ICT Use in Boarding Schools

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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 motivated to introduce necessary and inevitable novel methods into pedagogic practices, have been put into effect. In this article, we will list a number of basic skills and knowledge that tutors and headmasters of boarding schools should know. Of course, these skills and knowledge should be known also by other teachers in schools and other institutes, but here 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 keeping an electronic diary of a tutor's work. The survey searched for eventual weaknesses and strengths of the process that may be important for the introduction and application of innovation in a pedagogic process. At the same time, the attitudes of pedagogic staff on this novel method were also investigated.

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

Uporaba IKT v dijaških domovih

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 the 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; changes are also occurring in secondary and higher education. These changes are increasing the competitiveness of offers within the environment and provides new possibilities of education to youths and adults.

ICT (Information and Communication Technology) has its place in our education system. Computers and ICT are used at all levels of education (Gerlič, 2006: 136). 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.

This is why we created a questionnaire in the first phase of our project. With this, we have attempted to look at what knowledge and skills from the fields of ICT headmasters and tutors possess and what skills they still need to be offered. Indeed, it is most important that during the process we help tutors to understand and learn how to use the electronic school book and that we ensure the technology is available to them.

Our paper deals with the content, significance, objectives and the advantages and weaknesses of using an electronic diary for a tutor's work (Blyth 1998: 14). The diary is a basic pedagogic document containing legally required data on students, tutors and their work with a pedagogic group and represents as such an important link between the tutors, students, headmaster, adviser, technical staff, school, parents and the rest of the school environment, locally as well as globally. The diary contains daily written notes representing the chronological recording of pedagogical processes. It contains most of the important information on students, on the pedagogical group and on their interactions. The electronic diary is an innovation serving

as a new type of recording pedagogic work and contributes new and more diverse forms and content as it taps into the field of information technology, which offers almost unlimited graphical possibilities. Electronic recording accelerates the registration of data and offers education staff possibilities of creativity, development, professionalism and innovation (Davies, 1998: 165). The electronic form of a diary of a tutor's work accelerates this and increases access to it by authorised staff and those interested in information on a pedagogic group and on individual students, as the data may be conveyed through an intranet and the Internet.

2 Understanding of ICT – knowledge and skills

Boarding schools are increasingly left with unused infrastructure and social, intellectual and cultural assets of its employees. In the new global environment, therefore, boarding-school tutors and headmasters must have knowledge of ICT.

Here, we will list a number of basic skills and knowledge that tutors and headmasters of boarding schools should know. Of course, these skills and knowledge should be known also by other teachers in schools and other institutes, but here we will only mention boarding schools in this article, because they are the focus of our research.

A tutor in a boarding school should be confident in using a wide range of software (Higgins and Packard, 2004: 21):

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

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

- computers (possibly with a variety of 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 is not enough time. Tutors should therefore try to identify particular areas where they feel a 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

The use of ICT is not a crucial part of a student's dormitory curriculum. At the moment, in Slovenia, a review of the national curriculum is being undertaken, and this is why we think it is a good time to introduce the use of ICT processes into the curriculum. In this way, tutors will need to develop their knowledge of the curriculum and what skills in using ICT are expected for various student age groups.

One of the issues that tutors will have to tackle is learning what software (and occasionally hardware) is appropriate for the various pupil age groups 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 & 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 in different age groups);
- 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 currently undergoing large advances, which is why we have chosen to undertake this survey so that many new knowledge needs in the ICT fields can be met. The tasks of tutors are that they follow these new skills and knowledge so that they can keep up to date with what this knowledge can offer them.

4 Understanding ICT capability

The 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, however. Using ICT effectively is also about developing an under-

standing of what technology has to offer (Higgins & Packard, 2004: 67).

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

The same concept can be applied to aid our own understanding of how to use ICT in our professional life. It is not just about acquiring skills but also about developing understanding and judgement about how to use those skills appropriately. Once we can use PowerPoint or another presentation software and have access to a data-projector in our classroom, we could create a presentation for each lesson that we teach. However, this would somewhat miss the point about what ICT is useful for. A tutor needs to decide when such a presentation is an effective use of the technology (in terms of what possibilities PowerPoint offers and how we can present information with it), but the teacher also needs to make a judgement about the class or group of pupils that he or she is teaching. It may be, for example, that the tutor has already used a similar presentation the previous day (Higgins & Packard, 2004: 17).

There is then a danger that the children will not find the presentation so compelling. It may be that, though the tutor is teaching and educating young children who may enjoy the spectacle, they may in fact gain little from the content (Černetič & Dečman Dobrnjič, 2006: 89). The tutor thus has to make a decision about *why* this would be better than another teaching technique. At this stage in training, the overlap between what the teacher knows, what they can do with ICT and what they know about the curriculum and opportunities for using ICT, may be limited. The teacher may have used a word-processing software to write essays or letters, for instance, and he or she will therefore 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 & Nicholas 1997: 105).

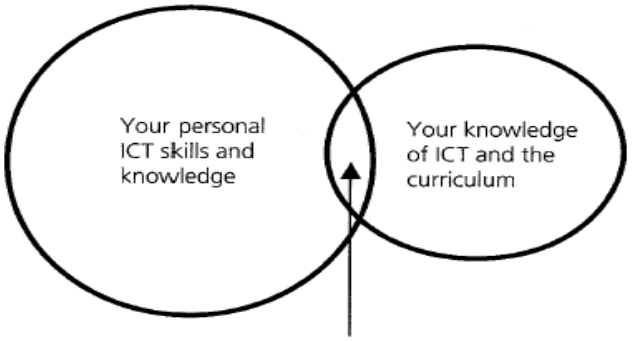

Figure 1: A teacher's initial ICT capability (source: Higgins & Packard, 2004: 17)

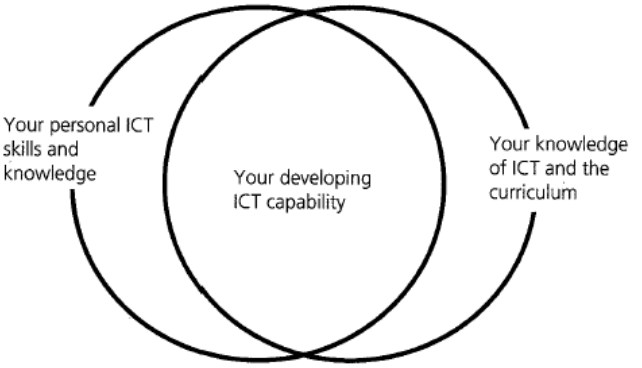

Figure 2: Developing a teacher's ICT capability (source: Higgins & Packard, 2004: 18)

4.1 The QTS skills test

Everyone who wants to be a tutor, a teacher or a headmaster will need skills in ICT. Required skills are (Chalkey & Nicholas, 1997: 106):

1. **general** ICT skills such as
   - finding one's 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 one's 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 the teacher can already do or will be able to practise during his or her

course. The teacher should also look to see which he or she may need to work on further (Ainsworth, Bibby & Wood, 1997: 96).

ICT equipment is part of a tutor's working environment and as such it can have positive effects on a tutor's motivation and his or her personal technical knowledge (Dečman Dobrnjič & Černetič, 2005, 406). The required workforce is in place, and human resources managers seek to ensure that people are well motivated and committed so as to maximise their performance in their different roles. Training and development has a role to play, as do reward systems to maximise effort and focus attention on performance targets.

5 ICT skills in the practices of boarding schools – research

Knowledge in fields relating to ICT is becoming more and more important in today's society. Schools that permanently educate their tutors in ICT will therefore become more competitive (Hativa & Cohen, 1995: 402). Technology is not transformative on its own. Schools and boarding schools too can ensure the effective use of educational technology in the classroom and create new learning environments (Anderson, Miloseva & Walker, 2006: 15).

Our goal is innovation – the electronic school book is becoming part of the curriculum at student boarding schools in Slovenia. In the first phase of our study, therefore, we carried out research on ICT knowledge amongst tutors and headmasters of boarding schools.

5.1 Basic Data on Research

Research was carried out into boarding schools in Slovenia. There are 39 boarding schools in Slovenia in which there are employed 240 tutors and 39 headmasters. In February 2007, we sent questionnaires by e-mail to tutors and headmasters and kindly asked them to return the answered questionnaires by e-mail. This is why this research has not been conducted anonymously.

The research is based on the QTS (Qualified Teacher Status) skills test by Davies (1998: 165). The basic issues at the core of our research were

- what skills and knowledge from the fields of ICT do tutors of boarding schools have?
- what skills and knowledge from the fields of ICT do headmasters of boarding schools have?
- what topics should be included in an electronic school book?

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 occurrences, these were combined with the elements of qualitative research. As a method of working, questions were asked as part of a questionnaire. The following were the issues at the centre of the research questions (Davies, 1998: 165):

1. **Basic use of ICT:**
   - Basic operations (opening programs, shutting down)
   - Organising work (saving, managing files and folders)

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

Statement: In Using...	I have no use for it	I have no use for it	I am a beginner	I am a beginner	I am confident	I am confident	I am an expert	I am an expert
	F of T	F of H	F of T	F of H	F of T	F of H	F of T	F of H
Basic operations (opening programs, shutting down)...	3	-	-	1	42	-	1	20
Organising work (saving, managing files and folders)...	3	-	-	1	42	18	1	2
Using a network (finding files, saving work)...	3	-	-	1	42	16	1	14

Legend: T – tutors; H – headmasters, N – the number of investigators; F – frequency

- 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. **Equipment**
   - Desktop computer
   - Data projector
   - Printers
   - Digital camera/videos
   - Scanner
   - Electronic whiteboard
   - Control technology

5.2 Analysis of the questionnaire replies

We sent questionnaires with data sheets to tutors and headmasters via e-mail. Tutors returned 46 useful questionnaires and headmasters returned 21. We also received four questionnaires via postal mail.

Most answers were statements of confidence in ICT. But from Table 1, we can see that three tutors do not use the computer. This means that tutors who are not using ICT cannot do their job professionally. All headmasters use computers, however, and most feel they have a basic knowledge of how to use them. Most of them – 14 – also feel that they have expert skills in their use. Only one tutor saw himself as expert.

From the results in Table 1, we can therefore assume that, compared to tutors, headmasters have more knowledge and skills in the use of ICT.

Mioduser, Tur-Kaspa & Leitner (2000: 56) stress the importance of knowledge and use of ICT in education and believe that those who do not use ICT in their work will quickly become non-competitive.

Results from Table 2 show that three 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. Only one tutor and headmaster saw himself as expert. Kirkwood (2000: 511) believes that the use of computers and applications show a tutor's development in the fields of ICT.

Table 2: Software – Tutors: N = 46; Headmasters: N = 21

Statement: In Using...	I have no use for it	I have no use for it	I am a beginner	I am a beginner	I am confident	I am confident	I am an expert	I am an expert
	F of T	F of H	F of T	F of H	F of T	F of H	F of T	F of H
Word processing...	3	-	-	1	42	19	1	1
Drawing, painting...	17	-	6	8	22	12	1	1
Spreadsheets and graphic programs...	3	-	12	3	20	17	1	1
Databases (ORACLE, MY-SQL, etc.)...	38	17	6	2	2	1	-	1
Internet software...	12	-	-	2	33	18	1	1
Presentation software (PowerPoint, etc.)...	23	6	2	3	20	11	1	1
Educational software...	17	3	4	1	24	16	1	1

Legend: T – tutors; H – headmasters, N – the number of investigators; F – frequency

Table 3: Equipment - Tutors: N = 46; Headmasters: N = 21

Statement: In Using...	I have no use for it	I have no use for it	I am a beginner	I am a beginner	I am confident	I am confident	I am an expert	I am an expert
	F of T	F of H	F of T	F of H	F of T	F of H	F of T	F of H
Desktop computer...	17	2	2	1	26	17	1	1
Data projector...	20	1	14	1	11	18	1	1
Printers...	3	-	7	1	35	19	1	1
Scanner...	19	2	3	4	13	14	1	1
Electronic whiteboard...	46	20	-	1	-	-	-	-
Digital cameras/video...	32	1	5	6	8	13	1	1

Legend: T – tutors; H – headmasters, N – the number of investigators; F – frequency

Table 3 shows the skills in use for additional equipment. Fewer answers can be found on the use of the electronic whiteboard. No tutors use it, which means that we can say that they do not know how to use it; only one headmaster uses it with his work, but he has only just started to do so.

Most skills are demonstrated regarding printers and very few for digital cameras, scanners and projectors. Sixteen tutors use laptops at home. Twenty headmasters use laptops in their free time, 18 of whom also use printers, 15 use video cameras, 12 use scanners, 6 use projectors and 1 uses the electronic whiteboard. Only one tutor and one headmaster saw themselves as expert in all the statements.

5.2.3 What topics should be included in an electronic school book?

Tutors and headmasters were also asked for their opinion on what topics should be included in an electronic school book. The most frequent answers were the following:

1. *Main topics:*
   - Annual year plan of the whole boarding school
   - Data of students (name, surname, address, parent's phone number, e-mails of student and parents, parents' education, student's interests, etc.)
   - Annual year plan of each tutor
   - Goals of education
   - Educational methods
   - Work with educational groups (monthly workshops, meetings with students, learning hours, other common activities, work with individuals, etc.)
   - Individual education plans for students with special needs and problematic behaviour
   - Interactions of tutors and groups in educational work
   - Continuing field education of tutors for current school year
   - Professional development plan for tutor – current, short-term and long-term
   - Work with parents
   - Cooperation with school: school teachers and school philology
   - Mid-term reports for headmaster
   - Overall year report
2. *Additional topics:*
   - Tutors' and students' interests (goals, plans, realisation and mid-term reports)
   - Implementation of students' and tutors' projects (plans, implementation, evaluation)
   - General activities of tutors and students
   - Summer camps
   - Participation in national and international volunteers projects
   - Dormitory strategies (long- and short-term strategies)

We can also add that an electronic school book would allow tutors to include various types of digital records (digital cameras, internet access, pictures, etc.)

6 Conclusions

Knowledge in the fields of ICT in today's global information society is increasingly becoming a basic necessity for tutors and headmaster. We believe that tutors and headmasters who do not use ICT cannot do their jobs professionally. Our research is based on the QTS test. With this

research, we aimed to gather information on tutors' and headmasters' knowledge and skills in the fields of ICT. We can conclude from the results of this research that skills and knowledge in ICT is greater for headmasters than for tutors. Because of the low frequency of some answers, we can also conclude that tutors and headmasters do not take up every new thing to emerge in the fields of ICT.

We have come to this latter conclusion by the fact that most of them (only one headmaster) do not use the electronic whiteboard. In addition, the answers on database use and the use of projectors and presentation applications show that they do not use as much ICT technology in their work as we would like. It was very rare for tutors or headmasters to judge themselves as experts in the fields of ICT (only two answers).

There is quite a difference amongst answers from tutors and headmaster, and this may be because they were expected to undertake different kinds of work and activities than usual in their work (this also affects financial possibilities on the use of ICT). Nevertheless, we think that, before we start to implement electronic school books into the boarding schools, we will need to educate tutors and headmasters in the skills of ICT.

According to this, the type of educational writing is also changing. One of most important documents in dorm houses is the log of tutors' work – the school book. This research also provided us with a great deal of interesting and useful information on topics that need to be covered in an electronic school book.

This research has provided us with information regarding the insufficient skills and knowledge in ICT of headmasters and tutors in boarding schools. We therefore conclude that the headmasters of boarding schools must carry out strategic management and education policies on how to enlarge the skills and knowledge in the fields of ICT by employers of various methods of and approaches to education.

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