

## Knowledge, Skills and Using of ICT in Boarding Schools

### Znanje, spretnosti in uporaba IKT v dijaških domovih

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#### **Abstract**

*Information technology has for some time now been an integral part of education and management processes in boarding schools. New contemporary work methods, used by tutors who are a motivated for introducing the necessary and inevitable novelties into the pedagogic practises, have been put into effect. In this article we will list down some basic skills and knowledge that tutors and headmasters of boarding schools should know. Of course those skills and knowledge should have other teachers in schools and other institutes, but we will only mention boarding schools in this article, because they are the focus of our research.*

*A survey was carried out in boarding schools searching for the opinions of headmasters and tutors on the advantages and disadvantages of electronic diary of tutor's work. It searched for eventual weaknesses and strengths of the process which may be important for introducing and applying of the innovation in a pedagogic process. Simultaneously the attitudes of pedagogic staff on this novelty were checked.*

**Key words:** knowledge of ICT, tutors, headmasters, skills, pedagogic process, research, boarding schools

#### **Povzetek**

*Informacijska tehnologija je v sodobnem času sestavni del vzgoje, izobraževanja in menedžmenta v dijaških domovih. Vzgojitelji v dijaških domovih so motivirani, da nova znanja, ki jih ponuja sodobna tehnologija, vključujejo v vzgojno izobraževalni proces. V našem članku prikazujemo rezultate raziskave, s katero smo želeli izvedeti, koliko in katera znanja s področja informacijske tehnologije imajo vzgojitelji in ravnatelji dijaških domov v Sloveniji. Zanimalo nas je tudi, katere vsebine naj bi imel elektronski dnevnik vzgojiteljevega dela, ki se kot inovacija pojavlja v vse večjem številu dijaških domov. Da bi pridobili željene podatke, smo anketirali vzgojitelje in ravnatelje dijaških domov.*

**Ključne besede:** znanje s področja IKT, vzgojitelji, ravnatelji, pedagoški proces, raziskava, dijaški domovi

## 1 Preface

Slovenia's transition into European Union demands an adjustment of our educational system with the standards and measures of the EU. The previous eight-year-schooling is becoming a nine-year one, the changes are also occurring in the secondary and higher education. These changes are increasing the

competitiveness of offers within the environment, and gives new possibilities of education to youths and adults.

Information technology has for some time now been an integral part of education and management processes in boarding schools. In recent years various forms of electronic diaries of tutors' work have appeared. New contemporary work methods, used by tutors who are motivated for introducing the necessary and inevitable novelties into the pedagogic practises, have been put into effect. Such novelties are generated by the changes in schools as well as in environment generally.

Wild thinks that implementing ICT in teaching processes has good impact on education. If we want that innovation becomes part of educational process, we have to give tutors maximal usage and contents that they change, accept and use single elements of process. But most needed is teachers' knowledge on ICT field, so that he can be able to use electronic school book.

That is why we made a questionnaire in first phase of our project. With this we try to look at what knowledge and skills from the fields of ICT headmasters and tutors possess and what skills are still needed to be offered to them. Certainly it is most important that during the process we help tutors to understand and know how to use the electronic school book and that we ensure available technology to them.

New contemporary work methods, used by tutors who are motivated for introducing the necessary and inevitable novelties into the pedagogic practises, have been put into effect. Such novelties are generated by the changes in schools as well as in environment generally. Our paper deals with the contents, significance, objectives, and with advantages and weaknesses of electronic diary of the tutor's work (Blyth 1998, 56). The diary is a basic pedagogic document containing the legally required data on students, tutors and their work with the pedagogic group and represents as such an important link between the tutors, students, headmaster, adviser, technical staff, school, parents and the rest of environment, local as well as global. The diary contains the daily written notes, representing the chronological recording of pedagogical process. It contains most of the important information on students, on the pedagogical group and on their inter-reactions. The electronic diary is an innovation serving as a different new type of recording the pedagogic work, and it contributes new and more diverse forms and contents as it taps from the field of information technology which offers almost unlimited animation possibilities. The electronic recording accelerates the registration of data and offers the education staff the possibilities of creativity, development, professionalism, and innovativity (Davies 1998, 89). The electronic form of diary of the tutor's work accelerates it and increases the access to it by the authorised staff and those interested in information on the pedagogic group and on individual students as the data may be conveyed through intranet and internet.

## **2. Understanding of ICT – knowledge and skills**

The boarding schools are left with unused infrastructure, and the social, intellectual and cultural assets of the employees. In new global environment boarding school's tutors and headmasters must have knowledge about ICT technology.

Here we will list down some basic skills and knowledge that tutors and headmasters of boarding schools should know. Of course those skills and knowledge should have other teachers in schools and other institutes, but we will only mention boarding schools in this article, because they are the focus of our research.

The tutor in the boarding schools should be confident to use a wide range of software (Higgins and Packard 2004, 21):

- word-processing (such as Microsoft's Word);
- drawing, painting and image manipulation (Microsoft's Paint; Adobe Photoshop etc.);
- presentation software (such as Microsoft's PowerPoint or Apple's Keynote);
- spreadsheets and graphing programs (such as Microsoft's Excel);
- databases (e.g. Microsoft's Access; Claris' Filemaker);

- Internet software (e.g. e-mail programs and web browsers such as Internet Explorer, Netscape, Safari etc.)...

They will also need to develop skills in using a range of equipment (Higgins and Packard 2004, 21):

- computers (possibly with different operating systems - Windows, Macintosh, Acorn) and certainly with different versions of operating systems (Windows 2000, XP, skills in using tablet PCs etc.);
- input devices (e.g. wireless keyboards and mice; keyboards and switches for learners with special needs);
- getting images onto a computer (scanners, digital stills and video cameras);
- output devices (printers, speakers, presentation technologies — such as data projectors and electronic [or interactive] whiteboards);
- control technology (such as temperature sensors or switches controlled by a computer).

It will also not be possible to develop all of this expertise ~ "during" their course. There simply isn't enough time! The tutors (they) should therefore try to identify particular areas where they feel their need to concentrate as they undertake their training and build on opportunities as they become available (for example using an electronic whiteboard if they are in a boarding school or classroom that has one available).

### 3 Curriculum and ICT

Use of ICT is not crucial part of student's school curriculum. At the moment in Slovenia there is review of curriculum and that is why we think it is good time to insert the use of ICT process in curriculum. In this way tutors will need to develop their knowledge of the curriculum and what skills in using ICT are expected with different ages of pupils.

One of the issues that tutors will have to tackle is learning about software (and occasionally hardware) that it is appropriate for pupils of different ages to use. The types of applications that are found in schools are similar to those in the list above and used by adults, but many of them have been adapted and developed for use by younger learners (Higgins and Packard 2004, 20):

- text handling (RM's TextEase or FirstWord; Microsoft Publisher etc.);
- drawing and painting (e.g. KidPix (The Learning Company); Dazzle (SEMERC); Colour Magic (RM));
- data handling (spreadsheets such as Number Magic (RM), graphing programs and databases such as Pictogram/Dataplot (Kudlian Soft), PickaPicture (Black Cat), Junior Pinpoint (Longman Logotron), FlexiTree (Flexible) etc.);
- specific curriculum software (programs to teach aspects of mathematics such as LOGO, or appropriate CD-ROMs for history for learners of different ages);
- specialist software for younger children, such as My World (Granada), or for special needs, such as Inclusive Writer (Inclusive Technologies);
- other ICT equipment (such as programmable robots, digital cameras etc.).

ICT is momentary in big raise and that is why we came along so many new knowledge needs in ICT fields. Tasks of tutors are that they follow those new skills and knowledge so they can keep in touch and on behalf they need to understand what this knowledge brings to them.

## 4 Understanding ICT capability

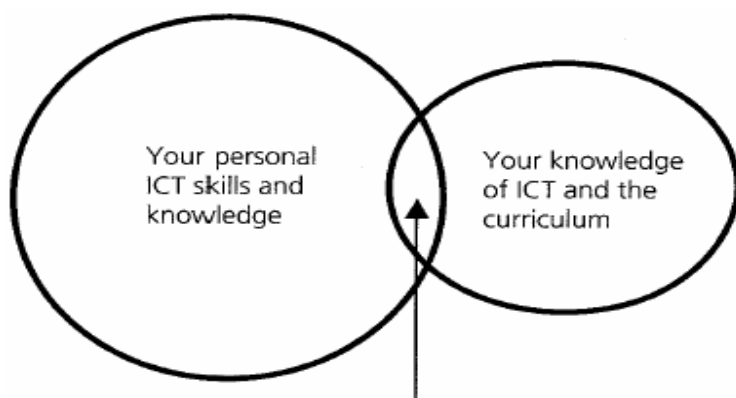
This term, ICT 'capability', was first applied to pupils as a way of evaluating how they were developing their understanding of IT in the early days of the National Curriculum. Skills and knowledge are not enough. Using ICT effectively is about developing your understanding of what technology has to offer (Higgins and Packard 2004, 67).

For pupils this is about not just assessing what skills they have been taught but how they make use of those skills in another context. They may have been taught how to alter the size and font of a document, but do they make use of these skills appropriately when designing a poster, for example?

The same concept can be applied helpfully to your own understanding of how to use ICT in your professional life. It is not just about acquiring skills, but developing understanding and judgement about how to use those skills appropriately. Once you can use PowerPoint or other presentation software and have access to a data-projector in your classroom, you could create a presentation for every lesson that you teach and education. However, this would be rather to miss the point about what ICT is useful for. As a tutor you need to decide when such a presentation is an effective use of the technology (in terms of what possibilities PowerPoint offers and how you can present information with it), but also you need to make a judgement about the class or group of pupils that you are teaching. It may be that you have already used a similar presentation on the previous day (Higgins and Packard 2004, 17).

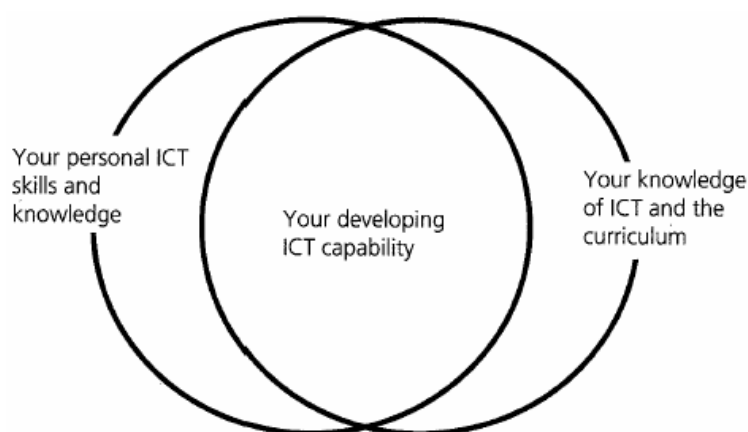
There is then a danger that the children will not find your presentation so compelling. It may be that you are teaching and educating young children who may enjoy the spectacle, but not gain much from the content. You have to make a decision about *why* this would be better than other teaching and education techniques. At this stage in your training the overlap between what you know and can do with ICT and what you know about the curriculum and opportunities for using ICT may be limited. You may have used a word-processing software to write essays or letters, you will be able to see how such software could be used in schools to help children learn to write (particularly in redrafting and improving their writing) without laborious copying out by hand (Chalkey and Nicholas (1997, 123).

**Figure 1:** Your initial ICT capability



(source: Higgins and Packard 2004, 17)

**Figure 2:** *Developing your ICT capability*



(source: Higinis and Packard 2004, 18)

#### 4.1 The QTS skills test

Everyone who wants to be a tutor, ateacher or a headmaster, will need the skills of ICT. Needed skills are (Chalkey and Nicholas (1997, 123):

1. **general** ICT skills such as:
  - finding your way around the computer; opening programs and files;
  - choosing appropriate applications;
  - copying between files and applications;
  - using the mouse (double clicking, highlighting); printing (and altering print settings);
2. **specific** skills for handling or coping with information:
  - researching and categorising information;
  - using an e-mail program and address book;
  - searching a database (including using precise queries);
  - using a web browser effectively (navigating forwards and backwards and using hyperlinks);
  - finding your way around a spreadsheet;
  - developing and modelling information:
    - adding records to a database, finding and sorting;
    - using functions and tools in a word processor (inserting pictures, using styles);
    - using a spreadsheet (including basic formulas);
    - organising records or layouts or data and numbers in a spreadsheet;
    - filtering e-mails;
  - moving text, pictures and slides around different programs;
  - presenting and communicating information:
    - displaying and managing text (font, style, layout, margins etc.);
    - formatting data (including between spreadsheets and tables);
  - managing e-mails (copying, forwarding);
  - preparing a presentation (altering styles, adding buttons, and transitions).

Many of these skills will be those that you can already do or will be able to practice during your course. You should look to see and which you may need to work on (Ainsworth, Bibby, and Wood 1997, 36).

ICT equipment is part of tutors working environment and as its can positively effects on tutors motivation and their personal technical knowledge as says Černetič (2004, 123), once the required workforce is in place and human resources managers seek to ensue that people are well motivated and committed so as to maximise their performance in their different roles. Training and the development has a rule to play, as do reward systems to maximise effort and focus attention on performance target.

## 5 ICT skills in practice of boarding schools – research

Knowledge from the fields of ICT is more and more important in today's society. Schools that will permanently educate their tutors from the fields of ICT, will become more competitive. (Hativa and Cohen 1995, 64). Our goal is that innovation –electronic school book is becoming part of curriculum of student's boarding schools in Slovenia. In first phase we carried out a research on ICT knowledge amongst tutors and headmasters of boarding schools.

### 5.1 Basic Data on Research

A research was carried out in the boarding schools in Slovenia. The basic issue that was subject of our interest and objective of the research was what skills and knowledge from the fields of ICT the tutors and headmasters of boarding schools posses.

The research covered 60 tutors and 39 headmasters of boarding schools in Slovenia.

The research was based on the quantitative research paradigm. To achieve an in-depth insight into the happening itself it was combined with the elements of qualitative research. As a method of work the polls were applied and as an instrument of research a questionnaire. The following were the questions of research (Dawes and Wegerif 2000, 145):

#### 1. Basic use of ICT:

- Basic operations(opening programs, shutting down)
- Organising works(saving,managing files and folders)
- Using a network (finding files, saving work

#### 2. Software

- Word processing
- Drawing, painting
- Spreadsheets and graphing programs
- Databases
- Internet software
- Presentation software
- Educational software

#### 3. Eguipment

- Desktop computer
- Data projector
- Printers
- Digital camera/videos
- Scaner
- Electronic whiteboard

- Control technology

## 5.2 Analysis of the questionnaire replies

We have sent questionnaires with data sheets to tutors and headmasters via e-mail. Tutors have returned 46 useful questionnaires and headmasters return 21 of them. We also got back 4 questionnaires via normal post mail.

### 5.2.1 Responses to the question Table 1

Table 1: Basic use – Remark: Tutors: N=46, Headmasters: N= 21

Trditvev	I have no use it	I have no use it	beginer	beginer	confident	confident	ekspert	ekspert	I have use it in my free time, too	I have use it in my free time, too
	TUT-	HEAD	TUT	HEAD	TUT	HEAD	TUT	HEAD	TUT	HEAD
Basic operations(opening programs, shutting down)	3	-	-	1	42	-	1	20	34	20
Organising works(saving, managing files and folders)	3	-	-	1	42	18	1	2	33	20
Using a network(finding files saving work)	3	-	-	1	42	16	1	14	34	20

Legenda: TUT – tutors HEAD – headmasters, N- frekvency

From the table 1 we can see that 3 of tutors do not use the computer at their work and one of them feels himself as expert. All headmasters do use computer and most of them feels like they know basic use of computers. Most of them also feel that they have expert skills in its use. Out of office 34 of 46 tutors and 20 of 21 headmasters use the computer. Mioduser, Tur-Kaspa, and Leitner, I. (2000. 46) stress out the meaning of knowledge and use of ICT in education and they think that those who don't use ITC at their work will soon be non-competitive.

## 5.2.2 Responses to the question Table 2

Table 2: Software - Remark: Tutors: N=46, Headmasters: N= 21

Trditev	I have no use it	I have no use it	beginer	beginer	confident	confident	ekspert	ekspert	I have use it in my free time, too	I have use it in my free time, too
	TUT	HEAD	TUT	HEAD	TUT	HEAD	TUT	HEAD	TUT	HEAD
Word processing	3	-	-	1	42	19	1	1	34	20
Drawing, painting	17	-	6	8	22	12	1	1	19	12
Spreadsheets and grafic programs	3	-	12	3	20	17	1	1	15	13
Databases (ORACLE, MY-SQL...)	38	17	6	2	2	1	-	1	-	2
Internet software	12	-	-	2	33	18	1	1	34	18
Presentation software (Power Point...)	23	6	2	3	20	11	1	1	15	6
Educational software	17	3	4	1	24	16	1	1	12	6

Legenda: TUT – tutors HEAD – headmasters, N- frekvency

Results from table 2 shows that 3 tutors do not use the applications and that tutors and headmasters do use databases at their work. Headmasters do have good skills in word processing, internet applications, and graphical applications. Most of tutors and headmasters use computers and applications also at home. Kirkwood (2000, 58) thinks that use of computers and applications show tutors development from the fields of ICT. That also thinks Somekhand Davis (1997, 56).



### 5.2.3 Responses to the question Table 3

Table 3: Equipment- Remark: Tutors: N=46, Headmasters: N= 21

Trditvev	I have no use it	I have no use it	beginer	beginer	confident	confident	ekspert	ekspert	I have use it in my free time, too	I have use it in my free time, too
	TUT	HEAD	TUT	HEAD	TUT	HEAD	TUT	HEAD	TUT	HEAD
Desktop computer	17	2	2	1	26	17	1	1	16	20
Data projector	20	1	14	1	11	18	1	1	4	6
Printers	3	-	7	1	35	19	1	1	13	18
Skener	19	2	3	4	13	14	1	1	9	12
Electronic whiteboard	46	20	-	1	-	-	-	-	-	1
Digital cameras/video	32	1	5	6	8	13	1	1	14	15

Legenda: TUT – tutors HEAD – headmasters, N- frekvency

Table 3 shows skills in use of additional equipment. Less answer can be found at the use of electronic whiteboard. None of tutors uses it which means that we can say that they do not know how to use it and only one headmaster uses it with his work but he just started.

Most skills are shown with printers and very few on digital cameras, scanners and projectors. 16 tutors do use laptops at home. 20 of headmasters do use laptops at their free time, 18 of them also use printers, 15 do use video cameras, 12 do use scanners, 6 use projectors and 1 does use electronic whiteboard.

Use of additional equipment at education does give teachers, tutors, headmasters and student's choice of different methods and approaches in education (Lewin 2000, 94).

### 5.2.4 What topics should be included in electronic school book?

Tutors and headmasters were also asked for their opinion on what topics should be included in electronic school book. Most frequent answers were:

#### 1. Main topics:

- Annual year plan of whole boarding school
- Data of students (name, surname, address, parents phone number, emails of student and parents, parents education, students interests, etc...)
- Annual year plan of each tutor
- Goals of education
- Educational methods
- Work with educational group (monthly workshops, meetings with students, learning hours, other common activities, and work with individuals, etc.)
- Individual education plan for students with special needs and problematic behavior

- Crossing of tutors and groups in educational work
- Constant field education of tutors for current school year
- Professional development plan for tutor – current, short sighted and longsighted
- Work with parents
- Cooperation with school: school teachers and school philology
- Midterm reports for headmaster
- Overall year report

## 2. Additional topics:

- Tutors and students interests (goals, plan, realization and midterm reports)
- Implementation of students and tutors projects (plan, implementation, evaluation)
- Worldwide activities of tutors and students
- Summer camps
- Participations in national and worldwide volunteers projects
- Dorm strategies (long and short term strategies)

We also add that electronic school book would allow tutors to include all sorts of theirs digital records (digital cameras, internet access, pictures, etc.)

## 6 Conclusions

Knowledge in the fields of ICT in today's global information society becomes basic competencies of tutors and headmaster. According to this the type of educational writing is also being changed. One of most important document in dorm houses is log of tutors work – school book. Research team from Institution Republike Slovenije for education has started their 7 years long project, whose primary goal is, that they implement electronic school book to all boarding schools in Slovenia. With this research we wanted to gather information on tutors and headmasters knowledge and skills from the fields of ICT, which we think are important for successful implementation of electronic school book.

We can say from the results of this research that skills and knowledge in fields of ICT is greater at headmasters than at tutors. Because of low frequency of some answers we cans say that as tutors and as headmasters do not follow all the new things in fields of ICT. We have come to this conclusion by the fact that most of them (only one headmaster) do not use the electronic whiteboard. Also the answers to database use, use of projectors and presentation applications do show that they do not use as much ICT technology at their work as we would like. Very rare were the answers that tutors or headmasters judge themselves as experts in fields of ICT (only two answers).

There is quite the difference amongst answers from tutors and headmaster that applies to that they probably come from different kind of work and activities that were expected to their work (this also affects on financial possibilities for the use of ICT), but nevertheless we think, that before we start to implement electronic school book into the boarding schools, we will need to educate tutors and headmasters with the skills of ICT. This research also gave us many interesting and useful information's on topics that should be covered in electronic school book, too.

This research gave us informations, that hedmasters and tutors in boarding schools didn't have enough skills and knowledge in fields of ICT. We concluded, that the headmasters of boarding schools must done strategic management and education policy, how to enlarge the skills and knowledge in fields of ICT at employers.

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### O avtorjih

**Mag. Olga Dečman Dobrnjič** je zaposlena kot višja svetovalka za področje dijaških domov na Zavodu Republike Slovenije za šolstvo. Po izobrazbi je magistra znanosti s področja menedžmenta v izobraževanju in educirana realitetna terapevtka. Peto leto vodi LAS Litija-lokalno akcijsko skupino za preprečevanje odvisnosti od prepovedanih drog, je glavna urednica znanstveno - strokovne revije ISKANJA. Njeno raziskovalno področje so odnosi med vzgojitelji in dijaki v dijaških domovih, konflikti v dijaških domovih, sodelovanje s starši, vodenje, motivacija in izobraževanje pedagoških delavcev, organizacijsko vodenje in spolna zloraba deklet in s teh področij objavlja članke in strokovne knjige.

**Izr. Prof. dr. Metod Černetič** je dolgoletni učitelj na Fakulteti za organizacijske vede, Univerze v Mariboru in na drugih fakultetah. Diplomiral je iz sociologije na Filozofski fakulteti v Ljubljani, magistriral in doktoriral je s področja razvoja človeških virov na Univerzah v Ljubljani in v Mariboru. Oblikoval in izvajal je več študijskih programov, na matični fakulteti in na drugih fakultetah. Je avtor učbenikov, monografij in soavtor knjig. Bil je nosilec in sodelavec raziskovalnih projektov in programov s področja razvoja visokega šolstva, razvoja podiplomskega študija, teorije organizacije in menedžmenta. Objavlja v domači in tuji strokovni literaturi iz navedenih znanstvenih področij. Objavil je preko 260 bibliografskih enot. Sodeloval in objavil je referate na preko 70 domačih in mednarodnih znanstvenih in strokovnih srečanjih. Je mentor študentom na dodiplomskem in podiplomskem študiju.