THE NEW MILLENNIUM LEARNERS: ICT USE IN INITIAL TEACHER TRAINING

Background

Since 2007 the OECD Project on the New Millennium Learners has been pointing to the increasing gap between the current use of technologies for teaching and learning in schools and the daily experiences that pupils have with technologies outside of school. According to many surveys, this should no longer be a problem related to the lack of availability of technology in schools, which, overall, look quite well equipped in OECD countries, but can be an issue which has more to do with what teachers believe to be the real potential and limitations of technologies for teaching and learning in schools.

Indeed, there is a certain paradox here. Although some studies in OECD countries show that teachers might be amongst the most skilled technology users, it appears to be that they are unable to take advantage of their competence and apply it to the way they teach. A number of reasons can be used to explain this paradox, but three emerge as the most salient:

- The absence of appropriate incentives to use technology in the classroom and, more in general, getting involved in any innovation;
- The dominant culture in the teaching profession, which does not rely very much on research-based evidence to identify good teaching methodologies and strategies;
- The fact that teachers may lack the vision and the personal experience of what a technology-enhanced teaching could look like.

While the first is related to the configuration of education systems and, particularly, to career development in the teaching profession, in the other two it seems to be clear that the experience of initial teacher training can be an important determinant. From what is known, it can be inferred that in most OECD countries teacher training institutions are not doing well at providing student teachers, not only with the vision, but, what is also important, the required experience of integrating technology in learning environments.

However, such an important claim regarding the role of initial teacher training in preparing teachers for an adequate in-classroom use of technology needs to be backed with empirical evidence. If this proves to be the case internationally, then there will be an urgent need for policy recommendations both for teacher training institutions and for governments in order to maximise the role that initial teacher training can play in offering a vision and a personal experience of a technology-enhanced education. If it is not the case and a number of successful experiences are identified, the factors and reasons which can contribute to a better understanding of their success will be investigated and disseminated.

Objectives

Against this background, the present proposal intends to investigate the actual use of technology in initial teacher training in OECD countries with the aims of:

1. Providing a detailed picture of ***how technology is used in initial teacher training, from a comparative perspective***, paying particular attention to the regulatory frameworks, the identification of best practices but also to the reasons that can eventually explain why the use of technology is low in regular teacher training institutions.

2. Analysing ***the views of the main stakeholders*** (teacher trainers, managers of teacher training institutions, policy makers, teacher unions, and student teachers) regarding the present use of technology in initial teacher training and their expectations for the future.

3. Issuing a number of ***policy recommendations*** both for teacher training institutions and governments in this domain.

Research questions

The following research questions will guide this study:

- *What are the national frameworks and requirements regarding the use of technology in initial teacher training?* In a wider context of increasing institutional autonomy, teacher training institutions may have to comply with government regulations, or at least expectations, regarding the competencies that teacher may have to develop in accordance with what national school curricula require them in terms of teaching objectives and methods. Also, the political importance attached to the development of 21st century skills may also have a reflection on teacher training requirements.

- *How different are the institutional frameworks and requirements?* Objectives, definitions and precise descriptions of required skills and competencies must be taken into account, as well as concrete means of implementation, methods of assessments and certification, and the balance of responsibilities between government and teacher training institutions.

- *To what extent and in what ways is technology used in teacher training institutions in OECD countries?* To get insight into the integration of technology in teacher training institutions, the kind of technology being used must be clearly defined (e.g. whiteboards, mobile devices, personal computers and different kinds of software), as well as the different ways of using it (e.g. own planning, presentations, teaching basic computer skills, communication, to enhance learning).

- *In what ways are student teachers prepared to integrate technology in teaching?* Are there separate technology courses or is technology integrated in subject specific courses? Is it taken for granted that the student teachers will find out themselves how to integrate technology as long as they know how to use it themselves? What role do internships play?

- *If student teachers are not satisfactorily prepared, what are the main obstacles?* Several obstacles are pointed at in the research review, are they the same in all countries?

- *How is policy evaluated?* Are policies evaluated regularly? Are there incentives related to policy? Are there relevant means available to implement policies? The role of leadership is part of this.

- *Does practice correspond to policy?* If not, are there clear obstacles? If yes, what are the supporting strategies?

Methodology

To address these research questions, this study will develop a methodological strategy which combines the review of the state of the art, internationally, with surveys, and a series of institutional case studies. These elements (research review, surveys, and case studies) will constitute the basis for a draft report on the issue which will be discussed in a dedicated international meeting. An improved version of this background paper, including the views of international experts, will be published as an OECD report on the issue.

Accordingly, the main activities will be:

1. A **research review**, to review and evaluate the knowledge base about ICT in initial teacher training, particularly from a comparative perspective covering the OECD countries. The research review will look particularly at similar projects at national level and, on the other hand, to the existing evidence-base regarding how the use of technology in initial teacher training results in improved chances to use better or more technology in the classroom when acting as a teacher. The review will be limited to research published in English, French, Spanish and the Scandinavian languages. A draft version has been already issued, and discussed in a dedicated expert meeting (Paris, October 29-30 2008).

2. **A policy questionnaire to the governments** in all OECD-countries to map policies and national initiatives within the field ICT in initial teacher training. The questionnaire will also be complemented with a review of national/corresponding policy documents.

3. A **content analysis of the websites of teacher training institutions**, intended to investigate how far technology is presented as a) an integral part of the vision of school education endorsed by the institution, and b) a relevant tool in the process of being trained as a teacher. The minimum is analyses of the web pages of the institutions in the case studies, if possible from the representative sample of institutions.

4. A **survey to a representative sample of teacher training institutions** in each participating OECD country. The survey is intended to improve the knowledge base about the actual use of technology in initial teacher training as well as about the main stakeholders views on the role of technology in teaching (teacher trainers and managers of teacher training institutions, student teachers and, whenever possible, mentors and teachers graduated from the sample training institutions in the last five years). The institution questionnaire has to be answered by a person who can collect the information required. Some information requires preparation (number of programs, number of students etc.) and a document with the questions in addition to the web-link will be attached.

   Five programs will be chosen for comparative purposes; (1) primary teachers, secondary teachers (compulsory school) in four different subjects (4) mathematics, (3) national lan-

guage, (4) social sciences and (5) natural sciences or corresponding. From these programs a sample of at least 100 last-year student teachers (20 from each program), 15 faculty members and, if possible, 15 mentors at field placements and recently certified teachers from each institution should be stratified or randomly selected – no convenience selection. We suggest random sampling or systematic sampling (Nth name selection technique) if possible. There will be questionnaires also to responsible persons like managers of teacher training institutions, responsible for pedagogical ICT-issues as well as hardware issues. It will be assumed that all informants will be able to answer the questionnaires online, and the OECD web-quest tool Checkbox Survey will be used for this purpose, and the distribution will be done from the OECD.

The questions will cover the following issues:

- policies and curricula
- organisation
- infrastructure and equipment
- frequency of use
- approaches to train student teachers on or with ICT
- drivers and barriers for use.

5. **A minimum of two case studies per country in each of the participating countries**. The case studies will look particularly at the staff and institutional and organizational factors that could emerge as determinants in the use of technology in teacher training programs. The rationale for the selection of the cases is to gather evidence contrasting two different situations:

   - Teacher training institutions which are publicly recognised as advanced or innovative for the use they make of technology for teaching and learning purposes in initial teacher training programmes.
   - Teacher training institutions which are publicly recognised as quality providers of initial teacher training, irrespective of their use of technology.

   The selection of the cases is the responsibility of the corresponding government and it is recommended to validate it using external experts. If only two cases are chosen, priority should be given to obtain contrasting views and practices about the use of technology in initial teacher training programs: a more advanced or innovative institution shall be compared to another one with a different and less intense approach to technology use in initial teacher training. The larger the number of cases, the better to present alternative approaches and a higher degree of variance.

   The case studies will also include individual interviews, group interviews, observations and analyses of policies, regulations and course documents. Three days at each institution to observe localities and physical equipment, and to have group interviews with small groups (ca 5 persons/group) of teacher trainers and last-year student teachers from different programs. A minimum of 5 groups of students covering the programs in focus of the study. Individual interviews with management and other persons with responsibilities in this respect will also be carried out. Each national coordinator will decide who to interview, just like they will decide who will answer the overall questionnaire. The organizations look differently in different countries/institutions and it must be a person who is most able to answer. Several people

may be involved. The researchers should as far as possible also interview mentor teachers at schools for the student teachers' field placements and recently certified teachers from the institutions. This might be possible through phone interviews depending on the distances.

Three days at each institution including phone interviews with a sample of recently graduated teachers and mentors, if possible. Researchers familiar with the local educational system and with local language knowledge are required.

6. **An international expert meeting in Stockholm** (autumn 2009), where the results and findings will be discussed.

To do all this, existing networks working in this domain will be contacted, for cooperation, consultation and dissemination purposes. Some countries/education systems might want to extend the national study. The OECD questionnaires and interview guides should be seen as a minimum for comparative purposes. The participating countries are of course also free to carry out more case studies. The minimum requirement is two case studies per participating country. There are of course also practical details which can be discussed further.

Levels of analyses

The empirical research project will complement the research review with three levels of analyses to address the research questions; a national level, an institutional level and the level of the actors' practices. The case studies in combination with the large survey aim at covering depth and width, to a certain extent.

- On the *national level* there will be a comparative analysis of national policies and curricula and also national initiatives regarding technology in teacher education – including national evaluations. This will be carried out as a document review taking into account objectives, definitions and precise descriptions of skills and competencies, concrete means of implementation, methods of assessments and certification, centralisation vs. decentralisation. A questionnaire will be sent out to countries as a complement to the document analyses.

- On the *institutional level* there will also be a document review regarding local policies and course descriptions and a survey of two teacher training institutions in all OECD countries. The survey will address issues like how technology is used and how student teachers are prepared to meet 21st century's demands. In the case studies supplementary data on equipment and human resources, support, local definitions of competencies, local project initiatives and evaluation will be addressed. In addition to this a content analysis of the web sites of teacher training institutes will be carried out.

- On the *actors' level*, which means the level of student teachers', teacher trainers', mentor teachers' and new teachers' level, there will be surveys and case studies including observations and interviews. Focus will be on practices, needs (in terms of education, equipment and support) problems, and self-reported competence and confidence.

In Table 2 at page 8 is an overview of the different methods and levels of analyses.

Overall planning for the study on ICT in initial teacher training

Table 1 - *The milestones of the study*.

Task	Start date	End date
Research review	Summer 2008	September 2008
Expert meeting for feed-back on review and design	October 2008	
Meetings for national coordinators	February 2009	
Case studies and Survey administration (on-line)	March 2009	April 2009
Analyzing data	May 2009	June 2009
Draft report	August 2009	
International expert meeting for discussion of the results	September 2009	
Final report		Autumn 2009

Details for country participation

The planning of the case studies will be carried out within the New Millennium Learners project Countries willing to actively participate in this study on ICT use in initial teacher training are requested to appoint a national coordinator. Below the task is divided in two parts; the case studies and the survey to a representative national sample of teacher training institutions.

Tasks for national coordinators

1. Case studies at two national (or corresponding) institutions.

    - Discuss the pre-planned design together with other national researchers working with the case studies in a face-to-face meeting to ensure agreement in approach.
    - Get access to institutions.
    - Be responsible for collecting data through the pre-planned survey, which will be available online from the OECD. Translation of questionnaires might be necessary. Unfortunately externals do not have access to the system, but upon request we can provide the national coordinators with alternative questionnaires.
    - Collect policy documents, course documents etc.
    - Prepare visits at institutions by reading collected documents and plan a schedule for interviews and observations.
    - A three-day visit at each institution.
    - Complementary phone interviews.
    - Draft the case study reports (two per country). The minimum is basic analyses, like descriptive analyses and basic correlations, and also if the results correspond to the policy.
    - Discuss the findings together in a second face-to-face meeting.

- Participate in the international expert meeting in Stockholm

2. Survey to a representative national sample of teacher training institutions. As an indication; if there are around 20 institutions in the country, we consider this number as "representative." If there is a larger number, the national coordinators will have to find a solution themselves, with as large variation as possible.

- Be responsible for selection of a sample of institutions and samples of respondents within the institutions.
- Send necessary reminders to respondents.

Costs

- The New Millennium Learners project will cover both the costs for organizing the meetings and developing the required questionnaires and guidelines for interviews.

- Countries willing to actively participate in the study on ICT use in initial teacher training are requested to appoint and fund a national coordinator. It is estimated that the full time equivalent workload will be one month plus one additional day for each two institutions in the survey. Other than covering these costs, countries actively participating in this study will have to cover the travel and accommodation costs corresponding to two two-day meetings at OECD headquarters and in the final meeting in Stockholm.

Expected outputs

The outputs of the study on ICT in initial teacher training will be the following:

1. A research review report.

2. A report analyzing the results of the surveys to governments, including policy review, from a comparative perspective.

3. A comparative analysis of the collection of national studies.

4. A background paper (draft report) to nurture the discussions at the final international meeting, August 2009.

5. A final synthesis report, autumn 2009.

Table 2 – *The different methods and levels of analyses*

	Review of documents	**Survey**	**Case studies**
National level	National policies and regulations National projects Means for implementation Evaluation strategies	Relate findings to national policies and regulations	Relate findings to national policies and regulations
Institutional level	Local policies and regulations Local projects Means for implementation Evaluation strategies	Actual use Support and/or obstacles Local strategies and initiatives Availability of equipment	Observations and interviews addressing the same issues as in the survey. Course documents Definition of competencies Leadership
Local actors' level		Actual use Needs Equipment available Support available Obstacles Self-reported competence and confidence	Observations and group interviews addressing the same issues as in the survey.

Surveys to:

Student teachers

Teacher trainers

Managers

Mentor teachers – if possible

New teachers – if possible

Group interviews with:

Student teachers

Teacher trainers

Phone interviews:

Mentor teachers – if possible

New teachers – if possible

Interview:

Manager

Observation protocols:

Technology resources