

# The Organisational and Personnel Aspects of Introducing ICT into Grammar Schools

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This article presents the results of comparisons between investment into ICT and the current state of equipment in Slovenian high schools compared to similar schools in the EU member states. Extensive research is based on surveying and interviews with the headmasters of 10 Slovenian high schools, jointly representing a typical sample of schools, as well as the different aspects of using ICT in their schools. The research results have shown that Slovenian high schools are substantially worse equipped with ICT than similar schools in the developed countries of the EU. This is evident in the lack of modern forms of organization, operation and education based on ICT. Slovenian high schools can only modernize their organization and operations if the Slovenian government starts investing substantially more into purchasing equipment, teacher training and the promotion of the knowledge, skills and competences that can only be developed using ICT.

**Key words:** ICT, education, high school, schools equipment

## 1 Introduction

Changes in modern society, where ICT occupies a very strong position and has been implemented in practically all spheres of life, were not followed properly by the formal educational systems. There are many reasons. Besides finances and personnel, there is also another one of great importance, namely that a doctrine of modern education based on ICT has not yet been formed, or in other words, opinions and methods differ highly. The formal approach, particularly the educational system (and this is especially true for the grammar schools), is traditionally conservative and does not accept vague solutions, which are still very common in the relatively new and fast growing field of ICT. Pedagogues and didacticians have especially big dilemmas since their opinion is that the basis should be done first (Rebolj, 2009) and the introduction of technology can only follow after that. In the field of modern education, which is generally referred to as e-education, Slovenia is only in the preliminary stage (Arh et al., 2008), while, in the area of grammar school education, it is even further back in the consideration stage, still considering "what to do" with education of this kind. At the same time, this condition is the result of society's attitude towards these technologies, which is also showed by the results of investment in ICT in the EU for 2006 (Computer usage ..., 2009).

The Information or even the cybernetic society is based on data processing systems and communication systems for transferring and sharing data. The entire technical support for the information society is based on information technology (IT). The introduction of new technologies and new equipment is inevitably connected to major organizational changes, financial and spatial investments and personnel demands – and

this is why it is very hard to find a place for it in the educational system (Gaytan, 2007). However, without adequate technology that exceeds the critical level, it is not possible to fully renovate schools. Especially problematic is the segment of grammar school education, which encompasses a major part of the population, which is the same as general education but has the largest number of teachers of general subjects, who are classically educated and orientated and do not have immediate interest in economy and among the sponsors.

The purpose of this article and the research, on which it is based, is to give an overview of the conditions of ICT in selected Slovenian grammar schools, which, in regard to their size and location in diverse surroundings, present a typical sample. Work was directed mostly towards the organisational and staff aspects of introducing modern technologies to a grammar school. We analysed how well are the schools equipped with ICT, the use of this equipment in school's activity, organisation and in the realization of the teaching process. The purpose of the research was also to estimate the portion of teachers who use ICT equipment and the modern way of working in connection with it. Through a poll and by talking to headmasters, we tried to determine what the visions or plans of individual headmasters or schools were in the field of ICT in the coming years. This data was compared to key documents about the anticipated updating and developing of Slovenian grammar schools (Izhodišča ..., 2007, Republika Slovenija: Nacionalna strategija ..., 2006), which in our opinion do not contain requests and standards of modern ICT schools, nor do they plan the required funding for modernization of grammar schools with ICT equipment. On the basis of the collected data and the comparison of Slovenian grammar school equipment to similar schools in the most developed countries of

the EU, we prepared some evaluations and starting points or suggestions for concrete handling in the processes of updating Slovenian grammar schools.

### 1.1 The Role and Meaning of ICT in Organization and Work in Educational Institutions

The first research articles on the subject of the dilemmas concerning the new ICT technologies in education, started to appear in the early 1990's. Howard Rheingold, in his well known book *Virtual Community* (Rheingold, 1993), exposed the communicative qualities of the internet, whereas Robert Burnett and P. David Marshall wrote about the possibilities of group and community formation without spatial and temporal limitations (Burnett and Marshall, 2003: 8). That era was especially marked by expansive possibilities in the use of the internet. The internet offered a broad field of activities and improvements: electronic business should enable better business solutions and the internet, as an exceptional information basis of data functions, acted as a highly diverse library that is always at hand for an individual.

New IC technologies and possibilities were pressured towards rapid implementation and integrated into as many fields of everyday life as possible; critics named these approaches »technological rationality« (Burnett and Marshall 2003: 9). In those times, the internet became a trend and the question of what content or structure it would be wise to establish on the internet and in which areas we could use it to maximum effect was less important.

After 1993, we witnessed rapid development in ICT technologies and application, especially in the field of business, while in the educational system, innovations were being put into effect very slowly. In Slovenian grammar schools, as in the business world, ICTs were put into effect in accounting services and libraries, in making schedules and, soon after that, into the working environments of school registries and headmasters. Teachers started using computers mostly for writing texts and for tests, whereas in recent years, mostly e-mail and the use of the internet are being implemented.

Access to new technologies for educational purposes was restricted for educational institutions due to technical, financial, personnel and spatial barriers, which still is the case nowadays to a great extent, whereas ICT accessibility for citizens at home grew much more rapidly (Hirsch, 2006). New technologies and possibilities were used in homes increasingly often, especially by young people. In the field of grammar schools, there were no systematic attempts to use new technologies for educational purposes, save for some attempts by some teachers in certain subjects – that is, in classes on computer or information science and with the use of calculators and computers in mathematics.

After 1997 a lot of research was done on the advantages and potential weaknesses and limitations of computer assisted education, encompassing different aspects of this work system, mostly organizational, socio-psychological and communicational. In the educational system, some elements influence positively and others negatively (at least according

to the comprehension of the pedagogical process), but a very important question is whether individual needs and desires can be realized more effectively with the help of computer transferred communication (Golding, 2006).

Many researchers have examined the efficiency of e-education, but too much research was aimed at specific segments; they started to set definitions for segments of the educational process. Only lately, systems for combined education have begun to be considered, which can only achieve better results in combination with the classical. Exclusive e-education is only suitable in a very narrow range – that is, the lower the age of the participants and the lower their educational level, the less suitable it is.

Discussions on social changes as a result of high technological achievements and changes in the last decade of the twentieth century, especially in the field of ICT, have been very impetuous and opinions differ exceedingly (Haralambos and Holborn, 2004). This still stands today and it strongly affects mostly public education and bigger systems that only want to establish tested and verified solutions.

### 1.2 The Conditions in EU and Comparative Data

During the dilemmas about ITC in education, the EU accepted a number of documents, handling the education and schooling of young people in the EU as key competences for a successful life and society (Štraus and Repež, 2006) and as one of the most important: interactive use of instruments also includes the ability to interactively use knowledge and information and also new technologies. The ability to interactively use knowledge and information is a key component in the use of information and knowledge, which allows the individual to operate with knowledge and information and use them for understanding further options, for forming opinions, for making decisions and for active cooperation.

The dilemmas that are forming in grammar schools are about more modernized grammar school organization, which functions on many levels and in more spheres and which are mutually co-dependent and dependent on numerous external and internal conditions.

A hierarchical organization is typical of Slovenian grammar schools; it is put into effect through the headmaster and his departmental assistants, the leaders of work groups, subject teachers and assistants. Programs and organizational forms are prescribed, the teachers' obligations are defined in the annual work plan and even more so within the union framework (promotion, teaching obligations, working hours, salary, etc...). This kind of organization consequently creates a rigid grammar school that no one is satisfied with, as the results of the research by Grmek (2006) and the basis for the renovation of grammar schools (Izhodišča ... , 2007) show.

In Slovenia, a number of projects are being conducted on the topic of ICT and e-education as a part of the programme from 2007 until 2013. In 2006, an organized workshop on the subject of ICT in schools took place in Slovenj Gradec and headmasters could get the latest information on this topic (School leadership ... , 2006). A modern basis for the use

of ICT in education were prepared by the committee for the informatisation of education (Čampelj et al. 2007); more was contributed on the possibilities and tasks in the field of ICT in schools by SIRIKT meetings and reviews.

For organizational and content-related renovation of Slovenian grammar schools, it is absolutely necessary to establish a system that would enable this renovation and later enable the system to function. That is why it is of major importance that a strategy is constructed and established, from a technical point of view and on a national level that would enable the whole system to function, especially with suitable internet portals for supporting e-education. On the school level, educational platforms need to be created. In the EU, the most developed countries have prepared complete and effective solutions and a few examples can be seen on internet sites. In this field in particular, there is a lot of ignorance and lack of knowledge and also, maybe consequently, incomprehension. Also, because this is connected to major investments and personnel demands, the processes occur very slowly.

## 2 Presentation of the Research

In the practical part of the research, we analyzed multiple documents about the condition and the planning to develop Slovenian grammar schools (Izhodišča ... , 2007), as well as other documents from this field in Slovenia (Republika Slovenija Nacionalna strategija ... , 2006), (Čampelj, 2007) and appropriate documents or guidelines from the EU (<http://www.elearningeuropa.info/>, The use of ICT ... , 2009), and some other developed countries in the EU. Some data is from the studies (Gerlič 2005, Senica 2008, Gerlič 2008 and Batagelj 2009). The Ministry of Education and Sport has precise information on equipping schools with ICT equipment.

An important part of the research is the poll that was done among 10 headmasters of Slovenian independent grammar schools (which are not united with school centres) from all around Slovenia; this is how we obtained a good average pattern. The headmasters were asked 87 questions, some of them also including sub-questions, about ICT in grammar schools.

We held an extensive interview with each headmaster. The results of the survey and the interviews were then compared with the data obtained at another Slovenian high school, from which we found that the selected sample presents the situation in Slovenia quite accurately. We are planning to perform research in certain segments at all Slovenian high schools.

### 2.1 The Results of the Examination of the Situation in the Field of ICT in the EU

We compared investments in ICT. In 2006, the average cost per inhabitant in the EU for ICT was 1340 €, Slovenia was ranked in the 14<sup>th</sup> place with 828 € per inhabitant. The first two were Sweden and Denmark with over 2450 € per inhabitant. Countries ranked below us included Greece, The Czech Republic, Slovakia, Poland and, in the last place, Romania with 213 € per inhabitant. In Slovenia, the State invested approximately 31 million € in the educational system for ICT equipment in

the period from 2004 to 2008 and bought 18,000 computers for 300,000 scholars and students – or about 6 computers per 100 students. Schools additionally invested 20 to 50% of their additional funds (Computer usage ... , 2006).

Concrete data on the number of computers in schools is also very interesting. Per 100 students in schools of the grammar school type, there were 12.5 computers in 2006 in the EU 25, 15.6 in EU 15, 41 in Norway, 29 in Sweden, 26 in England, 18 in Finland and only 8 in Slovenia, which put us in a very weak 19<sup>th</sup> place. According to the data from the poll of the headmasters of grammar schools (Raziskava: IKT ... , 2009), Slovenian grammar schools had between 8 and 19 computers per 100 students in January 2009, which is very bad since it has been three years since that data was published by the EU and it shows that Slovenian grammar schools are seriously falling behind.

In 2006, measurements were made of how many teachers use computers for teaching purposes. The EU 25 average in grammar schools is 73% and in EU 15 that average is 76.1% (Computer usage ... , 2006). In 2006 in Slovenia, 54% of teachers used computers, which put them in a very weak 22<sup>nd</sup> place. According to the poll data (Raziskava: IKT ... , 2009), 60% of grammar school teachers use computers to teach, while the use of an e-platform for teaching (mostly Moodle) is just starting, and even that in only approximately 30% of schools and only with certain teachers.

### 2.2 The Results of the Research

We selected certain questions from the research, (Raziskava: IKT ... , 2009) that apply to organization of work, and analyzed them. In the tables and graphs, the results of the answers of selected questions and comments on the analysis of the answers, are presented.

In Figure 1, the results are shown for answers to Question number 16, which reads: ICT services should be organized on the level of the Ministry of Education and Sport, so that schools have as few operative tasks and technological concerns as possible, so they can focus all their energy on the use of ICT in class. The results show that the system should be centrally guided but should also allow schools initiatives.

In Figure 2, the results are shown for answers to Question number 44, which reads: In our grammar school, every student has the possibility of using ICT in school. 60% of headmasters strongly agree with this and 40% of them agree.

Comment: Headmasters realize that differences in accessibility to ICT are causing ever larger gaps among students and this is why the possibility of accessing the equipment at schools is being provided for them (from 3 to 48 hours per week on from 4 to 50 computers). There are big differences between grammar schools in this field.

In Figure 3, the results are shown for answers to Question 63, which reads: In Slovenia, we can rapidly increase the use of ICT in grammar schools if it becomes required for classes and especially if it will not be possible to pass GCE without knowledge and usage of ICT.

Comment: It is very important that it is possible to increase the use of ICT in schools, with the help of a modernized GCE.

Table 1: Answers to Question 15: In your opinion, what organizational factors obstruct the faster introduction of ICT in grammar schools?

	1. I strongly disagree	2. I disagree	3. Undecided	4. I agree	5. I strongly agree
Lack of funds for purchasing equipment and software	0	2	3	3	2
Lack of space	1	4	2	2	1
The school does not have adequate personnel to maintain ICT system.	0	2	1	6	1
The high investment and maintenance costs of ICT.	0	1	1	8	0
High school students have plenty of this technology at home and they want more direct contact with the teacher at school.	0	5	3	2	0
It is possible to achieve good results in the present GCE without ICT.	0	3	0	7	0

Comment: The key problems are high investment and maintenance costs, lack of adequate personnel and the fact that ICT is not seen as necessary for school work (success in GCE).

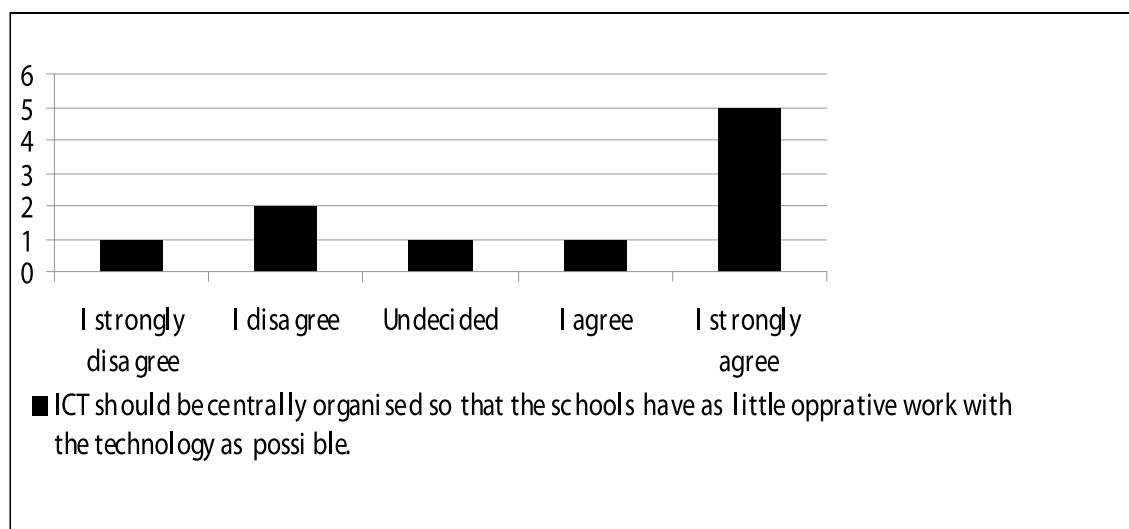


Figure 1: Headmasters' opinions on the organization of ICT in Slovenia

Table 2: Responses to Question 19: In modern society, ICT occupies a very strong position. In grammar schools, we follow these demands and needs

	1. I strongly disagree	2. I disagree	3. Undecided	4. I agree	5. I strongly agree
As fast as the financial means allow	0	1	1	8	0
As fast as pedagogical practice allows	0	4	0	5	1
As fast as recent materials allow it	0	5	2	3	0
As fast as the teachers allow it	0	3	0	4	3
We do not follow these trends because we have too many other obligations	3	4	1	2	0
In the fields where it was most necessary	0	0	2	6	2
Only in subjects where the teachers were interested	1	1	0	7	1

Comment: Grammar schools introduce ICT as fast as the financial means allows, where teachers were interested in it and where it was the most necessary. All other reasons have less influence

Table 3: Answers to Question 25: Introducing ICT into grammar schools is slow and difficult due to:

	1. I strongly disagree	2. I disagree	3. Undecided	4. I agree	5. I strongly agree
Poorly defined solutions, of which there are plenty in the relatively new and fast growing field of ICT.	1	1	1	7	0
Inadequately made study programmes that do not include instructions on the use of ICT.	0	1	1	6	2
An insufficient number of teachers who are qualified to use ICT.	1	0	0	7	2
Resistance on the part of the teachers, who believe that new technology requires everyday work throughout the whole year.	0	1	1	7	1

Comment: Besides the financial and material conditions, inadequate study programmes that do not include the necessity of ICT usage, rigid organization of classes and poorly defined solutions for the use of ICT in schools are also very important inhibitors of the introduction of modern technologies in grammar schools

Table 4: Answers to Question 31: In financing projects and purchasing equipment, we rely on:

	1. I strongly disagree	2. I disagree	3. Undecided	4. I agree	5. I strongly agree
State funds.	1	0	0	4	5
Parental contribution.	0	1	3	6	0
Donations from Slovenian donators.	0	1	2	7	0
Contributions from sponsors.	0	1	2	6	1
Contributions from the grammar school graduates club (alumni).	1	3	2	4	0
Municipality contribution.	0	3	2	5	0
Students will bring computers with them to the school and, in this way, create a completely computerized school.	0	5	4	0	1
Funds from EU projects.	0	0	0	7	3
Donations from foreign foundations looking for young talents.	1	5	2	2	2
Computer companies with interests in the future sale of equipment and who wish to introduce it to young people in schools.	0	1	0	8	1
School reserve funds.	0	3	1	5	0

Comment: headmasters rely on the funds from various sources to purchase ICT equipment, with the main real sources probably being the MES (Ministry for Education and Sport) and parental contributions. In this time of crisis, both could be in even smaller amounts than they have been so far. There are high expectations for EU funds (which, in this case, are practically the same as those from the state) and computer companies, yet this is unrealistic.

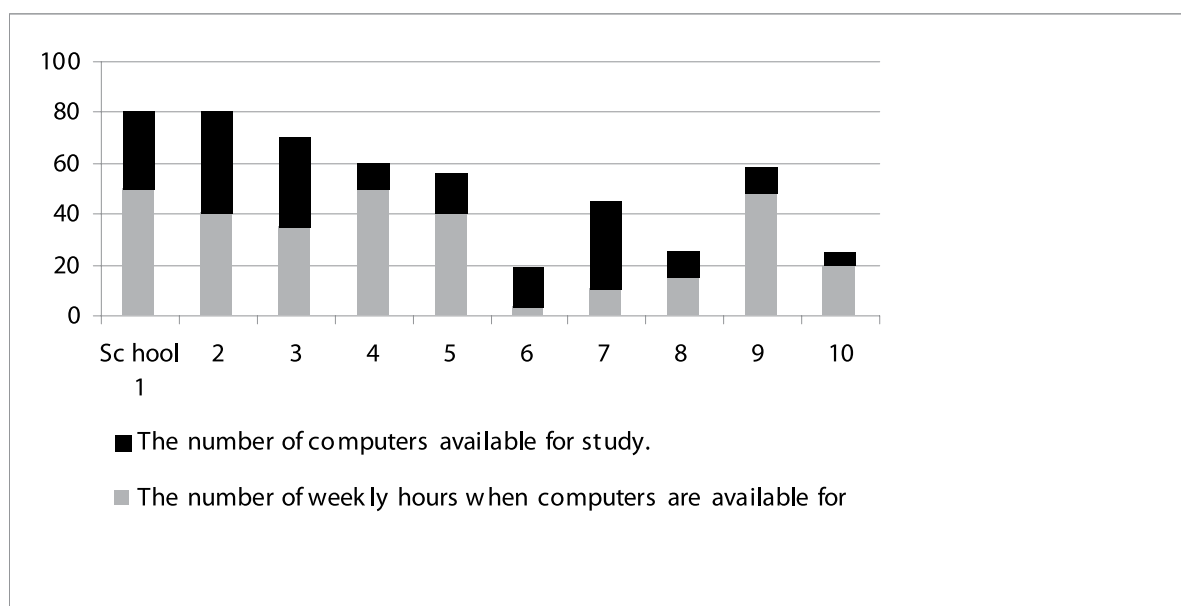


Figure 2: The number of computers which are available to high school students for studying after classes, and how many hours per week

Table 5: Answers to Question 52: Our school has all the necessary information on the intranet for informing students: (please, choose as applicable)

	YES	NO
Weekly school schedule and yearly class calendar	10	0
School events	10	0
Subjects of study	8	2
Teachers – presentation	9	1
Teachers – parent-teacher interview time	10	0
Electronic school grade book	1	9
Teachers – their e-mail addresses	9	1
Headmaster and assistants – their e-mail addresses	10	0
Links to e-materials that were created in the framework of the MES and the European social fund.	8	2
A database of answers to frequent questions about the school and individual subjects.	5	5

Comment: Most of the schools have a well assured system for informing students but all schools should provide at least the above information for more transparent and easy operation. These results were also confirmed by analysis of the web sites of the high schools that participated in the poll.

Table 6: Answers to Question 54: Our school has all the necessary data on the intranet to help the students with studying: (please, choose as applicable)

	YES	NO
An arrangement of topics by individual subjects.	7	3
Teaching material for individual subjects.	8	2
Examples of solved exercises from individual subjects.	8	2
Forums for individual subjects.	6	4
The e-mail addresses of teachers and school management.	9	1
High school students can send questions to teachers.	9	1

Comment: In contrast to the opinions of students and to our analysis of high school internet sites, the headmasters' opinion on this field is highly optimistic. Normally, only a few teachers have matters in good order. The situation of a question service via e-mail is also highly unorganized. Only three schools have a determined time for replying to e-mails (from 20 to 48 hours), while in other schools it can take a few days to get a reply or one is never even sent, as was confirmed by our research.

Table 7: Answers to Question 58. In our grammar school, teaching based on an educational platform (e.g. Moodle) is:

	1. I strongly disagree	2. I disagree	3. Undecided	4. I agree	5. I strongly agree
Highly successful and it has increased interest and the efficiency of classes.	1	0	1	6	1
Introduced experimentally in a couple of subjects.	1	0	0	5	3
Only in the stage of gathering information.	1	3	0	6	5
A part of the program when the MES requests it.	1	2	1	4	1

Comment: The use of e-platforms in grammar schools is only in the preliminary stages and only with some teachers, but it is encouraging that the results are being graded positively.

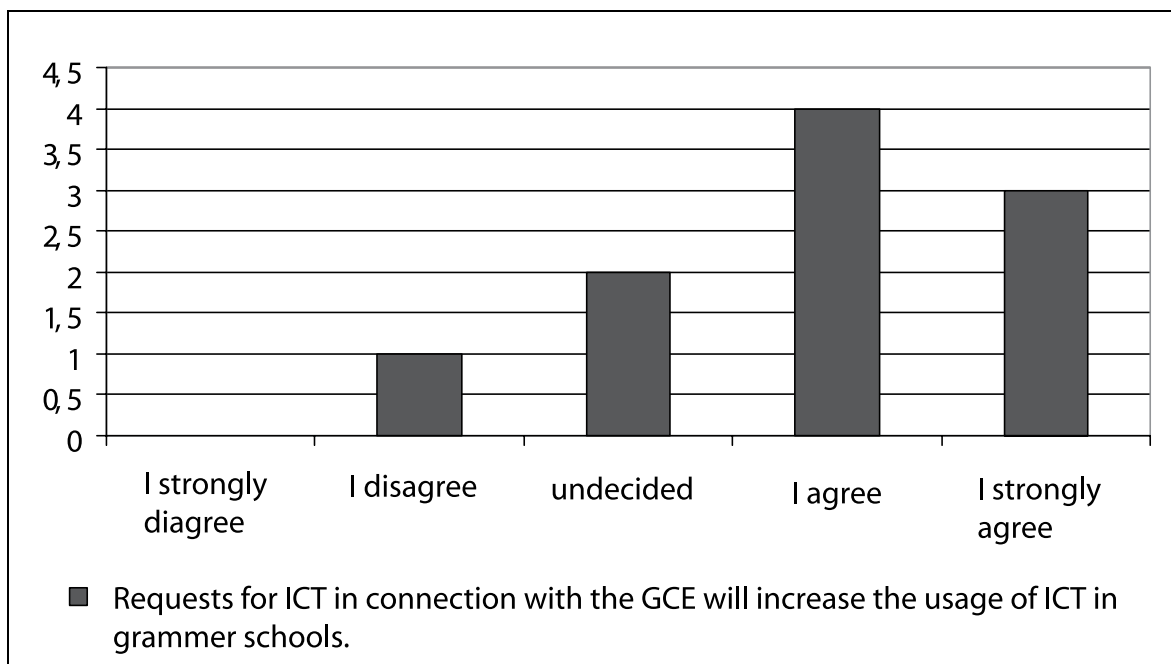


Figure 3: Influence of ICT usage in GCE preparations

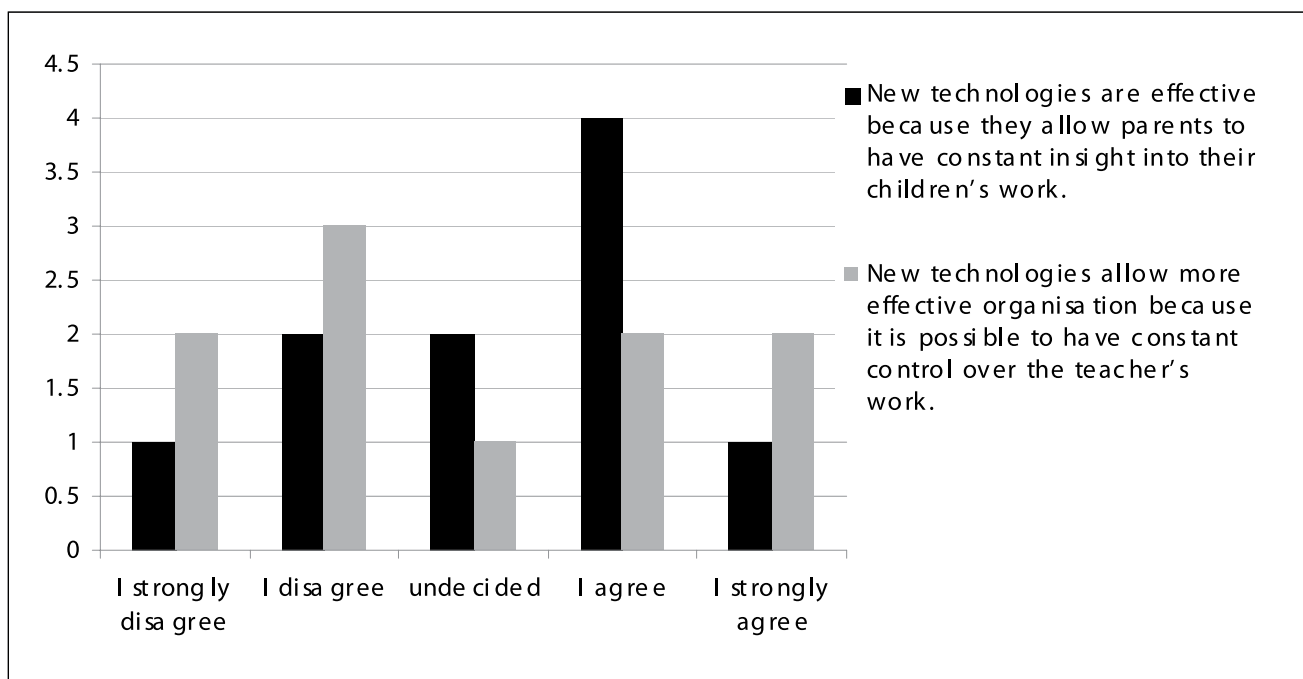


Figure 4: The efficiency of new technologies regarding supervising high school students and teachers

In Figure 4, the results are shown for answers to Question 68, which reads: New technologies allow the more effective organization of work in grammar schools?

Comment: It is interesting to see that headmasters differently value the options about following and supervising the teachers' work, different organization of work and on the parents' possibilities of following their children's results. This is probably, for the most part, the result of a wrong paradigm on teacher autonomy and contradicts the transparency of the system, which is actually supported by the headmasters.

In Figure 5, the results are shown for answers to Question 77, which reads: Too many pedagogues insist that children spend too much of their free time using computers, not caring that they do not have that opportunity in school or that they are not taught how to rationally use modern systems.

Comment: Opinions on the use of computers among young people tend to be very diverse among headmasters and teachers.



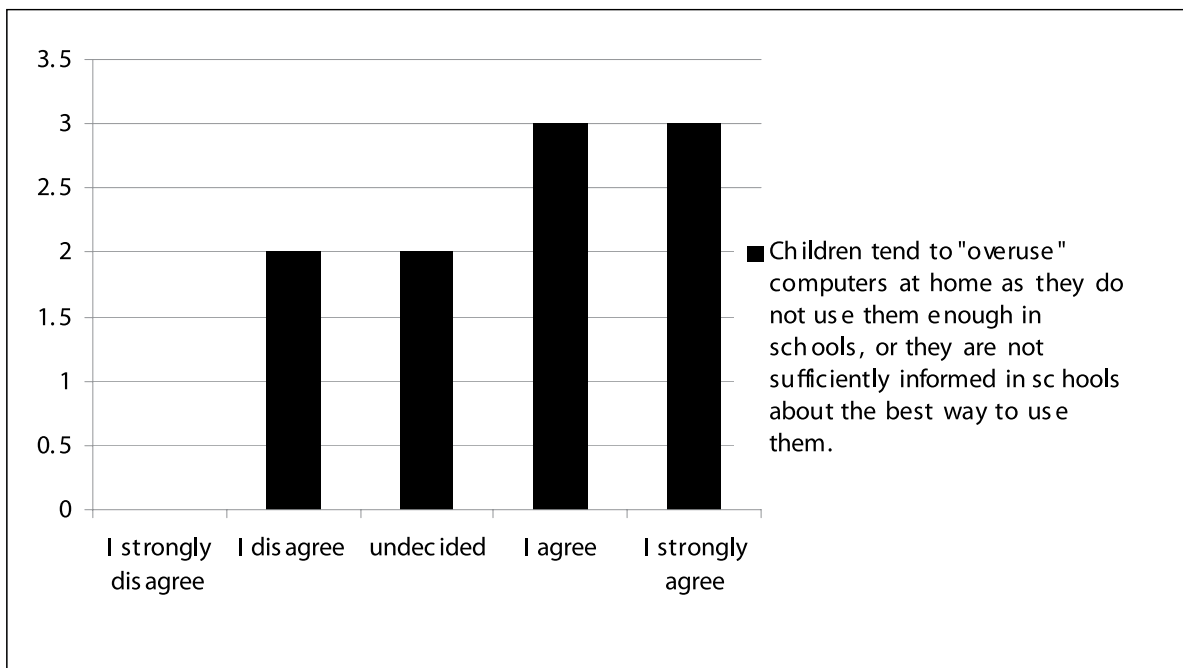


Figure 5: The opinion on excessive computer usage

Table 8: Answers to Question 83: Choose a level of agreement with the following statements:

	3. Undecided	4. I agree	5. I strongly agree
Independent experts, schools, universities, non-profitable and other organization and companies that have a key role in the field of ICT will have to become more united. Only in this way we will be able to assure a proper price per quality unit.	1	5	4
The role of the high school student is shifting from passive to active and, while doing this, the students use all the study forms ICT can offer.	0	5	5
The role of the teacher is changing from one who passes on knowledge into more of a tutor and coordinator of education and a moderator in the evaluation of information.	0	4	6

Comment: It is great that headmasters positively value the paradigms of a modern school. Their positive attitude can also be seen in the everyday use of computers

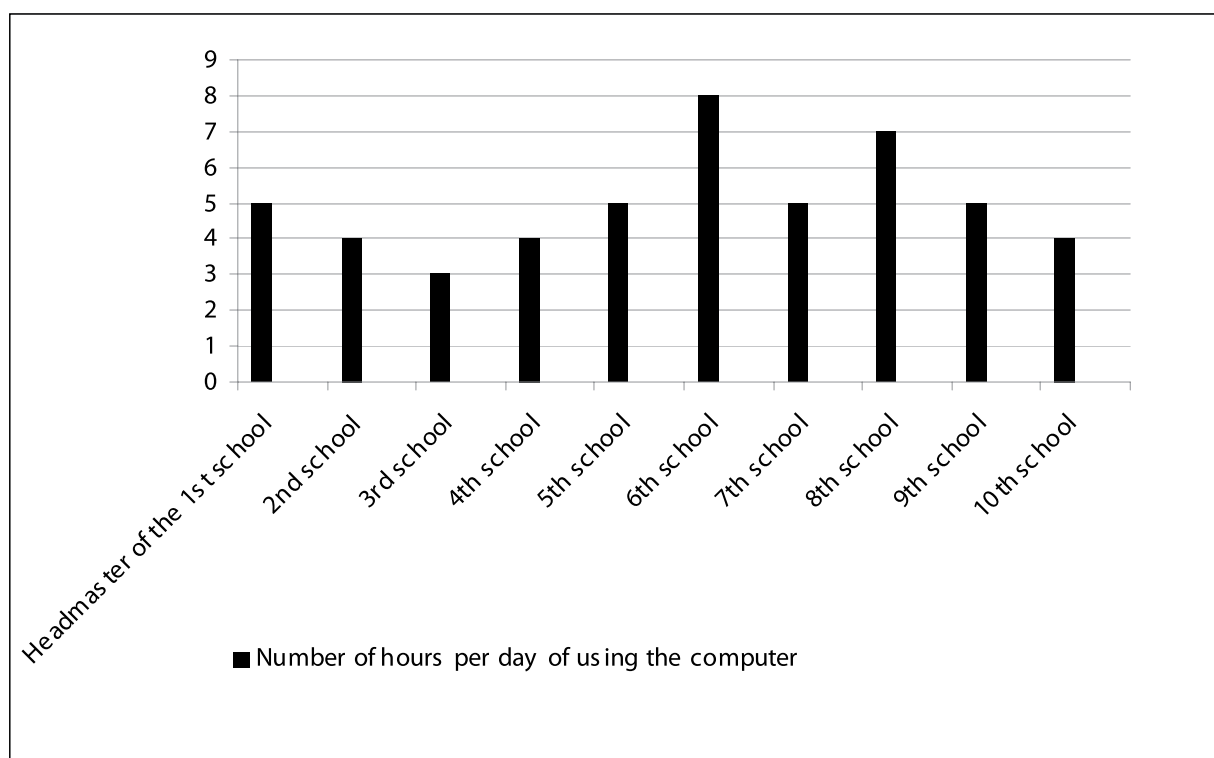


Figure 6: How many hours per work day the headmasters use computers

Table 9: Answers to Question number 85: Choose a level of agreement with the following statements:

	2. I disagree	3. Undecided	4. I agree	5. I strongly agree
The following principle applies: One who does not master ICT cannot perform his profession (a teacher in a school)	2	3	3	2
A centre for expert, methodological and didactical support needs to be created, as well as a system for counselling and guidance for the teachers about gaining new skills.	0	0	6	4
High schools need to include themselves in activities in the Slovenian and European educational network and use services – the results of ICT projects.	0	0	6	4
Subject curricula have to be updated using e-materials in teaching and learning and also legal and financial questions about material copyrights of e-materials have to be solved.	0	0	6	4

Comment: Strategic and concrete aims in the field of introducing ICT are evaluated very positively, which provides realistic possibilities realizing them.

In Figure 6, the results are shown for answers to question number 26, which reads: How many hours per work day the headmasters use computers. Headmasters are arranged by schools corresponding to Figure 2.

### 3 Conclusion

The main purpose of this article is to show the results of the overview of the situation in the field of ICT in Slovenian grammar schools, from the viewpoint of grammar school equipment as well as the use of technologies in planning and performing the educational process. In our analysis, we used data gathered with the poll and by talking to the headmasters of 10 Slovenian grammar schools that were selected in a way that presented a sufficiently representative sample. The poll contained 87 questions and over 200 sub-questions, however, in this article, only the data that applies to schools' equipment, use of technology, accessibility and use of these technologies in class (for pupils and teachers) and the vision or plans of the headmasters for introducing ICT into their grammar schools in the future, was used. With our analysis and in planning future activities, we also considered the results of other research and compared the situation in Slovenia to those of similar schools in developed countries of the EU.

The use of modern technologies in class is more or less an accessory, supplement or means for increasing student interest – however, to a very small degree (in most developed schools, up to 20%), it is a matter of introducing an overall concept of education, which can only be made possible through working on one of e-platforms, among which Moodle is the most recognized.

Headmasters have a crucially important role in the continuous development of a grammar school and the results of the poll show that over 70% support and are familiar with modern orientations, even though only few (maybe 20%) are familiar with the overall concepts and completely different way of working that a modern school requires and enables. However, this matter can be quickly resolved by introducing this concept on a general level or in some grammar schools and with the well grounded education and qualification of headmasters.

The modern school is based on equipment and technology. The current ICT equipment of our grammar schools is way below the standards of similar schools in the developed countries of the EU, where similar schools have up to two or three times as many computers per 100 students than our schools do. The teachers' equipment presents a special problem, which is solved in only a few schools (less than 20%) by co-funding teachers when they buy computers, which also have to be used for school work. For now, it is important and positive that teachers in 50% of schools have the possibility of using the internet and computer-projection equipment in almost all classrooms. In other schools, they plan to do the same thing in the next two years.

In the last few years, was achieved considerable progress in the area of producing e-materials in Slovenia. E-materials already exist for a lot of subjects, while quality and useful e-materials still need to be made for others. However, it is worth mentioning the current problems with current e-materials, which most of the schools are not even familiar with or know their characteristics.

One of the solutions lies in a Slovenian educational portal, which would systematically interconnect and arrange material and take care of the development of the whole system. The institution for education would have to be included in this endeavour, where it will be able to use its knowledge and experience of the educational system more realistically.

Major problems with introducing modern technologies include financial means and spatial boundaries, because no major increase has been expected in the renovation of grammar schools and headmasters also predict only modest investment in this field in the forthcoming years.

The financial funds required for purchasing, applying and maintaining modern equipment substantially exceed the present investments in this field, where, in grammar school programmes, most of the funds are used for wages and maybe 2% is used for technology. For a modern technologically supported class, at least 10% of total investment must go to equipment and infrastructure. The price of the grammar school program has to be raised by at least that much, otherwise renovation will not be possible. The problem of outsourcing will appear which is only present now in the school system in cleaning and organizing meals but which will become an important item in the school budget in the future.

Personnel are a considerable problem for both organizational and technological renovation, which is especially true for an educational system that limits their work with students to classroom hours, consultations and some activities after class, relatively little time in the workplace and holidays that are the same for the students as for the teachers. Also, the fact that more than 40% of teachers do not use computers for class purposes is not encouraging, especially since the developed countries of the EU practically reached a 100% qualification rate for teachers in the new technologies years ago.

In grammar schools, it will be necessary to systematize new working positions for qualified personnel or to ensure funds for external services (media technicians and multimedia or media engineers), because a modern grammar school needs complete technical support for the whole system.

It is of the utmost importance that the vision accepted by the Ministry for Education and Sport is as modern as possible and that it also garners general support from the headmasters. A less pleasant notion is that there is no strategy, at least for grammar schools. Also, according to the resolutions of the Council of Experts (Izhodišča ..., 2007) the Ministry for Education and Sport do not provide enough support for modern technology when renovating grammar schools. But a more positive notion is that we have at our disposal excellent institutions, companies and individuals that have demonstrated their skills and competences in the business world and will also help to achieve worldwide standards in the field of education. We still see major problems in developing the concepts, didactics and methodologies, as old concepts prevail and radical action and renewal will be necessary.

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## Organizacijski in kadrovske aspekte uvajanja Informacijsko komunikacijskih tehnologij v gimnazije

V članku so predstavljeni rezultati primerjave med vlaganji v IKT v slovenske gimnazije in podobne šole v EU in rezultati obsežne raziskave, ki smo jo opravili z anketo in razgovori z ravnatelji desetih slovenskih gimnazij, ki predstavljajo tipični vzorec za Slovenijo. V raziskavi smo preučevali različne aspekte uporabe IKT v šolah. Raziskava je pokazala, da so slovenske šole slabše opremljene z IKT kot v najbolj razvitih državah EU, kar ne omogoča sodobne organizacije dela in učnega procesa. Stanje se bo izboljšalo le v primeru, ko bo slovenska vlada namenila več sredstev za IKT v izobraževanju (nakup opreme, pripravo e-gradiv, izobraževanje učiteljev itd.) in ko bodo zahteve po IKT kompetencah vključene tudi v cilje programov.

**Ključne besede:** IKT, izobraževanje, gimnazija, opremljenost šol