Focus on the Pedagogical Dimension in ICT Literacy for Teachers

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Introduction

The Strategy on the Implementation of Information and Communication Technologies (ICT) into Lithuanian Education was developed in 2000 and an extensive revision was made this year (Informacijos 2000). The National Strategy provides an extensive vision on ICT use and its systematic introduction into different areas of education. According to the document, the following seven areas of education should be dramatically changed, while implementing ICT in education: (1) the relationship between society and education; (2) life at school; (3) contents and methods of education; (4) provision for computer equipment and learning aids; (5) the teacher's role and qualification; (6) the connection between science and education; (7) management and funding of ICT implementation. Teacher training in respect of ICT is one of the most important parts.

What are the main goals and scopes presented in the National Strategy? We have been concentrating on the following issues: (1) to provide conditions for all teachers to obtain the complete ICT literacy and skills to apply new technologies and modern teaching methods in education, (2) to pay special attention to in-service of informatics teachers and ICT coordinators in order to acquire and constantly improve their professional qualifications, (3) to develop an effective and flexible system of teachers' in-service training and life-long learning and to provide adequate pedagogical and technical in-service training for all teachers, (4) to develop teacher education to face the demands of the information society, (5) to develop digital learning materials for teachers, (6) to provide pedagogical support for teachers, (7) to change the role of school librarians and appoint them the position of school information center and information skills education specialist, (8) to develop a several-level system of incentives for all teachers who apply ICT in education.

In summary, the following fundamental factors could be brought to the fore in contemporary teacher training. First, the teacher should constantly improve his/her professional, technological, and social competence: the use of ICT should become a highly integrated tool of daily school life. Second, forms, methods, and tools of life-long learning (distance learning, support networks, etc.) have to become the essential elements of in-service and pre-service teacher training systems. This is to be achieved by: (1) providing conditions for all teachers, school librarians and ICT coordinators to acquire both sufficient ICT literacy and skills to apply new technologies and methods in education; (2) developing an effective and flexible system of teachers' in-service training and life-long learning, and (3) by developing a several-level system of incentives for all teachers who effectively apply ICT in education.

The Main Points of In-Service Teacher Training in ICT

More than 40 in-service teacher training institutions of different kinds located at the municipalities and regional centers of Lithuania were established by the end of 1999. In-service teacher training was decentralized, so there was a great variety in the content, volumes, and methods of the courses.

What appears to be far more effective is to bring teachers as quickly as possible to a point where they can feel, recognize and begin to appreciate the relevance of computers to their own classroom practice in their own subject areas. Once teachers get acquainted with how the proper use of ICT can make a real contribution to their professional work, the motivation to acquire fresh technical knowledge is easily developed.

As often as not there is a danger that teacher training emphasizes the technical skills of the teachers, where the aim is to learn to use certain software like spreadsheets or word processors. Learning these technical details can be organized on a local level, while concentration on pedagogical issues is more important and has a deeper influence on the work at school.

So the most important element in a new approach to teacher training is not to concentrate on teaching of technical knowledge and skills but rather on rendering of the principles by which the students' learning has to be improved. For this reason, the main priority in teacher training is given to the design of electronic educational materials that are compatible with the compulsory school curriculum subjects. The focus of in-service training

courses is also shifted from the development of technical skills to the didactical aspects of integrating ICT into education. Great attention is paid to developing thinking and new skills required in the information age (e. g. handling of enormous amounts of information, searching and selection of information needed for a particular task, project development, algorithmic—structured thinking and problem solving).

The Role of Informatics Teachers in the Dissemination of ICT in Schools

The main factors and driving forces that influence ICT implementation in the primary, basic, and secondary school levels, as well as teacher training in ICT, are teaching of Informatics and Logo. In Lithuania, Informatics is a separate school subject for many years. The compulsory course of Informatics has been taught at school since 1986. Since we have a separate informatics subject at school we have teachers of Informatics. That is very important for schools – each school has at least one expert in ICT who can also work as a trainer (tutor) of other teachers.

In the Lithuanian basic school, there exist long-term traditions to teach Logo (using the approach of Seymour Papert). The main emphasis here is put on developing creativity, thinking skills, and problem-solving abilities—long-term benefits that are expected to impact on the future society (Dagiene 1999). Those teachers who are using Logo become technologically and pedagogically stronger. They are not afraid of the modern ICT tools, and, what is probably even more important, they become more creative.

Some Lithuanian professional societies conduct the educational activities that help teachers to improve their ICT skills. The first one is the Lithuanian Computer Society under the auspices of which a Working Group of Teaching and Learning (WGTL) was founded in 1994 (http://www.liks.lt/liksb_an.htm). The aim of the WGTL is to bring together teachers and researchers who are interested in ICT implementation in education. What should be stressed here is the high level of activity and creativity of the teachers involved.

The second body—the Lithuanian Association of Informatics Teachers (LINMA)—was established in 1999 (http://www.ipc.lt/linma/). The main aims of LINMA are to collect, evaluate, and share methodological know-how of ICT use at school.

Active participation of students (from 13 to 18 years old) in National Informatics Olympiads is also a strong impetus for teachers to develop their ICT practices. A simple use of e-mail can serve as an example. A few years ago electronic mail was employed to exchange tasks and student solutions (Dagiene 1997). It was a proper innovation that stimulated all teachers involved to begin to use e-mail communications. Today all the schools are provided with electronic mail and at least one teacher at each school is a real expert in this area.

The ICT Literacy Standard for Educators and Implementation

In December of 2001, the ICT Literacy Standard for Teachers (the Standard) was developed and approved by the Ministry of Education and Science. The Standard sets the requirements for teacher pre-service and in-service study syllabi for all levels as well as for the organization of studies. The Standard is a part of teachers' certification requirements for those who are seeking a higher certification category. It defines the mandatory professional qualifications for application of ICT by teachers for teaching and personal use.

The Standard rests upon: (1) the European Computer Driving License (ECDL) Program. It conforms to minimal computer literacy requirements for the teacher as a public services provider; and (2) the concept of application of ICT in education, a didactic approach to teachers professional development, requirements to understand the employment of ICT in the process of education, to understand social and ethical issues, and knowledge of how to use educational software.

The Standard is on target for minimum requirements of literacy of educators to enable them: (1) technological part: to organize the educational process using ICT; and (2) educational part: to develop a professional attitude.

The Technological part consists of three main issues: (1) application of software in education; (2) preparation of textual and visual teaching and learning materials; and (3) use of basic Internet services in education.

The Educational part was focused on the four domains: (1) the ability to use ICT in the educational process; (2) the development of an information culture for students and teachers; (3) knowledge of ways for development of professional proficiency in the employment of ICT; and (4) knowledge of the main forms for dissemination of educational information.

The ICT Literacy Standard for Educators was implemented in Spring 2002. At the beginning it was taught in the usual way: there were face-to-face courses of 40 hours duration organized in computer centers. In Aummer 2002, the course for the Technological part was designed and prepared for distance learning, and in Autumn—the course for the Educational part as well. Thus, currently the entire material corresponding to the Standard is on the Internet and teachers from all over the country may use it.

The material prepared for distance learning was designed on the basis of the following criteria; (1) the material was strictly structured, grouped into small portions in order that the reader could easily make breaks during the process of learning; (2) there were self-test questions, exercises, and other tasks added to the material in order that the reader could constantly test his or her own level of understanding.

This year there were 7,500 teachers instructed in the Technological part using face-to-face (6,400) and distance learning methods (1,100). The course on the Educational part was organized only by distance learning.

In Summer, 100 teachers were instructed, and some of them became the teacher trainers. Currently they are supervising 1,000 teachers who are studying the Educational part by distance learning. In total, 8600 teachers were instructed in ICT from lower and upper secondary school. That makes 50 percent of all teachers working in secondary schools (in grades 9–12).

Conclusions

A National Strategy for ICT Implementation into Education has been developed, in which the teacher's role and qualifications are one of the most important parts. The focus of in-service teacher training courses has shifted from the development of technical skills to the didactical aspects of integrating ICT into education. Teaching of Informatics has a great influence on in-service teacher training of ICT. The ICT Standard for Educators prepared a year ago is the most important document in teacher training of ICT.

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