

Development of Computer Literacy in Lithuania

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The paper presents an overview of the current status and future prospects of computer literacy development in Lithuania: governmental strategic and program decisions, collaboration of the main stakeholders, the outcomes of ECDL program development, the current level of computer literacy.

New situation in teaching and studies

The *education and science institutions* play a major role in the development of the information society. The key *objectives* of their activities have always been the same: developing the young person in every possible way and delivering background education as well as professional knowledge. The new information technologies provide for quality implementation of those objectives. As a matter of fact the implementation of the information society ideas and possibilities in a certain country largely depends on the ability of the whole educational system to provide an adequate and dynamic response to the new challenges of the society development.

While considering the *new situation in teaching and studies*, it is important to emphasise that:

- There has been a shift to the concept of lifelong learning;
- Time and distance limits are basically fading;
- Information is becoming universally easy to access and its volumes are growing very fast;
- IT influence on the activities of each person is steadily growing.

With regard of those focal points and the general situation in the development of the information society in Europe and Lithuania, the primary objectives for the school can be produced.

The school in the information society

In nowadays the objectives of education set for the school essentially remain the same except that there are new effective possibilities of their implementation. The general education school must moderate the likely *risks of the information society development*. The latter include:

- Social divide between those who can use computers (who have them at home) and those who do not have this possibility; this difference should be compensated by the school;
- Unequal opportunities to acquire full-fledged education in the native language in view of the universal pressure of the software in English;
- Virtual global communication leads to increasing alienation among people: the school should be able to divide the activities of the students in both the common and the virtual environment;
- A student who has a computer and who has mastered it sometimes becomes more enlightened than the teacher: both of them should be ready for that;
- There is a great risk that abundant information in English and other languages can obscure the native language. Therefore Lithuanian language and culture should be nurtured in the computer environment.

Generally it is considered that the *school computerisation* could be implemented in three *stages*:

1. *Teaching* IT and informatics as a new subject;
2. *Application* of IT as a powerful education engine in teaching other subjects and expanding their content;
3. *Inclusion* of new integrated subjects into the curricula, i.e. an actual reform of the whole educational system.

The Lithuanian comprehensive school mainly is in the second stage of computerisation implementation.

Foreign experience shows that an efficient application of information technologies in the process of education starts after there is averagely at least one computer available for ten students. The teachers, in their turn, must also be provided with possibilities of building their computer literacy.

Computer literacy-related national strategic documents

On December 14, 2004 the Minister of Science and Education has approved *The Strategy* [SICT-04] and *Programme* [PICT-04] for the Introduction of ICTs into the Lithuanian Education in 2005-2007. This strategy was formed with regard to the needs and aims of the development of the information society both in Europe and Lithuania, which are defined in the European i2010 policies¹, and in the Lithuanian Information Society Development Programme. The main strategy objectives are: (1) Achieve a breakthrough in teaching and learning of pupils via the use of modern ICTs. (2) Create a network of educational computers -- a cyber space filled with information for teaching and learning – while creating conditions for modern management of the educational system and for communication among school communities at the same time. (3) Improve the computer competence of residents in order to reduce the social seclusion in the sphere of ICTs. The results of this strategy implementation are evaluated in [Dag-07]. The general conclusion is: the strategy was implemented rather successfully, i.e., the 70% of indicators are implemented or almost implemented, 25% of indicators are implemented partially, and few indicators remain undefined because of the lack of clarity.

As a part of 2005-2007 Strategy implementation activities, the project “*Improvement of Primary and Special Education Teachers’ Competences of Using ICT and Innovative Methods of Teaching and Learning*” [Nat-09] was carried out in 2006-2008 by the Education Development Centre (which is a state non-profit educational institution founded by the Ministry of Education and Science of the Republic of Lithuania in 2001 after the restructuring of the Institute of Pedagogy) in cooperation with its partners. The project was aimed at: (1) Creating preconditions for a breakthrough in the use of information and communication technologies; (2) Innovative methods of teaching and learning in primary and special education; and (3) Strengthening the methodological and teaching/learning base related to the application of ICT and innovative education methods.

At the end of 2007 the *Strategy of ICT implementation in learning system and vocational training* for the new period 2008-2012 was approved [SICT-07]. It is the 3rd in row strategy of ICT implementation in learning system, and reflects the continuously changing focus. While the first strategy (2000-2004) was mainly computer usage-oriented, and the second (2005-2007) strategy was oriented to ICT applications in different activities (focussing on learning resources, services, and teacher training), the latest third strategy (2008-2012) seeks to prepare the possibilities of inclusive, integrated stage and to rise the learning into qualitatively new level [Dag-09].

The computer literacy development process depends on the general situation of education processes in Lithuania, too. At the end of April of 2009 the new *Law on Science and Studies*² was adopted by the *Seimas*. Objectives of the Law: (1) more opportunities for the students, professors, the country; (2) competitiveness; (3) high quality of studies; (4) sufficient financial resources; (5) modern management of higher education institutions; (6) substantive autonomy and accountability; (7) involving business partners; (8) openness and dialogue with the society. This Law has introduced the student voucher (i.e. student basket). This year 21000 students (1st year bachelor) received the students voucher to cover all their tuition fees. To ensure the accessibility to higher education, a state supported loan system for students was reformed and expanded. This year 5 commercial banks were selected to participate in this state supported loan system; students can choose the credit institution for their loan [Put-09].

The opponents call the state-supported student loan system “one of the most expensive in Europe”, and the loan-granting conditions now “the worst” [Jeg-09]. On the other hand, Gintaras Steponavičius, the minister at the Ministry of Education and Science, praises the new student loan

1 http://ec.europa.eu/information_society/tl/policy

2 http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=343430&p_query=&p_tr2= (in Lithuanian)

system as very viable and asserts that this year the government will allocate 1.3 million Litass (376,800 €) to compensate for excess interest, and up to 9 million Litass will be allocated for the purpose next year.

Technological and professional computer literacy in Lithuania

The *General Computer Literacy Program* [GCLP-04] has been approved by the Government of the Republic of Lithuania on September 2004. Here the general computer literacy is understood as the relevant knowledge of information and communications technologies, the ability and aptitude to use the computer hardware and software at the user's level. On the other hand, the inability to use information technologies (or the unavailability) reduces the citizens' opportunities of taking part in the labour market and prevent them from using the services of the e-market (information networks, bank operations, e-payments, e-shopping, multifunctional cards, etc.). For the citizens to use the new kinds of services successfully, they need computer literacy skills and knowledge.

In pursuance of the objective set in the General Computer Literacy Program, the following *goals* are being addressed:

1. To encourage the citizens to study information and communications technologies and to use ICT in different fields of activities, to become full members of the information society capable of living and working therein (i.e., encouraging public to use information and communications technologies).
2. To offer possibilities to all the inhabitants of the Republic of Lithuania to build computer literacy corresponding to their education and occupation irrespective of their age, sex, special needs, social status or place of residence (i.e., offering possibilities to build computer literacy).
3. To ensure high quality of computer literacy training and to monitor the Program implementation.

A traditionally perceived computer user primarily needs *technological computer competence*, i.e. capability to work on the PC and to use the most common general-use software at the user's level [OtTe-03, OtTe-06]. To ensure the efficiency of the computer user in the e-space, *professional computer literacy* is vital as well since it should help the computer user, who is performing a specific function, to build a clear motivation for using the computer in professional activities. The computer user must understand the benefit and the new professional possibilities the computer may offer at the workplace and the problems that may arise if the information technologies are ignored. The adoption of the Lithuanian national *Standard of General Computer Literacy* [GCLS-04] represents the first step in the implementation of the aforesaid General Computer Literacy Program.

In view of the fact that quite a large part of the present-day teachers went to school and university at the time when the information technologies in Lithuania were just making the first steps, more attention should be given to building their computer literacy. Every year, the institutions of the Ministry of Education and Science of the Republic of Lithuania arrange *trainings for teachers* in technological and professional computer literacy. That is a very important fact since the real citizen of the information society is educated at school and that requires relevant preparation.

At this point, the problem of *computer literacy assessment* arises: how it should be defined and declared that a citizen is computer literate. Preferably the assessment should apply uniform criteria and be broadly used. There is a need of a uniform certificate, a document that would evidence the conformance of the abilities of a person to the requirements of a certain standard.

Problems related to the computer literacy certification

With respect to computer literacy, it is essential to clarify the distinctions between the following types of deficiencies. Firstly, an insufficient number of skilled people in the labour market or in an occupational segment are defined as *skills shortage*. Secondly, we speak of the *skills gap* as a competence shortfall between the current and the required competence levels of individual staff within organizations. And lastly, a mismatch between the competence of the user/candidate and the expected competence needs of the employers is assumed to arise from *syllabus misalignment*.

All the three problems are closely interrelated. Statistical investigation in the field of computer literacy and expected needs are performed by such well-known organisations as EICTA (European Information and Communication Technologies Association)³, the consortium Career Space⁴, the Council of European Professional Informatics Societies (CEPIS)⁵, etc. All the studies reveal a great shortfall in computer literacy skills and competence. There are different suggestions on dealing with the problems. Based on the practical experience of the ECDL Foundation⁶, CEPIS work group suggested the *CEPIS IT Competence Maturity Model* which includes the following levels of qualification [StWe-04]: (1) minimal computer literacy; (2) basic computer literacy; (3) technological computer literacy; (4) professional computer literacy – expert user; (5) technological competence of informatics expert; and (6) professional competence of informatics expert – expert user.

It was also suggested that uniform criteria should be used for assessing certain skills and uniform certificates should be issued to demonstrate that the capabilities of the person meet the requirements set for a certain computer literacy level. *ECDL certification* sets a standard definition of technological computer literacy requirements across Europe.

The implementation of the ECDL program in Lithuania is gathering pace. The ECDL provisions have been embedded in the Teachers' Computer Literacy Standard⁷, the Students' General Computer Literacy Standard⁸, and the General Computer Literacy Standard [GCLS-04]. The purpose of the General Computer Literacy Standard is to set uniform qualification requirements and recommendations for the computer literacy of the citizens and to legitimate the principles of computer literacy verification.

The Standard sets the basic and minimal qualification of computer literacy. The *basic computer literacy qualification* includes IT knowledge and capabilities that are sufficient to use the computer at work at the user's level. The basic computer literacy qualification program matches the ECDL basic program and it is further refined in the course of the ECDL program development.

The *minimal qualification of computer literacy* includes technological knowledge and capabilities that are sufficient to ensure minimal satisfaction of the needs while using the services provided in the electronic space: composing, searching for, and transmitting information, and communications. The program of the minimal computer literacy qualification matches the ECDL program for citizens and it is further refined in the course of the ECDL program development.

The *professional computer literacy at the expert level* is certified by the ECDL Advanced certificates. Those are approved for four ECDL modules: word processing, spreadsheet, database, and presentation. The implementation of those modules is topical for Lithuanian colleges and universities the graduates whereof seek to prove their high professional competence in individual fields of IT application.

After alternative training programs (which are not based on the ECDL program) are approved by experts appointed under the order of the Minister, they may be converted into basic and minimal competence requirements and programs subject to an order issued by the Minister of Education and Science.

The *basic computer literacy requirements for the students* of state and municipal schools and universities set by the Standard are included into the teaching programs. The requirements of the Standard are also recommended for non-state schools. The computer literacy training programs are accorded with the goals, objectives, possibilities, and prospects of activities in the electronic space of a certain institution or organisation.

3 <http://www.eicta.org/>

4 http://www.eaeeie.org/theiere/meeting_wien/Curriculum_Development_Guidelines.pdf

5 <http://cepis.org/>

6 <http://www.ecdl.com>

7 http://www.ipc.lt/english/apie/skelbiami_dok/teachers%20computer%20literacy%20standard.doc

8 http://www.ipc.lt/english/apie/skelbiami_dok/students%20general%20computer%20literacy%20standard.doc

ECDL program achievements and cooperation

According to July 2009 data, the 1.22 % of the Lithuanian population (i.e. 43490 certificates, including 26,476 ECDL START, 23,441 ECDL, 2,755 e-Citizen, 11 CAD certificates; and 1,518 certificates since the beginning of y. 2009) had the European Computer Driving License already, significantly higher value than in all neighbouring countries. 2000 e-Citizen certificates from ECDL Lithuania have helped the Alliance “Langas į ateitį (Window to the Future)”⁹ to win the 2008 European e-Inclusion Award¹⁰ – gold medal from the European Commission (i.e. to received a special award for its innovative use of ICT to increase computer literacy of Lithuanian society). In addition, there were successful Leonardo da Vinci project CECA (ECDL CAD QTB) with partners from Romania, Italy, Malta, the Netherlands, and project euCAD (ECDL 3D CAD AQTB) with partners from Romania, Malta, Portugal, UK and Estonia. E-Guardian program was pilot-tested and authorised, etc.

On the other hand, the Lithuanian ECDL testing infrastructure was highly rated by the ECDL Foundation auditors. Exceptionally high ratings were given to the technological infrastructure solutions. The Lithuanian ECDL Quality Management Committee deserved credit from the auditors, too. The authorised ECDL testing centres cover the whole Lithuania more or less evenly.

The development of the ECDL certificates in Lithuania is highly promoted by its incidence rate among the students of Kaunas University of Technology, Kaunas Faculty of Humanities of Vilnius University, Lithuanian Academy of Physical Education, and Division General Stasys Raštikis NCO School¹¹.

There is a good tradition of fruitful cooperation between responsible governmental institutions (Information Society Development Committee¹², Ministry of Education¹³, Center of Information Technologies of Education¹⁴, Ministry of Economics¹⁵, etc.) and associations of IT companies and professionals – the Association “Infobalt”¹⁶ (which unites companies and scientific institutions specializing in IT, telecommunications, eservices, etc. areas), the Lithuanian Computer Society¹⁷, the Representative Office of the ECDL Foundation in Lithuania¹⁸, Langas į ateitį (Window to the Future) Alliance (formed by leading Lithuanian businesses, such as mobile telecommunications company Omnitel¹⁹, fixed telecommunications company TEO LT²⁰, largest banks Swedbank²¹ and SEB²², as well as the largest Lithuanian IT companies Alna²³ and ATEA²⁴), the Knowledge Economy Forum²⁵. We hope that fruitful collaborative work will continue and expand in future.

The current status of higher stage of digital literacy – eLearning – in Lithuania is overviewed and evaluated in [GuSi-09].

9 <http://www.langasiateiti.lt/index.php/en>

10 http://www.citizenonline.org.uk/e-inclusionawards_eu/winners

11 <http://www.ktu.lt> , <http://www.vukhf.lt/> , http://www.lkka.lt/?set_lang=en , <http://senas.kam.lt/index.php/lt/34857/>

12 <http://www.ivpk.lt>

13 <http://www.smm.lt/en/>

14 <http://www.itc.smm.lt/>

15 <http://www.ukmin.lt/en/>

16 http://www.infobalt.lt/sl/index_en.php

17 <http://www.liks.lt>

18 <http://www.ecdl.lt>

19 <http://www.omnitel.lt>

20 <http://www.teo.lt>

21 <http://www.swedbank.lt>

22 <http://www.seb.lt>

23 <http://www.alna.lt>

24 <http://atea.lt/>

25 <http://www.zef.lt>

Conclusions

In order to materialize the principles pronounced by the concept of the information society, it is vital to improve the computer literacy of the citizens. Therefore the fact that the Government of the Republic of Lithuania approved the General Computer Literacy Program deserves very positive judgement.

The computer literacy skills must be defined by a standard and assessed by respective certificates. In view of overall globalisation and the development of the information society the common EU programs of establishing and certifying the labour force qualification are gaining immense significance.

The use of uniform competence standards and a common European qualification system is important on all computer literacy levels. Positive changes related to the computer literacy certification on the European level can be observed in Lithuania, too.

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