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Promoting the effective use of ict in Romanian primary and secondary education - steps made in the frame of edutic project

Gabriel Gorghiu a *, Laura Monica Gorghiu b, Iulian Brezeanu a, Ana-Maria Suduc a, Mihai Bîzoi a

aElectrical Engineering Faculty, Valahia University Targoviste, 18-24 Unirii Blvd., 130082 Targoviste, Romania
bFaculty of Sciences and Arts, Valahia University Targoviste, 18-24 Unirii Blvd., 130082 Targoviste, Romania

Abstract

The great potential of introducing ICT in nowadays education is well-known. Teachers become more familiar on using ICT in schools and as their experience grows, they are able to develop effective ICT-based teaching and learning tools. Many teacher training programs or continuing professional development opportunities were proposed with the declared aim to support the integration of ICT in the actual education, but also to develop on-line training / e-learning in schools.

This paper illustrates the main aspects developed in a Romanian teacher training program, dedicated to all the educational levels, organized in the frame of the project called “EDUTIC - A network for teachers professional development with the view to increase the quality of ICT implementation in the Romanian primary and secondary education” (code POSDRU/19/1.3/G/37002). The overall objective of the project was to improve teachers’ skills and attitudes by developing and delivering a training program which aimed to integrate ICT tools in the educational process. The training program proposed one compulsory module and two optional ones - the teachers having the possibility to select one of those last two. After the ending of the training phase, the teachers expressed their feed-back in related on-line questionnaires. In this sense, the paper presents some of their main opinions.

1. Introduction

It is generally accepted that Information and Communications Technology is changing the face of education (Abbott, 2001). ICT plays also a strong role in advancing the Education for Sustainable Development which vision is to have a world where everyone has the opportunity to benefit from quality education and learn the values, behavior and lifestyles required for a sustainable future and for positive societal transformation, as is stipulated in the documents of United Nations General Assembly that proclaimed the United Nations Decade of Education for Sustainable Development, 2005-2014 (http://www.desd.org/). Practically, for reaching the mentioned aims, ICT operates in two specific ways (Paas, & Creech, 2008): (a) by increasing the access to educational materials about sustainability (via distance learning, educational networks and databases); (b) by helping to promote new ways of interacting, in order to facilitate the learning called for Education for Sustainable Development, that emphasizes not
just knowledge, but choices, values and actions. On the other hand, ICT has induced major changes into the nature of work, but also played a key role in the globalization process.

Consequently, many countries have changed the objectives of their educational systems and have directed much of their attention to the development of ICT skills in schools (Ezziane, 2007). As teachers play one of the most active roles in the teaching and learning processes, they represent the key persons for using ICT in various educational settings productively. In this respect, it is obvious that teachers need the support and training to positively integrate technology into their classroom, and their attitudes toward ICT may be a significant factor in the implementation of ICT in education (Usun, 2009).

Basically, in a clear way, the education in school should properly solve two important problems (Craina, & Losonczy, 2005):

- How to implement ICT in education, in strong relation with the use of available computers and IT terminals (hardware)?
- How to use the software in teaching and learning (including also the Internet) and transform them in additional didactic instruments, with educational valences?

Beside the mentioned questions, it is generally accepted that ICT can be used in a pedagogical way, in various educational activities, as below (Craina, & Losonczy, 2005):

- preparing lesson plans, notes, presentations, drawings, charts, worksheets, databases etc. - for individual or group working. Those materials can be easily stored as files, updated periodically, printed, multiplied, disseminated;
- using multimedia facilities to support the fundamentals or the applications of specific lessons. In this sense, the presentations can be made in accordance with the applicability in the learning process and students’ perception. This fact can determine the students to make logical connections and discover new perspectives on the addressed issues;
- accessing information from educational digital storage media (like CDs or DVDs);
- developing structural charts that contain the essential elements of the discussed topic;
- implementing modern methods of evaluation (like digital portfolios or projects).

Having in mind the described issues, it is obvious that an actual and interesting teacher training program should emphasize on teaching / learning methods based on ICT tools. In fact, ICT can provide more flexible and effective ways for teachers’ professional development, improve pre-service and in-service teacher training, and connect teachers to the global educational community (Jung, 2005). At the same time, it is very important for the teachers the concrete way for delivering the training. In this respect, it is accepted that blended-learning represents a feasible solution. It is based on the fact that both face-to-face and remote presence is needed in order to offer flexibility to the learner and its tutor. In this case, the evaluation is made on analyzing a learner’s portfolio which demonstrates all competencies required in order to function adequately in a certain professional layer (Kommers, 2009).

2. The Training Program

Considering the aspects mentioned above, Valahia University Targoviste proposed a 18 months project, in the frame of Sectoral Operational Program for Human Resources Development, financed from the European Social Fund (http://www.fseromania.ro/), called “EDUTIC - A network for teachers professional development with the view to increase the quality of ICT implementation in the Romanian primary and secondary education” (POSDRU/19/1.3/G/37002), which started in April 2010 (http://edutic.ssai.valahia.ro). The project partnership consisted of Valahia University Targoviste (coordinator) and the Scholar Inspectorates from nine counties of Romanian South-Muntenia Region (Argeș, Buzău, Călărași, Dâmbovița, Giurgiu, Ialomița, Olt, Prahova, Teleorman).

The regional approach was claimed by specific blended-learning activities that combine traditional training (face-to-face) with the on-line sessions, using a course management platform. Face-to-face meetings were organized for approximately 20% of allocated training time.

In the frame of the project, a network was established between partners for assuring a permanent communication channel (Brezeanu, Gorghiț, & Gorghiț, 2010). The Moodle-based e-platform (http://moodle.edutic.ssai.valahia.ro/)
provided remote access and the necessary collaborative training environment, but also assured the adequate communication resources.

The EDUTIC training program proposed one compulsory module (Brezeanu, & Gorghiu, 2010): Fundamentals on pedagogical use of ICT in education, e-learning technologies and learning platforms, and ICT tools for designing teaching materials. After the ending of the module, the teachers - function of their needs - had the opportunity to select one of the following modules: Visual communication and multimedia technology in education - Procedures for integrating multimedia applications in education (optional Module 1) or Teaching methodologies and pedagogical strategies based on the use of virtual instrumentation - Designing learning activities which include the use of virtual experiments in education (optional Module 2).

The content of the compulsory Module emphasized on the main pedagogical theories that support the use of ICT in education, basic aspects related to the use of ICT tools in teaching / learning / evaluation processes, description of ICT-based pedagogical models. More, there were described specific aspects related to the role of educational stakeholders in the actual education. The Module was completed by the description of the main learning-patterns involved in the on-line training and some facts about operational e-learning platforms, e-learning portals and distance learning projects. Finally, there were presented various aspects related to the producing of teaching materials, starting from the traditional ones, to those developed on the base of ICT. At the same time, there were reviewed the new technologies (tools and digital applications) which enable project-based learning activities and implement ICT-based learning units.

The optional Module 1 was focused on presenting the multimedia technologies, as essential tools for creating modern educational courses, and practical labs. There were highlighted specific methods for digital image and video processing, screen recording techniques, videoconferencing, but also there were presented the main aspects related to the designing of the instruction based on multimedia applications.

The optional Module 2 was oriented on presenting the relevant concepts of virtual instrumentation technology, with a view to develop teaching methodologies and pedagogical strategies that can integrate virtual experiments in education. There were reviewed the main educational technologies that enable the design of virtual experiments - explorative environments, computational tools, learning tools and web applications which assist the students in the learning process, extensible software environments that can be customized for particular purposes, systems that allow data collection and representation.

The target group involved in the training program consisted of 500 in-service teachers from all the educational levels, in the mentioned nine counties.

3. Results and Discussions

A final evaluation questionnaire was applied to all the participants, at the end of each training Module. The questionnaires claimed for teachers’ feedback in relation to several aspects that were presented and acquired during the training stages.

It is important to emphasize that the biggest part of the trained teachers acquired the content concerning the pedagogical use of ICT at a large scale and agreed that the use of ICT tools offer as important benefits a better understanding of scientific content, an increasing of students’ learning motivation, a better connection between theory and practice and a high attraction of students for studying and learning (as example: figure 1 - referred to the compulsory Module, illustrated by a typical five-level Likert scale; figure 2 - referred to optional Module 2, considering the percentages recorded following t). In addition, being asked about the possibility to design new learning objects that involve specific ICT elements, the teachers expressed a positive feedback concerning the creating of such objects and also implementing the produced tools in their daily activities.

Concerning the evaluation of the quality of the training sessions, the teachers rated their satisfaction in relation to various aspects appeared during the blended-learning process. In this sense, figure 3 (relevant for the compulsory Module) and figure 4 (relevant for the optional Module 2) present the teachers’ feedback related not only to the trainers and tutors’ skills, but also to the usefulness of the e-learning environment. As illustrated, in both Modules the above mentioned aspects were appreciated by the teachers to a high rate situated between very good and excellent.
Figure 1. Teachers’ feedback related to the benefits of using ICT tools (relevant for compulsory Module)

Figure 2. Teachers’ feedback related to the benefits of using ICT tools (relevant for optional Module 2)

Figure 3. Teachers’ perception concerning different aspects related to the quality of the training sessions (relevant for compulsory Module)

Figure 4. Teachers’ perception concerning different aspects related to the quality of the training sessions (relevant for optional Module 2)

4. Conclusions

In the actual context, the vocational skills needed by the teachers for integrating ICT tools in education can be provided through blended-learning, in a positive way. In this respect, the training sessions proposed in the frame of EDUTIC project were oriented on the use of ICT tools, for increasing the efficiency and quality of the teaching / learning activities. After the ending of the training sessions, at the time of evaluation when analyzing the teachers’ portfolios, it is clear that technology supported the development of the teachers’ innovative spirit, mainly for their own professional development, but also in their daily practice, by improving of new teaching methods and / or developing new teaching materials (even ICT-based educational applications).

Clearly, the core of the training process was represented by the pedagogical use of ICT, offering a powerful priority to provide new opportunities for accessing the Information Society components, through the meaning of
Education for Sustainable Development. Thus, a well-oriented training process aims to promote the extension of using ICT in the primary and secondary education, but also to enable teachers to use new tools in education and training.

Coming back to EDUTIC project, it is important to conclude that the teachers’ feedback recorded a positive value, with a strong and declared feeling that the training process was organized and performed according to their own agenda, and the learning and solving of the proposed tasks were considered to be done in relation to their own rhythm. At the same time, the teachers mentioned that the main gain was represented by the acquired knowledge, strongly related to the integration of ICT in the teaching / learning process, with an important impact on increasing of pupils’ motivation and understanding (Gorghiu, Brezeanu, & Gorghiu, 2011).

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