	0.0%	0.0%	10.2%	**0.339**
	Average	**47**	55.3%	17.0%	17.0%	4.3%	0.0%	2.1%	2.1%	2.1%	**0.872**
	Big	**19**	36.8%	15.8%	5.3%	21.1%	5.3%	0.0%	5.3%	10.5%	**1.421**
	Very big	**28**	25.0%	21.4%	14.3%	21.4%	0.0%	3.6%	7.1%	7.1%	**1.750**
	NA	**8**	62.5%	0.0%	12.5%	0.0%	0.0%	25.0%	0.0%	0.0%	**1.500**



H20. Does your school have a strategy explicitly aimed at the use of new technologies?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	Yes, it is provided in a separate document.	1.1%	4.7%	3.1%
2	Yes, it is included in the school's development project.	56.8%	71.0%	64.6%
3	Yes, but it is not formal/ it is not written.	5.7%	11.2%	8.7%
4	No, but we intend to develop such a document during this school year	30.7%	7.5%	17.9%
5	No, because we don't think this is a priority of our school	4.5%	0.9%	2.6%
	NA	1.1%	4.7%	3.1%
	Total	100.0%	100.0%	100.0%

H21*. To what extent do you consider the following development directions for **the use of ICT** as priorities for your school? Please mark them in order, from 1 (priority) to 5 (least important):

		Average
1	- as support for teaching-learning-assessment at different subjects	**1.777**
2	- for administration, management, school records	**2.823**
3	- for information purposes and teachers' professional development	**2.776**
4	- for the development of educational projects in collaboration with other schools or other institutions of the civil society (including companies-employers)	**3.403**
5	- for computer science lessons or/and computer initiation for students	**2.345**

H22. What are the problems in your school with regard to the use of ICT?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	Not enough computers/ laboratories. The equipment of teachers' offices with computers. Some computers are obsolete/ in repair. Not enough equipment for laboratories: lack of consumables, lack of software, lack of video projectors.	35.2%	45.8%	41.0%
2	Insufficient lessons/ programmes. Lessons only for certain/ few topics./ There is no soft (AeL) for primary education/ for gymnazium etc.	3.4%	4.7%	4.1%
3	Teachers insufficiently trained (for the use of ICT). Reluctant, conservatory teachers.	3.4%	4.7%	4.1%
4	The maintenance of the network. Lack of a (qualified) network administrator / responsible/ technician in school.	1.1%	0.9%	1.0%
5	INTERNET. No access to the Internet. Low transfer speed. The laboratory is not connected.	33.0%	15.9%	23.6%
6	Lack of adequate rooms. Little room. Inadequate furniture.	6.8%	2.8%	4.6%
7	Insufficient financial resources.	30.7%	24.3%	27.2%
8	Lack of software licenses.	11.4%	5.6%	8.2%
9	The AeL is not working.	9.1%	15.0%	12.3%
10	Other answer	5.7%	15.0%	10.8%
	Total	100.0%	100.0%	100.0%

H23a. What do you think is the most urgent problem?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	The organisation of more courses for ICT/ AeL initiation/ use for teachers. Teachers' participation in advanced training courses.	0	1	1
2	More computers. The provision of computers for teachers. Acquisition of computers. The extension of the computer network.	3	2	5
3	The provision of computer equipments: LCD screen, printers, video projectors etc.	4	6	10
4	Hiring a network technician or administrator / a person responsible for the laboratory/ computers. Concluding a contract with a specialised company for the maintenance of computers.	3	3	6
5	More classes of computer science/ ICT for students.	6	0	6
6	Connection to the INTERNET	1	7	8
7	The provision of soft. Acquisition of soft (educational soft). Acquisition of licenses.	0	3	3
8	Allocation of funds to the schools. (for connection, computers, soft, room.)	2	1	3
9	Repair and re-install the AeL soft.	0	1	1

H23b. What measures or resources would be necessary in order to solve that problem?

		Rural	Urban	Total
	Total subjects	**88**	**107**	**195**
1	The organisation of courses for ICT/ AeL initiation/ use for teachers (especially for older teachers), teachers' participation in advanced training courses, organised by or in collaboration with the Teacher Training Centres, training teachers for the use of ICT in education … for the efficient implementation of SEI, connection to the Internet during the training courses, training students and network administrators, "cascade" training for teachers	20.5%	9.3%	14.4%
2	Provision of more functional computers Equipping laboratories with new, highly permorfant computers and upgrading the older ones to meet current needs, provision of computers for teachers' rooms and offices, provision through projects, funds from the Ministry of Education, extending the computer network, replacing over 90% of the existing computers (some more than 10 years old)	20.5%	34.6%	28.2%
3	Provision of computer equipment Acquisition of material resources, LCD screens, printers, video projectors, UPS sources etc.	4.5%	7.5%	6.2%
4	Hiring a network technician/ administrator, hiring auxiliary teaching staff, specialised staff/ computer specialists for maintenance, concluding a contract with a specialised company for the maintenance of computers, introducing a computer specialist post also in the smaller schools, hiring an administrator or a computer science teacher, a full-time network administrator, hiring qualified personnel for the maintenance of the network, at least one person per county responsible with the management of installation problems, the updating of the platform (maybe a SIVECO specialist), "hiring an administrator for introducing the data (rural)", prompt response from the staff responsible for the maintenance of computers, hiring a computer science specialist also at gymnazium level for the computer science laboratory	14.8%	11.2%	12.8%
5	Introducing a number of hours in the core curriculum (computer science/ ICT for students)	2.3%	0.9%	1.5%
6	Connection to the Internet allocation of funds for paying the installation and the subscription, the implementation as soon as possible of the minister's order referring to the connection of schools to the Internet	15.9%	2.8%	8.7%
7	Providing educational soft for more subjects more diverse soft and for disadvantaged subjects, acquisition of licenses (we've bought new computers and we need licences to make them compatible with	5.7%	8.4%	7.2%

	those in the SEI - besides AEL Msoffice ex. C++ and FoxPro), more various lessons in the AEL programme, provision of specific soft for gymnazium education, developing educational soft in mother tongues (Hungarian)			
8	Solving the technical problems in the AEL network durable adjustment of the AEL system, revising the system and re-installing the soft, representatives of SIVECO should pay regular visits to the school to update the programme, to install rooters, to update AEL, increasing the speed of programmes, repairing the computers	6.8%	2.8%	4.6%
9	Providing financial support Making acquisitions with the school's funds or extra-budget sources, financial support from the municipality/school inspectorate/Ministry of Education, or other providers of financial support, developing projects to receive funds, sponsorships, grants for projects	4.5%	7.5%	6.2%
10	Providing adequate rooms projects to extend the room for laboratories, more laboratories, separating the AEL laboratories from those for computer science classes, repairing those parts of the school's building which are preserved in order to solve the problem of space, providing adequate supply of electricity to avoid power breaks, proving the laboratories with adequate furniture	4.5%	16.8%	11.3%
11	Motivation of people involved providing adequate salaries, free courses, encouraging teachers (not with coercive methods) to participate in training courses for the use of ICT in education	1.1%	1.9%	1.5%
12	Other aspects Making sure the teacher enjoys a certain degree of independence in the organisation and running of the programme. « The most urgent problem is avoiding the computer slavery. There is no education on the internet. The solution is to bring teachers back to the libraries". Decentralization (the headteacher should be empowered to hire the right people).	0.0%	2.8%	1.5%

A3.3. The Teacher's Questionnaire: Information from the Statistical Analysis

Note: Given the fact that in a school a teacher may teach both high-school classes and SAC classes, the analysis based on factors will be done for the two levels of education.

The distribution of teachers based on the area of residence and the education level

	Rural	Urban	Total	**Rural**	**Urban**	**Total**
GIM	483	331	814	**78.7%**	**34.0%**	**51.3%**
P-GIM	131	643	774	**21.3%**	**66.0%**	**48.7%**
Total	614	974	1588	**100.0%**	**100.0%**	**100.0%**

The percentage of teachers in the sample who teach computer science /ICT: 7.4%

T01. On a 0 to 3 scale, try to estimate **the level of computer use**:

Factor		**Number of subjects**	**T01-1**	**T01-2**	**T01-3**	**T01-4**	**NA**	**Average**
			0	**1**	**2**	**3**		
	Total subjects	**1588**	**40**	**377**	**653**	**384**	**134**	
Total		**1588**	**2.5%**	**23.7%**	**41.1%**	**24.2%**	**8.4%**	**1.950**
Residence	Rural	614	3.9%	23.6%	41.4%	22.0%	9.1%	**1.896**
	Urban	974	1.6%	23.8%	41.0%	25.6%	8.0%	**1.983**
Type	GIM	814	3.4%	25.3%	40.5%	21.1%	9.6%	**1.878**
	GRS	346	1.7%	23.1%	43.4%	25.4%	6.4%	**1.988**
	HSC	407	1.2%	21.1%	40.5%	29.0%	8.1%	**2.059**
	SAC	21	4.8%	23.8%	38.1%	28.6%	4.8%	**1.95**
Size	Specialised teachers (computer science/ICT)	120	0.0%	0.8%	12.5%	82.5%	4.2%	**2.852**
	Participants in ICT training modules	988	0.5%	19.5%	44.4%	27.7%	7.8%	**2.078**

T02. Do you have a computer at home?

		Rural	Urban	Total	**Rural**	**Urban**	**Total**
1.	Yes, I have my personal computer and I am the only person who uses it	150	294	444	**24.4%**	**30.2%**	**28.0%**
2.	Yes, I have a computer, which is also used by other members of my family	346	586	932	**56.4%**	**60.2%**	**58.7%**
3.	I don't have a computer at home	114	93	207	**18.6%**	**9.5%**	**13.0%**
	NA	4	1	5	**0.7%**	**0.1%**	**0.3%**
	Total	614	974	1588	**100.0%**	**100.0%**	**100.0%**
	YES	**496**	**880**	**1376**	**80.8%**	**90.3%**	**86.6%**
	NO	114	93	207	18.6%	9.5%	13.0%
	NA	4	1	5	0.7%	0.1%	0.3%

T03. If yes, do you have an Internet connection?

		Rural	Urban	Total	**Rural**	**Urban**	**Total**
1.	Yes, a cable connection	224	604	828	**45.2%**	**68.6%**	**60.2%**
2.	Yes, a dial-up connection (telephone line)	120	145	265	**24.2%**	**16.5%**	**19.3%**
3.	I don't have an Internet connection	150	125	275	**30.2%**	**14.2%**	**20.0%**
	NA	2	6	8	**0.4%**	**0.7%**	**0.6%**
	Total	**496**	**880**	**1376**	**100.0%**	**100.0%**	**100.0%**
	YES-from the computer owners	**344**	**749**	**1093**	**69.4%**	**85.1%**	**79.4%**
	YES-from the total sample				**56.0%**	**76.9%**	**68.8%**

T04. When you use Information and Communication Technologies (ICT) at your subject, which is the most frequent situation among the ones listed below?

T04-01	In the SEI laboratory, with AeL installed
T04-02	In a computer laboratory, where AeL is not installed
T04-03	In a regular classroom, with a computer and a video projector
T04-04	Other situation
T04-05	I haven't used ICT at my subject so far

Factor	Variants	**Total**	**T04-01**	**T04-02**	**T04-03**	**T04-04**	**T04-05**	**NA**
Total		**1588**	**932**	**63**	**195**	**59**	**302**	**37**
Total		**1588**	**58.7%**	**4.0%**	**12.3%**	**3.7%**	**19.0%**	**2.3%**
Residence	Rural	614	67.8%	2.6%	4.4%	2.1%	21.0%	2.1%
	Urban	974	53.0%	4.8%	17.2%	4.7%	17.8%	2.5%
Type	GIM	814	68.1%	2.6%	5.3%	3.8%	18.9%	1.4%
	P-GIM	774	48.8%	5.4%	19.6%	3.6%	19.1%	3.4%
Teaching experience	First year	53	34.0%	9.4%	9.4%	1.9%	41.5%	3.8%
	2-5 years	264	59.1%	2.3%	14.0%	1.5%	22.0%	1.1%
	6-10 years	334	56.6%	3.9%	15.6%	4.2%	16.5%	3.3%
	11-20 years	314	59.9%	6.1%	14.3%	4.5%	13.4%	1.9%
	Over 20 years	444	63.3%	2.3%	9.5%	4.7%	18.5%	1.8%

Factor	Variants	**Total**	**Yes**	**No/NA**
Total		**1588**	**78.7%**	21.3%
Residence	Rural	614	**76.9%**	23.1%
	Urban	974	**79.8%**	20.2%
Type	GIM	814	**79.7%**	20.3%
	P-GIM	774	**77.5%**	22.5%
Teaching experience	First year	53	**54.7%**	45.3%
	2-5 years	264	**76.9%**	23.1%

	6-10 years	334	**80.2%**	19.8%
	11-20 years	314	**84.7%**	15.3%
	Over 20 years	444	**79.7%**	20.3%

Subject	Total of teachers	T04-01	T04-02	T04-03	T04-04	T04-05
BIOLOGY	**145**	69.7%	3.4%	9.0%	2.1%	15.2%
CHEMISTRY	**113**	77.0%	2.7%	6.2%	4.4%	7.1%
CIVIC EDUCATION	**2**	50.0%	0.0%	0.0%	0.0%	50.0%
ENTREPR. EDUCATION	**1**	0.0%	0.0%	100.0%	0.0%	0.0%
SPORTS	**14**	21.4%	0.0%	0.0%	14.3%	57.1%
MUSIC	**3**	0.0%	0.0%	0.0%	0.0%	100.0%
DRAWING	**9**	11.1%	0.0%	22.2%	11.1%	33.3%
RELIGIOUS EDUCATION	**22**	31.8%	0.0%	13.6%	4.5%	50.0%
TECHNOLOGICAL ED.	**19**	73.7%	5.3%	10.5%	0.0%	5.3%
PHYSICS	**139**	64.0%	3.6%	11.5%	10.1%	10.1%
GEOGRAPHY	**134**	64.2%	3.0%	13.4%	2.2%	15.7%
COMPUTER SCIENCE	**126**	81.7%	12.7%	2.4%	0.8%	1.6%
PEDAGOGY	**1**	100.0%	0.0%	0.0%	0.0%	0.0%
HISTORY	**137**	62.8%	1.5%	15.3%	1.5%	16.8%
LATIN	**2**	0.0%	0.0%	50.0%	0.0%	50.0%
MOTHER TONGUE	**9**	44.4%	0.0%	11.1%	11.1%	33.3%
MODERN LANGUAGES	**186**	40.3%	2.7%	18.3%	4.8%	32.3%
ROMANIAN LANGUAGE	**170**	46.5%	2.4%	20.0%	3.5%	24.1%
MATHEMATICS	**195**	77.9%	1.5%	4.1%	2.6%	12.3%
SOCIAL AND HUM. SC.	**54**	35.2%	3.7%	16.7%	0.0%	42.6%
SPEC./ OPTIONAL SUBJ.	**95**	40.0%	11.6%	18.9%	7.4%	15.8%

T05*. Please indicate to what extent you used the computers in your school (in the 2006-2007 school year) for the following types of activities:

T05-01	teaching-learning activities in the SEI laboratories
T05-02	assessment tests for students, on computer
T05-03	use of the educational resources (encyclopaedias, image libraries, dictionaries etc.), provided and installed by the MERY/ school inspectorate/ SIVECO
T05-04	consulting the school legislation or news on edu.ro, portal.edu.ro, forum.edu.ro etc.
T05-05	information for preparing lessons
T05-06	creating work sheets for students, information materials, sketches, assessment forms etc.
T05-07	creating educational soft
T05-08	administrative activities: student records, filling in psychological and pedagogical forms on a computer etc.
T05-09	communication with teachers from other schools, through email, chat or Internet
T05-10	contact with your students, outside the school hours
T05-11	contact with parents, via email or Internet
T05-12	the creation of school development projects

TOTAL	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T05-01	28.4%	42.2%	20.7%	1.5%	7.2%	**1.067**
T05-02	20.2%	41.0%	28.7%	1.3%	8.8%	**0.892**

T05-03	25.3%	38.6%	25.5%	2.9%	7.7%	**0.967**
T05-04	54.4%	23.9%	14.9%	1.4%	5.4%	**1.403**
T05-05	46.4%	34.9%	10.8%	0.8%	7.1%	**1.375**
T05-06	50.1%	29.7%	12.9%	1.1%	6.2%	**1.384**
T05-07	6.4%	17.4%	56.9%	7.6%	11.7%	**0.342**
T05-08	32.4%	28.5%	28.2%	2.8%	8.1%	**1.015**
T05-09	27.5%	28.8%	32.4%	2.3%	9.1%	**0.920**
T05-10	12.4%	24.7%	49.2%	3.8%	9.9%	**0.549**
T05-11	5.0%	16.1%	64.7%	4.2%	9.9%	**0.291**
T05-12	19.3%	29.0%	37.3%	3.8%	10.6%	**0.755**

RURAL	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T05-01	31.8%	41.9%	18.7%	1.3%	6.4%	**1.125**
T05-02	18.6%	43.3%	29.2%	1.1%	7.8%	**0.873**
T05-03	23.0%	37.5%	29.2%	2.6%	7.8%	**0.905**
T05-04	44.3%	24.9%	22.1%	1.5%	7.2%	**1.223**
T05-05	42.2%	37.0%	11.9%	0.7%	8.3%	**1.323**
T05-06	45.1%	31.6%	15.6%	1.1%	6.5%	**1.303**
T05-07	5.5%	14.3%	60.3%	8.6%	11.2%	**0.286**
T05-08	28.3%	26.7%	33.2%	2.9%	8.8%	**0.914**
T05-09	15.8%	25.1%	46.3%	2.6%	10.3%	**0.632**
T05-10	5.5%	20.2%	59.6%	4.2%	10.4%	**0.349**
T05-11	2.4%	9.1%	74.1%	3.9%	10.4%	**0.156**
T05-12	15.8%	30.1%	39.6%	3.4%	11.1%	**0.694**

URBAN	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T05-01	26.3%	42.4%	21.9%	1.6%	7.8%	**1.030**
T05-02	21.3%	39.5%	28.4%	1.4%	9.3%	**0.905**
T05-03	26.8%	39.3%	23.2%	3.1%	7.6%	**1.006**
T05-04	60.8%	23.2%	10.4%	1.3%	4.3%	**1.513**
T05-05	49.1%	33.7%	10.1%	0.9%	6.3%	**1.406**
T05-06	53.2%	28.5%	11.2%	1.1%	6.0%	**1.434**
T05-07	7.0%	19.3%	54.7%	7.0%	12.0%	**0.378**
T05-08	35.0%	29.6%	25.1%	2.8%	7.6%	**1.078**
T05-09	34.8%	31.1%	23.6%	2.2%	8.3%	**1.099**
T05-10	16.7%	27.5%	42.7%	3.5%	9.5%	**0.674**
T05-11	6.7%	20.5%	58.8%	4.3%	9.7%	**0.375**
T05-12	21.5%	28.2%	35.8%	4.1%	10.4%	**0.794**

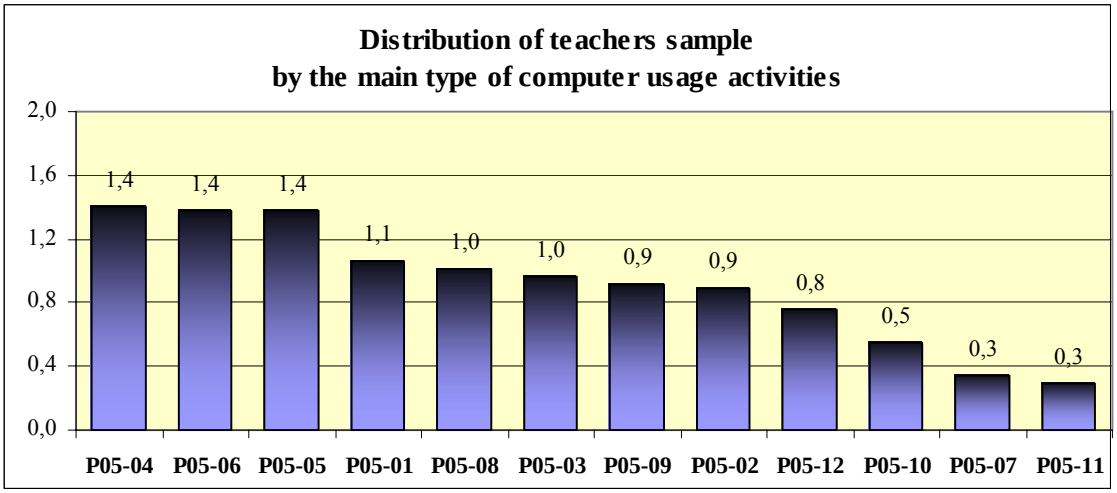
GIM	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T05-01	32.6%	42.9%	17.2%	1.5%	5.9%	**1.148**
T05-02	18.3%	43.5%	27.9%	1.2%	9.1%	**0.881**
T05-03	23.2%	38.1%	28.1%	2.8%	7.7%	**0.916**
T05-04	46.2%	25.2%	20.4%	1.6%	6.6%	**1.259**
T05-05	43.5%	35.4%	12.3%	0.5%	8.4%	**1.335**
T05-06	44.6%	31.1%	15.8%	1.2%	7.2%	**1.297**
T05-07	6.1%	14.6%	58.5%	8.4%	12.4%	**0.307**

T05-08	27.8%	26.0%	33.4%	3.4%	9.3%	**0.900**
T05-09	19.5%	23.6%	43.2%	2.8%	10.8%	**0.702**
T05-10	8.0%	20.1%	56.9%	4.3%	10.7%	**0.404**
T05-11	3.2%	12.0%	69.4%	4.3%	11.1%	**0.207**
T05-12	15.7%	26.7%	40.8%	4.9%	11.9%	**0.660**

P-GIM	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T05-01	24.0%	41.5%	24.3%	1.6%	8.7%	**0.980**
T05-02	22.2%	38.4%	29.6%	1.4%	8.4%	**0.904**
T05-03	27.5%	39.1%	22.7%	3.0%	7.6%	**1.020**
T05-04	63.0%	22.5%	9.2%	1.2%	4.1%	**1.550**
T05-05	49.5%	34.5%	9.2%	1.2%	5.7%	**1.415**
T05-06	55.8%	28.3%	9.8%	1.0%	5.0%	**1.473**
T05-07	6.7%	20.3%	55.2%	6.8%	11.0%	**0.379**
T05-08	37.3%	31.0%	22.7%	2.2%	6.7%	**1.133**
T05-09	35.8%	34.2%	20.9%	1.8%	7.2%	**1.141**
T05-10	17.1%	29.5%	41.2%	3.2%	9.0%	**0.699**
T05-11	7.0%	20.4%	59.8%	4.0%	8.8%	**0.377**
T05-12	23.0%	31.4%	33.6%	2.7%	9.3%	**0.853**

Average scores on answer categories and factors

Factor		No.of tea-chers	**T05-01**	**T05-02**	**T05-03**	**T05-04**	**T05-05**	**T05-06**	**T05-07**	**T05-08**	**T05-09**	**T05-10**	**T05-11**	**T05-12**
Total		1588	1.067	0.892	0.967	1.403	1.375	1.384	0.342	1.015	0.920	0.549	0.291	0.755
Resi-dence	Rural	614	1.125	0.873	0.905	1.223	1.323	1.303	0.286	0.914	0.632	0.349	0.156	0.694
	Urb.	974	1.030	0.905	1.006	1.513	1.406	1.434	0.378	1.078	1.099	0.674	0.375	0.794
Type	GIM	814	1.148	0.881	0.916	1.259	1.335	1.297	0.307	0.900	0.702	0.404	0.207	0.660
	P-GIM	774	0.980	0.904	1.020	1.550	1.415	1.473	0.379	1.133	1.141	0.699	0.377	0.853



T06*. The soft available on the computers in your school allows:

T06-01	computer science and/ or computer use lessons
T06-02	lessons with students at different subjects, other than computer science
T06-03	the creation of educational soft by you
T06-04	Internet navigation for information and research
T06-05	consulting educational resource libraries, dictionaries, encyclopaedias etc.
T06-06	communication with other schools/ the school inspectorate/ the Ministry of Education
T06-07	establishing the school programme, keeping student records

TOTAL	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T06-01	60.5%	15.5%	4.0%	11.5%	8.4%	**1491**
T06-02	56.5%	26.3%	5.0%	7.1%	5.0%	**1.467**
T06-03	18.7%	22.3%	25.6%	20.3%	13.2%	**0.687**
T06-04	62.2%	12.5%	13.1%	5.3%	6.9%	**1.471**
T06-05	53.0%	20.0%	9.4%	8.2%	9.3%	**1.389**
T06-06	54.3%	14.9%	14.0%	8.2%	8.6%	**1.352**
T06-07	49.2%	19.8%	11.8%	11.0%	8.3%	**1.288**

RURAL	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T06-01	59.8%	17.9%	4.1%	10.9%	7.3%	**1.483**
T06-02	58.6%	25.1%	4.6%	6.2%	5.5%	**1.507**
T06-03	16.1%	19.2%	33.2%	17.9%	13.5%	**0.595**
T06-04	47.7%	14.8%	23.5%	5.9%	8.1%	**1.200**
T06-05	40.7%	24.4%	15.3%	8.8%	10.7%	**1.186**
T06-06	41.7%	18.4%	20.5%	9.3%	10.1%	**1.132**
T06-07	47.7%	20.7%	12.4%	10.3%	9.0%	**1.275**

URBAN	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T06-01	61.0%	14.0%	4.0%	11.9%	9.1%	**1.496**
T06-02	55.2%	27.1%	5.3%	7.7%	4.6%	**1.442**
T06-03	20.3%	24.2%	20.7%	21.8%	12.9%	**0.745**
T06-04	71.4%	11.0%	6.6%	4.9%	6.2%	**1.638**
T06-05	60.7%	17.2%	5.7%	7.9%	8.4%	**1.513**
T06-06	62.3%	12.6%	9.9%	7.5%	7.7%	**1.487**
T06-07	50.1%	19.2%	11.4%	11.4%	7.9%	**1.297**

Average scores on answer categories and factors

Factor	Variants	**No. of teachers**	**T06-01**	**T06-02**	**T06-03**	**T06-04**	**T06-05**	**T06-06**	**T06-07**
Total		1588	1.491	1.467	0.687	1.471	1.389	1.352	1.288
Residence	Rural	614	1.483	1.507	0.595	1.200	1.186	1.132	1.275
	Urban	974	1.496	1.442	0.745	1.638	1.513	1.487	1.297

T07*. Please estimate – on a scale from 1 to 3 – **the positive effects** of using the SEI laboratory for each of the segments below.

		Points	Average
Teachers	**T07.1-1**	facilitating teacher's activity (design-teaching-assessment)	**1.717**
	T07.1-2	increasing the teacher's efficiency/ more efficient activities	**1.856**
	T07.1-3	encouraging innovation in teaching/ modernising the teaching process	**1.585**
Students	**T07.2-1**	attracting students, developing their interest in studying	**1.534**
	T07.2-2	developing students' computer skills	**1.593**
	T07.2-3	facilitating the students' understanding of different phenomena	**1.973**
Learning activities	**T07.3-1**	promoting cooperative learning, developing team work abilities	**1.785**
	T07.3-2	allowing individualised/ personalised learning	**1.501**
	T07.3-3	favouring active, interactive, participative learning	**1.787**

Average place on each category

Factor			Teachers			Students			Learning activities		
			T07.1-1	T07.1-2	T07.1-3	T07.2-1	T07.2-2	T07.2-3	T07.3-1	T07.3-2	T07.3-3
Total		**Average place**	**1.717**	**1.856**	**1.585**	**1.534**	**1.593**	**1.973**	**1.785**	**1.501**	**1.787**
Resid.	Rural	No.subjects	586	581	586	589	585	583	582	583	580
		Av.place	**1.718**	**1.840**	**1.609**	**1.475**	**1.619**	**2.063**	**1.787**	**1.477**	**1.860**
		Std.dev.	0.813	0.670	0.777	0.743	0.670	0.756	0.791	0.660	0.775
	Urban	No.subjects	939	931	937	943	935	927	933	930	929
		Av. place	**1.710**	**1.831**	**1.581**	**1.550**	**1.579**	**1.917**	**1.768**	**1.503**	**1.793**
		Std.dev.	0.755	0.728	0.760	0.768	0.686	0.748	0.790	0.674	0.773
	Test Z	Test Z	**0.194**	**0.234**	**0.706**	**1.897**	**1.128**	**3.681**	**0.442**	**0.750**	**1.636**
Type	GIM	No.subjects	780	772	779	785	776	770	775	774	775
		Av.place	**1.772**	**1.817**	**1.592**	**1.499**	**1.591**	**2.060**	**1.835**	**1.477**	**1.822**
		Std.dev.	0.804	0.690	0.774	0.753	0.677	0.752	0.814	0.646	0.764
	P-GIM	No.subjects	745	740	744	747	744	740	740	739	734
		Av. place	**1.652**	**1.853**	**1.591**	**1.545**	**1.597**	**1.884**	**1.714**	**1.510**	**1.816**
		Std.dev.	0.745	0.722	0.759	0.766	0.683	0.747	0.760	0.691	0.785
	Test Z	Test Z	**3.011**	**0.973**	**0.010**	**1.172**	**0.151**	**4.561**	**2.999**	**0.970**	**0.147**
Gender	Males	No.subjects	414	408	413	417	410	407	409	409	405
		Av. place	**1.768**	**1.846**	**1.700**	**1.549**	**1.602**	**1.966**	**1.768**	**1.533**	**1.879**
		Std.dev.	0.778	0.703	0.777	0.768	0.700	0.742	0.781	0.675	0.756
	Females	No.subjects	1087	1081	1086	1091	1085	1079	1081	1080	1081
		Av.place	**1.700**	**1.831**	**1.552**	**1.513**	**1.592**	**1.982**	**1.784**	**1.479**	**1.799**
		Std.dev.	0.777	0.708	0.759	0.757	0.675	0.758	0.794	0.669	0.780
	Test Z	Test Z	**1.515**	**0.363**	**3.300**	**0.815**	**0.267**	**0.387**	**0.347**	**1.389**	**1.794**
Training module	Yes	No.subjects	966	955	958	969	957	948	956	952	953
		Av.place	**1.711**	**1.818**	**1.574**	**1.514**	**1.550**	**1.978**	**1.757**	**1.491**	**1.793**
		No.subjects	0.781	0.712	0.758	0.755	0.670	0.754	0.787	0.669	0.771
	No	No.subjects	559	557	565	563	563	562	559	561	556
		Av.place	**1.717**	**1.864**	**1.621**	**1.535**	**1.670**	**1.966**	**1.807**	**1.497**	**1.863**
		Std.dev.	0.773	0.694	0.780	0.766	0.691	0.756	0.796	0.668	0.778
	Test Z	Test Z	**0.150**	**1.225**	**1.151**	**0.513**	**3.306**	**0.290**	**1.173**	**0.190**	**1.693**

T08*. Please indicate the difficulties you encountered in the use of the SEI laboratory.

T08-01	insufficient computers/ laboratories
T08-02	technical problems (during lessons)
T08-03	(slow) running of the AeL programme/ network
T08-04	lack of qualified personnel for the maintenance of the network
T08-05	insufficient training for teachers in the use of educational soft
T08-06	insufficient educational software
T08-07	insufficient time for preparing lessons or tests; difficulties in their creation
T08-08	soft installation
T08-09	access to the Internet

TOTAL	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T08-01	45.7%	28.7%	13.2%	6.6%	5.9%	**1.276**
T08-02	17.9%	48.2%	18.6%	9.1%	6.2%	**0.897**
T08-03	20.8%	41.1%	17.7%	11.9%	8.6%	**0.904**
T08-04	29.6%	25.3%	28.3%	9.2%	7.6%	**0.914**
T08-05	28.0%	41.6%	14.5%	9.3%	6.6%	**1.045**
T08-06	33.1%	35.0%	12.4%	10.5%	8.9%	**1.112**
T08-07	34.6%	38.8%	11.6%	7.2%	7.9%	**1.172**
T08-08	18.6%	31.4%	21.9%	16.2%	12.0%	**0.779**
T08-09	22.9%	28.5%	29.8%	8.4%	10.3%	**0.829**

RURAL	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T08-01	45.1%	28.7%	13.4%	6.4%	6.5%	**1.272**
T08-02	16.3%	49.8%	17.4%	9.3%	7.2%	**0.888**
T08-03	18.4%	41.0%	19.7%	11.2%	9.6%	**0.861**
T08-04	37.8%	23.5%	23.6%	8.3%	6.8%	**1.063**
T08-05	28.0%	42.8%	12.5%	9.9%	6.7%	**1.059**
T08-06	32.6%	35.8%	11.7%	11.4%	8.5%	**1.103**
T08-07	34.0%	41.4%	9.0%	8.3%	7.3%	**1.181**
T08-08	19.7%	27.0%	22.5%	18.2%	12.5%	**0.760**
T08-09	31.9%	24.6%	24.3%	8.6%	10.6%	**0.989**

URBAN	To a great extent	To little extent	Not at all	Don't know	NA	Average
Points:	**2**	**1**	**0**	**0**		
T08-01	46.1%	28.6%	13.0%	6.8%	5.4%	**1.278**
T08-02	19.0%	47.1%	19.3%	8.9%	5.6%	**0.902**
T08-03	22.3%	41.1%	16.4%	12.3%	7.9%	**0.930**
T08-04	24.4%	26.4%	31.3%	9.8%	8.1%	**0.819**
T08-05	28.0%	40.8%	15.7%	8.9%	6.6%	**1.036**
T08-06	33.5%	34.5%	12.8%	10.0%	9.2%	**1.118**
T08-07	34.9%	37.2%	13.2%	6.5%	8.2%	**1.166**
T08-08	17.9%	34.2%	21.5%	14.9%	11.6%	**0.791**
T08-09	17.2%	30.9%	33.4%	8.3%	10.2%	**0.728**

T09**. The most difficult problem when using the SEI laboratory

		Rural	Urban	Total
	Total subjects	**614**	**974**	**1588**
T09-01	insufficient computers/ laboratories	27.2%	30.8%	29.4%
T09-02	technical problems (during lessons)	2.9%	2.1%	2.4%
T09-03	(slow) running of the AeL programme/ network	1.8%	2.7%	2.3%
T09-04	lack of qualified personnel for the maintenance of the network	3.4%	3.5%	3.5%
T09-05	insufficient training for teachers in the use of educational soft	6.8%	4.4%	5.4%
T09-06	insufficient educational software	5.2%	5.0%	5.1%
T09-07	insufficient time for preparing lessons or tests; difficulties in their creation	9.6%	7.8%	8.5%
T09-08	soft installation	0.0%	0.2%	0.1%
T09-09	access to the Internet	2.9%	1.1%	1.8%
T09-10	other problems	7.8%	12.1%	10.5%
T09-11	power breaks/ oscillations	1.0%	0.0%	0.4%
T09-12	programme/ AeL lessons installation (on server)	0.2%	0.3%	0.3%
T09-13	Few information about the AeL laboratory, the educational soft, its correct use	2.8%	3.0%	2.9%
T09-14	I don't have any problem!/ Generally, there are no problems	5.2%	4.9%	5.0%

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	614	974	1588
Total number of answers	472	759	1231
Average number of answers	**0.77**	**0.78**	**0.78**

T10**. Soft problems

		Rural	Urban	Total
	Total subjects	**614**	**974**	**1588**
T10-01	None/ there are no problems	9.0%	11.1%	10.3%
T10-02	Insufficient lessons/ Lessons only for certain/ few topics./ There is no soft for my subject. / There is no soft (AeL) for primary/ gymnazium education etc.	28.2%	30.4%	29.5%
T10-03	Not enough computers/ laboratories to use the existing soft	1.1%	1.7%	1.5%
T10-04	It requires a lot of time (for developing and understanding). The overloaded curriculum does not allow a frequent use of computers.	3.7%	3.7%	3.7%
T10-05	Low performance. Difficult. Different difficulties (technical) during computer lessons./ I trust more the traditional teaching methods.	7.3%	10.8%	9.4%
T10-06	It contains content errors.	2.8%	4.9%	4.1%
T10-07	It sis not appropriate for some students (for weak students)	1.6%	3.0%	2.5%
T10-08	High costs for the soft available in the market	0.3%	0.8%	0.6%
T10-09	Other answer	2.3%	3.8%	3.2%

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	614	974	1588
Total number of answers	350	687	1037
Average number of answers	**0.57**	**0.71**	**0.65**

T11**. Positive aspects of the soft

T11-01	It is very good./ It is good./Well thought./ Well structured. Easy to use/ Educative. Rigorous.
T11-02	It captures students' interest./ It's attractive. / It has an unusual character/ It stimulates students.
T11-03	It facilitates understanding. It's intuitive. The intuitive presentation of some phenomena (natural phenomena, harder to perceive). It makes the contents accessible. Presentation of phenomena that cannot be explained in the traditional way. It is favourable to active learning. It facilitates quick access to information.
T11-04	It develops thinking. It develops visual memory etc.
T11-05	It develops computer use skills.
T11-06	Modelling, simulation of reality. Practical applications. Virtual experiments (well designed). Connects the students with writers, critics etc.
T11-07	Good graphics. Clear drawings. Representative pictures.
T11-08	The existence of tests./ the soft includes computer tests./ Good, useful tests.
T11-09	It helps teachers. It encourages innovation in teaching.
T11-10	Other

		Rural	Urban	Total
	Total subjects	**614**	**974**	**1588**
T11-01	It is very good./ It is good./Well thought./ Well structured. Easy to use/ Educative. Rigorous.	9.9%	11.8%	11.1%
T11-02	It captures students' interest./ It's attractive. / It has an unusual character/ It stimulates students.	15.6%	12.6%	13.8%
T11-03	It facilitates understanding. It's intuitive. The intuitive presentation of some phenomena (natural phenomena, harder to perceive). It makes the contents accessible. Presentation of phenomena that cannot be explained in the traditional way. It is favourable to active learning. It facilitates quick access to information.	21.8%	23.2%	22.7%
T11-04	It develops thinking. It develops visual memory etc.	2.0%	1.6%	1.8%
T11-05	It develops computer use skills.	0.7%	1.1%	0.9%
T11-06	Modelling, simulation of reality. Practical applications. Virtual experiments (well designed). Connects the students with writers, critics etc.	10.3%	12.1%	11.4%
T11-07	Good graphics. Clear drawings. Representative pictures.	9.3%	9.9%	9.6%
T11-08	The existence of tests./ the soft includes computer tests./ Good, useful tests.	2.9%	3.5%	3.3%
T11-09	It helps teachers. It encourages innovation in teaching.	5.2%	2.2%	3.3%
T11-10	Other	4.6%	3.6%	4.0%

	The average number of answer variants		
	Rural	Urban	Total
Total subjects	614	974	1588
Total number of answers	505	795	1300
Average number of answers	**0.82**	**0.82**	**0.82**

T12*. On average, in the 2006-2007 school year, considering only your subject, **how many times a semester did you have lessons with a class** in the SEI laboratory?

		points
T12-01	Never	**0**
T12-02	Once a semester	**1**
T12-03	Two times a semester	**2**
T12-04	Three times a semester	**3**
T12-05	Four times a semester	**4**
T12-06	Five times a semester	**5**
T12-07	More than six times	**6**

Factor		No.sub.	T12-01	T12-02	T12-03	T12-04	T12-05	T12-06	T12-07	NA	Average on semester
Total		**1588**	**362**	**298**	**262**	**160**	**108**	**74**	**272**	**52**	
Total		**1588**	**22.8%**	**18.8%**	**16.5%**	**10.1%**	**6.8%**	**4.7%**	**17.1%**	**3.3%**	**2.432**
Residence	Rural	614	19.5%	13.7%	14.7%	11.2%	7.8%	7.0%	22.1%	3.9%	**2.871**
	Urban	974	24.8%	22.0%	17.7%	9.3%	6.2%	3.2%	14.0%	2.9%	**2.159**
Type	GIM	814	17.8%	15.2%	16.3%	11.4%	8.6%	6.8%	20.3%	3.6%	**2.820**
	GRS		25.7%	28.9%	14.7%	8.1%	4.6%	1.7%	13.3%	2.9%	**1.952**
	HSC		30.2%	17.9%	18.7%	8.8%	4.9%	2.7%	13.5%	3.2%	**2.025**
	SAC	774	23.8%	4.8%	9.5%	14.3%	9.5%	9.5%	28.6%	0.0%	**3.238**

Subject	Total teachers	T12-01	T12-02	T12-03	T12-04	T12-05	T12-06	T12-07
BIOLOGY	**145**	17.9%	15.2%	17.2%	15.2%	8.3%	5.5%	15.2%
CHEMISTRY	**113**	10.6%	22.1%	19.5%	13.3%	4.4%	5.3%	23.0%
CIVIC EDUCATION	**2**	50.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%
ENTREPR. EDUCATION	**1**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SPORTS	**14**	57.1%	7.1%	0.0%	0.0%	14.3%	0.0%	7.1%
MUSIC	**3**	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
DRAWING	**9**	66.7%	11.1%	11.1%	0.0%	0.0%	0.0%	0.0%
RELIGIOUS EDUCATION	**22**	40.9%	18.2%	9.1%	4.5%	4.5%	0.0%	9.1%
TECHNOLOGICAL ED.	**19**	26.3%	5.3%	5.3%	15.8%	5.3%	5.3%	36.8%
PHYSICS	**139**	9.4%	20.9%	18.0%	14.4%	8.6%	5.8%	22.3%
GEOGRAPHY	**134**	19.4%	20.1%	18.7%	10.4%	10.4%	7.5%	10.4%
COMPUTER SCIENCE	**126**	5.6%	4.8%	4.0%	5.6%	5.6%	2.4%	67.5%
PEDAGOGY	**1**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
HISTORY	**137**	18.2%	18.2%	19.0%	8.8%	7.3%	5.1%	19.7%
LATIN	**2**	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%
MOTHER TONGUE	**9**	44.4%	11.1%	44.4%	0.0%	0.0%	0.0%	0.0%
MODERN LANGUAGES	**186**	40.9%	18.8%	20.4%	8.6%	3.2%	1.1%	4.3%
ROMANIAN LANGUAGE	**170**	30.6%	23.5%	19.4%	5.9%	7.1%	5.3%	7.1%
MATHEMATICS	**195**	14.4%	20.0%	16.9%	14.4%	8.2%	7.7%	16.9%
SOCIAL AND HUM. SC.	**54**	42.6%	20.4%	13.0%	1.9%	5.6%	3.7%	7.4%
SPEC./ OPTIONAL SUBJ.	**95**	27.4%	21.1%	10.5%	11.6%	6.3%	4.2%	14.7%

T13*. How often do you use, on average, the computers available in your school, for **professional development activities** (information, research, learning computer programmes, distance courses, experience exchanges, publishing online articles etc.)?

		points
T13-01	Never	**0**
T13-02	Once a semester	**1**
T13-03	Two times a semester	**2**
T13-04	Three times a semester	**3**
T13-05	Four times a semester	**4**
T13-06	Five times a semester	**5**
T13-07	More than six times	**6**

Factor		No.sub.	T13-01	T13-02	T13-03	T13-04	T13-05	T13-06	T13-07	NA	Average on semester
Total		**1588**	**341**	**421**	**252**	**151**	**97**	**67**	**214**	**45**	
Total		**1588**	**21.5%**	**26.5%**	**15.9%**	**9.5%**	**6.1%**	**4.2%**	**13.5%**	**2.8%**	**2.194**
Residence	Rural	614	22.1%	27.0%	14.0%	9.1%	7.3%	4.7%	11.9%	3.7%	**2.147**
	Urban	974	21.0%	26.2%	17.0%	9.8%	5.3%	3.9%	14.5%	2.3%	**2.223**
Type	GIM	814	25.2%	26.4%	13.6%	9.6%	6.8%	3.6%	11.3%	3.6%	**2.023**
	GRS		14.2%	28.3%	18.2%	9.0%	6.6%	5.5%	15.6%	2.6%	**2.457**
	HSC		20.1%	24.6%	18.4%	10.1%	4.4%	4.7%	16.0%	1.7%	**2.325**
	SAC	774	23.8%	38.1%	14.3%	4.8%	4.8%	0.0%	14.3%	0.0%	**1.857**

T14*. How often do you use ICT for the following types of activities?

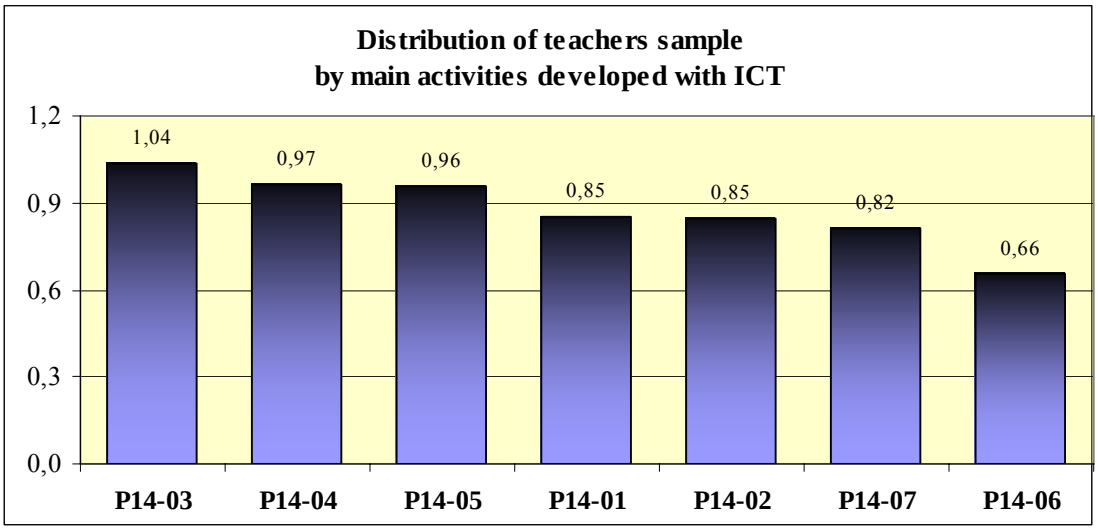
T14-01	Sequences where students learn to use computer programmes (editing, calculation, Internet)
T14-02	Sequences where students search for information on the Internet
T14-03	Sequences where teaching and learning involve the use of electronic lessons (at my subject)
T14-04	Tasks where students work individually, using ICT
T14-05	Tasks where students work in groups, using ICT
T14-06	Activities resulting in a multimedia product (a film, a web page, an electronic presentation)
T14-07	Activities where students are asked to be creative, to explore and to innovate, using ICT resources and/ or the Internet

Total	Often	Sometimes	Never	NA	**Average**
	2	**1**	**0**	**0**	
T14-01	22.0%	35.2%	35.8%	7.0%	**0.851**
T14-02	21.0%	37.5%	35.3%	6.2%	**0.848**
T14-03	16.2%	29.5%	14.0%	40.2%	**1.036**
T14-04	12.8%	30.5%	14.8%	41.9%	**0.965**
T14-05	12.3%	30.8%	14.8%	42.1%	**0.958**
T14-06	7.9%	22.0%	27.8%	42.4%	**0.655**
T14-07	9.8%	27.1%	20.3%	42.8%	**0.816**

RURAL	Often	Sometimes	Never	NA	**Average**
	2	**1**	**0**	**0**	
T14-01	21.3%	38.4%	32.9%	7.3%	**0.875**
T14-02	10.9%	29.8%	51.6%	7.7%	**0.559**

T14-03	24.4%	45.4%	24.4%	5.7%	**1.000**
T14-04	17.3%	49.7%	25.4%	7.7%	**0.912**
T14-05	18.7%	48.2%	25.2%	7.8%	**0.929**
T14-06	9.1%	30.5%	50.8%	9.6%	**0.539**
T14-07	10.4%	40.9%	39.3%	9.4%	**0.682**

URBAN	Often	Sometimes	Never	NA	**Average**
	2	**1**	**0**	**0**	
T14-01	22.4%	33.2%	37.7%	6.8%	**0.836**
T14-02	27.4%	42.4%	24.9%	5.2%	**1.026**
T14-03	11.0%	19.5%	7.5%	62.0%	**1.092**
T14-04	10.0%	18.5%	8.1%	63.4%	**1.051**
T14-05	8.3%	19.8%	8.2%	63.7%	**1.003**
T14-06	7.1%	16.6%	13.2%	63.0%	**0.833**
T14-07	9.3%	18.5%	8.3%	63.9%	**1.028**



The average level of ICT use on subjects

Subjects	**Total teachers**	**T14-01**	**T14-02**	**T14-03**	**T14-04**	**T14-05**	**T14-06**	**T14-07**
BIOLOGY	**145**	0.805	0.777	1.125	1.023	1.016	0.646	0.882
CHEMISTRY	**113**	0.813	0.798	1.213	1.028	1.057	0.509	0.819
CIVIC EDUCATION	**2**	0.500	0.500	1.000	0.500	0.500	0.500	0.000
ENTREPR. EDUCATION	**1**	1.000	1.000	1.000	0.000	0.000	0.000	0.000
SPORTS	**14**	0.667	0.385	0.308	0.667	0.667	0.500	0.667
MUSIC	**3**	0.333	0.333	0.000	0.333	0.000	1.000	0.667
DRAWING	**9**	0.667	0.750	0.625	0.714	0.571	0.857	1.000
RELIGIOUS EDUCATION	**22**	0.600	0.600	0.684	0.700	0.611	0.722	0.474
TECHNOLOGICAL ED.	**19**	1.579	1.368	1.263	1.611	1.333	1.222	1.368
PHYSICS	**139**	0.955	0.865	1.213	1.023	1.069	0.695	0.841
GEOGRAPHY	**134**	0.720	0.763	0.976	0.909	0.850	0.628	0.756
COMPUTER SCIENCE	**126**	1.919	1.390	1.631	1.758	1.556	1.419	1.605
PEDAGOGY	**1**	2.000	0.000	2.000	2.000	2.000	2.000	0.000
HISTORY	**137**	0.707	0.789	1.008	0.968	0.951	0.612	0.756
LATIN	**2**	0.000	1.000	0.500	1.000	0.500	1.000	1.000
MOTHER TONGUE	**9**	0.500	1.000	0.111	0.333	0.250	0.333	0.625
MODERN LANGUAGES	**186**	0.590	0.754	0.644	0.830	0.789	0.630	0.820

ROMANIAN LANGUAGE	**170**	0.588	0.686	0.788	0.733	0.809	0.667	0.808
MATHEMATICS	**195**	0.867	0.753	1.078	1.022	1.000	0.596	0.780
SOCIAL AND HUM. SC.	**54**	0.531	0.776	0.667	0.765	0.760	0.702	0.860
SPEC./ OPTIONAL SUBJ.	**95**	1.056	1.132	0.846	1.056	1.045	0.897	1.135

T15.** The educational soft you use in activities with your students is:

T15-01	free of charge, distributed through the SEI Programme by the Ministry of Education/ the school inspectorate/ SIVECO
T15-02	bought with money from the school fund
T15-03	free of charge, in Romanian language, downloaded from the Internet
T15-04	free of charge, in English/ French, downloaded from the Internet
T15-05	other soft,
T15-06	Don't know/ I don't answer

Factor	Variants	**Total**	**T15-01**	**T15-02**	**T15-03**	**T15-04**	**T15-05**	**T15-06**
Total		**1588**	**1032**	**59**	**155**	**81**	**62**	**318**
Total		**1588**	**65.0%**	**3.7%**	**9.8%**	**5.1%**	**3.9%**	**20.0%**
Residence	Rural	614	73.1%	1.6%	7.3%	1.8%	2.4%	16.9%
	Urban	974	59.9%	5.0%	11.3%	7.2%	4.8%	22.0%
Type	GIM	814	72.6%	2.5%	7.7%	3.2%	2.6%	16.5%
	GRS		61.3%	4.3%	10.4%	4.6%	4.9%	20.5%
	HSC		52.3%	5.9%	13.8%	9.3%	5.7%	27.5%
	SAC	774	76.2%	0.0%	0.0%	4.8%	4.8%	4.8%

The average number of answer variants

	Rural	Urban	GIM	GRS	HSC	SAC	Total
Total subjects	614	974	814	346	407	21	1588
Total number of answers	634	1073	855	367	466	19	1707
Average number of answers	**1.03**	**1.10**	**1.05**	**1.06**	**1.14**	**0.90**	**1.07**

T16**. What educational activities with the help of ICT have you organised with your students outside classes?

T16-01	Projects where students use ICT
T16-02	Initiation computer courses
T16-03	Distance collaboration activities with other schools (through the Internet)
T16-04	Competitions
T16-05	Creation of web pages
T16-06	Publications created in school, by students
T16-07	Other

Factor	Variants	**Total**	**T16-01**	**T16-02**	**T16-03**	**T16-04**	**T16-05**	**T16-06**	**T16-07**
Total		**1588**	**549**	**265**	**161**	**249**	**95**	**324**	**85**
Total		**1588**	**34.6%**	**16.7%**	**10.1%**	**15.7%**	**6.0%**	**20.4%**	**5.4%**
Residence	Rural	614	19.7%	25.6%	4.2%	12.1%	2.4%	19.1%	4.7%
	Urban	974	43.9%	11.1%	13.9%	18.0%	8.2%	21.3%	5.7%

Type	GIM	814	25.4%	24.4%	6.4%	14.0%	1.7%	17.7%	4.5%
	GRS		39.9%	9.5%	13.0%	10.4%	8.1%	24.6%	7.5%
	HSC		49.6%	5.7%	15.7%	23.8%	12.8%	22.9%	5.2%
	SAC	774	9.5%	47.6%	0.0%	9.5%	4.8%	9.5%	4.8%

The average number of answer variants

	Rural	Urban	GIM	GRS	HSC	SAC	Total
Total subjects	614	974	814	346	407	21	1588
Total number of answers	539	1189	767	391	552	18	1728
Average number of answers	**0.88**	**1.22**	**0.94**	**1.13**	**1.36**	**0.86**	**1.09**

T17. Based on your experience in your subject, to what extent teaching and learning with the help of ICT influence students' achievement?

T17-01	Following the use of ICT, I noticed a positive impact on students' achievement at my subject.
T17-02	ICT has no effect on students' achievement at my subject.
T17-03	ICT has a negative influence meaning it drops my students' achievement.

Factor	Variants	**Total**	**T17-01**	**T17-02**	**T17-03**	**NA**
Total		**1588**	**1115**	**258**	**18**	**197**
Total		**1588**	**70.2%**	**16.2%**	**1.1%**	**12.4%**
Residence	Rural	614	71.8%	15.1%	0.5%	12.5%
	Urban	974	69.2%	16.9%	1.5%	12.3%
Type	GIM	814	70.5%	15.4%	0.7%	13.4%
	GRS		69.7%	17.1%	1.2%	12.1%
	HSC		69.8%	17.9%	2.0%	10.3%
	SAC	774	76.2%	4.8%	0.0%	19.0%

Subject	**Total teachers**	**T17-01**	**T17-02**	**T17-03**	NA
BIOLOGY	**145**	76.6%	11.0%	0.0%	12.4%
CHEMISTRY	**113**	72.6%	17.7%	0.9%	8.8%
CIVIC EDUCATION	**2**	50.0%	0.0%	0.0%	50.0%
ENTREPR. EDUCATION	**1**	100.0%	0.0%	0.0%	0.0%
SPORTS	**14**	21.4%	50.0%	0.0%	28.6%
MUSIC	**3**	66.7%	33.3%	0.0%	0.0%
DRAWING	**9**	33.3%	11.1%	0.0%	55.6%
RELIGIOUS EDUCATION	**22**	40.9%	31.8%	4.5%	22.7%
TECHNOLOGICAL ED.	**19**	89.5%	10.5%	0.0%	0.0%
PHYSICS	**139**	71.2%	14.4%	2.2%	12.2%
GEOGRAPHY	**134**	71.6%	14.9%	0.7%	12.7%
COMPUTER SCIENCE	**126**	95.2%	4.8%	0.0%	0.0%
PEDAGOGY	**1**	100.0%	0.0%	0.0%	0.0%
HISTORY	**137**	71.5%	13.1%	2.2%	13.1%
LATIN	**2**	100.0%	0.0%	0.0%	0.0%
MOTHER TONGUE	**9**	44.4%	33.3%	0.0%	22.2%
MODERN LANGUAGES	**186**	66.7%	15.6%	0.0%	17.7%

ROMANIAN LANGUAGE	**170**	59.4%	21.8%	3.5%	15.3%
MATHEMATICS	**195**	66.2%	24.6%	1.0%	8.2%
SOCIAL AND HUM. SC.	**54**	59.3%	29.6%	1.9%	9.3%
SPEC./ OPTIONAL SUBJ.	**95**	80.0%	8.4%	0.0%	11.6%

T18. To what extent do you think ICT helps you with differentiated education (for example: challenging good students in various ways and motivating at the same time weak students to participate in learning activities)?

T18-01	I need more time to develop strategies and tools for differentiated education when I intend to use ICT than when I design an activity in a traditional way
T18-02	It's more easy to provide differentiated education when I teach with ICT help

Factors		Number of subjects	**T18-01**				**T18-02**			
			Agree	**Disagree**	**Don't know**	**NA**	**Agree**	**Disagree**	**Don't know**	**NA**
Total		**1588**	**45.6%**	**18.8%**	**27.8%**	**7.8%**	**49.7%**	**14.7%**	**28.0%**	**7.5%**
Residence	Rural	614	42.7%	19.4%	31.1%	6.8%	51.3%	12.9%	29.0%	6.8%
	Urban	974	47.4%	18.4%	25.8%	8.4%	48.8%	15.9%	27.4%	7.9%
Type	GIM	814	43.6%	19.0%	30.0%	7.4%	48.8%	14.0%	29.7%	7.5%
	GRS	346	48.6%	19.1%	22.5%	9.8%	52.3%	16.2%	23.1%	8.4%
	HSC	407	47.2%	17.9%	28.3%	6.6%	48.9%	15.5%	29.0%	6.6%
	SAC	21	42.9%	19.0%	23.8%	14.3%	61.9%	4.8%	23.8%	9.5%
Teaching experience	First year	53	26.4%	18.9%	45.3%	9.4%	45.3%	15.1%	32.1%	7.5%
	2-5 years	264	41.3%	26.9%	28.8%	3.0%	52.7%	14.4%	29.5%	3.4%
	6-10 years	334	44.9%	22.5%	25.7%	6.9%	57.5%	11.4%	24.3%	6.9%
	11-20 years	314	50.0%	20.7%	21.7%	7.6%	51.0%	20.4%	22.6%	6.1%
	Over 20 years	444	47.3%	11.9%	31.3%	9.5%	44.8%	14.4%	31.8%	9.0%
	NA	179	46.9%	13.4%	27.4%	12.3%	42.5%	12.3%	31.8%	13.4%
ICT course	Yes	988	50.6%	20.1%	22.1%	7.2%	56.1%	15.9%	22.0%	6.1%
	No	600	37.3%	16.5%	37.3%	8.8%	39.3%	12.8%	38.0%	9.8%
Gender	Male	432	45.6%	17.4%	30.8%	6.3%	48.4%	15.0%	30.3%	6.3%
	Female	1128	45.8%	19.4%	26.7%	8.1%	50.4%	14.6%	27.2%	7.7%

Subject	**Total CD**	**T18-01**				**T18-02**			
		Agree	**Disagree**	**Don't know**	**NA**	**Agree**	**Disagree**	**Don't know**	**NA**
BIOLOGY	**145**	42.8%	20.0%	28.3%	9.0%	56.6%	13.1%	24.8%	5.5%
CHEMISTRY	**113**	53.1%	16.8%	23.0%	7.1%	46.9%	22.1%	23.0%	8.0%
CIVIC EDUCATION	**2**	50.0%	0.0%	50.0%	0.0%	50.0%	0.0%	50.0%	0.0%
ENTREPR. EDUCATION	**1**	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
SPORTS	**14**	28.6%	21.4%	35.7%	14.3%	28.6%	7.1%	42.9%	21.4%
MUSIC	**3**	33.3%	0.0%	66.7%	0.0%	66.7%	0.0%	33.3%	0.0%
DRAWING	**9**	33.3%	22.2%	22.2%	22.2%	22.2%	22.2%	33.3%	22.2%
RELIGIOUS EDUCATION	**22**	22.7%	13.6%	45.5%	18.2%	27.3%	18.2%	36.4%	18.2%
TECHNOLOGICAL ED.	**19**	36.8%	36.8%	10.5%	15.8%	68.4%	5.3%	15.8%	10.5%
PHYSICS	**139**	50.4%	19.4%	20.1%	10.1%	47.5%	16.5%	28.1%	7.9%

GEOGRAPHY	**134**	49.3%	13.4%	29.9%	7.5%	42.5%	17.9%	30.6%	9.0%
COMPUTER SCIENCE	**126**	46.0%	35.7%	12.7%	5.6%	79.4%	7.9%	10.3%	2.4%
PEDAGOGY	**1**	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
HISTORY	**137**	40.1%	16.8%	35.0%	8.0%	46.7%	13.1%	32.8%	7.3%
LATIN	**2**	50.0%	0.0%	50.0%	0.0%	50.0%	0.0%	50.0%	0.0%
MOTHER TONGUE	**9**	55.6%	11.1%	22.2%	11.1%	33.3%	22.2%	33.3%	11.1%
MODERN LANGUAGES	**186**	37.6%	21.0%	35.5%	5.9%	45.7%	11.3%	37.1%	5.9%
ROMANIAN LANGUAGE	**170**	44.1%	15.3%	34.7%	5.9%	41.8%	15.9%	33.5%	8.8%
MATHEMATICS	**195**	51.3%	17.4%	26.7%	4.6%	45.6%	20.5%	28.7%	5.1%
SOCIAL AND HUM. SC.	**54**	48.1%	13.0%	33.3%	5.6%	48.1%	18.5%	25.9%	7.4%
SPEC./ OPTIONAL SUBJ.	**95**	45.3%	21.1%	23.2%	10.5%	60.0%	11.6%	22.1%	6.3%

T19. Based on your experience, to what extent do you think teaching and learning with the help of ICT influence students, differentiated on achievement levels and gender?

		Impact			I cannot say	NA
		Positive (+)	**Negative (-)**	**None(0)**		
T19a	good students	49.1%	0.3%	2.2%	8.6%	39.7%
T19b	weak students	37.5%	2.5%	9.1%	10.4%	40.5%
T19c	girls	41.7%	0.4%	1.6%	15.3%	41.1%
T19d	boys	42.5%	0.4%	1.0%	15.1%	41.1%

	Factor		Impact			Don't know	NA
			positive	negative	none		
T19a	**Total**		**76.2%**	**0.7%**	**4.2%**	**14.5%**	**4.5%**
	Residence	R	75.9%	0.2%	3.9%	15.5%	4.6%
		U	76.4%	1.0%	4.3%	13.9%	4.4%
	Type	GIM	75.4%	0.7%	4.5%	14.0%	5.3%
		GRS	77.7%	0.9%	3.8%	13.9%	3.8%
		HSC	76.2%	0.5%	3.9%	15.7%	3.7%
		SAC	81.0%	0.0%	0.0%	19.0%	0.0%
	Professional experience	First year	58.5%	0.0%	11.3%	22.6%	7.5%
		2-5 years	79.9%	0.4%	2.7%	15.9%	1.1%
		6-10 years	79.6%	0.0%	4.5%	11.7%	4.2%
		11-20 years	79.0%	1.0%	5.7%	11.1%	3.2%
		Over 20 years	72.5%	1.4%	3.2%	17.8%	5.2%
		NA	73.7%	0.6%	3.4%	12.8%	9.5%
	ICT course	Yes	83.3%	0.4%	3.4%	10.2%	2.6%
		No	64.5%	1.2%	5.3%	21.5%	7.5%
	Gender	Males	75.9%	0.7%	5.8%	14.8%	2.8%
		Females	76.6%	0.6%	3.6%	14.5%	4.7%

T19 b	Total	**Total**	**58.8%**	**4.4%**	**14.1%**	**16.8%**	**5.9%**
	Residence	R	58.6%	3.7%	13.7%	18.1%	5.9%
		U	58.9%	4.8%	14.4%	15.9%	6.0%
	Type	GIM	58.6%	3.3%	14.9%	16.6%	6.6%
		GRS	59.2%	5.8%	13.9%	15.9%	5.2%
		HSC	58.0%	5.7%	13.3%	17.7%	5.4%
		SAC	76.2%	0.0%	4.8%	19.0%	0.0%
	Professional experience	First year	45.3%	7.5%	13.2%	24.5%	9.4%
		2-5 years	61.4%	3.4%	12.1%	20.8%	2.3%
		6-10 years	64.1%	4.2%	13.8%	13.5%	4.5%
		11-20 years	62.1%	5.4%	16.2%	12.1%	4.1%
		Over 20 years	55.2%	4.5%	12.8%	19.8%	7.7%
		NA	52.5%	3.4%	17.3%	15.1%	11.7%
	ICT course	Yes	65.3%	3.9%	14.4%	12.8%	3.6%
		No	48.2%	5.2%	13.7%	23.3%	9.7%
	Gender	Males	56.5%	4.6%	16.4%	17.6%	4.9%
		Females	60.3%	4.1%	13.2%	16.6%	5.9%

T19 c	**Total**	**Total**	**63.6%**	**0.8%**	**3.6%**	**25.1%**	**6.9%**
	Residence	R	66.4%	0.2%	2.6%	24.1%	6.7%
		U	61.8%	1.2%	4.2%	25.8%	7.0%
	Type	GIM	62.8%	0.9%	3.4%	25.3%	7.6%
		GRS	67.3%	0.6%	2.9%	24.0%	5.2%
		HSC	61.4%	1.0%	4.7%	25.8%	7.1%
		SAC	76.2%	0.0%	0.0%	23.8%	0.0%
	Professional experience	First year	47.2%	0.0%	7.5%	32.1%	13.2%
		2-5 years	66.3%	0.8%	2.3%	27.7%	3.0%
		6-10 years	70.1%	0.9%	4.2%	20.4%	4.5%
		11-20 years	66.2%	0.3%	3.5%	23.6%	6.4%
		Over 20 years	58.3%	1.6%	3.2%	28.6%	8.3%
		NA	60.9%	0.0%	4.5%	22.3%	12.3%
	ICT course	Yes	69.4%	0.4%	2.8%	22.7%	4.7%
		No	54.0%	1.5%	4.8%	29.2%	10.5%
	Gender	Males	63.0%	0.9%	4.6%	25.5%	6.0%
		Females	64.1%	0.8%	3.2%	25.2%	6.7%

T19 d	Total	Total	64.8%	1.0%	2.6%	24.6%	6.9%
	Residence	R	67.6%	0.2%	2.1%	23.5%	6.7%
		U	63.0%	1.5%	3.0%	25.4%	7.1%
	Type	GIM	63.4%	1.0%	3.1%	24.9%	7.6%
		GRS	69.1%	0.9%	1.7%	23.1%	5.2%
		HSC	63.1%	1.2%	2.7%	25.6%	7.4%
		SAC	81.0%	0.0%	0.0%	19.0%	0.0%
	Professional experience	First year	49.1%	0.0%	5.7%	32.1%	13.2%
		2-5 years	68.6%	0.8%	1.9%	26.1%	2.7%
		6-10 years	71.0%	0.9%	3.9%	19.5%	4.8%
		11-20 years	65.9%	1.9%	2.2%	23.2%	6.7%
		Over 20 years	60.6%	1.1%	1.8%	27.9%	8.6%
		NA	60.9%	0.0%	3.4%	24.0%	11.7%
	ICT course	Yes	71.1%	0.7%	1.9%	21.7%	4.7%
		No	54.5%	1.5%	3.8%	29.5%	10.7%
	Gender	Males	63.9%	0.9%	3.2%	25.7%	6.3%
		Females	65.6%	1.0%	2.3%	24.4%	6.7%

Subject	Good students					Weak students				
	Impact			Cannot say	NA	Impact			Cannot say	NA
	positive	negative	none			positive	negative	none		
BIOLOGY	79.3%	0.0%	1.4%	14.5%	4.8%	66.9%	4.1%	6.2%	16.6%	6.2%
CHEMISTRY	82.3%	0.9%	3.5%	10.6%	2.7%	58.4%	4.4%	21.2%	11.5%	4.4%
CIVIC EDUCATION	50.0%	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	50.0%	0.0%
ENTREPR. EDUCATION	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
SPORTS	50.0%	0.0%	7.1%	21.4%	21.4%	21.4%	0.0%	28.6%	28.6%	21.4%
MUSIC	100.0%	0.0%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	66.7%	0.0%
DRAWING	55.6%	0.0%	0.0%	11.1%	33.3%	22.2%	11.1%	11.1%	22.2%	33.3%
RELIGIOUS EDUCATION	63.6%	0.0%	4.5%	27.3%	4.5%	40.9%	4.5%	18.2%	27.3%	9.1%
TECHNOLOGICAL ED.	100.0%	0.0%	0.0%	0.0%	0.0%	84.2%	5.3%	10.5%	0.0%	0.0%
PHYSICS	81.3%	1.4%	2.9%	9.4%	5.0%	64.7%	3.6%	17.3%	10.1%	4.3%
GEOGRAPHY	85.1%	0.0%	3.7%	9.0%	2.2%	61.9%	3.7%	17.9%	12.7%	3.7%
COMPUTER SCIENCE	88.1%	0.8%	5.6%	2.4%	3.2%	83.3%	3.2%	10.3%	1.6%	1.6%
PEDAGOGY	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
HISTORY	77.4%	0.7%	1.5%	16.1%	4.4%	62.8%	4.4%	8.0%	19.0%	5.8%
LATIN	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
MOTHER TONGUE	44.4%	0.0%	22.2%	22.2%	11.1%	55.6%	0.0%	11.1%	11.1%	22.2%
MODERN LANGUAGES	71.5%	0.5%	3.8%	21.0%	3.2%	55.4%	2.7%	12.4%	25.3%	4.3%
ROMANIAN LANGUAGE	69.4%	0.6%	5.3%	20.0%	4.7%	47.1%	5.9%	20.0%	20.6%	6.5%
MATHEMATICS	72.3%	2.1%	8.7%	14.4%	2.6%	56.4%	7.2%	14.4%	16.9%	5.1%
SOCIAL AND HUM. SC.	66.7%	0.0%	5.6%	24.1%	3.7%	51.9%	5.6%	14.8%	24.1%	3.7%
SPEC./ OPTIONAL SUBJ.	82.1%	0.0%	1.1%	12.6%	4.2%	61.1%	4.2%	11.6%	16.8%	6.3%

Subject	Girls					Boys				
	Impact			Cannot say	NA	Impact			Cannot say	NA
	positive	negative	none			positive	negative	none		
BIOLOGY	69.0%	0.0%	2.1%	21.4%	7.6%	71.7%	0.0%	0.7%	20.7%	6.9%
CHEMISTRY	62.8%	0.0%	0.9%	29.2%	7.1%	65.5%	0.0%	0.0%	27.4%	7.1%
CIVIC EDUCATION	50.0%	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	50.0%	0.0%
ENTREPR. EDUCATION	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
SPORTS	28.6%	0.0%	7.1%	42.9%	21.4%	28.6%	0.0%	7.1%	42.9%	21.4%
MUSIC	100.0%	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	0.0%	33.3%	0.0%
DRAWING	44.4%	11.1%	0.0%	11.1%	33.3%	55.6%	0.0%	0.0%	11.1%	33.3%
RELIGIOUS EDUCATION	36.4%	0.0%	4.5%	50.0%	9.1%	36.4%	0.0%	0.0%	54.5%	9.1%
TECHNOLOGICAL ED.	89.5%	0.0%	5.3%	5.3%	0.0%	84.2%	5.3%	5.3%	5.3%	0.0%
PHYSICS	68.3%	1.4%	2.2%	22.3%	5.8%	69.1%	1.4%	0.7%	22.3%	6.5%
GEOGRAPHY	70.1%	1.5%	3.0%	20.9%	4.5%	72.4%	0.7%	2.2%	20.1%	4.5%
COMPUTER SCIENCE	83.3%	0.0%	4.8%	9.5%	2.4%	83.3%	0.8%	3.2%	8.7%	4.0%
PEDAGOGY	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
HISTORY	67.2%	0.0%	2.9%	24.1%	5.8%	67.9%	0.7%	1.5%	23.4%	6.6%
LATIN	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
MOTHER TONGUE	44.4%	0.0%	11.1%	22.2%	22.2%	44.4%	0.0%	11.1%	22.2%	22.2%
MODERN LANGUAGES	60.2%	0.5%	3.8%	30.6%	4.8%	62.9%	1.1%	2.2%	29.6%	4.3%
ROMANIAN LANGUAGE	56.5%	1.2%	5.3%	29.4%	7.6%	55.9%	3.5%	4.7%	28.2%	7.6%
MATHEMATICS	54.4%	1.5%	5.6%	30.8%	7.7%	56.4%	1.0%	4.1%	30.8%	7.7%
SOCIAL AND HUM. SC.	61.1%	0.0%	5.6%	27.8%	5.6%	61.1%	0.0%	5.6%	27.8%	5.6%
SPEC./ OPTIONAL SUBJ.	66.3%	2.1%	1.1%	24.2%	6.3%	68.4%	0.0%	2.1%	24.2%	5.3%

T20. To what extent do you think that the initial or in-service training you participated in are appropriate for the practical needs related to the use of computers for classroom activities?

		Rural	Urban	Total
	Total subjects	**614**	**974**	**1588**
1.	They are appropriate and meet the requirements of real use; I don't need more other courses so as I can carry out efficient learning activities with the help of ICT	17.4%	17.0%	17.2%
2.	They are appropriate in a first stage, but I still need more practice	60.6%	56.9%	58.3%
3.	They are inappropriate; the courses I attended are not enough for me to design and carry out learning activities with the help of ICT	6.2%	8.2%	7.4%
4.	Don't know/ I don't have an opinion.	11.6%	11.3%	11.4%
	NA	4.2%	6.6%	5.7%
	Total	100.0%	100.0%	100.0%

Subject	Total teachers	T20-01	T20-02	T20-03	T20-04	NA
BIOLOGY	**145**	17.9%	61.4%	6.2%	7.6%	6.9%
CHEMISTRY	**113**	19.5%	65.5%	4.4%	6.2%	4.4%
CIVIC EDUCATION	**2**	0.0%	50.0%	50.0%	0.0%	0.0%
ENTREPR. EDUCATION	**1**	0.0%	100.0%	0.0%	0.0%	0.0%
SPORTS	**14**	14.3%	35.7%	0.0%	35.7%	14.3%
MUSIC	**3**	0.0%	33.3%	33.3%	33.3%	0.0%
DRAWING	**9**	11.1%	44.4%	0.0%	22.2%	22.2%

RELIGIOUS EDUCATION	**22**	22.7%	45.5%	4.5%	18.2%	9.1%
TECHNOLOGICAL ED.	**19**	42.1%	57.9%	0.0%	0.0%	0.0%
PHYSICS	**139**	18.7%	62.6%	6.5%	8.6%	3.6%
GEOGRAPHY	**134**	11.2%	67.2%	7.5%	11.2%	3.0%
COMPUTER SCIENCE	**126**	46.0%	34.1%	4.0%	9.5%	6.3%
PEDAGOGY	**1**	0.0%	100.0%	0.0%	0.0%	0.0%
HISTORY	**137**	11.7%	66.4%	7.3%	8.8%	5.8%
LATIN	**2**	0.0%	50.0%	50.0%	0.0%	0.0%
MOTHER TONGUE	**9**	11.1%	22.2%	11.1%	33.3%	22.2%
MODERN LANGUAGES	**186**	11.3%	60.2%	7.0%	16.1%	5.4%
ROMANIAN LANGUAGE	**170**	9.4%	59.4%	14.1%	11.8%	5.3%
MATHEMATICS	**195**	21.0%	57.9%	7.7%	7.7%	5.6%
SOCIAL AND HUM. SC.	**54**	9.3%	51.9%	7.4%	25.9%	5.6%
SPEC./ OPTIONAL SUBJ.	**95**	15.8%	67.4%	5.3%	9.5%	2.1%

T21. Have you attended any in-service training course in the use of ICT?

The distribution of teachers based on their participation in at least one ICT course

		Rural	Urban	Total	**Rural**	**Urban**	**Total**
1.	**Yes**	366	622	988	**59.6%**	**63.9%**	**62.2%**
2.	**No**	235	334	569	**38.3%**	**34.3%**	**35.8%**
	NA	13	18	31	**2.1%**	**1.8%**	**2.0%**
	Total	614	974	1588	**100.0%**	**100.0%**	**100.0%**

The percentages of teachers' participation in ICT courses on factors

Factor		Number of subjects	Yes	No	NA	**Yes**	Test z / Chi-sq
Total		**1588**	**988**	**569**	**31**	**62.2%**	
Residence	Rural	614	366	235	13	**59.6%**	**z=1.71**
	Urban	974	622	334	18	**63.9%**	
Type	GIM	814	505	292	17	**62.0%**	**Chi-sq =5.91**
	GRS	346	232	109	5	**67.1%**	
	HSC	407	240	158	9	**59.0%**	
	SAC	21	11	10		**52.4%**	
Professional experience	First year	53	16	34	3	**30.2%**	**Chi-sq =53.17**
	2-5 years	264	141	119	4	**53.4%**	
	6-10 years	334	229	101	4	**68.6%**	
	11-20 years	314	230	78	6	**73.2%**	
	Over 20 years	444	291	148	5	**65.5%**	
	NA	179	81	89	9	**45.3%**	

Factor	Variant	Yes	Test z / Chi-sq
Total		**62.2%**	
Residence	Rural	**59.6%**	**z=1.71**
	Urban	**63.9%**	

Type	GIM	**62.0%**	**Chi-sq=5.91**
	GRS	**67.1%**	
	HSC	**59.0%**	
	SAC	**52.4%**	
Professional experience	First year	**30.2%**	**Chi-sq=53.17**
	2-5 years	**53.4%**	
	6-10 years	**68.6%**	
	11-20 years	**73.2%**	
	Over 20 years	**65.5%**	
	NA	**45.3%**	

T22. If yes, how many? .....

	Number of courses	Rural	Urban	Total	Rural	Urban	Total
1.	**One**	226	352	578	**36.8%**	**36.1%**	**36.4%**
2.	**Two**	101	181	282	**16.4%**	**18.6%**	**17.8%**
3.	**Three**	17	49	66	**2.8%**	**5.0%**	**4.2%**
4.	**Four**	4	8	12	**0.7%**	**0.8%**	**0.8%**
5	**Five**	1	2	3	**0.2%**	**0.2%**	**0.2%**
6	**Six**	0	1	1	**0.0%**	**0.1%**	**0.1%**
	NA	265	381	646	**43.2%**	**39.1%**	**40.7%**
	Total	614	974	1588	**100.0%**	**100.0%**	**100.0%**

T23. With reference to your last ICT course, please specify:

T23.a the date of completion:

		Rural	Urban	Total	Rural	Urban	Total
1.	1994	0	1	1	**0.0%**	**0.1%**	**0.1%**
2.	1997	0	3	3	**0.0%**	**0.3%**	**0.2%**
3.	1998	1	1	2	**0.2%**	**0.1%**	**0.1%**
4.	1999	2	4	6	**0.3%**	**0.4%**	**0.4%**
5.	2000	6	9	15	**1.0%**	**0.9%**	**0.9%**
6.	2001	5	19	24	**0.8%**	**2.0%**	**1.5%**
7.	2002	4	25	29	**0.7%**	**2.6%**	**1.8%**
8.	2003	8	26	34	**1.3%**	**2.7%**	**2.1%**
9.	2004	12	65	77	**2.0%**	**6.7%**	**4.8%**
10.	2005	75	106	181	**12.2%**	**10.9%**	**11.4%**
11.	2006	125	156	281	**20.4%**	**16.0%**	**17.7%**
12.	2007	78	133	211	**12.7%**	**13.7%**	**13.3%**
	NA	298	426	724	**48.5%**	**43.7%**	**45.6%**
	Total	614	974	1588	**100.0%**	**100.0%**	**100.0%**

T23.b the title of the course:

		Rural	Urban	Total	Rural	Urban	Total
1.	PC initiation/ use/ ICT courses	74	164	238	**12.1%**	**16.8%**	**15.0%**
2.	AeL (course)	189	228	417	**30.8%**	**23.4%**	**26.3%**
3.	ECDL/ ICDL.	4	12	16	**0.7%**	**1.2%**	**1.0%**
4.	Programming courses (Forte, C++, Pascal, Oracle, databases, php, MySQL etc.)	2	7	9	**0.3%**	**0.7%**	**0.6%**
5.	Network administration/ Administration and	4	3	7	**0.7%**	**0.3%**	**0.4%**

	use of the SEI laboratory						
6.	Module 3 (in the training programme)/ Training course	14	12	26	**2.3%**	**1.2%**	**1.6%**
7.	Postgraduate course	11	30	41	**1.8%**	**3.1%**	**2.6%**
8.	Other	13	41	54	**2.1%**	**4.2%**	**3.4%**
	NA	303	477	780	**49.3%**	**49.0%**	**49.1%**
	Total	614	974	1588	**100%**	**100%**	**100%**

T23.c the institution that organised the course:

		Rural	Urban	Total	**Rural**	**Urban**	**Total**
1.	CCD	85	238	323	**13.8%**	**24.4%**	**20.3%**
2.	SIVECO	112	98	210	**18.2%**	**10.1%**	**13.2%**
3.	ECDL (Romania)/ ICDL	2	6	8	**0.3%**	**0.6%**	**0.5%**
4.	a company	16	16	32	**2.6%**	**1.6%**	**2.0%**
5.	an NGO, association, foundation	2	3	5	**0.3%**	**0.3%**	**0.3%**
6.	a university	35	68	103	**5.7%**	**7.0%**	**6.5%**
7.	my school/ a school, a high-school	38	76	114	**6.2%**	**7.8%**	**7.2%**
8.	*Other answer*	24	26	50	**3.9%**	**2.7%**	**3.1%**
	NA	300	443	743	**48.9%**	**45.5%**	**46.8%**
	Total	614	974	1588	**100%**	**100%**	**100%**

T24. How do you think the training activities should be designed so as the new technologies to be used efficiently in education?

		Rural	**Urban**	**Total**
	Total subjects	**614**	**974**	**1588**
1.	More practice/ Based on practice (not theory)	10.7%	10.8%	10.8%
2.	They should allow enough time for solid learning. The duration of courses should be longer.	0.7%	0.8%	0.8%
3.	In computer laboratories (with access to the Internet)./ They should have course materials/ They should be accompanied by soft (useful soft).	7.3%	8.0%	7.7%
4.	They should be carried out by competent trainers (who should also know how to communicate with the participants)./ They should be serious.	1.8%	3.5%	2.8%
5.	Differentiated across subjects./ across education levels (gymnazium teachers separated from high-school teachers)	5.2%	7.4%	6.5%
6.	In small groups (less than 20-25 teachers).	1.1%	3.1%	2.3%
7.	Training modules, from simple to complex./ In several phases./ Regularly./ At regular times (once a year, once in 2 years).	17.3%	15.9%	16.4%
8.	They should be compulsory.	0.7%	0.7%	0.7%
9	They should be free.	0.7%	1.4%	1.1%
10	Other	8.0%	9.7%	9.0%
	NA	10.7%	10.8%	10.8%
	Total	100%	100%	100%

A3.4. The Student's Questionnaire: Information from the Statistical Analysis

Note: The characteristics of the student sample determine analyses based on the following factors:

- *the area of residence of the school*
- *the area of residence of the students*
- *the education level*
- *the type of school*
- *the students' gender*

S01.** In what circumstances do you use a computer?

		Total	School residence		Students' residence		
			Rural	Urban	Rural	Urban	NA
	Total subjects	**3953**	**1193**	**2760**	**1674**	**2252**	**27**
1.	At home	83.1%	72.2%	87.8%	72.6%	90.9%	70.4%
2.	At school	63.4%	68.8%	61.1%	67.4%	60.7%	40.7%
3.	At a friend's place	14.5%	12.5%	15.4%	13.3%	15.5%	7.4%
4.	At my parents' work place	1.0%	0.4%	1.2%	0.5%	1.3%	0.0%
5.	In an Internet-cafe	6.0%	4.9%	6.4%	6.3%	5.8%	0.0%
6.	I don't use a computer.	0.9%	1.3%	0.8%	1.3%	0.6%	7.4%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		Education level		
		GIM	SAC	HSC
	Total subjects	**1319**	**192**	**2442**
1.	At home	82.1%	49.5%	86.2%
2.	At school	62.8%	75.5%	62.8%
3.	At a friend's place	13.6%	5.2%	15.7%
4.	At my parents' work place	0.9%	0.5%	1.0%
5.	In an Internet-cafe	3.8%	7.8%	7.0%
6.	I don't use a computer.	1.1%	1.6%	0.8%
	Total	100.0%	100.0%	100.0%

The average number of answer variants

		School residence		Students' residence		
	Total	Rural	Urban	Rural	Urban	NA
Total subjects	3953	1193	2760	1674	2252	27
Total number of answers	6674	1911	4763	2704	3936	34
Average number of answers	**1.69**	**1.60**	**1.73**	**1.62**	**1.75**	**1.26**

			School residence		Students' residence		
	Number of answers	Total	Rural	Urban	Rural	Urban	NA
	Total subjects	**3953**	**1193**	**2760**	**1674**	**2252**	**27**
1.	Three variants	14.6%	10.7%	16.3%	11.8%	16.8%	3.7%
2.	Two variants	39.8%	39.1%	40.1%	38.2%	41.1%	33.3%
3.	One variant	45.3%	49.7%	43.4%	49.6%	42.1%	48.1%
4.	NA	0.3%	0.4%	0.2%	0.4%	0.0%	14.8%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

S02. Do you have a computer at home?

		Residence			
		Rural	Urban	NA	Total
	Total subjects	**1674**	**2252**	**27**	**3953**
1.	Yes, I have my personal computer and I am the only person who uses it	28.1%	38.3%	29.6%	33.9%
2.	Yes, I have a computer, which is also used by other members of my family	46.5%	53.9%	40.7%	50.7%
3.	I don't have a computer at home	25.0%	7.7%	14.8%	15.1%
	NA	0.4%	0.1%	14.8%	0.3%
	Total	100.0%	100.0%	100.0%	100.0%
	YES	**74.6%**	**92.2%**	**70.4%**	**84.6%**
	NO	25.0%	7.7%	14.8%	15.1%

S03. If Yes, is it connected to the Internet?

		Residence			
		Rural	Urban	NA	Total
	Total subjects	**1249**	**2076**	**19**	**3344**
1.	Yes, a cable connection	20.4%	65.0%	47.4%	48.3%
2.	Yes, a dial-up connection (telephone line)	15.1%	16.6%	10.5%	16.0%
3.	I don't have an Internet connection	68.6%	19.4%	52.6%	38.0%
	Total	100.0%	100.0%	100.0%	100.0%
	YES	**35.5%**	**81.6%**	**57.9%**	**64.3%**
	NO	68.6%	19.4%	52.6%	38.0%

S04*. Please consult the list of activities currently carried out on a computer and estimate how often you use them.

Reorganisation of activities in categories:

Computer games	**A**	**It.4-01**	For games
Means of communication	**B**	**It.4-02**	For communication (chat, forum, email)
Information and research	**C**	**It.4-03**	For information and documentation in various areas, for finding out what are the news
		It.4-04	For learning activities (at different school subjects)
Soft and programming techniques	**D**	**It.4-05**	For learning how to use different programmes/ a computer

	Very often	Often	Sometimes	Never	NA	
Points	**3**	**2**	**1**	**0**		
It.4-01	9.5%	18.6%	33.2%	20.0%	18.7%	**1.217**
It.4-02	21.5%	19.2%	14.3%	23.1%	22.0%	**1.499**
It.4-03	5.9%	17.8%	33.5%	18.7%	24.1%	**1.144**
It.4-04	5.7%	22.2%	37.8%	13.1%	21.2%	**1.260**
It.4-05	6.3%	16.7%	36.6%	15.0%	25.4%	**1.193**

The re-codification allows us to obtain additional information. Grouping the five activities with the codes A,B,C,D, the analysis estimates the frequency of each activity and the categories of activities for each subject at a sample level.

The percentages of sample students who use a computer for the categories of activities mentioned based on the main factors of influence
(the code for using a computer is 1, while code 0 is for not using a computer)

Factor		Number of students	Computer games	Means of communication	Information and research	Soft and programming techniques
			A	B	C	D
Total		**3953**	**2425**	**2171**	**2915**	**2356**
Total		**3953**	**61.3%**	**54.9%**	**73.7%**	**59.6%**
School	Rural	**1193**	63.6%	26.0%	60.3%	55.3%
	Urban	**2760**	60.4%	67.4%	79.6%	61.4%
Residence	Rural	**1674**	61.4%	29.9%	61.9%	54.9%
	Urban	**2252**	61.6%	73.6%	82.8%	63.4%
Education level	GIM	**1319**	70.8%	37.9%	68.9%	60.7%
	SAC	**192**	41.1%	21.9%	37.0%	33.9%
	HSC	**2442**	57.8%	66.7%	79.2%	61.0%
Gender	Males	**1783**	74.8%	58.5%	75.0%	64.6%
	Females	**2142**	50.4%	52.1%	73.0%	55.8%

The distribution of simultaneous activities mentioned by students, on categories and based on students' residence

Categories	Frequent				Percentages			
	Rural	Urban	NA	Total	Rural	Urban	NA	Total
A	84	45	2	131	5.0%	2.0%	7.4%	3.3%
B	10	33	2	45	0.6%	1.5%	7.4%	1.1%
C	49	56	2	107	2.9%	2.5%	7.4%	2.7%
D	16	21	1	38	1.0%	0.9%	3.7%	1.0%
One category	**159**	**155**	**7**	**321**	**9.5%**	**6.9%**	**25.9%**	**8.1%**
AB	10	25	1	36	0.6%	1.1%	3.7%	0.9%
AC	89	40	1	130	5.3%	1.8%	3.7%	3.3%
AD	116	49		165	6.9%	2.2%	0.0%	4.2%
BC	49	184	2	235	2.9%	8.2%	7.4%	5.9%
BD	2	3		5	0.1%	0.1%	0.0%	0.1%
CD	51	44		95	3.0%	2.0%	0.0%	2.4%
Two categories	**317**	**345**	**4**	**666**	**18.8%**	**15.4%**	**14.8%**	**16.8%**
ABC	69	245		314	4.1%	10.9%	0.0%	7.9%
ABD	4	15		19	0.2%	0.7%	0.0%	0.5%
ACD	373	142	2	517	22.3%	6.3%	7.4%	13.1%

BCD	74	327	3	404	4.4%	14.5%	11.1%	10.2%
Three categories	**520**	**729**	**5**	**1254**	**31.0%**	**32.4%**	**18.5%**	**31.7%**
ABCD	283	826	4	1113	16.9%	36.7%	14.8%	28.2%
Four categories	**283**	**826**	**4**	**1113**	**16.9%**	**36.7%**	**14.8%**	**28.2%**
None	**395**	**197**	**7**	**599**	**23.6%**	**8.7%**	**25.9%**	**15.2%**
Total	**1674**	**2252**	**27**	**3953**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

With reference to the four categories of activities (A-B-C-D), a low percentage of students mentioned a single one (8.1%), most of them indicating four (28.2%). One in six students (15.2%) didn't mention any category.

S05. At school, you use a computer:

		School		
		Rural	Urban	Total
	Total subjects	**1193**	**2760**	**3953**
1.	In the SEI laboratory, with AeL installed	87.5%	78.7%	81.4%
2.	In a computer laboratory, where AeL is not installed	8.7%	17.5%	14.8%
3.	In a regular classroom, with a computer and a video projector	2.7%	3.4%	3.2%
4.	Other situation	1.5%	2.0%	1.9%
	NA	1.3%	3.8%	3.1%
	Total	100.0%	100.0%	100.0%

		Education level		
		GIM	SAC	HSC
	Total subjects	**1319**	**192**	**2442**
1.	In the SEI laboratory, with AeL installed	88.8%	66.1%	78.5%
2.	In a computer laboratory, where AeL is not installed	5.7%	29.2%	18.7%
3.	In a regular classroom, with a computer and a video projector	3.1%	7.8%	2.8%
4.	Other situation	3.0%	1.0%	1.3%
	Total	100.0%	100.0%	100.0%

S06. At school, do you have access to a computer outside classes?

			School		Education level		
		Total	Rural	Urban	GIM	SAC	HSC
	Total sub.	**3953**	**1193**	**2760**	**1319**	**192**	**2442**
1.	**Yes**	30.3%	27.6%	31.4%	25.6%	19.8%	33.6%
2.	**No**	68.1%	71.5%	66.6%	73.5%	77.1%	64.5%
	NA	1.6%	0.9%	2.0%	0.8%	3.1%	2.0%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

S07. During classes in the computer laboratory, do you use a computer:

		GIM	SAC	HSC	Total
	Total subjects	**1319**	**192**	**2442**	**3953**
1.	By yourself	25.5%	55.2%	67.8%	53.1%
2.	With another classmate (the same computer)	54.5%	29.7%	24.7%	34.9%

3.	With two other classmates (the same computer)	12.9%	9.4%	3.8%	7.1%
4.	With three other classmates (the same computer)	2.0%	1.0%	0.9%	1.3%
5.	Other situation:	3.2%	0.0%	1.1%	1.7%
	NA	1.9%	4.7%	1.8%	2.0%
	Total	100.0%	100.0%	100.0%	100.0%

S08*. In the 2006-2007 school year, how many lessons have you had in the computer laboratory approximately?

	Subject	Total	None	1-2	3-4	5-6	7-8	9-10	More than 10	NA	Average number of lessons
	Points		**0**	**1,5**	**3,5**	**5,5**	**7,5**	**9,5**	**11,5**	**0**	
a	Biology	145	43.8%	18.1%	9.3%	4.0%	1.1%	1.1%	3.6%	19.1%	**1,748**
b	Geography	134	48.7%	14.5%	8.1%	2.9%	1.5%	1.1%	2.8%	20.4%	**1,506**
c	Social and Humanistic Sciences	54	60.6%	5.2%	2.2%	0.9%	0.6%	0.3%	1.2%	29.1%	**0,582**
d	Chemistry	113	46.0%	13.9%	7.2%	4.4%	2.0%	1.5%	2.8%	22.0%	**1,701**
e	Physics	139	40.4%	15.4%	9.4%	6.1%	2.3%	1.7%	3.9%	20.7%	**2,119**
f	Romanian language/ mother tongue	170	50.9%	12.9%	5.7%	2.8%	1.4%	0.8%	3.0%	22.6%	**1,376**
g	Mathematics	195	46.1%	13.7%	8.6%	3.4%	1.9%	1.3%	4.0%	20.9%	**1,803**
h	Drawing	9	61.6%	5.5%	2.5%	0.7%	0.4%	0.6%	2.1%	26.5%	**0,736**
i	Technological education	19	56.9%	6.6%	2.9%	1.7%	0.9%	0.8%	4.1%	26.1%	**1,222**
j	Modern languages	186	54.7%	9.5%	4.5%	2.2%	0.7%	0.4%	2.2%	25.9%	**1,024**
k	History	137	50.6%	12.3%	5.8%	2.4%	1.2%	0.9%	2.8%	24.1%	**1,330**
l	Specialised subjects	95	57.9%	3.5%	2.2%	1.2%	0.8%	0.7%	4.0%	29.7%	**1,105**
m	Computer science	126	14.0%	4.9%	3.5%	3.3%	2.4%	3.4%	56.3%	12.2%	**8,379**

The average number of lessons in the computer science laboratory on education levels

	Subject	Total	GIM	SAC	HSC
a	Biology	**1.748**	**2.914**	**1.395**	**1.084**
b	Geography	**1.506**	**2.535**	**0.884**	**0.954**
c	Social and Humanistic Sciences	**0.582**	**0.817**	**0.500**	**0.472**
d	Chemistry	**1.701**	**2.195**	**2.204**	**1.409**
e	Physics	**2.119**	**2.953**	**2.129**	**1.652**
f	Romanian language / mother tongue	**1.376**	**1.935**	**1.444**	**1.058**
g	Mathematics	**1.803**	**3.066**	**1.672**	**1.098**
h	Drawing	**0.736**	**1.107**	**0.944**	**0.529**
i	Technological education	**1.222**	**1.784**	**1.943**	**0.872**
j	Modern languages	**1.024**	**1.446**	**1.050**	**0.801**
k	History	**1.330**	**2.426**	**0.830**	**0.751**
l	Specialised subjects	**1.105**	**0.605**	**2.316**	**1.259**
m	Computer science	**8.379**	**6.938**	**9.012**	**9.029**

S09*. At school, you use a computer:

		To a great extent	To little extent	Not at all	Don't know	NA	Average
	Points	**2**	**1**	**0**	**0**		
S09a.	teaching-learning activities in the SEI laboratories at subjects other than computer science	35.0%	33.8%	15.7%	6.6%	8.9%	**1,139**
S09b.	assessment tests for students, on computer	14.2%	30.6%	31.4%	5.1%	18.7%	**0,726**
S09c.	use of the educational resources: encyclopaedias, image libraries, dictionaries etc.	25.3%	29.9%	23.7%	4.0%	17.1%	**0,971**
S09d.	information for preparing lessons	23.0%	24.4%	29.6%	4.2%	18.7%	**0,867**
S09e.	assessment and testing on computer	10.3%	16.7%	49.0%	4.1%	19.9%	**0,467**
S09f.	communication with students from other schools, through email, chat or Internet	9.3%	19.2%	45.0%	5.5%	21.1%	**0,477**

The frequency of computer use at school on factors

	Total	**Residence**		**Education level**		
		Rural	Urban	GIM	SAC	HSC
S09a.	**1.139**	**1.295**	**1.070**	**1.411**	**0.917**	**1.002**
S09b.	**0.726**	**0.817**	**0.686**	**0.849**	**0.744**	**0.654**
S09c.	**0.971**	**0.796**	**1.047**	**0.814**	**0.834**	**1.068**
S09d.	**0.867**	**0.705**	**0.935**	**0.621**	**0.911**	**0.999**
S09e.	**0.467**	**0.195**	**0.582**	**0.241**	**0.221**	**0.606**
S09f.	**0.477**	**0.376**	**0.520**	**0.362**	**0.266**	**0.554**

S10*. Which is, in your opinion, the most important effect of using computers at lessons?

		1	2	3	NA	Average
S10a.	attracting students to learn how to use a computer	1558	698	1396	301	**1,956**
S10b.	students understand better what they are taught	1196	1387	1043	327	**1,958**
S10c.	students learn easier	1011	1502	1111	329	**2,028**

	Total	**Residence**		**School**		**Education level**			**Gender**	
		R	U	R	U	GIM	SAC	HSC	M	F
S10a.	1.956	1.904	1.991	1.896	1.981	1.948	1.823	1.968	1.952	1.956
S10b.	1.958	1.977	1.944	1.983	1.947	1.923	2.224	1.959	1.989	1.933
S10c.	2.028	2.044	2.017	2.044	2.021	2.023	1.925	2.037	1.998	2.052

S11*. What bothered you during lessons carried out with the help of computers in the computer laboratory?

		To a great extent	To little extent	Not at all	Don't know	NA	Average
	Points	**2**	**1**	**0**	**0**		
S11a.	More students working on the same computer	21.1%	21.7%	40.2%	3.2%	13.8%	**0.742**
S11b.	Something always breaks and lessons are interrupted(for a while)	10.2%	26.8%	41.6%	5.9%	15.4%	**0.558**
S11c.	The graphics of some programme	5.8%	22.2%	44.7%	9.1%	18.2%	**0.413**
S11d.	Small characters	2.0%	11.6%	64.2%	4.1%	18.2%	**0.190**
S11e.	The clarity of images and graphs	5.5%	17.1%	55.5%	4.4%	17.5%	**0.340**

S11f.	The colours used in the educational soft	3.7%	14.6%	58.1%	5.3%	18.3%	**0.271**
S11g.	Some computer tasks	9.4%	33.0%	36.2%	5.1%	16.4%	**0.618**
S11h.	Insufficient time for using a computer during classes	35.7%	29.7%	18.6%	3.2%	12.8%	**1.158**
S11i.	Other	21.1%	21.7%	40.2%	3.2%	13.8%	**0.742**

S12. At which lessons or topics carried out in the laboratory was it more difficult to you to follow the teacher's explanations and interact with the computer at the same time:

	GIM	SAC	HSC	TOTAL	GIM	SAC	HSC	TOTAL
BIOLOGY	147	2	58	207	11.1%	1.0%	2.4%	5.2%
CHEMISTRY	142	18	122	282	10.8%	9.4%	5.0%	7.1%
DRAWING	7	2	9	18	0.5%	1.0%	0.4%	0.5%
TECHNOLOGICAL EDUCATION	35	5	16	56	2.7%	2.6%	0.7%	1.4%
PHYSICS	182	19	125	326	13.8%	9.9%	5.1%	8.2%
GEOGRAPHY	69	0	52	121	5.2%	0.0%	2.1%	3.1%
COMPUTER SCIENCE	93	44	544	681	7.1%	22.9%	22.3%	17.2%
HISTORY	90	2	35	127	6.8%	1.0%	1.4%	3.2%
MODERN LANGUAGES	26	2	32	60	2.0%	1.0%	1.3%	1.5%
ROMANIAN LANGUAGE	45	2	26	73	3.4%	1.0%	1.1%	1.8%
MATHEMATICS	167	16	130	313	12.7%	8.3%	5.3%	7.9%
SOCIAL AND HUMANISTIC SCIENCES	1	0	15	16	0.1%	0.0%	0.6%	0.4%
SPECIALISED SUBJECTS	1	0	20	21	0.1%	0.0%	0.8%	0.5%
None	79	5	126	210	6.0%	2.6%	5.2%	5.3%
All	222	36	456	714	16.8%	18.8%	18.7%	18.1%

S13. At which subject did you most enjoy working in the laboratory?

	GIM	SAC	HSC	TOTAL	GIM	SAC	HSC	TOTAL
BIOLOGY	417	12	280	709	31.6%	6.3%	11.5%	17.9%
CHEMISTRY	232	15	342	589	17.6%	7.8%	14.0%	14.9%
DRAWING	26		35	61	2.0%	0.0%	1.4%	1.5%
TECHNOLOGICAL EDUCATION	49	6	44	99	3.7%	3.1%	1.8%	2.5%
PHYSICS	239	6	285	530	18.1%	3.1%	11.7%	13.4%
GEOGRAPHY	279	3	166	448	21.2%	1.6%	6.8%	11.3%
COMPUTER SCIENCE	433	122	1541	2096	32.8%	63.5%	63.1%	53.0%
HISTORY	270	2	65	337	20.5%	1.0%	2.7%	8.5%
MODERN LANGUAGES	103		88	191	7.8%	0.0%	3.6%	4.8%
ROMANIAN LANGUAGE	121	4	101	226	9.2%	2.1%	4.1%	5.7%
MATHEMATICS	325	4	145	474	24.6%	2.1%	5.9%	12.0%
SOCIAL AND HUMANISTIC SCIENCES	18		27	45	1.4%	0.0%	1.1%	1.1%
SPECIALISED SUBJECTS	3	5	82	90	0.2%	2.6%	3.4%	2.3%
None	23		14	37	1.7%	0.0%	0.6%	0.9%

All	12	1	65	78	0.9%	0.5%	2.7%	2.0%

S14. At which subject did you most like the programmes?

	GIM	SAC	HSC	TOTAL	GIM	SAC	HSC	TOTAL
BIOLOGY	406	14	207	627	30.8%	7.3%	8.5%	15.9%
CHEMISTRY	180	5	200	385	13.6%	2.6%	8.2%	9.7%
DRAWING	9		18	27	0.7%	0.0%	0.7%	0.7%
TECHNOLOGICAL EDUCATION	40	2	28	70	3.0%	1.0%	1.1%	1.8%
PHYSICS	193	9	216	418	14.6%	4.7%	8.8%	10.6%
GEOGRAPHY	232	13	140	385	17.6%	6.8%	5.7%	9.7%
COMPUTER SCIENCE	215	73	1065	1353	16.3%	38.0%	43.6%	34.2%
HISTORY	227	2	53	282	17.2%	1.0%	2.2%	7.1%
MODERN LANGUAGES	60	2	38	100	4.5%	1.0%	1.6%	2.5%
ROMANIAN LANGUAGE	144	4	56	204	10.9%	2.1%	2.3%	5.2%
MATHEMATICS	308	4	108	420	23.4%	2.1%	4.4%	10.6%
SOCIAL AND HUMANISTIC SCIENCES	7		26	33	0.5%	0.0%	1.1%	0.8%
SPECIALISED SUBJECTS	3	10	50	63	0.2%	5.2%	2.0%	1.6%
None	14	1	21	36	1.1%	0.5%	0.9%	0.9%
All	23	6	160	189	1.7%	3.1%	6.6%	4.8%

S15. At which subject do you think that lessons in the laboratory helped you classmates learn more?

	GIM	SAC	HSC	TOTAL	GIM	SAC	HSC	TOTAL
BIOLOGY	562	22	553	1137	42.6%	11.5%	22.6%	28.8%
CHEMISTRY	401	19	455	875	30.4%	9.9%	18.6%	22.1%
MATHEMATICS	13	2	93	108	1.0%	1.0%	3.8%	2.7%
MODERN LANGUAGES	332	33	645	1010	25.2%	17.2%	26.4%	25.6%
COMPUTER SCIENCE	400	31	640	1071	30.3%	16.1%	26.2%	27.1%
GEOGRAPHY	208	30	220	458	15.8%	15.6%	9.0%	11.6%
PHYSICS	491	35	319	845	37.2%	18.2%	13.1%	21.4%
DRAWING	37	4	152	193	2.8%	2.1%	6.2%	4.9%
HISTORY	142	11	193	346	10.8%	5.7%	7.9%	8.8%
SOCIAL AND HUMANISTIC SCIENCES	148	27	255	430	11.2%	14.1%	10.4%	10.9%
ROMANIAN LANGUAGE	359	7	215	581	27.2%	3.6%	8.8%	14.7%
TECHNOLOGICAL EDUCATION	13	19	287	319	1.0%	9.9%	11.8%	8.1%
SPECIALISED SUBJECTS	473	96	1739	2308	35.9%	50.0%	71.2%	58.4%
All	10	5	31	46	0.8%	2.6%	1.3%	1.2%

S16. Lessons in the computer laboratory help or don't help:

		Help them	Don't help them	Make it more difficult for them	I cannot say	NA
a.	good students	3242	83	29	347	252
b.	weak students	2758	159	317	506	213
c.	girls	2817	71	75	612	378
d.	boys	2857	64	57	590	385

		Help them	Don't help them	Make it more difficult for them	I cannot say	NA
a.	good students	82.0%	2.1%	0.7%	8.8%	6.4%
b.	weak students	69.8%	4.0%	8.0%	12.8%	5.4%
c.	girls	71.3%	1.8%	1.9%	15.5%	9.6%
d.	boys	72.3%	1.6%	1.4%	14.9%	9.7%

Students' opinion based on gender:

		1	2	3	4	NA	Total	1	2	3	4
S16 a	M	1422	58	17	165	121	1783	79.8%	3.3%	1.0%	9.3%
	F	1809	25	12	179	117	2142	84.5%	1.2%	0.6%	8.4%
S16 b	M	1181	88	155	242	117	1783	66.2%	4.9%	8.7%	13.6%
	F	1564	71	161	263	83	2142	73.0%	3.3%	7.5%	12.3%
S16 c	M	1144	59	66	327	187	1783	64.2%	3.3%	3.7%	18.3%
	F	1662	12	9	283	176	2142	77.6%	0.6%	0.4%	13.2%
S16 d	M	1317	35	25	239	167	1783	73.9%	2.0%	1.4%	13.4%
	F	1532	29	32	349	200	2142	71.5%	1.4%	1.5%	16.3%

S17. Would you like to use more computers and the Internet for lessons at different subjects?

	Total	Yes	No	NA	Total
S17	3953	95.1%	4.2%	0.7%	100.0%

S18. Children who do not have access to a computer may find themselves at a disadvantage later?

	Total	Yes	No	NA	Total
S18	3953	90.4%	8.7%	0.9%	100.0%

S19. Can the use of computers without limit be harmful?

	Total	Yes	No	NA	Total
S19	3953	87.0%	12.1%	0.8%	100.0%

ANNEX 4. The List of Schools Included in the Sample

A4.1. Schools

School code	County	Town/ Village	School Name	No. of teachers	No. of students
001	ALBA	SIBOT	SC. CLASELE I-VIII SIBOT	6	10
002	ALBA	CIUMBRUD	SC. CLASELE I-VIII	6	10
003	ALBA	CIUMBRUD	GRS AGRICOL "ALEXANDRU BORZA"	12	40
004	ALBA	CUGIR	COL.NAT. "DAVID PRODAN" CUGIR	12	40
005	ARAD	PAULIS	SC. CLASELE I-VIII PAULIS	6	10
006	ARAD	SAMPETRU GERMAN	SC. CLASELE I-VIII SAMPETRU GERMAN	6	10
007	ARAD	ARAD	SC. CLASELE I-VIII MIHAI EMINESCU	6	10
008	ARAD	SEBIS	GRS INDUSTRIAL SEBIS	12	40
009	ARAD	ARAD	COL.TEH. DE CONSTR. SI PROT. MEDIULUI	12	40
010	ARGES	VALEA MARE-STEFANESTI	SC. CLASELE I-VIII VL.MARE-STEFANESTI	6	10
011	ARGES	BUDEASA	SC. CLASELE I-VIII CALOTESTI	6	10
012	ARGES	CORBENI	GRS CORBENI	12	40
013	ARGES	CAMPULUNG	SC. CLASELE I-VIII NR. 5	6	10
014	ARGES	PITESTI	SC. CLASELE I-VIII NR. 17	6	10
015	ARGES	PITESTI	LIC TEOLOGIC PENTICOSTAL ELIM	12	40
016	BACAU	COMANESTI	SC. CLASELE I-VIII NR. 3	6	10
017	BACAU	SOLONT	SC. CLASELE I-VIII SOLONT	6	10
018	BACAU	BACAU	SC. CLASELE I-VIII ION LUCA	6	10
019	BACAU	BACAU	COLEGIUL ECONOMIC "ION GHICA"	12	40
020	BIHOR	GIRISUL DE CRIS	SC. CLASELE I-VIII GIRISUL DE CRIS	6	10
021	BIHOR	DERNA	SC. CLASELE I-VIII DERNA	6	10
022	BIHOR	LUNCASPRIE	SC. CLASELE I-VIII LUNCASPRIE	6	10
023	BIHOR	ORADEA	SC. CLASELE I-VIII DACIA	6	10
024	BIHOR	NUCET	SC. CLASELE I-VIII NUCET	6	10
025	BIHOR	ORADEA	COL.NAT. EMANUIL GOJDU	12	40
026	BIHOR	ORADEA	LIC TEORETIC "AUREL LAZAR"	12	40
027	BISTRITA NASAUD	ILVA MICA	SC. CLASELE I-VIII NR.1	6	10
028	BISTRITA NASAUD	MAGURA ILVEI	SC. CLASELE I-VIII MAGURA ILVEI	6	10
029	BISTRITA NASAUD	PERIS	GRS CETATE PERIS	12	40
030	BISTRITA NASAUD	BISTRITA	GRS SANITAR	12	40
031	BOTOSANI	ROMA	SC. CLASELE I-VIII ROMA	6	10
032	BOTOSANI	DRĂGUȘENI	SC. CLASELE I-VIII DRĂGUȘENI	6	10
033	BOTOSANI	BOTOSANI	SC. CLASELE I-VIII NR. 13	6	10
034	BOTOSANI	BOTOSANI	LIC DE STIINTELE NATURII "GRIGORE ANTIPA"	12	40
035	BRAILA	TATARU	SC. CLASELE I-VIII - SAM TATARU	6	10
036	BRAILA	BRAILA	SC. CLASELE I-VIII “ECATERINA TEODOROIU”	6	10
037	BRAILA	BRAILA	SC. CLASELE I-VIII NR.10	6	10
038	BRAILA	BRAILA	GRS "GRIGORE MOISIL"	12	40

039	BRASOV	HOLBAV	SC. CLASELE I-VIII HOLBAV	6	10
040	BRASOV	TARLUNGENI	SC. CLASELE I-VIII TARLUNGENI	6	10
041	BRASOV	BRAN	LIC TEORETIC "SEXTIL PUSCARIU" BRAN	12	40
042	BRASOV	FAGARAS	SC. CLASELE I-VIII NR. 1 FAGARAS	6	10
043	BRASOV	SACELE	GRS CONSTRUCTII-MONTAJ SACELE	12	40
044	BRASOV	BRASOV	COL.NAT. "UNIREA" BRASOV	12	40
045	BUCURESTI	BUCURESTI	SC. CU CLASELE I-VIII NR.178	6	10
046	BUCURESTI	BUCURESTI	SC. CU CLASELE I-VIII NR. 31	6	10
047	BUCURESTI	BUCURESTI	SC. CU CLASELE I-VIII NR. 88	6	10
048	BUCURESTI	BUCURESTI	SC. CU CLASELE I-VIII NR. 70	6	10
049	BUCURESTI	BUCURESTI	SC. CU CLASELE I-VIII NR. 79	6	10
050	BUCURESTI	BUCURESTI	SC. CLASELE I-VIII NR. 124 "VOIEVODUL MIHAI"	6	10
051	BUCURESTI	BUCURESTI	SC. CLASELE I-VIII NR. 198	6	10
052	BUCURESTI	BUCURESTI	GRS INDUSTRIAL "GHEORGHE ASACHI"	12	40
053	BUCURESTI	BUCURESTI	COL.NAT. "IULIA HASDEU"	12	40
054	BUCURESTI	BUCURESTI	COL.TEH. "EDMOND NICOLAU"	12	40
055	BUCURESTI	BUCURESTI	LIC WALDORF	12	40
056	BUCURESTI	BUCURESTI	LIC TEORETIC "STEFAN ODOBLEJA"	12	40
057	BUZAU	BUDA	SC. CLASELE I-VIII BUDA	6	10
058	BUZAU	ZIDURI	SC. CLASELE I-VIII ZIDURI	6	10
059	BUZAU	BUZAU	SC. CLASELE I-VIII NR. 15	6	10
060	BUZAU	BUZAU	GRS INDUSTRIAL "CONTACTOARE" MUNICIPIUL BUZAU	12	40
061	BUZAU	BUZAU	LIC DE ARTA MUNICIPIUL BUZAU	12	40
062	CALARASI	DRAGALINA	SC. CLASELE I-VIII DRAGALINA	6	10
063	CALARASI	CHIRNOGI	SC. CLASELE I-VIII NR. 3	6	10
064	CALARASI	OLTENITA	SC. CLASELE I-VIII NR. 3	6	10
065	CARAS SEVERIN	GRADINARI	SC. CLASELE I-VIII GRADINARI	6	10
066	CARAS SEVERIN	RESITA	SC. CLASELE I-VIII NR. 12	6	10
067	CARAS SEVERIN	MOLDOVA NOUA	GRS INDUSTRIAL MOLDOVA NOUA	12	40
068	CARAS SEVERIN	RESITA	LIC TEORETIC "TRAIAN LALESCU" RESITA	12	40
069	CLUJ	CALATELE	SC. CLASELE I-VIII CALATELE	6	10
070	CLUJ	GARBAU	SC. CLASELE I-VIII GARBAU	6	10
071	CLUJ	TURDA	SC. CLASELE I-VIII ANDREI SAGUNA	6	10
072	CLUJ	TURDA	GRS DE RESURSE NATURALE SI SERVICII	12	40
073	CLUJ	TURDA	COL.TEH. TURDA	12	40
074	CLUJ	CLUJ-NAPOCA	LIC TEORETIC "AVRAM IANCU"	12	40
075	CONSTANTA	COSTINESTI	SC. CLASELE I-VIII COSTINESTI	6	10
076	CONSTANTA	TOPRAISAR	GRS TOPRAISAR	12	40
077	CONSTANTA	OLTINA	SCOALA DE ARTE SI MESERII OLTINA	3	20
078	CONSTANTA	CONSTANTA	SC. CLASELE I-VIII NR. 8	6	10
079	CONSTANTA	CONSTANTA	SC. CLASELE I-VIII D. STIUBEI	6	10
080	CONSTANTA	MEDGIDIA	SC. CLASELE I-VIII NR. 2	6	10
081	CONSTANTA	MEDGIDIA	COL.NAT. "KEMAL ATATURK" MEDGIDIA	12	40
082	COVASNA	GHELNITA	SC. CLASELE I-VIII JANCSO BENEDEK	6	10
083	COVASNA	INTORSURA BUZAULUI	GRS "NICOLAE BALCESCU"	12	40
084	COVASNA	SFANTU GHEORGHE	LIC TEORETIC "SZEKELY MIKO"	12	40
085	DAMBOVITA	HULUBESTI	SC. CLASELE I-VIII NR. 1	6	10

086	DAMBOVITA	SELARU	SC. CLASELE I-VIII SELARU	6	10
087	DAMBOVITA	ULIESTI	SC. CLASELE I-VIII ULIESTI	6	10
088	DAMBOVITA	MORENI	SC. CLASELE I-VIII NR. 4	6	10
089	DAMBOVITA	TARGOVISTE	GRS IND. “NICOLAE CIORANESCU”	12	40
090	DOLJ	CIUPERCENII NOI	SC. CLASELE I-VIII	6	10
091	DOLJ	POIANA MARE	SC. CLASELE I-VIII NR. 2	6	10
092	DOLJ	CRAIOVA	SC. CLASELE I-VIII NR. 9 PETRACHE POENARU	6	10
093	DOLJ	CRAIOVA	SC. CLASELE I-VIII NR. 25	6	10
094	DOLJ	CRAIOVA	COL.NAT. ELENA CUZA CRAIOVA	12	40
095	GALATI	CUDALBI	SC. CLASELE I-VIII NR.1	6	10
096	GALATI	MUNTENI	SC. CLASELE I-VIII	6	10
097	GALATI	GALATI	SC. CLASELE I-VIII NR. 11 "MIHAIL SADOVEANU"	6	10
098	GALATI	TECUCI	SC. CLASELE I-VIII NR. 7	6	10
099	GALATI	GALATI	GRS "ELENA DOAMNA" (ALIMENTAR 1)	12	40
100	GALATI	GALATI	COL.NAT. "M.KOGALNICEANU"	12	40
101	GIURGIU	VEDEA	SC. CLASELE I-VIII VEDEA	6	10
102	GIURGIU	GAUJANI	SC. CLASELE I-VIII GAUJANI	6	10
103	GIURGIU	MALU SPART	SC. CLASELE I-VIII MALU SPART	6	10
104	GORJ	URECHESTI	SC. CLASELE I-VIII URECHESTI	6	10
105	GORJ	ALIMPESTI	SC. CLASELE I-VIII ALIMPESTI	6	10
106	GORJ	POCIOVALISTEA	SC. CLASELE I-VIII NR. 1 POCIOVALISTEA	6	10
107	GORJ	TARGU-JIU	GRS NR.1 TG-JIU	12	40
108	GORJ	TARGU-JIU	COL.NAT. "SPIRU HARET" TG-JIU	12	40
109	HARGHITA	LUNCA DE JOS	SC. CLASELE I-VIII NR. 1 "MAJLATH GUSZTAV KAROLY"	6	10
110	HARGHITA	BILBOR	SC. CLASELE I-VIII NR. 1 "O.C.TASLAUANU"	6	10
111	HARGHITA	DITRAU	GRS "PUSKAS TIVADAR" DITRAU	12	40
112	HARGHITA	TOPLITA	LIC TEORETIC"KEMENY JANOS" TOPLITA	12	40
113	HARGHITA	ODORHEIU SECUIESC	LIC TEORETIC "TAMASI ARON" ODORHEI	12	40
114	HUNEDOARA	ANINOASA	SC. CLASELE I-VIII CU CLASELE I - VIII "SF. VARVARA"	6	10
115	HUNEDOARA	PUI	SC. CLASELE I-VIII PUI	6	10
116	HUNEDOARA	HUNEDOARA	SC. CLASELE I-VIII CU CLASELE I - VIII NR. 7	6	10
117	HUNEDOARA	PETRILA	SC. CLASELE I-VIII CU CLASELE I - VIII PETRILA	6	10
118	HUNEDOARA	DEVA	GRS IND. "HOREA" DEVA	12	40
119	IALOMITA	ANDRASESTI	SC. CLASELE I-VIII ANDRASESTI	6	10
120	IALOMITA	SLOBOZIA	COL.NAT. "M.VITEAZUL" SLOBOZIA	12	40
121	IASI	COTNARI	SC. CLASELE I-VIII STEFAN CEL MARE	6	10
122	IASI	MIRCESTI	SC. CLASELE I-VIII IUGANI	6	10
123	IASI	SIPOTE	SC. CLASELE I-VIII SIPOTE	6	10
124	IASI	OSOI	SC. CLASELE I-VIII OSOI	6	10
125	IASI	HARLAU	SC. CLASELE I-VIII PIRCOVACI	6	10
126	IASI	TARGU FRUMOS	SC. CLASELE I-VIII G. IBRAILEANU	6	10
127	IASI	IASI	GRS "STEFAN PROCOPIU" IASI	12	40
128	IASI	IASI	LIC ECONOMIC ADMINISTRATIV NR.1	12	40
129	ILFOV	DOBROESTI	SC. CLASELE I-VIII NR. 1	6	10
130	ILFOV	DARASTI	SC. CLASELE I-VIII NR. 1	6	10
131	MARAMURES	BOIU MARE	SC. CLASELE I-VIII “DR.TEODOR MIHALI”	6	10
132	MARAMURES	CICARLAU	SC. CLASELE I-VIII CICARLAU	6	10
133	MARAMURES	ULMENI	GRS "DR.FLORIAN ULMEANU" ULMENI	12	40

134	MARAMURES	BAIA MARE	SC. CU CLASELE I-VIII "I. L. CARAGIALE"	6	10
135	MARAMURES	TAUTII DE SUS	SC. CLASELE I-VIII IOAN SLAVICI	6	10
136	MARAMURES	SOMCUTA MARE	GRS "IOAN BUTEANU" SOMCUTA MARE	12	40
137	MARAMURES	SIGHETU MARMATIEI	LIC "LEOWEY KLARA"	12	40
138	MEHEDINTI	DIRVARI	SC. CLASELE I-VIII DIRVARI	6	10
139	MEHEDINTI	SISESTI	LIC TEORETIC " GHEORGE IONESCU SISESTI"	12	40
140	MURES	BEICA DE JOS	SC. CLASELE I-VIII BEICA DE JOS	6	10
141	MURES	SANGEORGIU DE MURES	SC. CLASELE I-VIII C. ROMANU-VIVU	6	10
142	MURES	TARGU MURES	SC. CLASELE I-VIII NR. 2	6	10
143	MURES	LUDUS	SC. CLASELE I-VIII NR. 1	6	10
144	MURES	TARGU MURES	GRS "AVRAM IANCU" TG. MURES	12	40
145	MURES	TARGU MURES	LIC TEORETIC "BOLYAI FARKAS" TG. MURES	12	40
146	NEAMT	TIBUCANI	SC. CLASELE I-VIII NR. 1	6	10
147	NEAMT	MOLDOVENI	SC. CLASELE I-VIII MOLDOVENI	6	10
148	NEAMT	GHERAIESTI	SC. CLASELE I-VIII GHERAIESTI	6	10
149	NEAMT	PIATRA NEAMT	SC. CLASELE I-VIII NR. 8	6	10
150	OLT	CRUSOVU	SC. CLASELE I-VIII CRUSOVU	6	10
151	OLT	SCARISOARA	SC. CLASELE I-VIII SCARISOARA	6	10
152	OLT	COLONESTI	SC. CLASELE I-VIII COLONESTI	6	10
153	OLT	CORABIA	SC. CLASELE I-VIII NR. 3 CORABIA	6	10
154	OLT	SCORNICESTI	GRS AGRICOL SCORNICESTI	12	40
155	OLT	SLATINA	COL.NAT. "ION MINULESCU" SLATINA	12	40
156	PRAHOVA	GORGOTA POTIGRAFU	SC. CLASELE I-VIII POTIGRAFU	6	10
157	PRAHOVA	VALCANESTI	SC. CLASELE I-VIII VALCANESTI	6	10
158	PRAHOVA	VALEA CALUGAREASCA	GRS AGRICOL VALEA CALUGAREASCA	12	40
159	PRAHOVA	PLOIESTI	SC. CLASELE I-VIII "CANDIANO POPESCU" PLOIESTI	6	10
160	PRAHOVA	CAMPINA	SC. CLASELE I-VIII URLETA CAMPINA	6	10
161	PRAHOVA	MIZIL	LIC TEORETIC "GRIGORE TOCILESCU"	12	40
162	PRAHOVA	PLOIESTI	SCOALA DE ARTE SI MESERII "TOMA CARAGIU"	3	20
163	SALAJ	SURDUC	SC. CLASELE I-VIII SURDUC	6	10
164	SALAJ	ZALAU	GRS "VOIEVODUL GELU"	12	40
165	SATU MARE	DOROLT	SC. CLASELE I-VIII DOROLT	6	10
166	SATU MARE	VIILE SATU MARE	SC. CLASELE I-VIII VIILE SATU MARE	6	10
167	SATU MARE	NEGRESTI OAS	SC. CLASELE I-VIII NR.3 NEGRESTI OAS	6	10
168	SATU MARE	SATU MARE	LIC TEORETIC GERMAN "JOHHAN ETTINGER " SATU MARE	12	40
169	SIBIU	SEICA MICA	SC. CLASELE I-VIII SEICA MICA	6	10
170	SIBIU	DUMBRAVENI	LIC TEORETIC DUMBRAVENI (SC. CU CLASELE I-VIII)	12	40
171	SIBIU	SIBIU	SC. CLASELE I-VIII "MIHAI EMINESCU"	6	10
172	SIBIU	SIBIU	SC. CLASELE I-VIII NR. 24 SIBIU	6	10
173	SIBIU	SIBIU	GRS DE C-TII SI ARHITECTURA "CAROL I"	12	40
174	SIBIU	MIERCUREA SIBIULUI	GRS "ILIE MACELARIU"	12	40
175	SUCEAVA	FRATAUTII VECHI	SC. CLASELE I-VIII FRATAUTII VECHI	6	10
176	SUCEAVA	BALACEANA	SC. CLASELE I-VIII BALACEANA	6	10
177	SUCEAVA	VATRA MOLDOVITEI	SC. CLASELE I-VIII VATRA MOLDOVITEI	6	10
178	SUCEAVA	RADAUTI	SC. CLASELE I-VIII RADAUTI NR. 1 "GHEORGHE POPADIUC"	6	10

179	SUCEAVA	SUCEAVA	GRS NR. 3 SUCEAVA	12	40
180	TELEORMAN	CIOLANESTI DEAL	SC. CLASELE I-VIII NR. 2	6	10
181	TELEORMAN	SCURTU MARE	SC. CLASELE I-VIII SCURTU MARE	6	10
182	TELEORMAN	VIDELE	SC. CLASELE I-VIII NR. 3	6	10
183	TELEORMAN	ROSIORI DE VEDE	COL.NAT. "ANASTASESCU"	12	40
184	TIMIS	CURTEA	SC. CLASELE I-VIII CURTEA	6	10
185	TIMIS	TEREMIA MARE	SC. CLASELE I-VIII TEREMIA MARE	6	10
186	TIMIS	SANNICOLAU MARE	SC. CLASELE I-VIII NR.1 SANNICOLAU MARE	6	10
187	TIMIS	LUGOJ	SC. CLASELE I-VIII NR.5 LUGOJ	6	10
188	TIMIS	TIMISOARA	GRS ENERGETIC TIMISOARA	12	40
189	TIMIS	TIMISOARA	LIC TEORETIC "VLAD TEPES"	12	40
190	TIMIS	TIMISOARA	LIC TEORETIC "J.L.CALDERON"	12	40
191	TULCEA	NICULITEL	SC. CLASELE I-VIII	6	10
192	TULCEA	TOPOLOG	GRS AGRICOL	12	40
193	TULCEA	MACIN	SC. CLASELE I-VIII "GH. BANEA"	6	10
194	VALCEA	GALICEA	SC. CLASELE I-VIII GALICEA	6	10
195	VALCEA	IONESTI	SC. CLASELE I-VIII	6	10
196	VALCEA	RAMNICU VALCEA	LIC DE MUZICA SI ARTE PLASTICE	12	40
197	VASLUI	HUSI	SC. CLASELE I-VIII NR. 03 "ANASTASIE PANU"	6	10
198	VASLUI	COROIESTI	SC. CLASELE I-VIII COROIESTI	6	10
199	VASLUI	LAZA	SCOALA DE ARTE SI MESERII LAZA	3	20
200	VASLUI	VASLUI	SC. CLASELE I-VIII NR. 01 "AL. I. CUZA"	6	10
201	VASLUI	FLORESTI	SC. CLASELE I-VIII FLORESTI	6	10
202	VASLUI	NEGRESTI	GRS INDUSTRIAL NEGRESTI	12	40
203	VRANCEA	MERA	SC. CLASELE I-VIII MERA	6	10
204	VRANCEA	COTESTI	SCOALA CU CLASE I-VIII COTESTI	6	10
205	VRANCEA	ODOBESTI	LIC TEORETIC "D. ZAMFIRESCU"	12	40

A4.2. Distribution of the Teacher's Questionnaires based on Subjects

School code	SUBJECT 1	SUBJECT 2	SUBJECT 3	SUBJECT 4	SUBJECT 5	SUBJECT 6	Additionally, for GIM
001	biology	geography	history	Modern languages	chemistry	physics	computer science
002	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
003	biology	geography	history	Modern languages	chemistry	physics	
003	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
004	Romanian language	mathematics	biology	drawing	geography	history	
004	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
005	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
006	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
007	technological education	drawing	biology	geography	history	Modern languages	computer science
008	biology	geography	history	Modern languages	chemistry	physics	
008	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
009	biology	geography	history	Modern languages	chemistry	physics	Romanian language
009	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
010	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
011	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
012	biology	geography	history	Modern languages	chemistry	physics	Romanian language
012	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
013	biology	geography	history	Modern languages	chemistry	physics	computer science
014	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
015	biology	geography	history	Modern languages	chemistry	physics	
015	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
016	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
017	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
018	technological education	drawing	biology	geography	history	Modern languages	computer science
019	biology	geography	history	Modern	chemistry	physics	

				languages			
019	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
020	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
021	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
022	biology	geography	history	Modern languages	chemistry	physics	computer science
023	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
024	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
025	biology	geography	history	Modern languages	chemistry	physics	
025	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
026	biology	geography	history	Modern languages	chemistry	physics	
026	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
027	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
028	technological education	drawing	biology	geography	history	Modern languages	computer science
029	biology	geography	history	Modern languages	chemistry	physics	
029	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
030	biology	geography	history	Modern languages	chemistry	physics	
030	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
031	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
032	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
033	biology	geography	history	Modern languages	chemistry	physics	computer science
034	Romanian language	mathematics	biology	drawing	geography	history	
034	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
035	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
036	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
037	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
038	biology	geography	history	Modern languages	chemistry	physics	
038	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
039	technological education	drawing	biology	geography	history	Modern languages	computer science
040	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
041	biology	geography	history	Modern languages	chemistry	physics	

041	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
042	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
043	biology	geography	history	Modern languages	chemistry	physics	
043	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
044	biology	geography	history	Modern languages	chemistry	physics	
044	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
045	biology	geography	history	Modern languages	chemistry	physics	computer science
046	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
047	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
048	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
049	technological education	drawing	biology	geography	history	Modern languages	computer science
050	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
051	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
052	biology	geography	history	Modern languages	chemistry	physics	
052	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
053	biology	geography	history	Modern languages	chemistry	physics	
053	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
054	biology	geography	history	Modern languages	chemistry	physics	
054	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
055	Romanian language	mathematics	biology	drawing	geography	history	
055	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
056	biology	geography	history	Modern languages	chemistry	physics	
056	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
057	biology	geography	history	Modern languages	chemistry	physics	computer science
058	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
059	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
060	biology	geography	history	Modern languages	chemistry	physics	
060	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	

061	biology	geography	history	Modern languages	chemistry	physics	
061	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
062	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
063	technological education	drawing	biology	geography	history	Modern languages	computer science
064	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
065	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
066	biology	geography	history	Modern languages	chemistry	physics	computer science
067	biology	geography	history	Modern languages	chemistry	physics	
067	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
068	biology	geography	history	Modern languages	chemistry	physics	
068	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
069	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
070	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
071	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
072	biology	geography	history	Modern languages	chemistry	physics	
072	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
073	biology	geography	history	Modern languages	chemistry	physics	
073	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
074	Romanian language	mathematics	biology	drawing	geography	history	
074	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
075	technological education	drawing	biology	geography	history	Modern languages	computer science
076	biology	geography	history	Modern languages	chemistry	physics	
076	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
077	biology	geography	history	Modern languages	chemistry	physics	
077	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
078	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
079	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
080	biology	geography	history	Modern languages	chemistry	physics	computer science
081	biology	geography	history	Modern	chemistry	physics	

				languages			
081	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
082	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
083	biology	geography	history	Modern languages	chemistry	physics	
083	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
084	biology	geography	history	Modern languages	chemistry	physics	
084	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
085	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
086	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
087	technological education	drawing	biology	geography	history	Modern languages	computer science
088	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
089	biology	geography	history	Modern languages	chemistry	physics	
089	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
090	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
091	biology	geography	history	Modern languages	chemistry	physics	computer science
092	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
093	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
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094	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
095	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
096	technological education	drawing	biology	geography	history	Modern languages	computer science
097	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
098	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
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101	biology	geography	history	Modern languages	chemistry	physics	computer science
102	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
103	chemistry	physics	Romanian language	mathematics	biology	geography	computer science

104	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
105	technological education	drawing	biology	geography	history	Modern languages	computer science
106	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
107	biology	geography	history	Modern languages	chemistry	physics	
107	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
108	Romanian language	mathematics	biology	drawing	geography	history	
108	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
109	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
110	biology	geography	history	Modern languages	chemistry	physics	computer science
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117	technological education	drawing	biology	geography	history	Modern languages	computer science
118	biology	geography	history	Modern languages	chemistry	physics	
118	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
119	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
120	biology	geography	history	Modern languages	chemistry	physics	
120	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
121	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
122	biology	geography	history	Modern languages	chemistry	physics	computer science
123	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
124	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
125	history	Modern	chemistry	physics	Romanian	mathematics	computer

		languages			language		science
126	technological education	drawing	biology	geography	history	Modern languages	computer science
127	biology	geography	history	Modern languages	chemistry	physics	
127	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
128	biology	geography	history	Modern languages	chemistry	physics	
128	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
129	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
130	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
131	biology	geography	history	Modern languages	chemistry	physics	computer science
132	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
133	biology	geography	history	Modern languages	chemistry	physics	
133	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
134	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
135	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
136	biology	geography	history	Modern languages	chemistry	physics	
136	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
137	Romanian language	mathematics	biology	drawing	geography	history	
137	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
138	technological education	drawing	biology	geography	history	Modern languages	computer science
139	biology	geography	history	Modern languages	chemistry	physics	
139	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
140	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
141	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
142	biology	geography	history	Modern languages	chemistry	physics	computer science
143	Romanian language	mathematics	biology	geography	history	Modern languages	computer science
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145	biology	geography	history	Modern languages	chemistry	physics	
145	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialised subjects	
146	chemistry	physics	Romanian	mathematics	biology	geography	computer

			language				science
147	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
148	technological education	drawing	biology	geography	history	Modern languages	computer science
149	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
150	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
151	biology	geography	history	Modern languages	chemistry	physics	computer science
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157	technological education	drawing	biology	geography	history	Modern languages	computer science
158	biology	geography	history	Modern languages	chemistry	physics	
158	Romanian language	mathematics	technological education	social and humanistic sciences	computer science	specialitate	
159	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
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166	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
167	history	Modern languages	chemistry	physics	Romanian language	mathematics	computer science
168	Romanian language	mathematics	biology	drawing	geography	history	
168	Romanian	mathematics	technological	social and	computer	specialised	

	language		education	humanistic sciences	science	subjects	
169	technological education	drawing	biology	geography	history	Modern languages	computer science
170	biology	geography	history	Modern languages	chemistry	physics	
170	Romanian language	mathematics	technological education	drawing	computer science	specialised subjects	
171	chemistry	physics	Romanian language	mathematics	biology	geography	computer science
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190	Romanian	mathematics	biology	drawing	geography	history	

	language						
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