Computer Supported Learning

ICT tools and digital methods in classes

PhD thesis booklet

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Introduction to the theme and structure of dissertation

The dissertation is based on two corresponding research projects (SDT-monitor, 2006. Country Survey on ICT in Public Education, 2006.), and builds on those experiences gained during numerous Hungarian and international projects dealing with ICT in schools. (eTwinning, 2004-2007., Celebrate, 2002-2004., SCALE, 2001-2003.) This work is highly of pedagogical point of view; my interest has been focusing on applying ICT as a set of tools for paradigm shift and active learning. That is why I write in detail about the constructivist theory, its practical embodiments, for example cooperative learning. I use those experiences gained during adapting and disseminating the results of an OECD research on formative assessment, also the EPICT ICT teacher training project.

Chapter one gives an introduction to the international and local policy background, and begins with analysing some of the documents from ICT aspect. Regarding the work going on the field of defining key competences for lifelong learning, I deal with the DeSeCo project and the work done in the framework of the Lifelong Learning program of the European Union. The dissertation includes some conclusions of two OECD research projects (Learning to Bridge the Digital Devide: ICT in Schools; Learning to Change: ICT in Schools), and gives a picture of the eTwinning Project, as the most important ICT-related action of the Lifelong Learning programme, highlighting the importance of the European Schoolnet, as a catalyst organisation of European ministries of education for applying ICT at schools and in learning.

Among the Hungarian materials of Chapter 1 I focus on the national Educational Informatics Strategy (2003), its goals and the ways of its realisation. The paper has a closer look at the new version of the National Curriculum regarding the cross curricular position of ICT in the document. This chapter speaks about the central role of Sulinet Programme Office, the agency for ICT in public education. This part ends with an overview of the scientific background, dealing with the radical change in knowledge concept, the growing importance of the constructivist theory and active learning. It has a special focus on CSCL (computer supported collaborative learning) regarding its history and practice, and also tells about the role of virtual learning environments that they might play in modernizing teaching and learning. I put a stress on ‘C’ for communication in ‘ICT’, on the dimension it can bring into collaborative learning.

Chapter 2 provides an overview on the first year of a three-year R+D project, named SDT-monitor, the main research project discussed in this dissertation. It gives the framework, financial background, hypotheses, the need for this project, also the tools and methods. There is an explanation how this R+D project and the Country Survey on ICT in Public Education are related to each other.

In **Chapter 3** the reader finds the results of SDT-monitor R+D project, based on questionnaires, interviews, teachers’ diaries, lesson observations. It goes into detail regarding the advantages and difficulties of using ICT during classes in different subjects. However the main focus is on SDT, the new Hungarian learning content management system, besides its validation the project gathered a lot of knowledge on digital teaching methods and using other ICT tools and software in school.

In this chapter one part is about forms, channels and methods of communication during the project, on all possible levels. It describes SDT, also deals with the role of other virtual learning environments used in the project, plus the role that they can play in near future in education. The chapter contains the results of the survey with questionnaires to show if real

development has been done during the project. The picture is refined by the results of 42 interviews, made in all project schools. These interviews are to be the basis of the school portraits that we want to draw in the next project year.

Chapter 4 shows the results of the Country Survey on ICT in Public Education. This survey is to be done in each year. This is the basis year, and serves as a point of comparison when monitoring the development of using ICT for teaching and learning purposes in public education. In the introductory part of the chapter the reader finds the main results, also there are recommendations for policy makers about the way they spend money on this field. There are two corresponding parts in the chapter, the results of the school managers' responses and those of the teachers.

Chapter five is an insight into the ICT in school monitoring process of two countries, Holland and England. The main reason for looking at them is not comparison but looking for arguments to convince policy makers about the importance of monitoring the process.

2. Research hypotheses and answers

1. There is an innovative circle of schools in Hungary that can develop into workshops and models for followers, and these schools call for help themselves.

This innovative circle does exist, usually comes from the early appliers, those who started building their ICT environments earlier than others, have a good infrastructure and paid attention to in-service ICT teacher trainings. Taking part in local and international ICT related innovative project plays a major role; let it be mere usage or a digital learning material development project. A narrower circle of innovative schools definitely is looking for the possibilities and makes a good use of those projects in developing the whole school. These schools usually publish the fact of their participation in research projects and also the results on the school website.

Not even in these innovative schools use ICT all the teachers, results come from a little but eager group of teachers. The organic use of ICT has different levels, and working out a system that can help this development process would be advantageous. The thesis suggests a method for marking the schools according to their achievements of the field. Meeting the requirements would be a tool for developing and for catalysing the process. Even the innovative schools need some more internal development in order to became models for followers. This should focus on making ICT culture part of the school culture, as a set of tools and methods that help collaborative learning. This process has started in the six project schools, and according to our expectation will lead to success in four of them during the planned three-year cycle.

Four of the six schools participating in the project articulated their need for help and used the project facilities for their own purposes, - two on the level of the project group, two on whole school level. In two schools not all the teachers realised the possibilities for personal professional development. Help and development work meant that the school or a group of teachers joined a research project, understood and accepted its goals and knew that these goals are to develop their schools as well so they devoted themselves to the project, however to different extents.

Every teacher took part in the central and local trainings, but there was a big difference in taking use of the help provided by the mentors and the research leader. On daily basis this

help meant commenting the lesson plans and worksheets, also the digital resources and methods that teachers intended to use during a lesson in the framework of the project. Mentors usually suggested some modifications to have a more collaborative class where ICT plays a practical role and heightens the level of teaching and learning. Mentors tried to initiate and sometimes facilitate group work among project teachers. They always advised on content technical, and aesthetical aspects of the worksheets, and asked the teachers from the same school to help each other similarly. This practice got roots only in one school.

The majority of teachers did their job: they sent their lesson plans to the mentors in advance and accepted numerous changes the mentors suggested, there was no anxiety about being supervised and advised. During the project period there was a significant change in the level of worksheets and in the general concept of what a worksheet was. We succeeded in adapting a kind that we call activity oriented worksheet where the tasks are explained and students can work even collaboratively without the permanent help or participation of the teacher. At the beginning of the project the majority of the worksheets were test-like, there were only questions listed in them. The work expected consisted of getting to know the answers by some reading exercises. Later the description of the activities, all the related resources and pictures were included. The number of interactive tasks has grown, because there were tools with which teachers themselves could create them.

The intensity of professional development was in correlation with the frequency of correspondence between the mentor and the teachers. Those who did not send their materials to the mentor or it was too late to build in the comments – have not improved significantly. It seems that for them taking part in the project was not a professional challenge but an overwhelming duty; they have not interiorised the goals. It has become obvious that without inner motivation even the teachers are not able to learn. There is a large gap in the development of those who had used the help and those who did not. Devoted colleagues were almost hurt if they had not got a detailed, immediate feedback, and they expected not only the mentors but also the project leader to do so.

Another meaningful help was the system of lesson observations. Partly it was going on among the teachers from the same school, partly there were twin schools to encourage the wider range of professional impact by visits and digital communication. All participants were asked to do at least three observations, they were expected to discuss the lessons on the spot, and they all filled in a form created for this observation purpose. The majority of the teachers enjoyed this option, and were happy to observe various lessons of different subjects. They said when observing lessons of their own discipline, they sometimes indulged in the topic. When visiting lessons of other subjects, they can pay more attention to the methods. It is an interesting fact that those who are more advanced in using ICT and collaborative ways of teaching were more interested in visiting lessons.

During the projects teachers were offered technical help from more sources. In simple cases the local system administrator or ICT coordinator meant this help, but for operating the virtual learning environments special experts were pointed out. There were two local training on each virtual learning environment, but teachers could ask for help via e-mail or by phone. Mentors and the project leader often advised on using Word for special purposes, also on special software that was useful in certain subjects or for special tasks, for example some crossword generators. System administrators were not as big help as we had meant. This might be because they did not get any other training but took part in the kick off meeting. About half of the teachers did not ask for any technical help, and this is more characteristic for those of lower level ICT users, especially when someone did not get motivated by the project

2. Helping the professional and purposeful ICT usage increase the level and intensity of using them

According to the experience gained by the mentors, lesson diaries, lesson plans and worksheets, also the reports in the end of the projects this hypothesis is correct with no doubt. Chapter three of the present dissertation shows the tools and methods used in different subjects during the project. We have detected growth in the number of methods, teachers got more conscious about *what when* and *how* and there has been a definite improvement in worksheets considering aesthetical, pedagogical and content values. During the project teachers got to know most of the digital resources available in their subjects, the tools, they recognised how learners react on different task types, also got experience on time needed for certain tasks. Thy formed an opinion on digital resources, became more profound about what resources are worth using during classes and what activities are most fruitful to go with them. They also got to have certain experience in trying and realising their ideas. Quite a lot of them were gaining the necessary knowledge of ICT parallel to cooperative techniques. This many-sided professional development made the proud of themselves, also the mentors and the leader of the project.

3. Professional usage of ICT tools has an impact on the whole school. At motivated but less experienced schools the development process is more effective

At two schools - where the principals are active in the field of informatics – real group work was going on among the teachers participating in the project, and the effects were detected in a much larger circle than their team. In one of these schools the director and one of the deputy heads were members of the project team; in the other the head provided all the technical preconditions and the infrastructure needed for the project, motivated the staff for part taking and one of his deputies was a team member. In these schools there were self-initiated demonstrations and trainings on tools especially on VLEs, and a big percentage the staff got interested in the methods and possibilities of computer supported collaborative learning. In both schools they used the VLEs in a wider circle and with success, plans were born for making common their usage.

In two schools – the middle field from this respect – all participants experienced professional development both in methodology and in ICT, but the project did not have a significant effect on other colleagues of theirs or on the whole school. In these cases the principals did not follow the course of the project and only in one of them was a deputy principal who paid some attention. The leadership did not make any action to inform the staff about the work being done in the project or to apply some results of it. In these schools in the project teams there were some very innovative teachers who considered their participation a big possibility and paid close attention to their own professional development, however real team work, cohesion among the five teachers participating, and positive group dynamics were far from optimal.

In the remaining two schools some of the team members have developed during the project, but it had no impact on the school as a whole organisation. Work was carried out in isolation; the leaders did not follow the project. One deputy participated but besides his own high-level job he did not pay attention to the others, did not put energy into forming a real team of the project group. In these schools participation was a personal hobby of the teachers. Since there was no cohesion in the group, professional communication and professional development was haphazard and individual. Luckily even in these schools there are great examples of professional development, due to personal diligence and stamina.

We had two schools of the 'beginner' category, a bilingual grammar school in the capital, and a traditional grammar school in the country. Since in none of the schools was the project taken up by the school leaders; it was up to the participants how much they wanted to develop, and how much they handed over to their colleagues outside their team, consequently how much the school developed. Although from the point of hypothesis 2 both schools belonged to the middle field, there are big differences in the extent and ways of professional development.

The questionnaires revealed that the makings of the two schools are very different. The technical infrastructure in general was less developed than in the other four institutions, but there is not a gap between the 'less developed advanced school and the more developed starter one. Even in the two schools having little experience the school leaders were open to using ICT in learning and teaching, however they were not as convinced of its advantages as their counterparts in the experienced schools. According to our study neither the infrastructure nor the daily practice are significantly different in the two groups of schools, we could not find the answer to this hypothesis.

4. The new tools give way to paradigm shift; they accelerate spreading of collaborative learning and help the realisation of a conscious whole school development process. For these purposes collaborative platforms serve well

In those four schools where collaborative platforms were used on regular basis, the process of teaching and learning has changed. These platforms enlarged the space and time of learning, contributed to the growth of collaboration and communication in connection with learning. Teachers liked those platforms more where they could act similarly to their every day practice (LGW Class Server, Moodle), especially because they also provide for traditional ways of testing and evaluating. Testing is a popular option, even students like being tested and automatically evaluated at once. Those more sophisticated ways of evaluation that for example Think.com provides for, need some tuning from the human part. According to our results these platforms offer a lot for the education that should be exploited. Virtual learning environments both enhance teachers' creativity, and motivate learners. Besides the reports by the teachers there are proofs in the back up system of those VLEs: the frequency of usage and the ways they were used.

3. Country survey on using ICT or teaching and learning purposes, 2006

The survey was carried out at the National institute of Public Education with the help of the Ministry of Education and Sulinet, the national agency for implementing ICT at schools, - in 2006. The online questionnaires were accessible on the website of Sulinet. This survey is to be repeated yearly, within the framework of this project at least two more times. It is to monitor how the usage of ICT tools and resources formulate, and how this process answer the social expectations, also how the financial and human efforts pay back. We want to know how schools use SDT, the central Digital Knowledge Base for schools that has been being developed by state money. (http://sdt.sulinet.hu)

The survey is a good basis to monitor the process of gaining ground of ICT tools in education, in the teaching and learning process. It shows the attitudes and expectations of school leaders in 2006, one year after the launch of the Digital Knowledge Base; also reveals how competent the teachers feel about using these tools during classes. It also shows the purposes and frequency of using ICT tools in and outside classes for educational purposes in the school year of 2005/2006. It is important to repeat the survey regularly in order to follow the state of art and to give fact when decisions are to be made.

Decisions to make among others are heightening the number of methodology trainings on using ICT for learning purposes; creating a mentor system to help the integration process (a network of experienced teachers); disseminating good practice especially in the form of showcase lessons even in videos; also providing the teachers with handbooks and resources.

Marta Hunya, Budapest, September, 2007

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ÖNÉLETRAJZ

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1996-97.	ELTE Bölcsész Kar, angol szak, számítógép a nyelvoktatásban
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1975-77.	Kirakatrendező és Dekoratőr Szakmunkásképző Intézet
1970-74.	Szeged, Tömörkény I. Képző- és Iparművészeti Szakközépiskola, kerámia szak

Képzettségek

2005. Tanári ECDL facilitátor

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1997. Angolszakos tanár

1983. Könyvtáros, magyar nyelv és irodalom szakos középiskolai tanár

1977. Kirakatrendező és dekoratőr

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Angol felsőfok (1993.), spanyol tanszéki nyelvvizsga (2006.)

Munkahelyek

2004 -	Országos Közoktatási Intézet / Oktatáskutató és Fejlesztő Intézet– tudományos munkatárs
2002 - 04	Educatio Társadalmi Szolgáltató KHT – pedagógiai szakértő, projektvezető
1994 - 02	Puskás Tivadar Távközlési Technikum - magyar- és angoltanár, igazgatóhelyettes

1986 – 94. Kvassay Jenő Műszaki Szakközépiskola - magyar- és angoltanár

1985 – 86. Nyír Utcai Általános Iskola – rajztanár

1982 – 85. Szász Ferenc Kereskedelmi Szakközép- és Szakmunkásképző Iskola - magyartanár

1977 – 82. Csemege Kereskedelmi Vállalat - kirakatrendező, grafikus

Megbízások

2005 Az EUN eTwinning projektjének szakértője, a Pedagogical Advisory Group tagja

2005 Hazai EPICT felügyelőbizottsági tag

2002 Digitális tananyagfejlesztés angolból és magyarból tanárnak és diáknak

2001 CD-fejlesztés (tanártovábbképzés az internetes angoloktatásban)

2001 Távoktatási tananyagfejlesztés a pedagógustovábbképzés területén, IKT

2001 - 2004. Szakértő a SCALE EU-programban (számítógép és vitakultúra)

2001 – 2003. Kerettantervi szakértő

2000 – 2005. Érettségi és vizsgaelnök

2000 – 2005. Szaktanácsadó számítógépes nyelvoktatás és kommunikáció szakterületen -

2000 EU pályázatbíráló - folyamatos

1998 Nemzetközi vitakultúra oktató - folyamatos

Készségek, jártasságok

Számítógép-kezelés (Word, Excel, Internet), jogosítvány

Jó kommunikációs készség szóban és írásban, magyarul és angolul, spanyol nyelvismeret

Tapasztalatok, szakterület

14 éve foglalkozom a számítógép tanórai alkalmazásának kérdéseivel, elsősorban az angol és a magyar nyelv oktatásának területén. Előbb saját tanítási gyakorlatomban alkalmaztam a számítógépet online és offline módon is, majd ezeket a tapasztalatokat felhasználva egyre többet tanítottam is a tanár-továbbképzési programok keretében, majd a terület közoktatási szakértője lettem.

Részt vettem egy OECD kutatásban, amely a számítógép és az internet órai felhasználását vizsgálta, majd társszerzőként kidolgoztam két távoktatási tananyagcsomagot ebben a témában. A programok akkreditálása megtörtént. A tanár-továbbképzési tananyagok egyikét bővített, enciklopédikus változatban is elkészítettük el CD-formában. (Webology – Internet a nyelvoktatásban, Edunet, 2003.)

Az NFT HEFOP 3.1. alprogramja keretében a kompetenciafejlesztést szolgáló tananyagok készítésében is részt vettem, öt modult írtam az angol nyelv internettel támogatott tanulásához, tanításához. Tevékenyen részt vállaltam a nemzetközi EPICT (Európai Pedagógusi IKT jogosítvány) kurzus hazai adaptálásában, elvégeztem a facilitátori képzést, és az EPICT hazai tevékenységét szakmailag felügyelő kuratórium tagja is lettem.

Részt vettem egy internetes alapú, vitakultúrával kapcsolatos hároméves nemzetközi kutatásban, mint szakértő, illetve a hazai kutatás vezetője. Ez a számítógép és az internet oktatási célú alkalmazását kívánta segíteni. Olyan szoftvert és tananyagokat fejlesztettünk, amelyek lehetővé teszik, hogy sok tantárgyban alkalmazhassák ezt a módszert. Az eredmények és módszerek disszeminációt segítő CD-ROM-ot és kétnyelvű könyvet én szerkesztettem. Másik sikeres nemzetközi projektem az Európai Iskolahálózat által koordinált, Magyarországon az Educatio KHT Sulinet Programirodájának keretei között folyó Celebrate volt. Ebben gyakorló tanárok fejlesztettek és próbáltak ki digitális tananyagokat modern pedagógiai módszerekkel. Ez a kutatás-fejlesztési projekt hozzájárult a hazai fejlesztések nemzetközi megalapozásához.

Két évig főállásban is a digitális tananyagfejlesztés segítésével és tanárképzési projektekkel foglalkoztam az Educatio Kht. Sulinet Programirodáján. 2006 óta az Oktatáskutató és Fejlesztő Intézet Fejlesztési és Innovációs Központja Tanulásfejlesztési és Integrációs Főosztályának tudományos munkatársaként dolgozom, a számítógép tanórai alkalmazása és általában az aktív tanulást segítő tanári módszertan a szakterületem. Tájékozódom Európában, igyekszem a trendeket és a hasznosítható eredményeket összegyűjteni és hozzáférhetővé tenni a hazai pedagógiai fejlesztés számára. Számos publikációm jelent meg e témában. Az Európai Iskolahálózat külső szakértője vagyok az Európa Tanács által kezdeményezett, rendkívül ambiciózus eTwinning projektben, amelynek az a célja, hogy Európa 30 ezer iskolájának lehetőleg minden tanulója megtapasztalja a számítógéppel segített nemzetközi együttműködés örömét és nehézségeit úgy, hogy ez a tevékenység illeszkedjék a tanítási programokba. Gyakorlati tapasztalatokat és elméleti ismereteket, valamint nemzetközi kitekintést is szereztem tehát a számítógép oktatási célú alkalmazását illetően, és ma is alkalmam van a személyes tapasztalatok és a nemzetközi munkavégzés során az európai trendekkel megismerkedni, így azok alakulását naprakészen követem.

Budapest, 2007. szeptember 20.

Hunya Márta

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