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EU STRATEGIES OF INTEGRATING ICT INTO INITIAL TEACHER TRAINING

Abstract

Education and learning are strongly linked with society and its evolution and knowledge. In the field of formal education, ICTs are increasingly deployed as tools to extend the learner's capacity to perceive, understand and communicate, as seen in the increase in online learning programs and the use of the computer as a learning support tool in the classroom. They can provide more flexible and effective ways for professional development for teachers, improve initial teacher training, and connect teachers to the global teacher community too. This paper analyses a variety of strategies ICT integration into initial teacher training. Based on the analysis of those strategies, it discusses new possibilities and challenges that ICT has brought to teacher training and professional development. It concludes with discussion of emerging research issues with respect to ICT integration into initial teacher training.

Introduction

We have seen a significant expansion of ICT (Information and Communications Technologies) in education, not only across economically developed countries, but also around the world [5, 6, 9, 13]. ICT advances, go beyond personal computing, facilitating collaboration and social interactions, thus enhancing social development and social computing [2, p. 436-439]. The latter is a new paradigm of social learning, networking, communication and technology development, which has become a hot topic attracting broad interest from various fields of enquiry, scientific disciplines and social theories [8, p. 336-350; 13, p. 5-12]. To use these tools effectively and efficiently, teachers need visions of the technologies' potential, opportunities to apply them, training and just-in-time support, and time to experiment. Only then teachers can be informed and confident in their use of new technologies [1]. They should also be committed to play a leading role in promoting other teachers' professional development in their own schools [5, p. 148-162]. In 2005, UNESCO launched the "Decade for Education for Sustainable Development", which aims to accelerate the implementation of a new vision in education where in this context, ICT has drawn an integral part to advancing ESD (Education for Sustainable Development) [10, p. 57-59] in two ways: first, by increasing access to educational materials about sustainability (e.g. via distance learning, educational networks and databases) and second, by helping to promote new ways of interacting in order to facilitate the learning called for in ESD, that emphasizes not just knowledge, but choices, values and actions [7, p. 7].

ICT is more than just another teaching tool [11, p. 14]. Its potential for improving the quality and standards of pupils' education and for supporting teachers, both in their everyday classroom role, for example by reducing the time occupied by the administration associated with it, and in their continuing training and development is significant. Advances in technology continuously arouse enthusiasm about the potential of new devices and connectivity for learning situations. The

current time is no exception: wireless networking, low-cost computers, the increasing capacity and flexibility of mobile, hand-held devices, for example, all raise hopes for reaching learners at low cost and with high-quality opportunities. The most rapidly-spreading ICTs are mobile telephones, and education has yet to tap into the potential offered by its reach and flexibility. New approaches to teaching and learning are called for with a corresponding change in the roles of all parties to the educational process. Easier access to global communication, including the Internet, the World Wide Web, and the widespread use of computers and interactive multimedia, means that:

- teaching and learning are less dependent on specific physical locations;
- the number of resources available to students outside the classroom is increasing dramatically; and
- the focus of control to initiate educational encounters has now passed to the learner on an 'any time - any place' basis [12, p. 5-6].

ICTs are not only an important addition to the curriculum content, but they have also added to the educational system a valuable set of new resources and didactical tools suitable to support the learning process. However, combining new technologies with effective pedagogy has become a daunting task for both initial teacher training and in-service training institutions.

This paper looks at progress of strategies in ICT integration in initial teacher training. Those strategies are organized into a matrix and elaborated with the collection of cases from leading international organizations such as UNESCO, EURYDICE, EUROSTAT etc. The paper concludes with a discussion of policy emerging research issues involved in ICT applications in teacher training. Methods employed in this study include desk analyses of various strategies of ICT teacher training cases and approaches published in selected articles or websites.

Discussion

This analysis of resources in ICT initial teacher training indicates that there are possibilities and challenges in adopting ICT in teacher training and professional development. Overall, governments, organizations and teacher training institutions seem to recognize the importance of integrating ICT in education and teacher training. In many cases, the national vision for ICT use in education has been integrated into teacher training. In the early 1980s, information technology and teacher education (ITTE) was part of the general fields of educational technology and educational computing, and scholarship on ITTE was dispersed throughout the 50 or so journals dealing with some aspect of those disciplines. Journals such as the Journal of Research on Computing in Education, Computers in the Schools, and Educational Technology all published occasional papers on ITTE. At about the same time, this growing number of ITTE professionals found that existing conferences such as the National Educational Computing Conference (NECC), the American Educational Research Association (AERA), and the Association for Educational Communications and Technology (AECT) no longer met their professional needs.

The International Society for Technology in Education (ISTE) was the first organization to recognize the emerging needs of ITTE, establishing in 1983 a special interest group for teacher educators interested in the use of computers. That same year the special interest group published the Journal of Computing in Teacher

Education, the first refereed quarterly journal dedicated to scholarly research and professional practice in ITTE. Another indicator of the emergence of ITTE as a sub discipline is the pattern of reports from the congressional Office of Technology Assessment (OTA). The original OTA report on technology and education dealt with the entire field. It addressed problems and issues that surround efforts to increase the meaningful use of technology in schools. One area of that report dealt with teacher education. Even with the growing recognition of the need for work on ITTE, it is interesting to note that the 1200-page Handbook of Research for Educational Communications and Technology does not have a chapter on technology and teacher education, and the term teacher education does not appear in the index of the book [14, p. 29-45].

The new vision of education highlights the need of effective learning and has shifted the emphasis of various elements involved in the education process. The international community that pursues progress towards achievement of the Education for All (EFA) goals, UNESCO believes the time has come to be more forceful in use of technologies for these ends [12, p. 6-7]. This entails activities to strengthen national capacities and the professional skills of individuals, to create new content for education. ICT applications in education should help meet the challenges of knowledge societies, contribute to the reduction of the digital divide, including disparities in access to knowledge, and provide opportunities for attaining quality education and lifelong learning for all [12, p. 7].

Qualified and trained teachers represent the key to quality teaching and learner motivation. However, in many countries professional expertise is limited and thinly distributed, particularly for the provision of non-formal literacy education. While ICT cannot be substitutes for teachers, ICT can supplement and support teachers by reducing their workload and enhancing their lessons [11, p. 15-24]. Organization such as The Eurydice Network has been closely following the ICT issue for several years, publishing data that provide greater insight into how education systems are taking account of this new situation. Eurydice Survey on this subject was published in September 2001 and described a better understanding of the nature and scope of national initiatives in this area.

In the light of the changes were observed in 1998-2001, it may be concluded that effort had been invested in this area with the very widespread incorporation of ICT into school curricula and initial teacher training. In over half of the European countries, training in ICT is compulsory for all future teachers whether they are intending to work in primary education, lower secondary education or upper secondary education. In some countries, institutions are totally free to devise and structure their course of training as they wish. Depending on the institution concerned, therefore, training in ICT may be a compulsory subject, a core curriculum option or an optional subject. This applies to the initial training of teachers for different levels of education in Ireland, Portugal until 2001/02, the Czech Republic, Hungary, Poland and Romania. In Spain and in the United Kingdom (Wales and Northern Ireland), all those intending to teach at primary level receive training in ICT.

On the other hand, corresponding provision for future secondary school teachers depends on the institution at which they undertake their initial training. In the French and German-speaking Communities of Belgium, training in ICT is

compulsory for all those intending to teach at primary and lower secondary levels whereas, until the start of the 2001/02 school year, training institutions themselves decided whether to train future teachers in upper secondary education. In Slovakia, initial training of secondary school teachers has to include ICT-related training, whereas the inclusion of ICT in the initial training of primary school teachers depends on the institution they attend. In a few countries, training in the teaching of ICT is one of the core curriculum options. The training institutions concerned are thus obliged to offer the subject, but it is left to the trainees to decide whether or not to include it in their overall course of training. In Germany and in Italy, this applies to the initial training of all primary and secondary school teachers whereas, in Liechtenstein and in Bulgaria the same formula is limited to the training of secondary school teachers and, in Austria, solely to those intending to work at upper secondary level. In Greece, only teachers in primary education currently receive compulsory training in the teaching of ICT. At secondary level, this training is not provided [3, p. 19-48]. In the seventh edition "Key Data on Education in Europe" appears that in primary education, the compulsory subjects specified in official curricula are the same in all countries. The main differences at this level relate to flexible timetables and the obligation to provide ICT instruction and religious or moral instruction. In countries in which religious or moral instruction is a compulsory subject, the share of total taught time earmarked for it generally varies between 4 % and 8 %.

Finally, elements of information and communication technology (ICT) are often included in compulsory studies. ICT is very rarely taught as a subject in its own right during primary education, but tends to be used as a resource for working on other subjects. Case study: Slovakia where ICT is being taught from the first year of primary school from 2007/08. Study time in compulsory secondary education remains totally flexible in the Netherlands and the United Kingdom and is almost entirely so in the Flemish Community of Belgium. Spain exhibits a similar situation in primary and secondary education, while the proportion of flexible timetables plummets from 47 % (primary) to 6 % (secondary) in Poland. Furthermore, in the majority of countries, pupils in compulsory general secondary education are free to choose their subjects up to a point, as 'core curriculum options' enable them to select certain subjects from a predetermined list. Information and communication technology (ICT) is taught as a subject in its own right in almost half of all countries, but accounts for a very small proportion of taught time. Very often, ICT is included in other subjects or taught as part of technology studies (Spain, France, Italy, Slovenia and Finland) [4, p. 150-190].

In addition, such projects as a European Qualifications Framework for Lifelong Learning (EQF) and the Education for All (EFA) in several developing countries is being implemented with close relationship with each country's government to integrate its activities into the nation's educational vision and policies.

Conclusion

A number of strategic actions are proposed in materials of international organizations mentioned above that could help teachers move from perspective and occasional ICT users to engaged and innovative users are:

1. Capacity building on ICT-enabled ESD based on blended models of training which would start with the training of a number of well-motivated ICT/ESD-literate teachers to function as resources in their own school and district.

2. Connect ESD capacity building to educational reform and change, giving due emphasis to the process as well as the substance of change.

3. Revise traditional teaching method and practices.

4. Governmental and administrative support: if teachers trained to integrate sustainable development and ICT in teaching and learning is to be effective, then responsible authorities should provide teachers pursuing training in this area with all the facilities and provide ESD innovative teachers' schools with extra computers and software [4, 6, 12].

ICT teacher training efforts made by organizations have shown training advantages of international collaborations and benefits of using ICT for teacher training. Furthermore, more attention should be paid to specific roles of ICT in offering multimedia simulations of good teaching practices, delivering individualized training courses, helping overcome teachers' isolation, connecting individual teachers to a larger teaching community on a continuous basis, and promoting teacher-to-teacher collaboration. Intended outcomes as well as unintended results of using ICT for teacher professional development need to be explored [4, 6, 12].

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