

## **Teacher Training On the Way to e-Teacher Qualifications**

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### **Abstract**

The recent five years' experience of teacher training covering all levels of education and focused on application of modern information and communication technology tools is reported. Case studies and good practices of various types of courses addressed to different teachers' groups, from elementary schools up to university level ones, are described. On one hand, the design of the courses assumes effective communication, with a positive feedback, between all the groups involved in the teaching/learning process: university teachers, school teachers and students as well as school authorities. On the other hand, the exploration of authoring tools by university teachers and the inclusion of the idea of universal design in education in practice, as an essential approach to teacher training in Poland, are discussed. The resulting final proposal of e-teacher qualifications certificate, which has been endorsed by the European Computer Driving Licence Foundation, is presented.

### **Keywords**

teacher training, lifelong learning, e-inclusion and e-participation, curriculum integration, special education needs, universal design of education, international ICT certifications, e-teacher standards in practice, mobile technologies and modern teaching styles

Motto: There are no more teachers. There is just a community of learners.  
[Raymond Murray Schafer, *The Thinking Ear. Complete Writings on Music Education*, Toronto 1986, p. 237]

### **INTRODUCTION**

Education and lifelong skills upgrading for everyone is recognized as an important imperative for growth and development in knowledge driven society nowadays. Making lifelong learning tangible is particularly essential for teachers involved in all levels of education. In the past decade we carried on various activities to cope with the problem. We started with the European Certificate Driving Licence (ECDL) as a benchmark for standard information and communication technology (ICT) skills [<http://www.ecdl.com/>] – referring to Finnish and eventually European Union proposals of the mid 90., which finally also covered International Certificate Driving Licence (ICDL) [<http://www.icdlgcc.com/>]. The main benefits of these proposals at that time consisted of their platform independence and precise descriptions of ICT com-

petences for everyone, both in the knowledge and skills aspects. On the other hand, our contacts with the Danish partners from the Uni-C community [<http://www.uni-c.dk/Service/English>] have indicated the importance of considering pedagogical profiles in outlining the required teacher qualifications in the ICT field in the digital age. Keeping the above ideas in minds we have designed courses for teachers focused on ICT standards.

Below, we describe our recent five years of experience in teacher training attempts, addressed to different groups of teachers, and discuss the basic assumptions of the designed courses and the outcomes finally leading to the proposal of defining modern e-teacher qualifications. In the first part of the section on ICT competences of teachers in practice we present the proposal of an application of modern ICT methods in teacher training at the post graduate level with appropriate syllabus implementation. The next part of the section is focused on a modification of the designed training courses in an attempt to find effective communication between all the groups involved, i.e. university teachers, school teachers, students and school authorities. After that, we briefly describe the currently running project dedicated to university teachers, based on one hand on authoring tools in a creative adaptation of teaching materials, and on the other hand referring to practical implementations of the ideas of universal design in education. The final section Resulting e-teacher standards proposal contains a compact description of required e-teacher qualifications.

### **ICT COMPETENCES OF TEACHERS IN PRACTICE**

The Internet has changed the way people acquire knowledge, learn and collaborate around the world. Thus modern ICT methods appear particularly important in improving teachers' skills and competences (Tadeusiewicz R., Rowiński T., 2011). The competence in the ICT field is not enough to be a good teacher, but it is impossible to be a good teacher in the XXI century without the ICT competence.

#### **Post graduate courses for teachers – first experience: pros and cons (Berndt-Schreiber, M., Dudkiewicz, M., Kwiatkowska, A. B., Piwińska, O., Polewczyński, A., 2008)**

The designed syllabus assumed the use of basic ICT tools essential for teaching in the classroom, and referred in details to the ECDL Core standards, i.e. text editing, basic spread sheets and data bases applications, as well as presentation tools and internet applications. In addition to ECDL standards, multimedia and e-learning items have been included in the 45 hour teaching schedule. We have explored the e-learning platform Moodle and used the blended method of teaching. There were 775 teachers-participants enrolled, representing elementary and secondary schools. The teachers were involved in teaching different subjects: arts, biology, chemistry, civics, informatics, geography, history, pedagogy. The average age of the teachers was 35 years (the oldest person being 59 and the youngest 25 years old). Finally about 85% of the participants were able to deal with the practical tasks and tests and successfully graduated the courses. In general it has been a new and interesting experience for the teaching university staff, providing and insight into the reality of the Polish schools of different levels in the region. However, we have completed the courses with some rather annoying observations. The ICT competences of most participants appeared very low at the beginning of the courses. E.g. more than 50% of the participating teachers had not used any computer communication tools before starting the courses. Therefore in most cases we had to refer to basic ICT knowledge items and skills and eventually could introduce the participants into some more advanced items planned in our syllabus for the courses. Merely a few of the enrolled groups could take advantage of more sophisticated intended tasks. In some cases we could hardly imagine how the teachers would be able to confront their students in the classroom and we were aware that in our assumed organization

scheme there was no chance for any feedback. Our final conclusion was that most of the teachers participating in the courses should have an opportunity for continuous ICT skills upgrading.

**A proposal of an effective communication – assuming a positive feedback**  
(Berndt-Schreiber, M., Dudkiewicz, M., Kwiatkowska, A. B., Koziński, M., Piwińska, O., Polewczyński, A., 2010)

Our next educational explicitly concerned the exploration of ICT tools in teaching biology, chemistry, geography, mathematics and physics. The innovative elements of the designed training courses for the teachers was this time focused on an attempt to find effective communication – with a positive feedback – between the groups involved in the process: university teachers, school teachers and students as well as school authorities. The basic difference between this approach and the previous one is illustrated in the Figures 1 and 2.



**Figure 1:** Information flow in traditional ICT courses – with no feedback assumed.

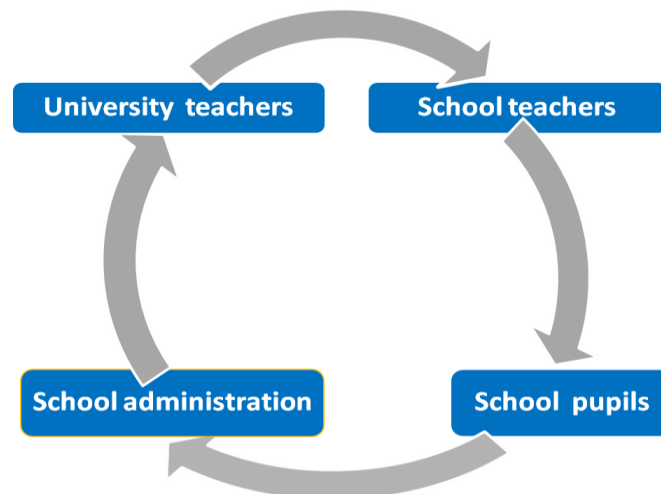


**Figure 2:** Information flows in modified ICT courses – with the positive feedback assumed.

The course was planned for 75 participants. The assumption was that all of them were teachers of selected subjects, with university level education, familiar with basic ICT tools and with at least several years' experience in teaching the subject in the school. The average age for 81% of the participants was between 30 and 50 years, below 30 years for 3% and over 50 years for 16%. The main aim of the pilot course was to prepare the participants to the process of gradual integration of ICT tools with the selected subjects of teaching: biology, chemistry, geography, mathematics and physics. On one hand, modern ICT tools may support and enhance traditional materials and ways of teaching. On the other hand, they provide a search of new approaches to the contents and methods of education. Both aspects, not commonly explored, have been considered in our course. The essential issue of the course was the mobilization of all the participants to employ the newly gained knowledge and skills in their school practice assuming a positive feedback between all the groups involved. Each of the course participants was obliged to prepare a plan of a special lesson exploring ICT tools. The lessons were performed at schools

and straightforwardly evaluated both by the students and the school administration staff members with appropriate evaluation questionnaires prepared for different levels of schools involved in the project. Finally, the resulting individual lesson plans with the author reports of the teachers and the evaluation surveys were reviewed by the university staff members leading the courses. At this stage, in order to refer directly to the present school reality, we also invited some of the best school teachers from the region to evaluate the methodology aspects of the reports. In spite of rather high requirements about 90% (68 persons) of the participants successfully completed the courses and the reports provided an interesting insight into the reality of the school teaching. One of the interesting facts revealed during the courses was that more than 95% of the students had computers at homes whereas computers were not directly available for most of the teachers in their schools. It is also worth noting that the applied procedure of evaluation resulted in more than 1500 persons involved in the project with merely 75 participants explicitly enrolled. Our project in 2009 – celebrated as the European Year of Creativity and Innovation – was recognized at the national level as a good practice to be followed in implementation of regional strategies of innovation in Poland in the category of Technology of Information Society (Rogut A., Piasecki B., Klepka M., Czyż P., 2009).

#### **Authoring tools for university teachers and universal design of education (Berndt-Schreiber, M., Polewczyński, A., Wdówik, P., 2012)**

Our next educational task was related to the design of ICT based courses for university teachers within a European Union supported project planned for the period 2010-2015. The project is currently running and its description at length is beyond the scope of the present paper. However we would like to focus here on two innovative aspects included in the project design.

The first one concerns authoring tools for university teachers. In a way the university teachers become learners at this stage just to teach the others better in the future. During the courses the teachers are encouraged to design their own multimedia teaching materials, related to their present teaching activities to be available on e-learning platforms. There are precisely defined conditions to be fulfilled when producing the materials. All the materials are finally reviewed by experts of the essentials, methodology, ICT technology, legal rules and aesthetic aspects. The procedure provides expert evaluations of all the products before they are finally introduced to the students on the e-learning platforms for further evaluation feedback. The first experience of the product implementations on e-platforms has appeared quite successful so far.

The second innovative aspect in our course offer concerns universal design of education. Universal design (UD), originally a concept from the field of architecture, is increasingly present in discussions of approaches to enhance educational access for students with various disabilities. However the concept of UD is not restricted to the idea of providing special conditions for various groups of the population with specific disabilities. Instead UD focuses on a creative approach taking into account new ways of communication, both visual and auditory ones, resulting in building a public space that can be made both aesthetically pleasing and functional for the greatest number of users. Thus in the education process the UD approach emphasizes the need for more flexible ways of teaching and learning acceptable for diverse types of learners. Table 1, below, indicates some basic differences in the traditional and universal styles of teaching.

The essential rules of the UD approach in education mainly concerns diversity acceptance, flexibility in the adaptation of forms and methods of teaching, availability for everyone, active involvement of the student and elimination of potential barriers. Because the UD concept in Poland still commonly remains mostly related to reduction of architecture barriers, we have decided to offer special on-line courses for university teachers dedicated to the idea of building a Universal Teaching Envi-

ronment at our university. The syllabus of the courses contains the following topics: reviews of common disabilities, methods of work with disabled university students, ICT technologies supporting the teaching and learning processes, education for disabled people from the legal perspective.

**Table 1:** Different teaching styles: traditional *versus* universal

| Traditional                                                 | Universal                                                          |
|-------------------------------------------------------------|--------------------------------------------------------------------|
| important role of the teacher, lectures being main elements | important role of the interaction and cooperation: student-teacher |
| assumption: all uniform / equal level student groups        | assumption: non-uniform / non-equal level student groups           |
| precisely defined targets and ways to reach them            | different targets and various ways to reach them                   |
| domination of printed and identical materials               | a variety of materials types and applied media                     |
| not many options for diverse students                       | many various options for diverse students                          |

The main targets of the courses may be described in the following items:

- raising the level of awareness concerning the legal and moral obligations to provide equal opportunities for all the university students,
- promoting the concept of universal design in education,
- improving activities of public institutions in Poland to provide equal chances for everyone.

The innovative aspect of the course design is the fact that main lectures are delivered on-line by prominent disabled people, university alumni – famous also because of their activities in eliminating information barriers in Poland. Apart from the on-line lectures our proposal provides discussion forum, feedback evaluation forms and additional resources related to the syllabus for all the participants. The structure of the *Universal Teaching Environment* on-line courses is presented in the Figure 3, below.

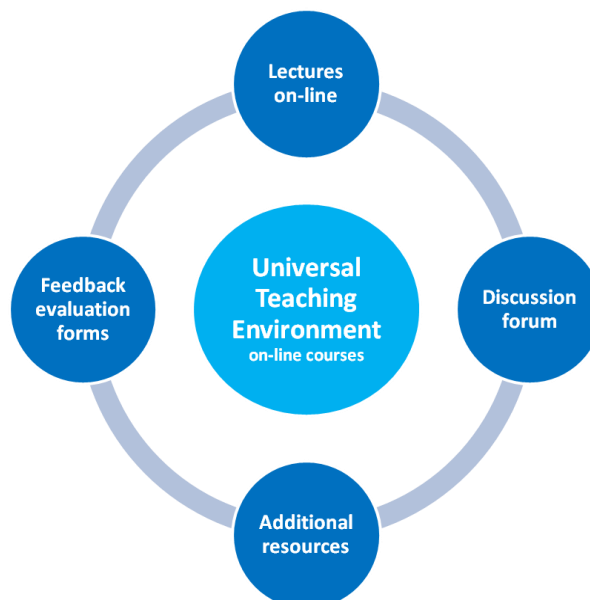


**Figure 3:** The structure of on-line courses: Universal Teaching Environment

The first experience and positive feedback results confirm the information offered in the courses' materials appears very important and useful for the university staff community.

## RESULTING E-TEACHER STANDARDS AND CERTIFICATES

Beginning in the mid-nineties, the ECDL certificate has been a benchmark for standard ICT skills. Although the certificate is platform independent and precisely defines competences in basic areas of ICT, it has been designed for everyone, not particularly for teachers. It misses pedagogical aspects and does not really measure those teachers' skills and competences which are important in classroom while working with students.

At the 7th IFIP WCCE 2001 in Copenhagen a Danish national initiative, called The Pedagogical ICT Driving Licence, was announced. Then it became the European Pedagogical ICT Licence (EPICT). Today, EPICT is a concept of in-service training course focusing on the pedagogical integration of ICT in the teaching practice (Ingesman L., Hojsholt-P0ulsen L., 2009).

We have proposed a different approach. There has been a huge number of various local and national in-service training courses for teachers financed by the European Union grants and a large percentage of 600 000 working school teachers have participated at least in one of the courses on the integration of ICT into education. On the other hand, new teachers coming to schools are prepared according to ICT curricula, which is equivalent to the ECDL Start syllabus, at least. We may therefore focus on certification of teachers' knowledge and skills in the area of using technology in practice. The certification process is based on Technology Standards (Sysło M. M., 2010), for teachers endorsed by the Polish Information Processing Society (National partner of ECDL Foundation in Poland). Finally the e-teacher certificates have been endorsed by the ECDL Foundation.

### Technology standards for teachers (Sysło, M.M., 2010)

The teachers' requirements for e-teacher licenses are based on "Technology Standards for Teachers" (Sysło M.M., 2010), which cover five areas. The teachers ought:

- A. Inspire and engage students in learning and developing creativity.
- B. Promote and develop digital citizenship and responsibility.
- C. Use and develop teaching and assessment methods using technology.
- D. Work and teach in a global and digital society.
- E. Engage in professional growth and leadership.

### E-Teacher standards and certificates (Kwiatkowska, A. B., Sysło, M. M., 2013)

There are no pre-requisites for the e-teacher certificate. The certification system of teachers' knowledge and skills in the area of using technology in education is based on the assumption that the teachers' skills are examined in the classroom, the main place of their work. The completion of this assumption leads to a change in working with students in the classroom and beyond.

Three stages in the certification system are distinguished:

#### A. e-teacher test.

Candidates take a test which covers the following areas:

- copyrights intellectual rights, as well as social aspects of information and communication technology applications;
- application of educational software in candidates' teaching subjects;
- application of educational platforms in blended learning.

#### B. e-teacher certificate

The e-teacher certificate is a confirmation that a teacher intentionally and effectively uses information and communication technology to improve her/his education-

al skills and tools and increases student achievements, and also cares about her/his own further development in the area of technology. To confirm that the requirements for a certified e-teacher are met, the teacher:

1. provides at least three lesson plans;
2. conducts lessons based on these plans and provides documentation of the lessons, which should include:
  - the school principal's observation report and a peer's observation report;
  - students' surveys;
  - materials for the lesson as additional confirmation of the lesson conduct;
3. participates in at least one form of training on classroom technology use;
4. passes the e-teacher test.

Teachers applying for the e-teacher certificate may receive guidance from a teacher who applies to obtain the e-teacher expert certificate, or from an e-moderator, in the area of: education methodology, the choice of materials proving the fulfillment of requirements specified in the syllabus and the documentation of these requirements.

### C. e-teacher expert certificate

The e-teacher expert certificate is a confirmation that a teacher meets the requirements stated for the e-teacher, shares their knowledge and skills with other teachers on the use of technology in teaching and shows creativity in teaching and, moreover, demonstrates educational leadership and invention in teachers' community.

The e-teacher certificate is the pre-requisite for the e-teacher expert certificate. To confirm that the requirements of the e-teacher expert certificate are met, the teacher:

1. Develops at least three lesson plans in one of the selected categories: a plan of a lesson conducted as a project (e.g. webquest), a plan of a lesson taught in groups (co-operation of students); a lesson plan with a significant use of educational platform (distance learning); other innovative activities.
2. Conducts open classes based on these lesson plans and provides documentation of the lessons, which should include:
  - the school principal's observation report and a peer's observation report;
  - students' surveys;
  - materials for the lesson as additional confirmation of the lesson conduct;
3. Takes care of at least two teachers applying for the e-teacher certificate.
4. Documents one of the forms of additional activities from the range of sharing the school knowledge and professional experience in the application of technologies, i.e. runs at-school in-service training for other teachers.

### e-Moderator standards

e-Moderator is an expert in the field of teacher education, who supervises the teachers' certification process. e-Moderators have the knowledge and skills at least at the level of an e-teaching expert and are authorized to conduct the process of e-teacher and e-teacher expert certification. They are also advisors to teachers in the process of obtaining e-teacher and e-teacher expert certificates.

Concluding this section we are glad to find out that our approach to teachers' certification has many elements in common with the teacher evaluation and improvement system proposed in the final report by the MET project (Bill and Melinda Gates Foundation, 2013). In particular, this system includes classroom observations by school principals, outside trained evaluators and student perception surveys. For a detailed description of technology standards for teachers and the process of e-teacher certification we refer to (Kwiatkowska A. B., Sysło M. M., 2013).

## CONCLUSIONS

Referring to our recent experience in diverse teachers training forms we have presented a proposal of e-teacher qualifications which may be treated as a step forward in the school practice and teachers' education in general. Advances in mobile technology have made flexible communication more feasible. Audio, visual, and text communication become instantaneous and widely available. It does provide changes in education processes. On one hand, there is a chance to gradually convert traditional classes into online ones and to create a new digital type of pedagogy with adapted and personalised styles of education (Berndt-Schreiber, 2011) in a way similar to the one recently suggested for the creative deconstruction of the traditional medicine by Eric Topol (2012). On the other hand, at the present stage we have all become "the community of learners" as stated in the motto of our paper. It does require special care in the permanent teacher training activities and the basic education of teachers in general. The success of the Finnish school reform of the recent three decades, leading to the best positions of Finnish students in the world ranking education results, indicates the essential role of a comprehensive approach to fundamental teacher training (Sahlberg, P., 2011). The fact we should also keep in mind concerns contemporary demographic changes. The aging population and improved survival rates, resulting from enhanced medical care, have led to an increasing number of "education consumers", who may be functionally limited by age or diverse disabilities. In this aspect the universal design approach to education, described in the paper, appears an important challenge as well.

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