Fredrikke
Organ for FoU-publikasjoner - Høgskolen i Nesna

ICT in educational context:

Exchanging knowledge between Czech, Norway and Poland

Dorota Siemieniecka-Gogolin
Harald Nilsen
(editors)

Pris kr. 85,-
ISBN 978-82-7569-169-7
ISSN 1501-6889

2007, nr. 14

HØGSKOLEN I NESNA

Om Fredrikke Tønder Olsen (1856-1931)

Fredrikke Tønder Olsen ble født på handelsstedet Kopardal, beliggende i nåværende Dønna kommune. Det berettes at Fredikke tidlig viste sin begavelse gjennom stor interesse for tegning, malerkunst og litteratur. Hva angår det siste leste hun allerede som ung jente ”Amtmannens døtre”.

Kildene forteller at Fredrikke levde et fascinerende og spennende liv til tross for sine handikap som svaksynt og tunghørt. Hun måtte avbryte sin karriere som gravørlærling fordi synet sviktet. Fredrikke hadde som motto: ”Er du halt, er du lam, har du vilje kjem du fram.” Fredrikke Tønder Olsen skaffet seg agentur som forsikringsagent, og var faktisk den første nordiske, kvinnelige forsikringsagent. Fredrikke ble kjent som en dyktig agent som gjorde et utmerket arbeid, men etter 7 år måtte hun slutte siden synet sviktet helt.

Fredrikke oppdaget fort behovet for visergutter, og startet Norges første viserguttbyrå. Hun var kjent som en dyktig og framtidsrettet bedriftsleder, der hun viste stor omsorg for sine ansatte. Blant annet innførte hun som den første bedrift i Norge vinterferie for sine ansatte.

Samtidig var hun ei aktiv kvinnesakskvinne. Hun stilte gratis leseværelse for kvinner, inspirerte dem til utdanning og hjalp dem med litteratur. Blant hennes andre meritter i kvinnesaken kan nevnes at hun opprettet et legat på kr. 30 000,- for kvinner; var æresmedlem i kvinnesaksforeningen i mange år; var med på å starte kvinnesaksbladet ”Norges kvinder” som hun senere regelmessig støttet økonomisk.

Etter sin død ble hun hedret av Norges fremste kvinnesakskvinner. Blant annet er det reist en bauta over henne på Vår Frelsers Gravlund i Oslo. Fredrikke Tønder Olsen regnes som ei særpreget og aktiv kvinne, viljesterk, målbevisst, opptatt av rettferdighet og likhet mellom kjønnene.

Svein Laumann

Contents

Editors´preface **2**

Eevi E. Beck, Leikny Øgrim and Margareth Sandvik

Responsible Design for Children: Whose Responsibility? **4**

Lucie Dokoupilová

A Different Perspective on use of IC technologies in Education **14**

Harald Nilsen and Henning Bueie

ICT as a tool in maths - useful for what? **18**

Elżbieta Perzycka

Preparing the teacher for performing professional tasks using information technology **29**

Dorota Siemieniecka

Ability and creative attitude with style of using the electronic media **38**

Anna Watoła

Computers in pre-school education as investing in the child's future **47**

Editors:
Dorota Siemieniecka
Harald Nilsen

Editors´preface

The articles in this edition of *Fredrikke* address readers who are interested in issues related to use of electronic remedies in school. Use of ICT in school is a rather new occurrence, and one should be confident to add new knowledge to what is already known. In spite of a common heading – ICT in school – one will note that the authors serve different perspectives,

The Norwegian authors E. Beck, L. Øgrim and M. Sandvik ask for quality of learning resources made for school, in particular system quality of school, mainly: *How to handle ethical responsibility in educational design?* "Whose responsibility" should be – we suggest – an inquiry of great relevance.

Lucie Dokoupilova from Czech introduces ICT particularly made for a specialized center – *monitory center* – in which teacher training students can practice and study pedagogical based activity. This is a step for quality in training for teacher-to-be, one suggests.

Harald Nilsen, Norway, presents a small-scale study linked to use of ICT in the subject mathematics in lower secondary school. The researcher places focus on the connection between the electronic tool and the role of the teacher, the social relations, the outcome of learning and additional learning.

Elzbieta Perzycka, Poland, discusses in detail what should be the teachers competence when implementing electronic remedy in school. The author asks for technical competence, methodical competence, awareness and potentiality competence and finally there is the inquiry for ethical competence.

Dorota Siemieniecka from Poland refers to quantitative based investigation aimed to throw light on the connection between teachers´ creativity and divergent thinking on one side and their attitudes and factual use of electronic media on the other side. One should not be surprised there is some relations – the article presents what is of interest.

Anna Watola, Poland, presents a research work carried out to illuminate *if* or *how* use of computer in pre-school education can be of help for the child´s *school readiness*. One

should note that the term “readiness” is linked to the subjects: reading, writing, maths, arts, music and foreign language.

Nesna University/College, NESNA; University of Nicolaus Copernicus, TORUN

November 2007

Eevi E. Beck, Leikny Øgrim and Margareth Sandvik

Responsible Design for Children: Whose Responsibility?

Abstract

Responsibility for ensuring the quality of learning resources for schools has been relaxed or dissolved in many countries. For ICT-based learning resources this raises issues of e.g. how social (cultural, class, gender) responsibility will be ensured. In this paper, we discuss
divergent views of where responsibility lies. With designers? With teachers who use it? With the young students? We sketch a model for teacher and student participation in design which takes into account ethical questions.

Key words: Design with children, design for children, responsibility, web-based systems, educational systems.

Introduction

An issue which has occupied critical computing is the social, political, and ethical responsibility of system developers. These questions are raised in the literature form the so called Scandinavian critical tradition in system development from the seventies and eighties [1, 2, 3, 4, 5, 8]. The researchers argued that system developers should be aware of and analyze interest conflicts related to information systems and take a stand, if possible, for the weaker parts. This ideology and explorations of its practical consequences dominated the first two Aarhus conferences (in 1975 and 1985). In the third one (1995), however, the critical view was hardly visible.

We contribute to a critical discussion of the social and ethical responsibility of the system developers through a case from education. The school is a key producer of ideology in society. Further, children and youth have become extremely important customers for the software
industry. They are in a more vulnerable position than adults for unbalanced or inappropriate representations.

For these reasons it is crucial to reveal ideologies communicated through educational software.

In Norwegian education, computer support for teaching and learning has gained substantial interest and funding in recent years and is a site of political negotiations. The government's four year "Programme for digital competence" [13] promises effort, funding, and possibilities for market growth. Strategies for digital learning resources are being developed. Simultaneously there has been a fragmentation of the previously strict quality assurance for teaching materials.

The system of approval has shrunk from both ends: Requirements to what should be taught in specific subjects have recently been substantially revised [14], relaxing previous specifications. Further, the controls have over some time gradually been relaxed. Teachers are expected to use information and communication technologies (ICTs) generally and internet-based resources specifically [10]. With the new medium of ICT-based learning resources new kinds of quality questions arise, while deregulation has removed familiar paths for handling these. Many kinds of responses are possible, including – importantly – training material for youth to learn cautious "netiquette." Our concern, however, is the teaching and learning situation in which the topic is not net use in itself but learning a subject such as writing skills. Through discussion of a concrete experience we exemplify issues which could benefit from a critical discussion.

With this backdrop we start the discussion of a specific digital learning resource. Our intention is not to conduct a full analysis of the learning resource. Rather, our purpose is to start a discussion on ethics in design and use of information systems influencing children.

Method

This paper is based on the authors' analysis of a specific learning resource, as well as interviews with pupils in one of the classes. The interviews were videotaped and partly transcribed.The data are drawn from the research project LISBET (home.hib.no/mediesenter/kul/), where the usage of this web-based learning resource is explored in cooperation between the researchers and four school classes.

Case: *NORSKVERKSTEDET*

Norskverkstedet ("The workshop for Norwegian," www.norskverkstedet.no) is a web-based learning resource. Designed for 10- to 13-year-olds, it is freely available to schools. As of summer 2005 it includes over 500 pages in a complex structure with links to internal and external pages. It has every possibility of becoming a high quality learning resource. Yet, it includes aspects which are problematic to the authors. In a previous paper we analyzed this learning resource in terms of the gender and ethnicity of implied readers [11]. Our present focus is methodological: How to handle ethical responsibility in educational design for children. To illustrate our concern we draw examples from a part of the resource where the young students are acting as journalists in different environments. One of these is the rural "Grønnebygd" (*Green Village*).

The *Green Village* scenario

In *Green Village*, two scenarios present situations about which the young students may write. In the first scenario (Fig. 1) minks have escaped from a mink farm, in the second there is a fear of wolves in the village,

Figure 1. Scenario "The Minks have Escaped"

The scenarios present *Green Village* as a society marked by conflicts as not a single positive relation is depicted. The characters are presented as silly, odd looking and with extreme opinions. In the mink scenario, no one in this tiny community seems to support the mink farmer or even show empathy with his situation. In the wolf scenario all seem to have clear opinions on what to do with the wolf – regardless of whether or not it exists.

Further, rural dialects are used inconsistently and the women use distinctly urban language. In other respects the depicted community is ethnically homogeneous. It has invisible children and passive, squeaky women. The farmer states as a fact that once wolves taste meat they'll continue killing. This makes little sense. While such a factual error might be part of real journalism, this is not in our view an appropriate challenge for the young students. In sum, these scenarios are in our view neither convincing for rural children to identify with, nor are they suited for urban children to gain understanding of rural life. Traditionally and recently there has been some tension between urban and rural societies in Norway where urban people use derogatory terms about farmers or rural people, hinting that they are slow, stupid, old fashioned, dirty and so on. (The reverse may also be the case, but rural perspectives on the divide are rarely reported in national media.) Our concern is that the images presented in the scenarios, while seeking to be funny, exaggerate the already culturally dominant urban perspective.

Interviews with young students

Six young students in the city of Oslo were interviewed in pairs about their experiences with the learning resource. The interviews took place almost six months after the children were introduced to *Norskverkstedet* ("The workshop for Norwegian") and were conducted with open questions (e.g. "What do you remember from Norskverkstedet – any characters?" "What do you remember about them?"). Here, we focus on their memories and impressions of *Green*

Village. Two of the students could describe people in *Green Village*, "somewhere outside the city." They remembered them as strange people, described by one as "bondeknøl" – a highly derogatory term for a farmer, and "…having strange eyes: He looked one way with one eye, and another with the other. And then he had a funny hat."

Four remembered the scenario with a wolf. They told us that all the people in the village were afraid, especially a mother. These four had at the time of the interviews been studying wildlife and were not impressed with the presentation of the wolf: "...just walking like this [makes grimaces and big eyes] and peeking from behind the tree instead of snarling to people," and "It seems like the wolf is afraid of people, as if it plays with people."

DISCUSSION: Stimulating the interest of young students?

In these scenarios (as well as in others, cf. [11]) all characters except one are designed as caricatures. The only "neutral" character is the Editor of the local newspaper. The purpose of these scenarios seems to be stimulating the imagination of the young students rather than their insight into village life. Yet their task – reinforced by the Editor – is to create a piece of factual

writing. Facts must be sought from other sources. Links are provided to other sites but during our trials and at the time of writing these are of varying quality.

A second issue arises from the interviewee comments about the behaviour of the wolf. Having studied wolves outside *Norskverkstedet*, the animal seemed ridiculous rather than funny to these children. Some of the young students were also upset over the unserious contents of some of the linked-to web sites. In sum, while we applaud the substantial efforts of designers and the cartoonist in engaging young students in a scenario and stimulating them to write, as many new

problems have arisen in the subtle form of contributing to existing dominance patterns. Often, in *Norskverkstedet* support is provided for exploring, understanding, and starting to discuss differences of opinion. Unfortunately, the integrated teacher manual provides no support for the

teachers in addressing points where this design idea breaks down and students may receive contradictory messages. The question then is where lies the responsibility for creating a meaningful whole which supports learning.

Responsibility of the young students vs. the school

Being critical to opinions and sources of information builds on skills which need to be practiced and refined gradually. This is seen as a central task for education in contemporary Norway, starting from the age of 10 or younger and continuing through to Secondary Education [14]. At the age in question, then, responsibility unequivocally rests with the school (and the materials

they use) for ensuring that the young students start learning such skills.

The use of the internet has introduced a complex challenge into schools: To what extent should children be exposed to potentially damaging pages? At various levels of maturity, what are good balances between guarding them against such exposure and training them in handling it? Schools, teachers, governmental education offices, researchers, and child welfare campaigners (e.g. Save the Children) have all been cautious in not laying down simplistic rules. They do, however, agree that responsible adults must be very clear about when children are in100% safe environments and when they are not. If and when children are allowed to "surf," adults must keep an eye on them.

Clearly, the issue of responsibility for children being exposed to undesirable contents is complex. We argue, however, that the wider complexity of the internet is a reason precisely for providing limited, safe spaces such as (most of) *Norskverkstedet*. Its basic design with some contents comprising more and less related stories, scenarios, or tasks and with clearly labelled pointers to outside seems consistent with the advice. Yet caution is needed with respect to the hidden messages. Teaching children awareness of implicit messages is a substantial task and may be best treated explicitly as a point for discussion. A humorous approach may mask as unintended side effects the marginalization of children belonging to dominated groups or children with learning difficulties. Humour must therefore be used with great caution and must be checked with a range of children.

Specific responsibilities of teachers

Responsibility for what young students are exposed to during class rests with the teacher. As a consequence of the above, teachers need to be fully aware of the borderlands between bounded use of internet material and situations where children may involuntarily encounter material which the teacher would not want them to see. In our experience, most teachers who use net based material in their teaching are acutely aware of the potential of various kinds of undesirable contents. In the case above, an aware teacher might use the imbalanced

representation of various groups of people to raise discussions with young students. Using this as an argument for a *laissez-faire* approach to the ethics of design, however, would place substantial burden on teachers. It would at least presuppose a thorough discussion of such issues in the teacher notes accompanying a system. Taking a different approach, the need for safe learning materials has in Norway been recognized in the allocation of substantial public resources to maintaining a web site with free, quality controlled web-based resources for schools (skolenettet.ls.no/). This is most welcome by teachers who are left to concentrate on other aspects of teaching, such as the subject at hand and the logistics of teaching using ICTs.

A model for teacher – student involvement

In Minken and Stenseth's [9, 12] method for designing learning resources, a main idea is that teachers or other educationalists should be key contributors to the process. The method is characterized by thorough educational planning and iterations and prototyping. Their method is

however developed for stand-alone products, and would need to be enhanced in two directions. First, the specifics of development for web-based resources must be taken into account, and second, the responsibilities of participants in the projects need to be addressed with respect to ethical and educational questions. Internet is in its nature dynamic, and net based learning

resources should never be regarded as fixed, final products. Prototyping is needed through the lifetime of the learning resource. For *Norskverkstedet*, new versions are released once a year based on experiences from the previous year.

A central issue in the LISBET project is how learning resources can be designed and re-designed with children. For this work we draw on experiences from participatory design and re-design (e.g. [6, 7]). Being founded in deep respect for end users, participatory design techniques focus on eliciting their needs and views. Both teachers and young students should be regarded as end users.

We need an alternative model of user involvement in educational web development which involves young students and adults who are experts in seeing their needs (i.e. teachers). Involved teachers need to be selected on the basis of their experience with the level of education and the subject in question. Their task is to critically examine the educational approach practiced through the resource. In particular, teachers would consider the different kinds of learning styles stimulated by the learning resource. Young students would ideally be

selected to represent a broad range of abilities in the subject and in using ICTs. They would need to be presented with questions or tasks to illuminate specific questions such as first impressions, their understanding of what is the overall idea/metaphor for the resource, what do they find funny and what is odd or difficult to understand. The extent to which their teachers should be involved would need to be carefully considered in each case.

Above, we saw an example of young students wishing more from the system (a more realistic depiction of wolves). Such a straightforward wish fits well with a user involvement approach, as does some of the investigation of interface and interaction styles. For the education aim of nourishing culturally critical views in young students, however, their opinions about design cannot uncritically guide design decisions. Adults (teachers, others) must take responsibility for design decisions, while taking children's views into account. This is a central paradox when wishing to involve children in design of educational software. Requirements from curricula etc must be met. In Norway it is less clear than before what this entails. Specific attention would need to be paid to including a range of perspectives such as urban/rural, gender, ethnicity, class, religious background, age (if the resource is intended to span an age range), and children with learning difficulties. Developers' influences would vary with their roles. Yet, all, including designers, text authors, illustrators, and sound designers would need to cooperate closely with students and teachers. They would need to extend themselves particularly when potential ethical and educational dilemmas are being identified by teachers.

Summary

When designing web based learning resources for young students particular attention needs to be paid to the embedded perspective as children are vulnerable and exposed to impressions from many angles. In this paper, we have analysed a specific learning resource from this point of view. Based on the analysis, we have sketched a model which combines elements of prototyping and participatory design. Special concern is given to young students as participants. Teachers are given a key role in the development of digital learning resources. National curricula, plans and regulations are also explicitly included. While our sketch needs further refinement in theory and practice to become a useful design method it does identify important areas of development of approaches to web based learning resources.

Acknowledgement

We thank teachers and children who are working with us for giving us your patience and enthusiasm. We thank our colleagues on the LISBET project for your willingness to engage in difficult discussions on the topics raised here.

Bibliography :

1. Bansler, J. (1989), *Systems Development Research in Scandinavia: Three theoretical schools, Scandinavian Journal of Information Systems 1*, August, 3-20
2. Bergo, O. T. and Nygaard, K. (1974), *Planlegging, styring og databehandling* [Planning, management and computing], Oslo: Tiden Norsk Forlag
3. Bjerknes et al (eds.). (1987), *Computers and Democracy – a Scandinavian Challenge,* Aldeshot: Avebury Gower Publishing Company Ltd
4. Bjerknes, G. and Bratteteig, T. *Florence in Wonderland. System development with Nurses*. In
5. [3], 279-295
6. Ehn, P., Mölleryd, B. and Sjögren, D. (2005), *Playing in Reality: A Paradigm case*. *Scandinavian Journal of Information Systems 2*, August 1990, 101-120. Avail.at: http://www.cs.auc.dk/SJIS/journal/volumes//volume02 /articles/06_ehn_p101-120.pdf (accessed 26 Jul 2005)
7. Greenbaum, J, and Kyng, M (eds.) (1991), *Design at work: cooperative design of computer systems,* Hillsdale New York: Lawrence Erlbaum Assoc.
8. Greenbaum, J. (1996), *Back to Labor: Returning to Labor Process Discussions in the Study of Work*, [in:] Olson et al. (eds.) *Proc. of the 1996 ACM conference on Computer supported cooperative work* (Boston, MA, 16-20 Nov 1996), 229-237.
9. Kyng, M. and Mathiassen, L. (1982), *System Development and Trade Union Activities*, [in:] N. Bjørn-Andersen, (ed.) *Information Society, for Richer, for Poorer*, North-Holland, Amsterdam
10. Minken, I. and Stenseth, B. (1998), *Brukerorientert programdesign* [User oriented program design], NLS.
11. Øgrim, L. and Beck, E.E. (2004), *Between "Special Interest" and "a Social Duty": Reflections on Teachers and ICTs. Paper presented at Professional learning in a changing society* (Oslo Nov 2004). Avail. At http://www.pfi.uio.no/konferanse/prof_learning/docs/pdf/Paper/Gruppe%201/Ogrim,%20Beck%20- paper.pdf (accessed 12 Jun 2005)
12. Sandvik, M. and Øgrim, L. (2005), *Describing and assessing a digital learning resource for young students*, [in:] Bjarnø (ed.). *New Teaching and Learning Practices: Experiences with eLearning Projects at Oslo University College 1998-2005*. Oslo University College: Oslo, 52-67. Stenseth, B. (1999), *User Centered Program Design.* Avail. at http://www.ia.hiof.no/%7Eborres/marketmet/ 1999 (accessed 28 Jul 2005)
13. UFD *Program for digital kompetanse 2004-2008* [Programme for digital competence 2004-2008]. Ministry of Education and Research, Oslo. Avail. at: http://odin.dep.no/ufd/norsk/satsingsomraade/ikt/0450
14. 11-990066/dok-bn.html (accessed 12 Jun 2005)
15. UFD St.m. nr 30 (2003-2004) *Kultur for læring* [Report no. 30 to the Storting (2003-2004): Culture for learning] Ministry of Education and Research, Oslo. Full text in Norwegian avail. at: http://www.odin.no/ufd/norsk/publ/stmeld/045001-040013/dok-bn.html, presentation in English avail. At http://odin.dep.no/ufd/engelsk/publ/veiledninger/045071-120013/dok-bn.html (accessed 12 Jun 2005)

Eevi E. Beck
Education Research Institute University of Oslo
Norway
Leikny Øgrim
Faculty of Education Oslo University College
Norway
Margareth Sandvik
Faculty of Education Oslo University College
Norway

Lucie Dokoupilová

A Different Perspective on use of IC technologies in Education

Abstract

The article presents the use of IC technologies in the practical training of students of teaching at Ostrava University in Ostrava. The theme of IC technologies is related to changes going on in the Czech system of education. These changes are most obvious in tertiary education; particularly dealing with setting the curriculum and the related profile of the graduate. The faculties when training future teachers, still more and more focus on the quality of the practical part of training and its reflection. Ostrava University has created a specialized monitoring center serving the above mentioned purposes and using IC technologies.

Keywords: ICT, skill, practical training

The 21st century is in the Czech system of education connected with many changes concerning perceiving education in a larger context. As part of the national curriculum, new educational programs for primary and secondary schools are created, enabling a much greater extent of differentiation within the educational systems offered. The systems meet the standards set by the regions, parents, etc. IC technologies and their practical use represent one of the cornerstones of those educational programs. Let us try to observe the application of IC technologies from a different perspective.

In connection with the process of determining the curriculum and the relevant profile of the graduate, the question of preparedness of teaching graduates for the actual teaching activity is more and more reflected nowadays. By this preparedness, the optimum development of the individual skills on both the theoretical and practical level and the interconnection with subject and pedagogical-psychological competence are meant. The outputs of the individual practical trainings should serve as a relevant indicator of the quality of the qualification of graduates. The trainings are incorporated into the last five semesters of the study plans for teacher training. The course of the individual practical trainings must be understood as a trilateral process, at the end of which the basic questions of the qualification of students for the teaching profession should be answered clearly. On the one hand, there are the subject didactics teachers as the ones who guarantee the current training of the students and create or co-create evaluation criteria, and the assisting teachers of the training who work as field consultants, coordinators and reflectors of students' skills and abilities, by means of evaluation criteria. The second party is represented by the students themselves, who, based on guided pedagogical performances and consultations with the assisting teacher and the subject didactics teacher, develop the practical part of their skills and abilities of their own teaching

competence. Students should perceive evaluation criteria as means of self-reflection. The third party are the pupils taught by the student (teacher-to-be), whose basic skills (ability to think critically, communication skills, skills concerning working with information, ability to apply theory in practical situations, and ability to decide) are developed by the student-teacher. The basic principle of the success of the whole process is that the practical training should be carried out in an educational atmosphere as natural as possible.

Thanks to its Center of Pre-Graduate Training, in 2001 the Pedagogical Faculty of Ostrava University carried out a project with the goal to establish a center specializing in pedagogical training at one of the teaching schools. This center provides for the trainings of students of teaching in conditions that correspond with the actual educational climate.

The goal of the project was to improve the practical training of teachers-to-be and academics at three faculties of Ostrava University. It supplemented the didactic equipment with unique recordings of classes taught by teachers as well as students themselves. These recordings are further used in the theoretical and practical parts of training. At the same time, the project limited disturbances when visiting sample classes for both pupils and teachers.

The specialized center of pedagogical training consists of two separate, audio-visually connected parts. The first part is a model class which provides universal didactic and technical background for teaching pupils at that particular school. The second part, a monitoring center, serves as a training center for all types of pedagogical training for students of teaching at Ostrava University. This way, students get the opportunity to observe lessons in the model classroom without disturbing by their presence. The lessons are as well recorded and didactics teachers can use the recordings during the following analysis. Thanks to the technical base located in the monitoring center, it is possible to process the recordings in several ways (e.g. using the PIP mode, students can observe the activity of the whole class and simultaneously see details of the individual pupils' activities, etc.). According to an agreement with experienced teachers and students, a whole series of educational tapes is made, which can be used in pedagogical, didactic and other programs of study.

Based on the information provided by all three parties involved in the process of practical training and their concurrent evaluation as part of feedback, it can be concluded that this form of carrying out the training is considered to be suitable and approaching the natural educational climate. Students appreciate the possibility to conduct classes without the direct presence of other people (assisting teacher, subject didactics teacher, fellow students, etc.), which they consider to be a step towards building up the natural respect of pupils. At the same

time, they are glad for the chance of being helped, in cases of emergency, by the assisting teacher or subject didactics teacher who watches the whole performance on-line in the monitoring center. This fact has a positive influence on their mental well-being when carrying out the training. Subject didactics teachers and assisting teachers highly appreciate the opportunity to work with the recordings of the students' teaching attempts when analyzing them. Pupils feel as positive the fact that they are not disturbed and made nervous by the presence of other persons who would otherwise observe the lesson from the back of the class.

As not all teaching schools have space for setting up such specialized centers of pedagogical training, the Center of Pre-Graduate Training is looking for further possibilities of this form of executing the practical part of the training of students of teaching. Wireless connection between the buildings of Ostrava University and the individual teaching schools seems to be one alternative. Cameras would be installed in classes and the picture would be broadcast directly inside the university. On-line broadcast would be available to a larger number of students and it would as well be possible to use the recordings as part of e-learning forms of study.

The unique character of this project has attracted our colleagues not only in the Czech Republic, who expressed their interest in series of tapes, but as well in the neighboring countries (Slovakia, Poland). As part of exchange programs of students of teaching, students would complete part of their training in this center (classes of English and German). They would as well present their scholarships in the form of recordings of their teaching attempts at their home schools.

Bibliography :

1. Dokoupilová, L. (2004), *Problematika provázanosti didaktické a praktické složky pregraduální přípravy studentů učitelství českého jazyka a literatury*, (Inovace obsahové koncepce oborových didaktik a praxe). [In:] *Jazykové a literární vzdělávání žáků, učitelů a vychovatelů teorie a současná praxe,* PdF OU: Ostrava, s. 67-74.
2. Dokoupilová, L., Frydrychová, M., Gejgusová (2002), *Aplikace zkušeností z pedagogických praxí v přípravě učitelů* [In:] *Profesionalizace ve vzdělávání učitelů a vychovatelů*, Sborník VZO CEZ: JO9/98: 174500001. 2002-06-01-Ostrava. Ostrava : PdF OU, 2002, s. 197-205.
3. Šimonik, O. (2004), *Pedagogická praxe v kontextu pregraduální přípravy učitelů*. [In:] *Pedagogická praxe v pregradální přípravě učitelů,* PdF MU: Brno, s. 16-19.
4. Vastutová J. (2001), *Kvalifikační předpoklady pro nové role pedagogických pracovníků.* [In:] *Učitelé jako profesní skupina, jejich vzdělávání a podpůrný systém*. Sborník z celostátní konference řešitelů projektu rezortního výzkumu MŠMT ČR č. LS 20007 Podpora práce učitelů. 1. díl. Praha : Pedagogická fakulta UK, č. 1, s. 51-55.

Lucie Dokoupilová
Ostrava University in Ostrava
Czech Republic

Harald Nilsen and Henning Bueie. [1]

ICT as a tool in maths - useful for what?[2]

Abstract

The article presents the use of ICT as a learning tool in the subject mathematics - topic: *Geometry with the program Cabri*[3]. Data is based on classroom observation, period February – March 2007, grade 9 (lower secondary school), 25 students. The article discusses the use of ICT in a holistic perspective that includes the atmosphere in the classroom, social relations, the subject and learning in general, as well as ICT as a learning tool. The article is divided into three parts, background, learning and learning objectives, and a summary. The background (I) presents observation as a method, the concepts learning vs. understanding, and presents use of ICT in an overall perspective, i.e. school and classroom context). In part II, learning and learning objectives, there is a presentation of the Cabri program and furthermore a discussion of the tasks and methods for the five observation hours. In addition to formal learning objectives, there is a paragraph on "concomitant learning", defined as learning strategies and learning of identity. Part III is a summary of the preceding discussion.

Key words: ICT: - holistic perspective, - teacher´s role, - understanding, - concomitant learning.

Goal of the study

Main goal was to register and gain closer understanding of using ICT for a particular school subject and task, and at the same time studying use of ICT in a broader perspective, i.e. classroom-activities and interactive, social processes. One may specify the observation goals like: - what impact has use of PC for the learning situation, - what is the connection between student´s use of PC and the teacher´s role, - what impact has use of PC on pupil´s cognitive behaviour, - does student´s use of PC affects the interplay between students and teacher, and - do students´ use of PC affect our conception of what learning in fact is?

Acknowledgement

I would like to thank Åretta Lower Secondary School and the pupils of grade 9b, whom I was able to observe in their mathematics class. Furthermore I would like to thank the teacher Henning Bueie who was very positive and forthcoming and has provided knowledge and support for this study.

[1] Harald Nilsen is pedagogue, researcher and the formal observer of what was going on in the classroom. Henning Bueie is the mathematics teacher of the class; he provided the necessary information and supported me in my observations.

[2] The article is a short version of a larger research report published in the serial *FREDRIKKE*, Nesna University College, 2007.

[3] About the program Cabri, see this article part II. Cabri Geometre (Cahier de Brouillon Informatique) is developed at the University of Grenoble, France.

Part I. BACKGROUND

ICT at schools

In 2006 the Norwegian government presented the teaching plan for the school reform project *Knowledge Promotion*[4]. In the National curriculum the use of digital tools is characterized as one of five basic skills, and ICT is supposed to play a central role in the subject of maths. The international DeSeCo[5] project of the OECD stresses that there is international agreement in terms of ICT-use; in the discussion of "key competencies" one of the three vital competencies is that pupils "use technology interactively" (p. 10-11).

Åretta Lower Secondary School is one of ten demonstration schools in Norway, and the school promotes the use of digital tools in teaching. The teachers of maths point that pupils who have fine-motor difficulties are better able to use the keyboard than they are to use pencil, dividers, and ruler in the geometry class.

About observation as a method

This classroom study is a case study limited to a single classroom and has a limited duration. The study is based on observation of selected classroom-activities and partly based on "stimulated recall" (Nunan 1992: 94f.), that means teacher´s comments on the previous classroom events under study. The observations are carried out in a natural setting . The study is *qualitative*; the overall goal is holistic understanding and to see connections as different from fragmentary knowledge (op.cit:231 and Patel & Davidson 1995). The personal based, subjective perspective of interpretation interferes with the validation of results. The subjective perspective is enhanced by the mode of observation where "open" observation was used rather than a pre-prepared observation form. Nevertheless the observations had a clear focus on work modes, social interaction and learning objectives, accordingly "semi-structured" (Nunan 1992:91-114, Patel & Davidson 1995:67).

The classroom is an arena for diverse activities.[6] Children and young adults are generally active, and in the classroom the teacher organizes physical, verbal, and mental activities that are meant to generate learning and understanding. As an observer in the 9th grade of Åretta school I experienced such a setting. It is impossible to describe the diversity of

[4] *Knowledge Promotion,* see Nilsen, H. 2006A: "School for the future; a critical view on the Norwegian School Reform 2006, *Knowledge Promotion*. In: *The New Educational Review*, 2006, vol 10, no. 3-4, and Nilsen, H. 2007: "Norweska reforma edukacji: *Promocja wiedzy* 2006. (forthcoming September 2007).
[5] DeSeCo: Definition and Selection of Competencies. Available on-line at: www.oecd.org/edu/statistics/deseco and www.deseco.admin.ch.
[6] See Ellis, N. C. 2006.

activities, and I had to be selective. However, selection and focus on something implies that some things can be overlooked. Therefore this study is not going to present "heavy" conclusions but is meant to prepare and motivate further more detailed studies in this field.

Learning = understanding

The new teaching plan, *Knowledge Promotion*, discusses the pedagogical challenges and changes in the wake of the new focus on ICT. The changes have at least two aspects, changes of the actual teaching methods and changes regarding the general view on learning. With the computer as a tool in the classroom, changes regarding the way of learning or the teaching design have become obvious, and we think that changes in design should have consequences for general views on learning such as asking what are the defined learning objectives, and what about the so-called concomitant learning? Another important aspect is to define the concepts that are used for describing learning. In this observational study it became clear for Bueie and me that we should talk about *understanding* rather than about learning. The term "understanding" means a more fundamental outcome *how to use* knowledge and skills. And – we suggest - understanding appeals more than learning to the idea that pupils are able to reflect upon what they have learned, i.e. understanding is linked to cognitive competency.
Understanding includes the use of ICT in a holistic, cognitive process ("reflectiveness"), and Bueie understands his role in this process as a co-worker of "constructing understanding", and in this role he is able to improve the general quality of the teaching process.

ICT in context[7]

In order to study a subject, learning and understanding, activities, and tools in a holistic perspective,[8] the whole school environment as a learning arena has to be included. The learning environment functions at least on three levels: school, classroom, and a third level where pupils/teachers *realize* their environment and their relations.

Åretta school consciously aims at realizing a result-oriented culture. The areas the school focuses on are evaluation, net-based learning and models for ICT-use, flexible work forms with access to basic classrooms, large classrooms, and group rooms, and last but not

[7] About ICT and context see Nilsen, H. 2006: "Bruk av IKT i et kontekstuelt perspektiv." In: Jenssen, Ø. (ed): *På nye veger*. Høgskolen i Nesna. In a Polish, little revised version, Nilsen, H. 2006: "ICT jako naredzie w edukacje na odleglosc w swietle perspektywy ekologicznej." In: Wenty, K. & E Perzyckiej (red) 2006 *EDUKACJA INFORMACYJNA*. Szczecin University.
[8] On perspectivism see Hundeiede, in: Løkensgard Hoel, T. 1998: *Læring som sosial praksis*. NTNU – Program for lærerutdanning.

least constructive pupil participation. A 10th grade pupil states that the best aspect of the school is that "the opinions of the pupils are heard and are taken seriously" (quoted in the newspaper *Gudbrandsdalen/Dagningen* 02.02.06) and that "now we can, to some degree, participate in determining what and how to learn."[9] The statements from a log book in 8th grade, where the task was to describe what was good about the school, include many answers such as "good/very good learning environment", "freedom", and "smart teachers".[10]

More important than the physical space as such is the atmosphere created by human beings who act and interact in that space. The pupils' verbal and body language demonstrates security. Both inside and outside the classroom there is much talking, but no unpleasant noise, the situation could be labelled an "ordinary" conversation culture of 15 year olds.

The teacher positioned himself in an anonymous way and appeared to be neutral and friendly; nevertheless he always was physically and visibly present. Being both anonymous and visibly present may appear to be a paradox, and this point is discussed later in the study. The pupils thought that the teacher was present for them. That the teacher was present for the pupils could be seen in the way they addressed the teacher openly, securely, and "naturally", in contrast to a memorized routine. About the teachers role, Bueie says that he perceived the social order and structure in the learning situation as calm and relaxed. He organized in a way where he did not have to show himself to be authoritarian, and "I can function as a genuine partner in conversation and cooperation with the pupils", he said.

From my observation I noted in particular students attitude related to the role of the teacher. By way of different signals they gave the impression that if there should be a *progression* in their learning, they needed the teacher. Bueie gives a comments to this, he claims:

> In my view the learning situation has changed after we started to use ICT. The focus has shifted from teaching to learning, from the teacher to the pupil. This means that pupils themselves must be more active in knowledge acquisition. Through their interaction with the computer, pupils control their own progression. They navigate through net pages, investigate, try out things, and the learning process is circular and recurrent rather than linear; cognition research has too long seen learning as a linear transfer of knowledge and knowledge as a storeroom of mental representation.

The fact that the computer offers and invites investigation and experimental activities should have consequences for the role of the teacher, according to Bueie: He means that the

[9] These pupils' statements are documented and seen in a larger context in Nilsen, H. 2006: "School for the Future: A Critical View on the Norwegian School Reform, 2006, *Knowledge Promotion*. I: *The New Educational Review* 2006, vol.10, no. 3- 4.
[10] From the brochure: *Åretta School*.

computer liberates time that can be used for supervising pupils individually and guide them through a process. The more pupils discover and understand without teacher´s explanation, the better the learning situation. ICT clearly opens up possibilities for investigation and a dialogic learning, for example when one works with geometrical figures, Bueie says.

From my observer position I noted that as a collective the pupils wanted to use their freedom in a responsible manner. In a way the computer invited the formation of routines, a type of seriousness in contrast to play and irresponsibility. Furthermore the cautious authority of the teacher appeared to implement an attitude that could be paraphrased as "we are here to learn" or "the teacher is here for us". Another important point was that the pupils appeared to respect each other for what they were, in contrast to a ranking according to smartness or popularity. However, this does not mean that pupils were not interested in being smart in their subject, and smart in their treatment of electronic remedy. The most interesting aspect in the relationship between teacher and pupils was that the teacher invited the pupils to be investigative and experimental in their routines. The positioning of the teacher is a signal to manage and to "find out things" independently, in contrast to a positioning where the teacher checks wrong and correct answers.

The teacher is convinced that ICT has a motivational effect and refers to his experiences in teaching mathematics in classes without computers. Here we come to a central point, namely the motivation to work with a subject. To learn means to "do" something, either physically or mentally. In this context it was obvious that the pupils were diligent and even enthusiastic in their dialogue with the computer. Above all, they appeared to be relaxed because the computer was a benevolent partner that did not demand anything but functioned more or less in a cooperative way and as a useful tool to them.

I experienced the importance of the computer for motivation when one of the five observation classes were computer-free. During this class there was so much loud talking and physical restlessness that it affected the learning environment, and the teacher had to calm down the class, though respectfully.

II. LEARNING and LEARNING OBJECTIVES

Dynamic geometry with Cabri

> Data technology has opened up many new options in regard to how we understand geometry. Among other things there are construction programs that enable us to perform the constructions that were traditionally done with dividers and ruler. Cabri is an example of such a construction program. The screen image of Cabri looks like a

blank page, but we are able to choose the basic geometrical figures that we want to construct from a menu. When a figure is constructed, we are able to change the basic elements of the figure's form or placement. (Bueie 2005)

Learning objectives and learning activities lesson by lesson (examples)

February 14th

- Tasks: With the help of computer and Cabri, pupils are going to construct "basic" angles (60 and 90 degrees), divide the angles in half, rise and lower normals, construct parallels, and try out simple triangle and quadrilateral functions.
- Work form: Pair work, each pupil with his or her computer. Free engagement with the computer until the aim is reached.
- Learning objective: To construct (= skill) according to instruction/guidance (= understanding).
- The teacher: Introduces the tasks briefly: "where are we, where shall we go?" Functions as an aide in the pupils' work processes.
- Learning gain: see report from February 21.

February 21st

- Tasks: With the help of Cabri pupils are going to construct triangles and write an construction explanation.
- Work form: In pairs, and the class is organized into two groups, A and B. During sequence 1 (ca. 20 min) each group is going to construct "their" triangle and write a construction explanation. Now the pupils erase their geometrical figure but leave the explanation on the screen. Group A and B swap computers and construct new triangles in accordance to the explanations that are left on the screen.
- Learning objectives: To construct according to an objective/instruction and create a functional construction explanation.[11]
- Teacher: (i) Introduces the class with providing a perspective (= the "why" of didactics) and (ii) problematizes the criteria for "good" construction explanations.
- Learning gain: Bueie explains that he has changed his view on learning gains after data technology has been introduced to the math class; he says:

[11] A "functional explanation" in this context means an explanation that another person can use to reproduce an object.

> With ICT there is a new focus on the pupil as an explorer, and the pupils' learning is linked to the quality of the process rather than to how many tasks they can solve during a given time. The process is interactive because pupils have the option to receive a "real time" feedback rather than a response on the quality of their final product. In summary one can say that the focus has shifted from the aim itself to the process towards the aim.

See report from March 12th on skill and understanding as learning gains.

March 12th

- Tasks: Repetition as preparation for the test on March 21st. Construction of triangles and quadrilaterals, with increasing degree of difficulty.
- Work form: Placement in pairs, individual work.
- Learning objectives: Skill to "manage" Cabri (carry out constructions). Understanding/reading skills (i.e. to grasp the instruction of the task and interpret the context between instruction and tool).
- Teacher: Introduces the tasks: (i) Provides a perspective, (ii) indicates where to find help on the internet, and (iii) acts as an aide for current activities. The role of the teacher in this context was much more visible than during other classes; he had a form where he ticked off items as "done", he was willingly accessible for questions from the pupils asking questions such as "can you come here" or "I don't get it". His role was to sympathetically monitor the work contract which consisted of individual work.

March 21st (test)

- Tasks: To demonstrate skills and understanding for the solution of geometrical tasks with Cabri.
- Work form: As on March 12th. Pupils present a finished product (four constructions, one construction with construction explanation).
- Learning objective: See March 12th.
- Atmosphere: Usual work climate, relaxed, pupils appear to be positive that they can "show" what they can do. Also freedom/acceptance to show that one is "not so smart". Absence of presentation fright.
- Teacher: Delineates the rules for the test, is present and to affirms the work situation, creates silence, signals through body language that the situation is OK, "tactically" helps individual pupils.

Test result:

The teacher points out the concepts *skills* and *understanding*, and the test is designed to demonstrate both aspects. Bueie states about the relation between skills and understanding that a skill comes from understanding. Understanding is the motivation behind the skill to "use" a tool. One can nevertheless add that a certain technical skill is also the prerequisite for understanding, i.e. a *cognitive process*. Understanding and skill are qualities that reinforce each other in an endless process. Through the test the pupils demonstrate their understanding in terms of being able to interpret the text of the task and to grasp the relation between the text of the task and the tools, and in terms of showing the skill to construct angles, divide angles in half, construct parallels, or calculate a denominator. Pupils should provide a construction explanation for one of the tasks. The teacher comments that the regular and the good pupils solve the tasks in a way that he thinks they would manage without the program (Cabri). However, in his opinion the so-called "weaker" pupils have better results with the program.

Concomitant learning

Concomitant learning is a learning gain that is not specifically aimed at and is therefore not evaluated formally. The *way* the teacher organized the classes motivated reflection about the informal learning gains. In a conversation with four pupils I asked what it meant for them to use the computer during the math class. Their answers contained terms such as "easier", "revise", "exact" and they explain: "it is somehow easier, we can revise and delete and get it done more exactly than by using pencil, dividers, and exercise book—there were so many things to take care of. When we use the computer we have everything, we remember where things are placed, and there is order." One girl expresses it such: "the challenge is to remember and to think, because we know that everything is there".

The pupils' comments indicate something about learning strategies, about learning as *cognition*. This means that the computer invites or demands a way to think, remember, and investigate, in other words, invites and demands attention and concentration. In conversations we come across the term "smart", and the pupils tell that everybody keeps up initially, but that after a while some become smarter because they remember better, "those are smartest who remember where things are", as one pupil points out.

The pupils' statements can be described in terms of both a cognitive and a process view of learning. What the pupils pointed out is that what was important was not "smartness" in terms of getting many correct answers, but they talked about the conditions for learning, to

remember what was where, to remember/think/understand what one needed, in other words, learning strategies. Indirectly they demonstrated that the *process* was more important than the final product. This is in accordance with Bueie's view; he talks about "navigating" the web pages, investigating, trying out. This point needs to be elaborated, and here we are:

The subject is mathematics, the tool is the computer, the teacher is a "conductor", and the framework is *relational pedagogy*. For me, in the role of observer, it appeared that pupils were equal, independent of any measurable "smartness". The teacher gave them time to try things out, to make mistakes, to succeed, to succeed "eventually". This practice appeared to create secure pupils, and feeling secure is a prerequisite for being a learning pupil. The pupils did not only learn a subject and learning strategies, they furthermore learned an *identity*. It appeared that the use of computers, the seeking and trying pushing of the keys in combination with the teacher's accepting patience formed the foundation for a type of security in terms of equality and the feeling that one is going to achieve something. A non-segregating relational pedagogy provides a good basis for reinforcing human value, which is the basis for a positive identity.

III. SUMMARY

The study presents ICT as a pedagogical tool in a holistic perspective. There is a focus on the atmosphere in the classroom, social relations, the role of the teacher, and how teacher and pupils use the computer as a pedagogical tool. The positioning of the teacher is a decisive factor, as Bueie expresses: "After we started using ICT, the focus in the classroom was shifted from the teacher-pupil dialogue to a dialogue between the individual pupil and his or her computer. Pupils must be more active and *search* for new knowledge, navigate net pages, check and try things out. My role is that of directing a learning community". Experiences from this study show that the positioning of the teacher is an important prerequisite for the experience of the computer as an inspiring tool. Pupils must have sufficient *time, freedom, and acceptance for a learning strategy marked by inquiry and investigation*.

In regard to learning gains, this report stresses the importance of skills and *understanding*. Skills mean the ability to navigate with one's own computer and to solve problems, and understanding means insight into *what* one does and *why* one does what one does. The computer is a tool in an investigative process towards a final product. Bueie stresses the importance of quality in the process and thinks that the process itself must receive as much attention and priority as the final result. The process or learning strategies can be related

both to an individual-cognitive and to a social-cognitive view of learning, which both correspond to the 2006 school reform "Knowledge Promotion" (see Dysthe, 2006). Bueie says about smartness that "smart" pupils are smart regardless of tools and methods. However, "weaker" pupils perform better with a computer than without, and this is related to the computer's motivational effect and the function as a tool to improve learning gains.

A part of the study deals with the phenomenon of "concomitant learning", also called informal learning. Pupils gain practice in investigating learning strategies. In both a dialogue with the computer and a multilogue with classmates and the teacher they "construct" knowledge and insight. The pupils are knowledge producers, in contrast to knowledge consumers. The article furthermore analyses the learning of identity: who am I as a pupil in general and as a pupil in a mathematics class in particular? The classroom structure of the grade 9b, the relations between the pupils and between pupil(s) and teacher classifies the situation as guided by relational pedagogy. The atmosphere, cooperation, and focus on the subject provided the pupils of grade 9b with a positive self-image. However, this is not primarily caused by the use of computers but by the teacher's arrangement of the "right" use of it.

Bibliography :

1. Bueie H. (2005), *Dynamisk geometri med Cabri*, Available on-line at: http://home.no.net/hbueie05/
2. Dysthe, O. (2006), *Conference speech*, Trondheim, 9 – 10. October. The heading of conference: SKRIVING FOR NÅTID OG FRAMTID (To write for the present and for the future).
3. Ellis, N. C. (2006), *Cognitive perspectives on SLA* [in:] K. Bardovi-Harlig, & Z. Dõrnyei (ed.) *Themes in SLA Research*. AILA Review, vol. 19.
4. Føllesdal, D., L. Walløe, J. Elster (1990), *Argumentasjonsteori, språk og vitenskapsfilosofi,* Oslo: Universitetsforlaget
5. Hoel, Løkensgard T. (1998), *Læring som sosial praksis. Med eit fagdidaktisk sideblikk*, Trondheim. NTNU. Program for lærerutdanning.
6. Matematikk, læreplan. I (2006), *Læreplanverket for Kunnskapsløftet*. Midlertidig utgave, juni, (57-69).
7. Oslo, Utdanningsdirektoratet (see: www.kunnskapsloeftet.no, English form)
8. Nilsen, H. (2006A), School *for the Future: A Critical View on the Norwegian School Reform-2006*, *Knowledge Promotion.* [In:] *The New Educational Review*, vol 10, no. 3-4.
9. Nilsen, H. (2006), *Bruk av IKT i et kontekstuelt perspektiv*, [In:] Ø.Jenssen, (ed.): *På nye Eger,* Høgskolen i Nesna.
10. Nilsen, H. (2006), *ICT jako narzędzie w edukacje na odleglość w swietle perspektywy ekologicznej*, [In:] K.Wenta & E Perzycka (ed.) Edukacja Informacyjna, Szczecin University: Szczecin
11. Nilsen, H. (2007), *Norweska reforma edukacji*: *Promocja wiedzy* 2006, (in print. Szczecin October 2007).
12. Nunan, D. (1992), *Research Methods in Language Learning,*. Language Teaching Library: United States. Cambridge
13. OECD: DeSeCo: "Definition and Selection of Competencies." Available on-line at: www.oecd.org/edu/statistics/deseco
14. Patel, R. & B. Davidson (1995), *Forskningsmetodikkens grunnlag.* Oslo. Universitetsforlaget, Original: *Forskningsmetodikens grunder* (Sweden) 1994. Lund. Studentlitteratur.
15. "Åretta ungdomsskole – vår plass i solsystemet". 2005. Brochure.

Public Documents

16. Competence Development Strategy in Basic Education, Available on-line at: www.kunnskapsloeftet.no.
17. Introduction to Knowledge Promotion, Available on-line at: www.kunnskapsloeftet.no.

Harald Nilsen, Nesna University College
Norway
Henning Bueie,
Åretta Lower Secondary School
Norway.

Elżbieta Perzycka

Preparing the teacher for performing professional tasks using information technology

Abstract

The school, just like any other area of human activity in the society, undergoes transformation, with one of the causes being the changes in social and economic conditions. Examples of areas affected by those changes are: places of storage and ways of using information, means of communication, kinds of professions as well as means and tools used for learning and working.] All people – the parents, employers, local communities and the society – expect that schools will prepare students for living in the arising information society as sensible users of information technology. For that to succeed, we need well-prepared teachers. It is their qualifications and competence which shall affect preparing students for meeting the requirements awaiting them in adult life. In this article I present the government's requirements posed to Polish teachers regarding educational aims and goals accounting for information technology.

Key words: information and communication technology, IT and media competences, standards in education

Introduction

Information technology is a combination of informatics with other branches and technologies, which act jointly with it and affect its applicability in society. It combines a set of means (devices), tools (software) as well as other technologies (e.g. telecommunication technology), which promote versatile usage of information. Information technology (IT) developed along the progress of computers, computer networks and software. The idea of IT gained on popularity in recent years, and is reflected in the curriculum basis[12] for general education. The importance of IT has been granted appreciation in all areas of teaching, and one of the main goals for teachers at school has become to create the conditions for students to acquire the following skills: searching, organizing and using information from a variety of sources as well as effective usage of information and communication technologies. Polish schools increasingly place emphasis on an interdisciplinary and systemic approach in education. The experiences in other countries so far[13] show that introducing modern information technologies to education causes significant qualitative change, not only in the education process in general school, but first and foremost – significant changes in the system of training teachers. Introducing widespread, thorough means of preparing teachers for using

[12] Podstawa programowa kształcenia ogólnego, MEN, 15 February 1999, available at: www.menis.waw.pl, accessed: 21 April 2007.

[13] R.Pachociński, Współczesne systemy edukacyjne, Warszawa 2000. The author of the book aims at acquainting the reader with European (Poland, England and Wales, France, Spain, Germany, Russia, Sweden, Italy) and non-European (Brazil, China, Egypt, India, Iran, Israel, Japan, Nigeria, US) systems of education.

information technology shall have far-reaching consequences, in particular in the areas of social life and economy[14]. Thus, the demand is rising for highly qualified teachers who are able to work with the computer. The abundance of resources and variety of means for recording information as well as their scattering deem it necessary to make use of a multimedia device (which indisputably is the computer), and information technology in general, in order to acquire, process, store and provide information (knowledge).

Information technology due to its nature going beyond separate subjects is taught in primary, secondary and post-secondary schools in all areas. The means as well as teaching methods undergo a constant dynamic development. The hardware base is changing and thus the capabilities of software as well. It is not possible to develop a permanent set of constant teaching aids required, since the technological progress forces change in hardware and software. As a result of constant external changes, the teachers should transfer them into internal changes, meaning an ongoing conscious quest for new educational solutions using the latest technological developments in conveying knowledge to the students. This is the only way for the student to actively transform information acquired from the surrounding reality. In order to teach students how to use new techniques, the teachers must master for themselves the art of using means and tools of information technology in teaching and enhancing the teaching of their subject corresponding to the students' level of preparation and the range of matters to be taught. In order to standardize the requirements posed to Polish teachers regarding their usage of information technology in teaching and learning, the government created standards for preparing teachers in this regard.

Standards for preparing teachers regarding information technology

Most countries[15] reforming their education system have set standards of professional competence for teachers. Ever more often, the term „qualifications" is replaced by „competences[16]". This is due to the fact that qualifications do not reflect changes taking place

[14] More by: B.Siemieniecki, Technologia informacyjna w polskiej szkole. Stan i zadania, Toruń 2003, p. 12.
[15] Compare: Department of Education, Initial Teacher Training (Secondary) and The Initial Training of Primary Schol Teachers in England, Ed.: M.Wilkin, Mentoring in Schools, London 1992, USA - *Association of College and Research Libraries. Information Literacy Competency Standards for Higher Education*, [available at:] http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm, accessed 12 April 2006, Australia - C.S. Bruce, Seven Faces of Information Literacy in Higher Education, AUSLIB Press, Adelaide, South Australia 1997.
[16] According to M.Czerepaniak-Walczak, competence is a conscious, trainable, satisfying yet not extraordinary, level of ability being a condition for effective conduct (acting) in some area [quoted from:] Aspekty i źródła profesjonalnej refleksji nauczyciela, Toruń 1997, p. 87; also - M.Dudzikowa describes competence as ability for something, dependant on abilities being parts thereof, skills, as well as on one's own conviction for using this

in contemporary school, being merely a general, theoretical term. The teacher's competences in using information technology gradually take shape of a specific paradigm[17], which has an empirical and explicatory meaning, particularly vital for pondering the phenomena of teachers' subjectivity and their adaptation at various stages in their professional activity. Proper specialist preparation, comprising of both the subject as well as methodical knowledge acquired in course of studies, determines the initial level for launching the career of a young teacher. The required competences alone are subject to constant change and need correction, not to mention the ever changing virtual reality shaped by the progress in information and communication technology. This is due to the specificity of teacher's work, which is non-standard and communicative in character and also due to the accelerating technological progress. Therefore, considering Polish standards[18] for professional competence of the teacher, one needs to bear in mind the Polish concept of quality in teacher's work, since it is difficult to consider without the context of local conditions in Polish schools, deeply rooted in Polish culture, both national and regional.

In accordance with the curriculum basis for general education, in August 2003 the Council for Information and Media Education within the Ministry of Education presented its proposal for standards in preparing teachers regarding information technology[19]. According to those standards, the teacher should be acquainted with the basics of computer operations and be able to use it as well as its peripherals, multimedia and network accessories in order to deal with information. One must be able to assess the suitability of the computer system configuration regarding the tasks being completed, be able to upgrade it with essential hardware and software elements, oversee the safety and hygiene of students' work, as well as deal with simple system malfunctions. In particular, we can call a teacher to be competent in information technology when he or she:

1) knows and understands the terms and rules comprising the basics of IT, makes proper use of IT terminology both in speech and in writing, as well as in the educational content being conveyed; recognizes the basic trends in IT progress,

---

ability, [w:] Kompetencje autokreacyjne – mozliwości ich nabywania w toku studiów pedagogicznych, „Edukacja Studia Badania Innowacje", 1993, No. 4 (44), p. 31.

[17] See: Z.Kwieciński, Nieuniknione. Funkcje alfabetyzacji w dorosłości, Toruń – Olsztyn 2002, p.115; R.Kwaśnica, Wprowadzenie do myślenia o wspomaganiu nauczycieli w rozwoju, H.Kwiatkowska, T.Lewowicki (Eds), „Studia Pedagogiczne" LXI, KNP PAN, Warsaw 1995.

[18] Model polskich standardów kwalifikacji zawodowych, M.Butkiewicz (Ed.), Warsaw – Radom 1995, pp. 29-32.

[19] Standards for preparing teachers in information technology and informatics (a document prepared by the Council for Information and Media Education - August 2003), available online at: www.men.gov.waw.pl/edu_infor/dokumenty/ accessed on: 15.04.2007

2) knows the basic framework and functions of a multimedia computer set, its basic elements and peripheral devices (such as: the printer, scanner, camera, microphone etc.),

3) uses a multimedia computer set and software (operation system, software applications, educational software) in the extent suitable to one's own professional needs as well as the educational needs of the students,

4) accesses computer networks: local (at school) and the Internet; knows basic internet services and their educational applications. Uses the net for accessing information, storing data and information as well as communications,

5) upgrades the computer set with simple peripheral devices, mainly intended for educational use, essential for work and teaching classes,

6) installs software, mainly educational, taking into account one's own needs and the intended usage (in cases where this does not require knowledge of the parameters of the computer system),

7) oversees the safety and hygiene of conduct at the computer – one's own and that of students; protects it from viruses, inappropriate materials and illegal conduct; can deal with simple and typical hardware and software malfunctions, especially when they occur during classes,

8) is acquainted with, is aware of and can present the basic uses of IT, including those in the closest proximity of the school: at the library, administration level and communication between school employees, students and their parents.

The teacher's task is to look after the development of one's own "didactics workbench" by using IT for: processing information in different forms, communicating and cooperating with other teachers, solving problems and conducting research on didactics in one's own subject; ongoing expansion of one's own IT capabilities and taking actions aimed at expanding them. In particular when he or she:

1) corresponds to one's own professional and educational needs, uses the basic software, such as: a word processor - for processing documents; a graphic editor - for processing images; spreadsheet - for analyzing data, comparison and calculations; database software - for storing and managing data; **2)** prepares materials and multimedia presentations, using the materials stored and processed electronically; **3)** uses IT for accessing diverse information sources (local – e.g. on CDs and on the Internet) as well as processing and using the stored information for one's own professional needs; **4)** uses communication capabilities of IT (e.g. e-mail, forums) for enhancing one's own workbench by new methods and means,

also in professional contacts. Communicates via IT with students and their parents; **5)** uses the computer and IT for planning and expanding professional capabilities, for teaching and various forms of advancement (locally and remotely); **6)** uses IT for solving one's own professional problems and perfecting the working methods.

In teachers' work, the matter of major importance is the role and use of IT in the subject being taught. This is possible when the teacher is aware of and is able to present the major applications and uses of IT in own professional specialty, which can motivate for integrating IT with the subject being taught. At the same time he or she should use IT for enhancing one's own professional skills and expanding the area of using IT in their own branch. In particular when: **1)** they are aware of and able to present the major applications and achievements of informatics and IT in their own area of teaching; **2)** use general software (such as: word processor, graphics editor, spreadsheet, database, software for creating presentations, internet-based services) for tasks connected with their professional activity, suitably to their needs and the needs of their area of expertise, **3)** use dedicated software, characteristic of their own subject, **4)** use IT for accessing information and databases, as well as storing, processing and presenting information, with particular emphasis on new, electronic sources of information from their own subject, **5)** use IT in professional communications and for their own subject matters, **6)** show interest in trends regarding the progress of IT means and tools, at least regarding their own subject.

The teacher working at school with students is aware of IT's capabilities for enhancing and enriching teaching and learning. If that brings benefits to the students, he or she uses the aid of IT at their classes, correspondingly to the students' level of advancement and the range determined to be taught by the *Curiculum basis* and the curriculum itself; assesses the educational benefits arising from using IT. This is possible on the condition, that the teacher: **1)** is aware of change that is caused by IT in education, both regarding the range and methods of teaching, as well as the role of the teacher, **2)** knows and can present the role and range including IT elements in the *Curriculum basis* for general education, with particular emphasis on one's own subject; is able to determine which fragments of the implemented curriculum are integrated with IT and which can be effectively enhanced by IT; prepares the general outline of teaching the material and designs scenarios and drafts for classes, including the use of IT, **3)** is able to describe and applies general methodical rules for using IT in enhancing teaching; is able to assess the educational benefits from using IT and its effect upon the efficiency of

education in particular cases, **4)** when needed, is able to determine requirements regarding additional equipment for computers, corresponding to the educational needs, **5)** uses typical IT means and tools for teaching and enhancing teaching of the subject, correspondingly to the range of teaching and the level of advancement and the interests of students, **6)** knows the available education software and other electronic educational resources, such as: educational games, web pages, news groups and forums in one's own subject and is able to assess their suitability for actual tasks; uses them for specific educational goals, using adequate teaching methods; when necessary and within one's own capabilities, uses IT to modify and independantly prepare teaching aids, also using IT, **7)** uses IT for building active learning and teaching environments, stimulating and sustaining students' creativity, **8)** ehnances the range of one's own didactic capabilities using proven examples of good practice regarding the usage of IT; uses practically tested approaches to teaching and learning using IT, such as: individualization, team work and projects, **9)** is able to show benefits arising from using IT by handicapped students and those with special educational needs, **10)** knowing the advantages and disadvantages of IT means and tools (both general and educational), makes the best possible decisions regarding their place in the teaching process and ways of using them for enriching the range and enhancing the educational message; critically evaluates IT tools and methods and prepares students for such evaluation, **11)** prepares and effectively teaches classes enhanced and enriched by IT and organizes IT use by students in the class; performs evaluation of the influence of IT upon student achievements and educational benefits arising from using it, **12)** cooperates with teachers of other subjects to implement interdisciplinary projects enhanced by IT, particularly within the so called cross-subject paths, **13)** is aware of the possibility of IT having influence over actions and conduct of own pupils, especially regarding further education and living in information society – the knowledge society; correspondingly to one's own capabilities, participates in remote teaching and makes use of services for lifelong learning, especially in the range of rapidly evolving IT. Makes the students aware of the need for lifelong learning and using IT for it, as well as the role of learning outside school (alternative, asynchronous, e.g. remote learning), **14)** aims at perfecting own “didactical workbench”: gets acquainted with new methods and ways of using IT in education, explores them, assesses their suitability and ultimately adapts them to own needs and those of the students; shows acquaintance with basic literature regarding IT in education, especially in one's own subject.

Particular emphasis is being put in Poland on educating and advancing the capabilities of teachers who should be prepared for using information technology critically and responsibly[20]. Every teacher is aware that IT may cause (also at school) many legal, ethical and social questions to arise, as well as dangers in those areas. Therefore, the teacher is expected to comply with the legal and ethical norms as well as rules of equity regarding access to computers and information technology, and also using them by the students. The teacher is supposed to inculcate students with their obligations by showing them the norms for co-existing in the information society that takes shape today.

The teacher will be able to present and justify all of these matters to the students if he or she: **1)** Complies with legal and ethical norms regarding usage of information sources as well as using information in one's own work and while working with students; explains the origin and reasons for using those norms; recognizes and explains the difference between using another person's intellectual property when credit to the author is given and a case of plagiarism; respects the privacy of other IT users – including that of students – and protects their data and resources, **2)** while teaching, takes into consideration human, ethical, legal and social aspects of using informatics by the students, at school and beyond, also for personal purposes, **3)** is aware of cultural differences inherent to information, ways of presenting and providing it; takes measures to guarantee the students equal access to computers, IT and information, regardless of their social and cultural background, gender, wealth and prior advancement, **4)** knows the basic rules of ethics in using the media and applies them in conscious and critical reception of messages from those media, **5)** knows the dangers (including ethical and legal) arising from improper usage of computers as well as using software and information sources which are inappropriate for students; is able to counteract effectively when those dangers arise, protecting students from them and shaping their world of positive values, **6)** knows the psychological and physical dangers to their health, resulting from excessive or improper use of IT; avoids those dangers, makes the students aware of them and protects them from them, **7)** is aware of democracy being connected with unlimited access to information as well as unrestricted communication; is aware of the dangers posed by globalization of social processes, **8)** is aware of the influence of IT over social conduct; is able to present trends in the advancement of technology in general, informatics and information technology, as well as the consequences of that progress for life, including professional life of

[20] S.Juszczyk, Kompetencje współczesnego nauczyciela w zakresie stosowania w edukacji technologii informacyjno – komunikacyjnych, [in:] F.Szlosek (Ed.) Ewolucja kwalifikacji nauczcyieli w kontekście przemian edukacyjnych, Warsaw – Siedlce – Radom 2007, p. 185.

an individual and whole societies in the arising information society; knows and presents official recommendations of national and international bodies regarding the direction of change caused by the progress in informatics and IT on national scale as well as in Europe and the whole world.

Summary

The hereby presented standards, constituting a description of what is valuable, may be used for evaluating teachers' preparation regarding information technology and informatics. Therefore, they can be used as a reference point for designing programs for educating teachers in this regard at universities and also developing programs for educating and advancing teachers who are already active in their profession. Consequently, they may contribute to improving the preparation level of teachers and forming a basis for certification.

An increasing number of teachers in Polish schools make use of computers and networks, as they have proven their didactic suitability for educating in accordance with the rules of complementary use of teaching methods and the means of IT[21]. Using information technology for teaching, the teacher cannot however forget that introducing significant changes to the methods used for teaching so far, one has to be aware of multiple learning styles[22] applied by students, that result from their individual differences.

In accordance with the hereby presented proposal, all teachers should be information and communication technology teachers in the same range as they are teachers of reading, writing and numeracy. Based on the standards, all teachers will know what competences they must possess in their profession and at the given stage of their career and consequently will be able to influence their own preparation level regarding information and communication technology. And it is self-education and self-teaching of IT which will make it possible[23].

[21] M.Tanaś., Dydaktyczny kontekst kształcenia na odległość, [in:] M.Tanaś (Ed.) Pedagogika @ środki informatyczne i media, Warszawa – Kraków 2005, p. 36.
[22] S.Juszczyk., Styl uczenia się dorosłych z wykorzystaniem komputera i Internetu, „Chowanna" 2004, Vol 2 (21), pp. 119-134.
[23] This assumption is confirmed by K.Wenta in his work: Samouctwo informacyjne jako metoda studiowania w świecie ponowoczesnym, [in:] T.Lewowicki, B.Siemieniecki (Eds) Współczeana technologia informacyjna i Edukacja medialna, Toruń 2004, p. 539.

Bibliography:

1. Bruce, C.S. (1997), *Seven Faces of Information Literacy in Higher Education*, AUSLIB Press: Adelaide, South Australia
2. Butkiewicz, M.(1995), *Model polskich standardów kwalifikacji zawodowych*, Warszawa – Radom
3. Czerepaniak-Walczak, M. (1997), *Aspekty i źródła profesjonalnej refleksji nauczyciela*, Toruń
4. Dudzikowa, M. (1993), *Kompetencje autokreacyjne – mozliwości ich nabywania w toku studiów pedagogicznych*, *Edukacja Studia Badania Innowacje*, No. 4 (44)
5. Juszczyk, S. (2007), *Kompetencje współczesnego nauczyciela w zakresie stosowania w edukacji technologii informacyjno–komunikacyjnych*, [in:] F.Szlosek (Ed.) *Ewolucja kwalifikacji nauczycieli w kontekście przemian edukacyjnych*, Warszawa – Siedlce – Radom Juszczyk, S. (2004), *Styl uczenia się dorosłych z wykorzystaniem komputera i Internetu*, „Chowanna", Vol 2(21)
6. Kwaśnica, R. (1995), *Wprowadzenie do myślenia o wspomaganiu nauczycieli w rozwoju*, (Ed.) H.Kwiatkowska, T.Lewowicki, „Studia Pedagogiczne" LXI, KNP PAN: Warsaw
7. Kwieciński, Z. (2002), *Nieuniknione. Funkcje alfabetyzacji w dorosłości*, Toruń – Olsztyn
8. Pachociński, R. (2000), *Współczesne systemy edukacyjne*, Warsaw
9. Siemieniecki, B.(2003), *Technologia informacyjna w polskiej szkole. Stan i zadania*, Toruń
10. Tanaś, M. (2005), *Dydaktyczny kontekst kształcenia na odległość*, [in:] M.Tanaś (Ed.) *Pedagogika @ środki informatyczne i media*, Warszawa – Kraków
11. Wenta, K. (2004), *Samouctwo informacyjne jako metoda studiowania w świecie ponowoczesnym*, [in:] T.Lewowicki, B.Siemieniecki (Ed.) *Współczeana technologia informacyjna i edukacja medialna*, Toruń 2004, p. 539.
12. Wilkin, M. (Ed.) (1992), *The Initial Training of Primary School Teachers Mentoring in Schools*, London

Elżbieta Perzycka
University of Szczecin
Szczecin Poland

Dorota Siemieniecka

Ability and creative attitude with style of using the electronic media

Abstract

The aim of the research was trying to describe the dependence between creative ability and the creative base of teachers and different ways of using media by them.

The progress in technology and the digital technology made a difference in the way we exchange information. The development and the availability of more advanced computer technologies is the reason for changes of the environment and the way that people function, in which we observe bigger and bigger media influence. Media plays a very strategic role in shaping the personality and stance of a man. They influence the receiver in the direct way by developing imitate emotional reaction and indirect through creating long term changes in the behaviour of the receiver in the field of attitude, opinion, interests, knowledge.

Key words: creative attitudes and abilities and media, IT and media, creativity in education, teacher's creativity and media.

Introduction

The aim of the research was trying to describe the dependence between creative ability and the creative base of teachers and different ways of using media by them.

The progress in technology and the digital technology made a difference in the way we exchange information. The development and the availability of more advanced computer technologies is the reason for changes of the environment and the way that people function, in which we observe bigger and bigger media influence. Media plays a very strategic role in shaping the personality and stance of a man. They influence the receiver in the direct way by developing imitate emotional reaction and indirect through creating long term changes in the behaviour of the receiver in the field of attitude, opinion, interests, knowledge. Media creates complex reality, in which the man functions, that expects exact attitudes that express the openness and flexibility in getting use to the changing reality of life which means the creative attitude. Man in his relations with the media can't only be a passive receiver; he should be interested in creative attitude, which means systematic and consistent realizing of creative needs, which make effective alternative to the passive receiving of the information from mass media. In the eye of the pushy expansion of the technology, massive insertion of computers into the schools questions are born concerning the place and the role of a teacher in a classroom dominated by media. Equally important problem is analysis of creativity in media context, there is more research needed for this even thou this problem keeps showing up in literature of this subject. The research done until now doesn't directly respond to the creativity in the context of media, they only include small portion or they only deal the field of one pedagogic innovation.

Research and results

In literature for teachers, only the expecting and the desirable picture of a teacher are given, which qualifies them as: independent thinking, doing, and creative activity. From the teachers is expected that they will specialize in wide range of the student development and that they will be the most effective factor shaping his or her learning environment. The teacher is given a goal, which is a creative change of him or her and their surroundings. In order for a teacher to realize this goal he or she needs to notice the development and creative attitude.

There are many definitions in the literature of the subject about the concept of creative abilities. One of the way to understand these abilities means having divergent abilities. This idea was introduced by Joy Guilford to mark these human abilities, which allow us to find new solutions.

Guilford explains the difference between divergent abilities and convergent abilities telling that the difference is about the way we think between new categories; whether or not we have an option to choose. Convergent thinking means to find one correct way to find solution to a problem, where divergent thinking means:" I can solve this problem this way or another (but I still don't know how) "- this structure allows different unknown abilities to solve a given problem. According to Guilford divergent abilities can be described by tests that show fluency, flexibility and originality of thinking.

Also according to the concept of Guilford it is given that teachers with creative abilities are characterised with divergent abilities which can be described by the smoothness of ones thinking, thinking flexibility, thinking originality. These abilities as shown in the research are realized on behalf of a creating new effects like creating new lesson plans supported by media and creating new programs. Teachers with creative abilities use the media to make new ideas on how to resolve problems and finding new information.

Second key expression for this work is connected with expression "creative attitude", which was developed on the ground of humanistic theories. According to literature it was established that creative attitude is a human future that allows the opening and curiosity to the reality that surrounds us, elastic reaction for different stimulus of our surroundings. In this work it has been established that it takes two personality spheres to have a creative attitude: the "get to know" and character logic. The "get to know" sphere is connected with intellectual abilities and connects with high sensitivity and ability in perceiving, remembering, processing and producing new information by using imagination, intuition and divergent thinking,

described as heuristic actions. Heuristic actions oppose algorythmic actions. For the development possibility of the fraction important is the context of the heuristic sphere. Other important components of the creative attitude are the following personality features: conformism and non-conformism.

In their own research, the teachers with specific features especially with creative abilities connected research question with attempt to describe the style of media use. It's assumed that this teacher will use media while showing: Active discovering of the subject, his actions will be turned toward using media in order to: finding new information, educating, self-made decisions, activating the environment.

The conceptions used to create new concept to the way media is used were distinguished by Bronisław Siemieniecki, duties fulfilled by computer in the process of stimulating the user to think creatively. Based on this model the style of media was described by the teachers dividing into two sections; creative and non-creative. It is given that the creative media use is characterized by high activity of the teacher, transgression, openness, abstract, reflexives thinking, tolerance, flexibility, smoothness, originality of thinking. Signs of activity can be as follows: Self-shaping, activeness out side of school like joining social clubs and sports activities, joining conferences or other forms of exchanging experiences, being involved in getting new information, resistance or lack of it in interacting with media, creative abilities, creative attitude.

It has been given that for a non creative style of media use are following reasons: high teacher activity, low lever of transgresses, low openness in the problem solving process, low abstract, small reflexives, lack of tolerance, low level of stimulance (stimulating of activeness), low creative approach to solving problems with media in area of smoothness, flexibility and originality.

In this work research as I mention they were looking for answers to the following problems: Is there a difference between two groups being studied in the way of using electronic media?,

And if there is than: Is the difference in direct connection with creative attitude and abilities?.

In order to verify these main thesis that deal with creative attitude and activities with ways of using media by teachers studies have been made which covered 248 teachers-students of post graduating studies at " Computer methods in education" realized in six different faculties in Poland (Szczecin, Wroclaw, Krakow, Łodź, Włocławek, Kwidzyn, Bydgoszcz, Katowice).

In order to describe the teacher's creative ability following tests were used: Drawing Test, Test Of Incredible Uses by J.P. Guilford. To describe the level of Creative Attitude Questionnaire KANH II S. Popek was used. In order to be able to recognize of what style of electronic media is used by teachers a questionnaire was made that deals with different styles of media used by teachers in education, and also a questionnaire that doubt with ideals according to the teachers education program that takes media education.

Based on the scores from the Test Of Incredible Uses and Drawing Test and questionnaire KANH I S. Popek 107 people were chosen for the proper research. This group was divided into 4 smaller sub-groups.

Group 1. High level of creative abilities, high level of creative attitude.

Group 2. High level of creative abilities, low level of creative attitude.

Group 3. Low level of creative abilities, high level of creative attitude.

Group 4. Low level of creative abilities ,low level of creative attitude.

Research was done in four phases:

Phase 1. Introduction research.

Introduction research's goal was to check correctness of research tools and to check research procedure.

Phase 2. Proper research.

In the first day of proper research listeners were given a task to complete that measured the ability and creative attitude with the help of Creative Attitude Questionnaire KANH I prepared by S. Popek and tasks connected to creative abilities by Test Of Incredible Uses by J.P. Guilford and Drawing Test also by J.P. Guilford.

On the second day teachers filled Questionnaire "Style Of Using Media By Teachers" and also " Questionnaire Of Creative Teaching Program".

Phase 3. The results of creativity tests were judged by competent judges. The results of KANH questionnaire were counted according to the author of the technique.

Phase 4. Statistic Analysis.

The results from the tests were given to statistic analysis with the use of Chi-square test, analysis variant ANOVA, Tukey Test.

The results of the study showed positive dependences between creative attitude and creative style for styles of the user of media by teachers. At the same time it has been told that divergent abilities have no effect on the chosen style of use the media by the teachers. Teachers from the high level of creative abilities groups use media more often than teachers

from the low level of creative abilities groups. The most often media used are: computers and the Internet and projectors. Where the least used ones were: books and electronic books. The main features of these teachers was involvement and eagerness in looking for information. The results showing that teachers of high level of creative attitude give more time for finding information concerning the subject that they teach and information technology in teaching. Teachers from groups of low level of creativity don't look for information or spend only a few minutes on looking (37,40% of the group tested), at the same time the teachers from the group of high creativity level one hour and more. Teachers with the high level of creative attitude more often are involved in didactics supported by media.

The results of being involved in didactics supported by media is more often use from computer programs at didactics work and finding new ways of own qualifications. This is supported by the results that show involvement in teachers joining societies that involve teachers with similar interests and being involved in conferences. It shows that 84,8% of people involved is not associated with any teaching societies. At the same time the high-level creative attitude groups we can find higher percentage of answers that show (11,3%) compare to the low-level creative attitude groups (2,8%).

As the results of the study show with the use questionnaire teachers from the high level creative attitude groups that go under post graduate studies associated with media are driven by self motivation. Where as the teachers from the low-level creative attitude groups outside motivation. High-level creative attitudes positively correlations with inside motivation, where as the test results show lack of connection with those two.

As much as 88,78% teachers tested show lack of resistance in media use and interaction. 11,21% tested are very unwilling to media use and the score shows the results from the low creativity attitude group.

Teachers with high creativity level show bigger interest in new things in the media field than teachers with low creativity level.

Teachers with high creativity level say that using media during the lesson shows that it stimulates the discovering minds of students, and also influences frequent attempts to resolve problems during the lesson, and underline that media stimulate students to self-action.

Teachers with high level of creativity attitude more often then in groups with low level of creativity attitude are sure that: media have big effect on supporting the problem solving process and allow for unconventional depiction of the tasks given, using media during the lesson helps the students in finding information.

Interesting results were given in dependency between creative attitude and abilities and the level of involvement in readiness of didactic materials. Even though the results showed that teachers with high level of creative attitude and high creative ability rarely have any didactic materials ready, where as teachers with low level of creative attitudes and low creative ability have them ready more often.

Completing the results of quantitative research was qualitative analysis of the answers that were included in the Questionnaire that dealt with teachers expectations towards teaching program that included teaching with media. Results of qualitative analysis confirm quantitative results. Teacher rarely use computer program during their lessons, the reason for this is the lack of methodology knowledge in the media education field (lack of being able to pick the right resources and context of teaching realized with support of computers). Creative use of computers in education means using them during the lesson. Teachers lack knowledge on how to use media and how to adopt them to education needs. It's hard to avoid a fact that the subject of the studies was a teacher of postgraduate studies connected with information technology, informatics and media. Se we could think that these teachers will poses greater competence in the use of the media field from the rest of the teachers. The results show how low the level of methodical knowledge that the teacher's poses in the field of computer support in educating and information Technology and Communication. We could think that teachers that did not attend commuter courses and who were not students in post graduate studies in the field of I.T. present very low or zero level of readiness to introducing media into the educating process.

Obtained results allow us to say that the style of use of the media strictly connects with creative attitude and is characterized in involvement, activity towards media and information.

The results that show that teachers with high level of creative attitude are more likely to use media, I believe it's connected with the high level of definition in creative attitude. Didactic tool like computers and the Internet allow the teacher to wide their horizons that deal with getting new information. Teachers with high creative attitude are easier to absorb new experiences in existing information structures, where as teachers with low creative attitude show tendency to refuse new carrier of information such as computers and the Internet.

Teachers with high creative attitude show bigger involvement and activity in finding new information compare to teachers with groups with low creativity level. Those teachers are characterized by active attitude towards information.

Teacher with high level of creative attitude keep looking for development opportunities of own qualifications (that is showing involvement in teachers joining societies that involve teachers with similar interests and being involved in conferences). The score that we received agrees with the thesis that people with the high level of creativity attitude more often show interest towards joining societies that affiliate other teachers.

High score that the groups with high level of creative attitude received, that dealt with the use of computers in teaching is connected with the possibility of using them to solve problems. This result can be interpreted as higher level of openness for new things among teachers from groups with high creative attitude.

Positive co-operation between the level of creative attitude and type of motivation (both types; outside and inside) among teachers is also connected to definition given in this work of creative attitude and assumes that measuring tool (KANH Popek Questioner). Teachers with high creative attitude are characterized by self-motivation shown in activity, stubbornness and independence, self-sufficient. Creative attitude is connected to openness, allows to free spontaneities in us describe owns autonomy. Teachers with groups of high creative attitude are driven by independence in non-conformism and are inside driven. Teachers from groups with low level of creative attitude show low activity, are characterize lack of posture that is open towards new information, they are described by conformism and are driven by self motivation, what as we already know has a negative influence on creativity.

Research shows lack of positive independence between divergent abilities and a type of teachers motivation. Teachers with a high level of creative attitude think that media are helping in a huge way with the problem solving process and help for an unconventional point of view.

Final result regarding the readiness of teachers with low level of creative attitude low ability of didactic materials oppose to group with high level of creative abilities and high level of creative attitude is interesting but doesn't reflect hypothesis analysis. It is expected that people from groups of high creativity level and abilities will be more eager to prepare didactic materials than teachers from groups of low creative ability and attitude. Because of a fact that differential results show in groups concentrated on WPWZ and NPNZ it's known that the level creative attitude with the level of creative abilities has effect on the final result. This result can be interpreted the people with high attitude and creativity level are active and are able to respond quickly and create different problem solutions. These people have a high knowledge on how to find different information. This means that these teachers can create

during the lesson elements that help educating process without the need of earlier detailed preparations. Where as the people with the low creative attitude and abilities must have a detailed plan and all materials because during the lesson it is hard for them actively change or create new elements in didactic process.

Summary

Final results of the study showing a positive connection between creative attitude an creative use of media by teachers, that is connected with one of theory's that we spoke about earlier in which the pressure is on the subject of creativeness among teachers and creating not new ideas from the other side educating teachers in which openness in finding new information is very important (creative attitude) in a small portion is revolving around abilities to divergent thinking and ability to find new solutions. Teacher is usually use to reproducing knowledge than creating it, and repeat method that are included in teaching programs and eventually re organizing them, that to create authentically new own ideas.

So the main question is appearing about the shape of pedagogic creativity as well as content of those programs and methods of educating teachers.

Bibliography:

Guilford, J.P, Hoepfner, R. (1971), *The Analysis of Intelligence*, Mc Graw-Hill Company: New York 1971.
Guilford, J.P. (1978), *Natura inteligencji człowieka*, Warszawa: PWN
Juszczyk, S., (1996), *Twórczy rozwój nauczyciela*, Kraków: Oficyna Wydawnicza „Impuls":
Maslow A.H. (1990), *Motywacja i osobowość*, Warszawa: Instytut Wydawniczy Pax
Maslow A.H.(1983), *Postawa twórcza*, „Nowiny Psychologiczne" nr 8-9.
Popek S. (1988) *Struktura zdolności i uzdolnień* [In:] S. Popek (ed.) *Twórczość, zdolności, wychowanie*, Warszawa: IBPM, s.8-34.
Popek S.(1980), *Przesłanki funkcjonowania postaw twórczych nauczycieli*, [In:] „Nauczyciel i Wychowanie" 6(128), s.110-122.
Popek, S. (2000), Kwestionariusz Twórczego zachowania KANH, UMCS, Lublin 2000.
Siemieniecka D., Siemińska-Łosko A. (2007) *Wybrane aspekty technologii informacyjnej w edukacji***,** Toruń: wyd. Adam Marszałek
Siemieniecka-Gogolin D. (2002), *Technologia Informacyjna a twórczy nauczyciele* [In:] T. Lewowicki, B. Siemieniecki (ed.) *Rola i miejsce technologii informacyjnej w okresie reform edukacyjnych w Polsce*, Multimedialna Biblioteka Pedagogiczna, Toruń: wyd. A. Marszałek, s.247-253
Siemieniecka-Gogolin D. (2004), *Media a twórczość* [In:] S.Juszczyk (ed.) *Edukacja medialna w społeczeństwie informacyjnym*, Multimedialna Biblioteka Pedagogiczna, Toruń: wyd. A. Marszałek, s. 76-81
Siemieniecka-Gogolin D. (2005), *Postawa i zdolności twórcze nauczycieli a styl użytkowania elektronicznych mediów,* Toruń: wyd. Adam Marszałek
Siemieniecki B. (1991), *Środki dydaktyczne w procesie myślenia twórczego*, Kraków: WSP
Siemieniecki B. (1997), *Komputer w edukacji: podstawowe problemy technologii informacyjnej*, Toruń: wyd. Adam Marszałek
Siemieniecki B. (1998), *Komputery i hipermedia w procesie edukacji dorosłych*, Toruń: wyd. Adam Marszałek

Dorota Siemieniecka
University of Nicolaus Copernicus
Toruń

Anna Watoła

Computers in pre-school education as investing in the child's future

Abstract

Many pre-school teachers are interested in using educational computer programmes in their pedagogical work. Classes are more and more often conducted using multimedia computer programmes in a creative way. This article presents selected research results concerning using a computer in the process of supporting the child's school readiness and as a new way of teaching-learning at the pre-school age.

Key words: pre-school education, computer, school readiness, teaching-learning process, centre of pre-school education

Introduction

Over the decades child education has been a crucial activity of humans. As far back as the primitive culture a child was perceived as a property of the whole tribe, it was to grow for the society rather than for its family alone[24]. In many countries pre-school education has been directed at different aims, still it was always an important element in the development of pedagogical thought which emphasised the fact that the child's first years are the most crucial for its independence, maturity and effectiveness of learning, and also the ability of functioning as an adult in future.

Pre-school age is a period when a person develops most intensely, and it is this period that decides about the person's future psychophysical state. Everybody's development depends, among others, on the extent to which the surrounding environment is able to activate their abilities and how it will support and direct them[25]. Over the last several years pre-school education in Poland has been subject to constant changes, new methods and forms of educational-didactic work are still sought and implemented. Investing in the child's future and having one's mind set on success is more and more common in our society[26]. Teachers are under constant pressure asking themselves the question how to support little child's individual development, so that it will be able to function successfully in the changing world in the future.

Based on the empirical study conducted in kindergartens[27] one can state that a computer is becoming one of the more important didactic media, and which is by many teachers and

[24] W. Bobrowska – Nowak., Historia wychowania przedszkolnego, Warszawa 1978, s. 9.
[25] E. Gruszczyk – Kolczyńska ., Co grozi sześciolatkom ?, Warszawa 2000.
[26] Barbel Merthan, Zabawy przygotowujące do szkoły, Kielce 2004, s.9.
[27] A. Watoła, Komputer we wspomaganiu pracy dydaktyczno – wychowawczej w przedszkolu, (in:) T. Lewowicki, B. Siemieniecki (Ed.) Rola i miejsce technologii informacyjnej w okresie reform edukacyjnych w Polsce, Toruń 2002, s. 387 – 397.

parents perceived as giving new chances and possibilities in the child's education. A computer is becoming a new investment in the child's educational future.

Scope of the research

For several years now I have fulfilled my interest in research in educational institutions within the scope of pre-school education. When another stage of the reform in the educational system was implemented I started conducting research connected with the realisation of the duty of school preparation by 6-year-old children[28]. The main research issue has been as follows: In what way do the institutions of pre-school education create educational chances for children at the pre-school age?

A number of hypotheses have been made and several research tools used. The essential tool for the conducted survey was the questionnaire which included many question categories.[29] The questionnaires were directed to the kindergarten and primary schools headmasters, pre-school teachers and primary school teachers of first grade students. I also used diagnostic sheets for respondents being mainly the parents of children attending the surveyed pre-school institutions, information cards helpful in defining the children's level of development, and also registers of educational-didactic classes. Another tool I used was the Test for checking school readiness by B. Wilgocka-Okoń[30] and [31], my own tests checking the level of school readiness, and the standardised tool for checking school readiness SGS[32]. One of the detailed issues covered the way of implementing new legal acts regarding the early support of the development of children and the regulations concerning equalising children's educational chances. Having these regulations in mind I also prepared questionnaires[33] directed to specialists - mainly psychologists, speech therapists and pedagogues conducting supportive and corrective classes in the surveyed institutions [34] and [35]. This survey was divided into several stages, with systematically growing number and types of the surveyed kindergartens. The main research has been conducted in Polish educational institutions. Part of the research

[28] Ustawa o systemie oświaty – Art. 14.
[29] M. Łobocki, Metody i techniki badań pedagogicznych, Kraków 2000.
[30] Wilgocka – Okoń B., O badaniu dojrzałości szkolnej, Warszawa 1971.
[31] Wilgocka – Okoń B., Gotowość szkolna dzieci sześcioletnich, Warszawa 2003.
[32] Koźniewska E. – Koordynator merytoryczny Projektu w Centrum Metodycznym Pomocy Psychologiczno – Pedagogicznej . Badanie gotowości szkolnej sześciolatków, Warszawa 2006.
[33] S. Juszczyk: Badania ilościowe w naukach społecznych. Szkice metodologiczne, Katowice 2005.
[34] Rozporządzenie Ministra Edukacji Narodowej i Sportu z dnia 18 stycznia 2005 r. w sprawie warunków organizowania kształcenia, wychowania i opieki dla dzieci i młodzieży niepełnosprawnych oraz niedostosowanych społecznie w przedszkolach, szkołach i oddziałach ogólnodostępnych lub integracyjnych Dz. U. Nr 19.
[35] Rozporządzenie Ministra Edukacji Narodowej i Sportu z dnia 19 lutego 2002 r. w sprawie sposobu prowadzenia przez publiczne przedszkola, szkoły i placówki dokumentacji przebiegu nauczania, działalności wychowawczej i opiekuńczej oraz rodzajów tej dokumentacji (Dz. U. Nr 23, poz. 225, z póź zm.).

has been started in educational institutions in the United States, Norway, Slovakia and the Czech Republic.

The first stage of initial diagnostic research in Poland was conducted in 42 kindergartens located mainly in the Silesia and Malopolska regions and in a pre-school institution in the USA - Kove Learning Academy, Chicago, Illinois. In Poland the research was conducted in municipal nursery schools, private nursery schools, pre-primary forms in primary schools and nursery schools run by monastic congregations. One of the stages was based on conducting a pedagogical experiment concerning the computer assisted process of shaping selected areas of school readiness of 6-year-old children.

The analysis of chosen research results

Based on the empirical studies[36] we can state that for several years now computer has been one of the more significant didactic media in pre-school education. The number of pre-school institutions equipped with computer hardware is growing fast and systematically, many of the institutions succeeded in replacing old computers with better and more modern ones. For several years now a ranking of the most popular educational computer programmes used in the surveyed kindergartens has been conducted within the research. The most popular programmes seem to be those supporting the skills and knowledge connected with early learning to read and write, mathematics, arts, music, foreign languages, speech therapy and those supporting the child at the pre-school age in all developmental areas. Many kindergartens run teacher programmes and innovations concerning the computer assisted process of shaping school readiness, eliminating different kinds of developmental dysfunctions. Computer, together with proper educational software has become useful in educational-didactic work with both talented children and those needing special and individual teaching-learning methods and forms.[37]

1. Computer in the process of shaping child's school readiness

Computer together with the carefully selected educational programmes was the experimental factor in the conducted empirical studies. The classes within the pedagogical experiment were based on using selected educational computer programmes supporting the

[36] A. Watoła, Komputer we wspomaganiu pracy dydaktyczno – wychowawczej w przedszkolu, (in:) T. Lewowicki, B. Siemieniecki (Ed.) Rola i miejsce technologii informacyjnej w okresie reform edukacyjnych w Polsce, Toruń 2002, s. 387 – 397.

[37] E. Nowicka, Media dydaktyczne nową szansą w przezwyciężaniu specyficznych trudności w czytaniu i pisaniu, (in:) S. Juszczyk, I. Polewczyk (Ed.) Media wobec wielorakich potrzeb dziecka, Toruń 2005, s. 50.

process of reaching school readiness including learning to read and write, acquiring mathematical skills and knowledge, and artistic skills and interest. The control group classes were conducted using traditional methods and forms, with the help of simple didactic media. Summing up the chosen, most important research results one was able to state that a kindergarten teacher, while properly using selected educational computer programmes, can significantly help the child in the process of shaping school readiness within the mathematical skills and knowledge and the ability to read. However using educational computer programmes to support learning to write and developing artistic skills and interest shows the same results as when using traditional methods.

2. Computer used to play and learn

The analysis of the research results shows that children attending educational-didactic classes in a kindergarten group take part in activities like keeping the kindergarten chronicle, writing and drawing memoirs, editing a kindergarten newsletter. Some children are quite skilful in sending and receiving information via e-mail, getting in touch with their parents or sending each other greetings over the Internet. Several teachers together with children run electronic correspondence with other kindergartens. A number of children take part in IT classes.

3. The colourful KidSmart pre-school computer centres

At the moment a lot of kindergartens are trying to qualify for the IBM KidSmart programme held under the auspices of the Polish Prime Minister. The idea of the teaching programme is based on

helping children to get used to communicating with the computer world; it also helps teachers to raise their technical qualifications. Such computer classes seem to be great fun for the children taking part. Kindergarten teachers from other European pre-school institutions are convinced that the colourful KidSmart pre-school centres provided by IBM, equipped with excellent educational software are of great educational quality. This programme makes it possible for pre-school children to have access to technology that is another medium useful in acquiring important skills and making school beginnings easier. The possibility of taking part in the programme gives many children from families with a low income greater chances of development and enables school success.

Among the kindergartens taking part in the research, the KidSmart computer set has been used for several years now mainly with 6-year-old children. Teachers use educational computer programmes to support selected stages of didactic classes within the following: the

ability to read and write, mathematical skills and knowledge, developing manual skills, designing, drawing, painting, colouring in, learning foreign languages, general knowledge of the surrounding cultural, environmental, technical and musical reality.

Summary

The number of pre-school institutions equipped with computer hardware is rapidly and systematically growing. The conducted research proves that a computer together with proper educational programmes is one of the most effective and attractive didactic media used in the little child's education[38].

Many kindergarten teachers show great interest in using educational computer programmes in their pedagogical work. Classes creatively using multimedia computer programmes are more and more frequent.[39] A growing number of teachers see the necessity of conducting classes connected with the adaptation to working with a computer, which should begin as early as the child's first years. Then, as an adult, they will be more capable of managing the constantly changing reality[40].

A properly used computer with carefully selected educational programmes can effectively support the process of child education in a kindergarten. Nowadays, computers and appropriate computer programmes are the medium that itself gives great possibilities of individualising the teaching-learning process taking into account specific developmental predisposition of every child. Kindergarten teachers using computers in a professional way are able to create conditions where the child will be happy to take up activities helping them to discover and develop their creative potential in full. Introducing a computer in the daily functioning of a Polish kindergarten is a new form of conducting educational-didactic classes. Certainly this is investing in the child's future.

[38] A.Watoła Komputerowe wspomaganie procesu kształtowania gotowości szkolnej dzieci sześcioletnich. Toruń, 2006.
[39] B. Siemieniecki, red. Perspektywa komunikacji z komputerem. Toruń 1996.
[40] B. Siemieniecki Komputerofobia – negatywna reakcja na technologię komputerową, (In:) B.Siemieniecki, J. Buczyńska (ed.) Komputer w rewalidacji. Toruń 2001 s. 127

Bibliography :

1. Barbel, M. (2004), *Zabawy przygotowujące do szkoły*, Kielce
2. Bobrowska – Nowak, B. (1978), *Historia wychowania przedszkolnego*, Warszawa
3. Gruszczyk – Kolczyńska, E. (2000), *Co grozi sześciolatkom?*, Warszawa
4. Juszczyk, S. (2005), *Badania ilościowe w naukach społecznych. Szkice metodologiczne,* Katowice
5. Koźniewska, E. (2006), *Koordynator merytoryczny Projektu w Centrum Metodycznym Pomocy Psychologiczno – Pedagogicznej. Badanie gotowości szkolnej sześciolatków*, Warszawa
6. Sobocki, M. (2000), *Metody i techniki badań pedagogicznych*, Kraków
7. Siemieniecki, B. (2001), *Komputerofobia – negatywna reakcja na technologię komputerową* [In:] B.Siemieniecki, J. Buczyńska (ed.), *Komputer w rewalidacji,* Toruń: Wyd. Adam Marszałek
8. Siemieniecki, B. (1996), *Perspektywa komunikacji z komputerem*, Toruń: wyd. Adam Marszałek
9. Nowicka, E. (2005), *Media dydaktyczne nową szansą w przezwyciężaniu specyficznych trudności w czytaniu i pisaniu* [In:] S. Juszczyk, I. Polewczyk (ed.) *Media wobec wielorakich potrzeb dziecka*, Toruń: wyd. Adam Marszałek
10. Ustawa o systemie oświaty – Art. 14.
11. Rozporządzenie Ministra Edukacji Narodowej i Sportu z dnia 18 stycznia 2005 r. w sprawie warunków organizowania kształcenia, wychowania i opieki dla dzieci i młodzieży niepełnosprawnych oraz niedostosowanych społecznie w przedszkolach, szkołach i oddziałach ogólnodostępnych lub integracyjnych Dz. U. Nr 19.
12. Rozporządzenie Ministra Edukacji Narodowej i Sportu z dnia 19 lutego 2002 r. w sprawie sposobu prowadzenia przez publiczne przedszkola, szkoły i placówki dokumentacji przebiegu nauczania, działalności wychowawczej i opiekuńczej oraz rodzajów tej dokumentacji (Dz. U. Nr 23, poz. 225, z póź zm.).
13. Watoła, A. (2006), Komputerowe wspomaganie procesu kształtowania gotowości szkolnej dzieci sześcioletnich, Toruń
14. Watoła, A. (2002), *Komputer we wspomaganiu pracy dydaktyczno – wychowawczej w przedszkolu*, [In:] T. Lewowicki, B. Siemieniecki (ed.) *Rola i miejsce technologii informacyjnej w okresie reform edukacyjnych w Polsce*, Toruń.
15. Watoła, A. (2002), *Komputer we wspomaganiu pracy dydaktyczno – wychowawczej w przedszkolu*, [In:] T. Lewowicki, B. Siemieniecki (ed.) *Rola i miejsce technologii informacyjnej w okresie reform edukacyjnych w Polsce*, Toruń
16. Wilgocka – Okoń, B. (2003), Gotowość szkolna dzieci sześcioletnich, Warszawa: Wydawnictwo Akademickie „Żak"
17. Wilgocka – Okoń, B. (1971), O badaniu dojrzałości szkolnej, Warszawa: PZWS.

Anna Watoła
The University of Silesia
Katowice Poland

Harald Nilsen: Nesna University/College
hn@hinesna.no +47 45 01 04 94

- WHE in the Subjects of Pedagogy and Psychology
- WHE in the science of Literature Universal
- WHE in the science of Nordic Language and Literature
- SE (i.e. Doctor`s Degree) in the field of Applied Linguistics

MORE: go to www.bibsys.no Print: Harald Nilsen
Press: ForskDok, column: Publications, and
column: Projects (not up to date)

EMPLOYMENT:
Nesna University/College, i.e. teacher training education, in-service teacher training, advanced lectures, conference speeches (national/international) publishing (national/international)

Dorota Siemieniecka: University of Nicolaus Copernicus, Toruń, Poland
dorka115@wp.pl **+48 781440244**
http://www.pedagogika.umk.pl/ztk/siemieniecka.htm

- master of pedagogy, specialisation Media in Education
- diploma in special study (Human Resources)
- Ph.D in Humanistic Sciences, theme: Creative attitude and creative abilities in usage of electronic media.

EMPLOYMENT:
University of Nicolaus Copernicus, Department of Didactics and Media in Education, teacher training – exercises, lectures, seminaries (Media education, Computer Diagnosis and thereapy in education, Methodics of Media Education, Creativity and Media), conference speeches (national/international), publishing (national/international)

Fredrikke – Organ for FoU-publikasjoner – Høgskolen i Nesna

Fredrikke er en skriftserie for mindre omfangsrike rapporter, artikler o.a som produseres blant personalet ved Høgskolen i Nesna. Skriftserien er også åpen for arbeider fra høgskolens øvingslærere og studenter.

Hovedmålet for skriftserien er ekstern publisering av Høgskolen i Nesnas FoU-virksomhet. Høgskolen har ikke redaksjonelt ansvar for det faglige innholdet.

Redaksjon
Hovedbibliotekar

Trykk
Høgskolen i Nesna

Omslag
Grafisk design: Agnieszka B. Jarvoll
Trykk: Offset Nord, Bodø

Opplag
Etter behov

Adresse
Høgskolen i Nesna
8701 NESNA

Tlf.: 75 05 78 00 (sentralbord)
Fax: 75 05 79 00
E-postmottak: ninfo@hinesna.no

Oversikt utgivelser Fredrikke
Hefter kan bestilles hos Høgskolen i Nesna, 8700 Nesna, telefon 75 05 78 00

Nr.	Tittel/forfatter/utgitt	Pris
2007/13	Kids and Internett/Barn og internett : A Polish-Norwegian look at the digital world of kids/et polsk-norsk blikk på barn og unges digitale hverdag / Beata Godejord og Per Arne Godejord (red.)	175,-
2007/12	Om styrking av samisk språk og identitet med vekt på Helgeland og Västerbotten : rapport fra seminar i Hattfjelldal 25.-26.januar 2007 / Marius Meisfjord Jøsevold (red.)	75,-
2007/11	Når språk møter språk : om forholdet mellom morsmål og målspråk / Øyvind Jenssen	120,-
2007/10	Samspill med fokus på barneperspektivet : studentoppgaver fra studiet Småbarnspedagogikk 2006-2007 / Bjørg Andås Ohnstad (red.)	
2007/9	Matematikk på ungdomstrinnet : med IKT og Cabri som verktøy / Harald Nilsen og Henning Bueie	45,-
2007/8	Hva viser småbarnsforskningen om barns sosiale utvikling i tidlige leveår? : en kritisk gjennomgang av psykoanalytiske, læringspsykologiske og tilknytningsteoretiske forklaringer / Oddbjørn Knutsen	55,-
2007/7	Lese og skrive og regne er gøy... : arbeid med begynneropplæring i lærerutdanningene ved Høgskolen i Nesna 2003-2007 / Anne-Lise Wie (red.)	160,-
2007/6	Dannelsesperspektivet i lese- og skriveopplæringen og ansvarsfordeling som grunnlag for videre utviklingsperspektiver / Elsa Løfsnæs	220,.
2007/5	Language learning - additional learning - learning environment - teachers's role : classroom studies in Czech Republic and Poland / Harald Nilsen	70,-
2007/4	På den åttende dag : en reise i en lærers erfaringer / Harald Nilsen	35,-
2007/3	The School Reform – 2006: Knowledge Promotion : a critical view Den norske skolereformen – 2006: Kunnskapsløftet : et kritisk blikk / Harald Nilsen	30,-
2007/2	Holocaust : rapport fra et dramaforløp med utgangspunkt i Joshua Sobols' skuespill "Ghetto" / Tor Helge Allern	200,-
2007/1	Curriculumtenkning innen TIMSS : metodeutvikling	120,-
2006/11	Forskjellighet og likeverdighet : en dekonstruktiv lesning av kunnskap og utdanning i den fådelte skolen / Anita Berg-Olsen	50,-
2006/10	Små skoler i små samfunn : å studere utdanning og læring i kontekst / Anita Berg-Olsen	50,-
2006/9	Bruk av Moodle som læringssystem og et sosialt samspill mellom studenter / Tom Erik Nordfonn Holteng og Laila Matberg	40,-
2006/8	Veiledning av nyutdannede lærere på Helgeland : nyutdannede lærere – halvfabrikata eller ferdigvare? / Knut Knutsen	100,-
2006/7	Om styrking av samisk språk og identitet med vekt på Helgeland og Västerbotten : rapport fra seminar i Hattfjelldal 26.-27.januar 2006 / Knut Berntsen (red.)	60,-
2006/6	Psykologisk subdeprivasjon hos barn i tidlige leveår og konsekvenser for den semantiske og fonologiske språkutviklingen / Oddbjørn Knutsen	50,-
2006/5	Phonetics : A Practical Course (cd-rom) / Patrick Murphy	100,-
2006/4	Barn og unges digitale hverdag : lærere og lærerstudenter diskuterer overgrepsproblematikk i digitale medier / Per Arne Godejord (red.)	250,-
2006/3	News og BitTorrent som verktøy for formidling av overgrepsmateriale : studentrapporter fra Prosjekt Gå inn i din tid, 1.år bachelor informatikk, HiNe / Per Arne Godejord (red.)	40,-
2006/2	Learning Management System og foreleserens opplevelse av jobbytelse / Laila Johansen Matberg og Tom Erik Nordfonn Holteng	50,-

2006/1	Samspillets betydning for den semantiske og fonologiske språkutviklingen i tidlige leveår / Oddbjørn Knutsen	70,-
2005/11	IKT-basert norskundervisning i utlandet / Ove Bergersen (red.)	85,-
2005/10	Drama Nettverk : rapport fra samling på Nesna 20. – 23. oktober 2004 / Anne Meek m.fl. (red.)	95,-
2005/9	Slik vi ser det : hva synes studenter om sin egen IKT-kompetanse etter avsluttet allmennlærerutdanning? / Laila J. Matberg og Per Arne Godejord (red.)	35,-
2005/8	Praksiskvalitet i allmennlærerutdanningen : en studie av adopsjonspraksis ved Høgskolen i Nesna / Kåre Johnsen	90,-
2005/7	Argumenter for og erfaringer med fysisk aktivitet i skolen hver dag : en analyse av et utvalg relevant litteratur og prosjekter i og utenfor Nordland / Vidar Hammer Brattli og Kolbjørn Hansen	55,-
2005/6	Praksisorienter lærerutdanning : presentasjon og evaluering av Dalu 2003 (rapport 1 og 2) / Hallstein Hegerholm	145,-
2005/5	Kjønnsrelatert mobbing i skolen : utfordringar for lærarprofesjonen / Arna Meisfjord	30,-
2005/4	Deltids allmennlærerutdanning : opplæringsboka som verktøy i praksisfeltet (2.utg) / Patrick Murphy	45,-
2005/3	Om styrking av samisk språk og identitet med vekt på Helgeland og Västerbotten : rapport fra seminar i Hattfjelldal 27.-28.januar 2005 / Knut Berntsen (red.)	60,-
2005/2	Norsk som minoritetsspråk – i historisk- og læringsperspektiv / Harald Nilsen (red.)	75,-
2005/1	Mobbing i skolen : årsaker, forekomst og tiltak / Oddbjørn Knutsen	55,-
2004/13	IKT skaper både variasjon og læring / Per Arne Godejord	30,-
2004/12	Deltids allmennlærerutdanning : opplæringsboka som verktøy i praksisfeltet / Patrick Murphy	45,-
2004/11	www.fruktkurven.no : systemering och utveckling av ett webbaserat abbonemang system / Peter Östbergh	90,-
2004/10	Utvikling av studentenes reflekterte og praksisrelaterte læring / Elsa Løfsnæs	90,-
2004/9	Utvärdering av IT och lärkulturer : ett samarbetsprojekt mellan Umeå Universitet och Høgskolen i Nesna / Peter Östbergh, Laila Johansen og Peter Bergström	85,-
2004/8	Med sparsomme midler og uklare odds : oppfølgingstilbud for nyutdanna lærere / Harald Nilsen og Knut Knutsen	100,-
2004/7	Prosessen bak det å ta i bruk mappe som pedagogikk og vurderingsform / Tom Erik N. Holteng og Hallstein Hegerholm	60,-
2004/6	Utdanning og forskning innenfor samiske miljø på Helgeland og Västerbotten : rapport fra seminar i Hattfjelldal 22. – 23.januar 2004 / Knut Berntsen (red.)	70,-
2004/5	Behov for kompetanseheving innenfor reiselivsnæringa på Helgeland / Knut Berntsen og Ole Johan Ulriksen	35,-
2004/4	Evaluering av databasert undervisning av 3Bi ved Sandnessjøen videregående skole / Johannes Tveita	20,-
2004/3	Skolens verdigrunnlag i et rawlsiansk perspektiv / Ole Henrik Borchgrevink Hansen	25,-
2004/2	Multiplikasjon i småskole og på mellomtrinnet / Bente Solbakken (red.)	45,-

2004/1	Humanistisk eklektisme i spesialpedagogisk rådgivning / Oddbjørn Knutsen	45,-
2003/9	RedBull NonStop 2002 : utveckling av et web-baserat resultatrapporteringssystem för en 24 timmars mountainbike tävling / Peter Östbergh	50,-
2003/8	"Kan du tenke deg å jobbe for Høgskolen i Bodø" : om Høgskolen i Nesnas etablering av informatikkutdanning i Mo i Rana / Geir Borkvik	25,-
2003/7	Lærerutdannere i praksisfeltet : hospitering i barnehage og grunnskole / Oddbjørn Knutsen (red.)	55,-
2003/6	Teori og praksis i lærerutdanning / Hallstein Hegerholm	50,-
2003/5	Nye perspektiver på undervisning og læring : nødvendige forskende aksjoner med mål om bidrag av utvidet innhold i lærerutdanningen / Jan Birger Johansen	30,-
2003/4	"Se tennene!" : barnetegning – en skatt og et slags spor / Nina Scott Frisch	35,-
2003/3	Responsgrupper : en studie av elevrespons og gruppekultur - norsk i 10.klasse våren 2003 Korgen sentralskole / Harald Nilsen	80,-
2003/2	Informasjonskompetanse i dokumentasjonsvitenskapelig perspektiv / Ingvill Dahl	40,-
2003/1	"Det handler om å lykkes i å omgås andre" : evalueringsrapport fra et utviklingsprosjekt om atferdsvansker, pedagogisk ledelse og sosial kompetanse i barnehager og skoler i Rana, Hemnes og Nesna kommuner i perioden 1999-2002 / Per Amundsen	80,-
2002/1	Augustins rolle i Albert Camus' Pesten / Ole Henrik Hansen	35,-
2001/6	Etniske minoritetsrettigheter og det liberale nøytralitetidealet / Ole Henrik Hansen	35,-
2001/4	Evaluering av prosjekt "Skolen som grendesentrum" / Anita Berg-Olsen og Oddbjørn Knutsen	70,-
2001/3	Fra Akropolis til Epidaurus / Tor-Helge Allern	40,-
2001/2	Hvordan organisere læreprosessen i høyere utdanning? / Erik Bratland	45,-
2001/1	Mjøs-utvalget og Høgskolen i Nesna : perspektiver og strategiske veivalg / Erik Bratland	30,-
2000/11	Implementering av LU98 / Knut Knutsen	120,-
2000/9	Moralsk ansvar, usikkerhet og fremtidige generasjoner / Kristian Skagen Ekeli	40,-
2000/8	Er dagens utdanningsforskning basert på behavioristisk tenkning? : drøfting av TIMSS' læreplanmodell fra et matematikkdidaktisk synspunkt / Eli Haug	90,-
2000/7	Sosiale bevegelser og modernisering : den kommunikative utfordring / Erik Bratland	50,-
2000/6	Fådeltskolen - "Mål og Mé" / Erling Gården og Gude Mathisen	60,-
2000/4	Bidrar media til en ironisk pseudo-offentlighet eller til en revitalisering av offentligheten? / Erik Bratland	40,-
2000/3	FoU-virksomheten ved Høgskolen i Nesna : årsmelding 1998 / Hanne Davidsen, Tor Dybo og Tom Klepaker	35,-
2000/2	Maleren Hans Johan Fredrik Berg / Ann Falahat og Svein Laumann	150,-

2000/1	TIMSS-undersøkelsen i et likestillingsperspektiv : refleksjoner rundt dagens utdanningssektor og visjoner om fremtiden / Eli Haug.	30,-
1999/2	Kjønn og interesse for IT i videregående skole / Geir Borkvik og Bjørn Holstad	20,-
1999/1	Fortellingens mange muligheter : fortellingsdidaktikk med analyseeksempel / Inga Marie Haddal Holten og Helge Ridderstrøm.	70,-