

The Pedagogical ICT Licence in Teachers' In-Service and Pre-Service Training

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ABSTRACT

The Pedagogical ICT Licence is suggested as a comprehensive international standard for the continued professional development of teachers in the pedagogical use of ICT in education. The concept has been adopted by a number of countries and is being supported by the European Commission's eContent program. The course mixes blended learning with team-based collaboration, and the content combines pedagogical knowledge of ICT integration with basic ICT-skills training.

Recently the approach has been implemented in initial teacher education with formal assessment in the form of digital portfolios and logbooks.

A European program that is well-documented, tested and in operation in five European countries is without parallel in teachers' professional development in ICT. And the prospect of being able to join a recognized program and thus benefit from a fully operational conceptual framework complete with content, administrative tools etc. may be attractive to a number of regions, states and countries.

Keywords: Professional development of teachers, in-service and pre-service training of teachers, pedagogical ICT-skills, integration of ICT, teacher education, blended learning, facilitators, national program.

1. INTRODUCTION

Hardware and software do not make it alone. Continued professional development of teachers (in-service training) in the pedagogical use of ICT is a key to successful and meaningful integration of ICT in education. However, research shows that school management is both an important agent of change and an efficient road block to change, which means that accompanied by professional development of the school management, in-service training of teachers provides a solid and powerful basis for real and innovative change of the school's organization and practices.

For quite some years now, in many countries national policies have addressed the big issue of improving the tangible benefits of huge investments in hardware and high-speed connections to the Internet. Several training initiatives have been launched, a majority of which focus only on basic or advanced ICT skills, and not on how teachers may actually apply ICT to improve teaching and learning.

Developing countries are also taking ICT to the schools in order to qualify students and teachers. Once hooked up to the Internet through e.g. a satellite connection the computer brings a world of information to the classroom, overcoming years of lack of

learning resources. Internet and electronic communication may be means to bridge the opportunity gap, but a disc on the rooftop and a computer in the classroom do not automatically generate new competencies.

From the simple questions,

- What do we want the teachers to learn?
- How do they learn this?
- How do we evaluate/assess whether they have learned what they are supposed to?

a comprehensive, national course concept was developed, which encompasses these three elements, and was put in large-scale operation. The program, Pædagogisk IT-kørekort[®] [1], began as a national initiative in Denmark in 1999. Since then 60.000 Danish teachers (more than 66%) have taken it up, and independent studies have documented its impact. The concept has proven to be robust, now localized into 9 school types nationally, targeting various education areas from pre-school and compulsory education to vocational and further education.

With support from the European Commission's eContent program [2] the concept has matured to offer a solid international standard for the in-service training of teachers. In Europe the course is named EP ICT - The European Pedagogical ICT Licence [3], and it has had its international break-through with pilots in Africa (APICT) and in Australia [4].

Recently, in Denmark the concept has been integrated in initial teacher training for compulsory education and general upper secondary education.

2. THE EUROPEAN PEDAGOGICAL ICT LICENCE

The European Pedagogical ICT Licence is in-service training for teachers combining pedagogical knowledge of ICT integration with basic ICT-skills training. The basic philosophy of the EP ICT concept is that when upgrading teachers one without the other makes the training useless.

The Pedagogical ICT Licence thus offers teachers basic ICT-skills on a personal and a professional level through focusing on the pedagogical integration of ICT in the teaching practice.

The course is realized through blended, flexible learning where the methodology applied is team-based and involves process-oriented learning, problem-based learning, collaboration activities and team-based assessment.

2.1 The EP ICT Course

The EP ICT course comprises 16 modules - 4 compulsory and 12 optional. A licence is given upon 8 module approvals.

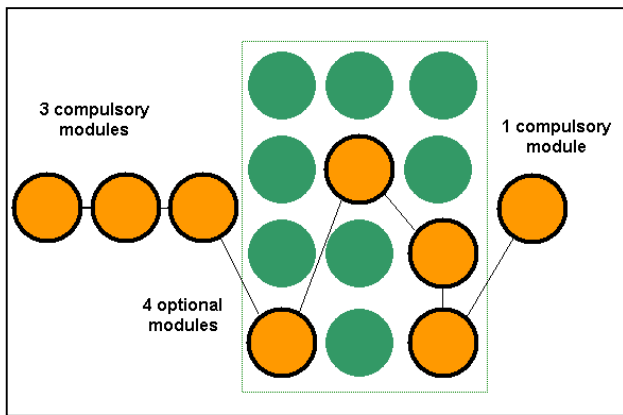


Figure 1: Model of content of the European Pedagogical ICT Licence course

Compulsory modules	Optional modules (select 4)
<ul style="list-style-type: none"> • Using the Internet and Internet resources, search and evaluate data • Writing electronically • Communicating electronically • School innovation 	<ul style="list-style-type: none"> • Using digital images • Using spreadsheets • Using presentations • Producing educational websites • A head start with databases • Models and simulations • Layout and DTP • Educational software • ICT and learning styles • ICT and reading (special needs) • ICT as a compensatory tool (special needs) • Games and learning

Figure 2: Overview of available modules

Module structure: In any given group of teachers the individuals will not have equal ICT-competencies or ICT-skills. Thus to allow for differentiation and flexible use, the modules are structured so that teachers can select the elements that are most relevant to them.

Each module is divided into the following elements:

- Pedagogical introductions and articles
- Best practice articles
- ICT-skills exercises
- ICT manuals
- Inspirational links and example

3. EPICT IN PRE-SERVICE TRAINING

In-service training is necessary for a long time still. However, the way forward is to make sure that new teachers and educators have the competencies required to successfully apply ICT in their everyday practice. Therefore they are to learn these skills as an integrated part of their further education study program.

From the summer of 2004, in Denmark the Pedagogical ICT Licence is offered on a national basis integrated in the curriculum for students, who graduate from Teacher Training Colleges to become teachers of compulsory education (grades 1-9).

In comparison with the in-service training, the characteristics of the pre-service approach are

- Same focus on ICT in general classroom learning, pedagogical application of ICT
- Same material as for in-service training, annually updated
- Same licence/certificate as for in-service teachers, recognized by school owners
- Different assessment.

3.1 Main Areas and Competencies

The objective of the Pedagogical ICT Licence for student teachers is to ensure that the student teacher acquires:

- Insight into the impact of ICT on the role of teachers and students and on the pedagogical and organizational development of the school
- Insight into the impact of ICT on the development of the subject
- Basic ICT skills
- Insight into and experience with team-based work in a net-based learning environment.

During the course the student teacher should reach this goal by acquiring a number of basic competencies in the ICT area within the main categories:

Main areas and competencies	
Basic ICT competencies	<ul style="list-style-type: none"> <input type="checkbox"/> Use a computer as a personal tool, for individual work, for preparation and learning <input type="checkbox"/> Use different networks, e.g. local area network, e-conferences, intranet or the like
Study and collaboration competencies with ICT	<ul style="list-style-type: none"> <input type="checkbox"/> Gather, evaluate, summarize, put into perspective and present information with ICT <input type="checkbox"/> Work systematically and process-oriented in electronic learning environments <input type="checkbox"/> Master different methods of work with ICT
Pedagogical and didactic ICT competencies	<ul style="list-style-type: none"> <input type="checkbox"/> Plan, complete and evaluate ICT-integrated training <input type="checkbox"/> Reflect on learning processes with ICT <input type="checkbox"/> Relate to the development of a school with regard to application of ICT

3.2 Assessment

In in-service training the assessment of the acquired skills of the practicing teachers is done through the process of discussing and evaluating the eight module assignments, which the team submits to the facilitator. In the in-service concept no fixed level of competencies is required. Initiating a process of pedagogical ICT development is much more important than rigid assessment of ICT-skills. During the course, and documented by the written assignments, all members of the team improve, and when they finish the course the national secretariat issues a certificate to all team members.

In a further education program a formal individual assessment is required. Acquisition of the ICT competencies is integrated in

the training at the teacher training college and during the practical training periods. When ready, each student teacher applies for assessment of a personal digital portfolio with regard to the ICT competencies. When this portfolio has been approved, the Pedagogical ICT Licence secretariat issues a certificate.

During the four years the student teacher produces a series of digital products that are related to school and education:

- ❑ Individual portfolio documenting student competencies
- ❑ Logbook documenting reflections

Professors and an internal evaluator evaluate this portfolio/logbook.

3.3 Digital Portfolio

The student teacher collects his or her work with ICT in the digital portfolio over a minimum of one year of study. The portfolio must also include material from the periods of practice. A portfolio should contain products and descriptions, which cover the EP ICT compulsory themes and at least four optional themes. It must provide documentation that the student teacher has acquired the above-mentioned competencies in the main competency areas. As a minimum the digital portfolio should contain two products and a process description, all with matching pedagogical, didactic considerations and reflections.

Portfolio products and forms

- ❑ Text production on paper; presentations - interactive screen presentation/time-controlled presentation; web-site; databases; spreadsheets; video production, digitally produced and processed; perhaps some other digital product; and
- ❑ One or more descriptions of learning scenarios (either a learning scenario at the teacher training college or from the student teacher's practice period).

3.4 Pedagogical, Didactic Considerations and Reflections

Each of the above products and learning scenarios must be accompanied by a description of pedagogical, didactic considerations and reflections. For example logbooks, where the student teacher describes and reflects upon his or her learning processes with ICT, at the teacher training college and during practice periods. This logbook may contain text (descriptive, reflective or transcripts of work processes) and pictures (photo, video, screen dump). Alternatives are other articles or products where the student teacher describes and reflects upon pedagogical problems in relation to integration of ICT in teaching and learning.

4. SETTING UP A NATIONAL PEDAGOGICAL ICT LICENCE

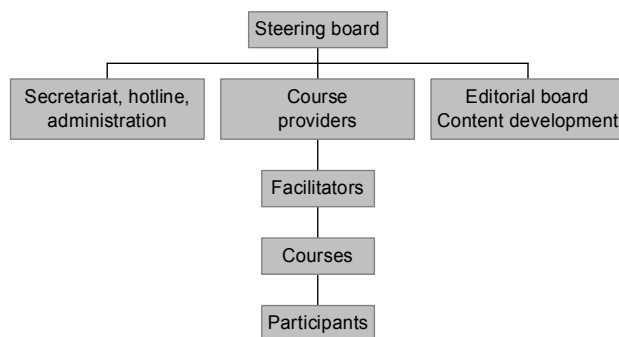


Figure 3: The distributed course organization

The Pedagogical ICT courses are delivered to teachers through a distributed course organization with local/regional course provision close to the school. Each level and its actors have their well-defined roles, and detailed and in-depth descriptions regulate the practical implementation. Thus educators perceive the courses to be highly local and flexible.

The regional structure offers teachers to work together with present colleagues, and it allows for scalability and flexibility in the course provision. The regional course providers are universities, teacher-training colleges, local pedagogical advisory centers (e.g. in municipalities or counties) or major schools themselves.

Steering board: Due to national differences the steering boards do not have the same mandate in all countries. A politically appointed steering board comprises members from all central actors and holds the overall responsibility - or acts as a consultative entity - for the national or regional implementation. The steering board has its mandate in matters of national recognition, course material, logistics, administration, course provision, facilitator certification, complaints etc.

Secretariat: The national secretariat takes care of the everyday management and marketing of the national EP ICT product. Secretariat activities involve pilot testing activities, the preparation of a course website, a helpdesk, design and layout of information material, web and paper, clearance of IPR and running the administrative tool and collaboration area.

Editorial boards: The national editorial boards are responsible for the localization of the modules and function as ambassadors for the project in the field of education. Their job is also to continually maintain and update the content in an area of rapid technological development and fleeting links.

National facilitators: Facilitators in EP ICT need to be certified and annually updated. To launch a course in any given country a group of first facilitators must be certified by the EP ICT Group. Many of these first facilitators are members of the national editorial board and will work as facilitators during the pilot testing. After the project period some of them will become responsible for the national facilitator certification.

5. EP ICT TECHNOLOGY

The technical set-up of a national implementation of the European Pedagogical ICT Licence involves the combination of three features:

- ❑ Access to course modules and additional content
- ❑ Access to an online communication and collaboration platform
- ❑ An administrative tool that controls access rights, a database of course participants and their progress, licenses issued, facilitators and their competencies, course providers and their administration staff etc.

This tailored combination of tools: a material-server, a communication tool and a customized administration platform, is documented and well tested in several counties. It provides a multi-language system that is easily cloned and amended. Of course the training program may also be implemented on other technical platforms, Learning Management Systems etc.

6. LOCALIZATION

It takes some work to localize the concept to fit a new national curriculum and a different cultural environment and education tradition. To accomplish this EPICT offers extensive documentation on course concepts, course content, national organizational set-up and technical implementation, and EPICT partners are ready to support new clients in their effort to set up a local, regional or national initiative.

However, experience from localizing the concept to a number of rather different countries has shown that in spite of cultural differences the syllabus and modules cover the priorities of new clients quite well. Most new partners do not change the weight on compulsory and optional modules. All are enthusiastic about the principles of assessment.

As countries differ very much in the degree that education of children with special needs is integrated in general schooling, some clients choose not to adopt the modules about special education, but target these to teachers from schools for children with special needs. Also the final module about school development must be completely rewritten, as national/regional opportunities and methodologies vary.

EPICT stresses the need for local technical support measures for participating teachers at the school during the course, as many teachers need help to cross this machine-threshold. These local support measures may not be present in all countries. Therefore, some countries add a pre-module on basic ICT-skills. Some have also added a pre-module about the written documentation of practice to prepare the teachers to better write their module assignments. Obviously, also concrete cultural examples and links must be replaced, e.g. links to Vikings do not go very well in Australia.

7. MAIN CONCLUSIONS FROM IMPACT STUDIES

Change is difficult to implement, and long term impact even harder to measure. Some skeptics claim that a course cannot create an impact if it tries to fundamentally change the way educators teach. However, the main conclusions from the studies [5, 6, 7] are that The Pedagogical ICT Licence has had a distinct impact on teachers' application of ICT. They state that completing the course has meant an increase both in their use of ICT in education and in their use of ICT for communication and collaborative purposes. In addition to this, participating teachers now use a wider variety of software, and they state that the course has inspired them to take a greater part in the ICT development of their school.

However, the teachers themselves feel that they still need to improve their skills. At this point they mention two areas of particular interest: the use of subject-specific educational software and the use of specific (advanced) ICT tools. They do not to the same extent mention the need for additional theoretical knowledge of the implementation of ICT in education.

Attending a course is one thing, implementing the skills and knowledge gained in the everyday teaching practice is another. Teachers state that if they are to implement ICT in education, there are some important preconditions: maintenance and update of the computers, and purchase of new equipment. The

fact that teachers focus on the state of the equipment indicates that there will be a continued need for investments in computers despite recent, massive investments in many countries.

The evaluations also reveal big variations and to some degree a two-humped curve: you benefit from participating if you are engaged and willing to seize the opportunity, and to take responsibility of your own learning. Free-wheelers may join the course without really taking themselves much further. Perhaps not surprisingly, the largest impact of the course has been on the use of the Internet in education and an explosive growth in the use of electronic communication. The exploitation is considerably bigger for preparation of lessons (e.g. finding information and producing materials) than the use in the actual lessons in the classroom together with the students. Female teachers generally find the impact to be somewhat bigger than male teachers, and younger teachers experience less impact.

The studies show that the impact is closely connected with parameters of teachers' daily life: teachers with access to technical and pedagogical guidance and support locally, and with a computer with access from home to the school, find the impact of participating in the training larger than the teachers without these opportunities. Previous and regular experience with the use of computers in education is important, and time is a significant element in the perceived utility value (in Denmark all teachers are given release time, 50 – 100 hours, to join the course). Frequent users, who use a computer once or more during the week in connection with their teaching activities, experience the most distinct impact.

The studies do not indicate whether students actually use ICT more after their teachers have been trained, nor do they prove whether students learn more and better.

8. SUMMARY

In Denmark the European Pedagogical ICT Licence has been attended by more than two-thirds of all teachers in compulsory education, and it has been successfully adopted in eight other educational areas. Thus the conceptual framework has proven its major impact with 60,000 participants since 1999. In Norway, on a mandate from the Ministry of Education, Agder Community College developed LærerIKT [8] as the Norwegian version of the Pedagogical ICT Licence (20,000 participants since 2002).

Parallel to this success EPICT-partners are developing a number of national adaptations of the concept: The European Pedagogical ICT Licence is currently being localized in Greece by Lambrakis Research Foundation, in Italy by Università degli Studi di Genova, Dipartimento di Informatica, Sistemistica e Telematica, and in Hungary by Eötvös Loránd University in Budapest.

Pilot courses have been arranged in Tasmania, Iceland, Ghana, Cameroon and Uganda – in the latter examples called The APICT Licence – The African Pedagogical ICT Licence.

9. REFERENCES

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