Getting Teachers well trained for E-Learning: A Case Study for developing ICT Skills for better Learning Requirements

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Abstract:
This chapter describes an experience in teacher training for e-learning in the field of adult education. It takes into account the models offered by flexible lifelong learning as the proper way to develop training for teachers in service, considering the advantages of blended learning. It focuses on the features a teacher training course has to fulfill, in order to facilitate in teachers the use of ICT as a tool to reach learning goals. Skills and competences are to be developed to guarantee that teachers not only are able to make proper use of computers, but also, and most important, that they are aware of the mayor challenges ICT brings as a powerful means of communication and as an emerging new pedagogical model. In this context, the learning design should always allow that the teachers, in training, to integrate in their work ICT solutions that fit to the didactic objectives, renew teaching and learning methodology, facilitate communication, give place to creativity, and allow pupils to learn at their own pace. By doing so, they will be closer to the profile of a tutor online, as a practitioner who successfully takes advantages of the virtual environments for collaborative work and learning communication. A case study is offered to point out possible approaches to develop training programmes.

Introduction:

Teaching training is a steady challenge in the always evolving learning the knowledge society requires. It is nowadays a common place to point out the advantages of ICT integration into school as a proper way to transform information into knowledge (Barberà-Badia, 2004). As shown in a survey developed for the European Union by the European Schoolnet (2005), in the last years a great effort has been made to ensure the presence of ICT in every school through the necessary infrastructure. As a result, more than 80% of the European teachers describe themselves as competent in using computers and the Internet in classrooms; two-thirds dispose of the necessary motivation for doing so (according to their own opinion), and 60% describe the ICT infrastructure in their schools and the Internet connection as sufficiently rapid. This means that most teachers use computers in their everyday work, but, on the other hand, some are still reluctant to do so, mainly those who claim that a subject does not lend itself to being taught with computers, or that there is a lack of proper didactic contents.

This may lead us to conclude that most teachers are aware of the advantages of using ICT in education. It could not be otherwise. Computers are a part of our daily life and ICT skills are thus among the new basic skills, according to the *Recommendation of the European Parliament and the Council of 18 December 2006 on Key Competences for Lifelong Learning* (Recommendation, 2006).But, if we observe at a certain scope, we can easily notice that the current use of ICT in classrooms is mainly related to information and data transfer and interactive exercises. This is closer to the Computer Aided Instruction, than to a truly e-learning system. In other words, the possibilities of the Internet as a tool for communication, collaborative learning, and development of social spaces for sharing and building knowledge remain still almost unexploited. For instance, the flexibility that e-learning offers to support and guide the learning activities of pupils who need to increase their learning result is an almost unexplored field. In the process of developing e-learning solutions for schools, teacher staff, policy makers, and other stakeholders are due to shift to a broader understanding of the possibilities of e-learning within the formal learning.

Therefore, to help teachers in delivering instructional predefined contents, it is possible to reach a more flexible e-learning model, which also correlates to the lifelong learning objectives. This

previous path is to be taken to ensure positive experiences for teachers and interesting learning results, and, accordingly, a natural shift to a more open minded use of the Web as a powerful way to build and share knowledge, which will probably bring us to the almost mythical realm of e-learning 2.0, often foretold as the future scenario that will allow learning in every possible human situation.

E- Learning as a Model for Teacher Training:

Since it is necessary to use a broader training model for teachers, it is to be taken into consideration which kind of training programme is to be developed. As a matter of fact, many training courses are regularly offered to teacher staff by the Educational Departments in every European country. The local peculiarities make it difficult to establish a regular standard within the European Union and to design a proper common policy in teacher training. A common background is given by the *Common European Principles for Teacher Competences and Qualifications* (European Commission, 2005), where the European Union views the role of teachers and their lifelong learning and career development as key priorities. Teachers should be equipped to respond to the evolving challenges of the knowledge society, participate actively in it, and prepare learners to be autonomous lifelong learners.
The key competences of teachers are set as follows. Teachers should be able to:
• Work with others
• Work with knowledge, technology, and information
• Work with and in society

To facilitate such an approach, ICTs are not only a means to distribute training course for teachers at service, but also the logical environment where these three dimensions of the key competences are to be developed. A proper use of ICT empowers the abilities needed for collaborative work, as well as requires an autonomous use of information sources, its selection and delivery, and allows teachers to keep in touch with a steady changing society, into which their pupils are to become active citizens. The report entitled "Assessment Schemes for Teachers' ICT Competence-A Policy Analysis," developed for the European Union by the European Schoolnet (2005), includes some remarkable key findings:
• In the future more detailed job descriptions and specialized training profiles are needed for different actors in schools to cater for a personalized training.
• Training policies face the challenges to be flexible enough for short term adjustments of changing training needs and incorporating long term goals and objectives that are important for teachers to identify with.
• Countries will need to think of offering new and flexible forms of training for teachers, at different times, at different places, with different means, but much more related to the concept of lifelong learning. This includes a shift in the culture of the teaching profession from a passive consumer of training courses to an active producer and organizer of its own learning process.
• Training policies can only be successfully implemented and sustainable in the long term if they are part of an interlinked or integrated ICT strategy that caters for technology, pedagogy, support, organizational development, and (financial) solutions.

From this point of view, e-learning solutions are an interesting approach that allows flexible forms of training, but that have to be delivered under some conditions to ensure the quality of their results. E-learning is unfortunately a very broad term, which may lead readers to think of many different learning scenarios, and therefore, it seems to be necessary to define or, at least, to set the limit of the concept for the aims of this chapter. Computer and learning are the two basic ideas that come to our minds when trying to define e-learning. Therefore, a first definition could point out this relationship. For instance: "The delivery of a learning, training or education program by electronic means. E-learning involves the use of a computer or electronic device (e.g., a mobile phone) in some way to provide training, educational or learning material" (V. Stockley, 2003). Such a definition involves the delivery of instruction via CD, the Internet, or shared files on a network. It is also called computer mediated learning. It is not surprising that a

new definition of e-learning is being developed, as far as a broader use of the Web has been reached. The so-called Web 2.0 (V.O'Reilly, 2005) enables a new definition of the concept, under the label of e-learning 2.0 (V. Downes, 2005; Jennings, 2005; Karrer, 2006).
The e-learning can be defined as the learning process using electronic means, and which can be characterized according to several economic, organizational, educational, and technological points of view. In English, the term E-learning, laid down by the economic world, refers to the ability to unify and combine terms such as: "Open and Outdistances Learning", (ODL), to qualify its open dimension coming from the field of Distance-Learning; "Compute Mediated Communication", (CMC), to practise technologies of communication (Promenades, Forum, Groupware) applied to the learning; "Web – Based Training", (WBT), to put into practice the dominant technology on Internet for the learning; "Distributed Learning" that puts into practice an educational approach of constructivist type founded on the Distributed Cognition.

The European Union Constitution defines the e-learning as: "The use of new multimedia technologies of the Internet to improve the quality of learning by facilitating the access to resources and services, on one hand, and making exchanges and collaboration at a distance, on the other hand". The e-learning is an educational and technological mode which is not only concerned with adult training education, but also higher education i. e., for an adult learner having a certain autonomy in the organization of his learning process. However, it is necessary to notice, that in the United States, E-learning is often stated as "Enhanced-Learning through Information Technologies", for all type of public, from the maternal side to the adult training education, and which includes all educational technologies already known: didacticials, CD/Rom, and Hypermedias. Nowadays, the principal exporting countries of e-learning services are: the United States, Australia, and Canada (V.Gilbert TOUZOT, 2002.)

The "e-Learning" has been adopted by the European Commission to European systems of education and learning. At the time of the European Council, held in Lisboa, March 23 and 24, 2000, heads of state and Government had sat the following objective: "to become the more competitive and most dynamic way of shortening knowledge in the world". Although Europe has a most elevated level of education as well as some important capacities of necessary investment in school and education, it has been subjected to some delays in the use of new technologies of information and communication.
The e-Learning aims at filling these gaps through intensifying efforts that have been already undertook. As far as education and learning is concerned, it puts into practice and prolongs Europe the plan of action. This initiative has four components:
• An effort to equip schools with computers multimedia.
• An effort of forming European teachers to digital techniques.
• The development of European educational and software services and the acceleration of the stake in network of schools and tutors.
• Most resources to mobilize will be national, but it is right to sustain them by all suitable communal instruments (programs of education, learning and youth for innovative actions and exchange of the good practices, the structural funds to help to the eligible regions, IST to sustain research and to promote the European digital content), and by the development of partnerships between the authorities and industrial field. (V.H Rzepa, A Tonge, 1998)

Thus, the e-learning would be an assembly, so many pedagogical practices that of educational technologies existed, in which development would come of Internet explosion with its potential of ubiquity. It seems, however, as for the recent evolutions of organizations, that the E-learning, as it is emerging, possesses features that make it defer technological approaches of educational type such as we knew. Several terms have been used to define the e-learning exactly, and the most suitable term is online learning. We sometimes speak of e-education, the "e", as in e-learning, being an explicit reference to technologies of information. The coeducational learning

combines notions of on-line and outstanding learning. It designates a method of acquiring knowledge or constructing knowledge using interactions (actor–actor, or actors-resources) relieved by a system of telematics (electronics, data-processing connected by network). The electronic learning can take place from a distance (on-line), in class (outstanding or both). The on-line learning is a particular feature of the learning at a distance, which is a general concept that includes correspondence courses.

The interesting point of this concept is that e-learning can no longer be defined only by the use of ICT itself, but by a certain use of the ICT. It includes communication, collaborative learning, social networks, and new roles for learners and teachers. But this supposed novelty is to be tracked back to the theories that stressed the change from a transmission model of knowledge transfer, to a learner-centered or activity-centered model (V.Gifford & Enyedy, 1999; Reeves, 1999; Vinicini, 2001; Wilson, 1995).

The conventional classroom was the natural metaphor in which many learning management systems (LMS) and, even more importantly, most learning designers and content creators, developed the learning environment, from computer aided instruction (CAI) to many online courses. They order the sequence of information and focus on the structure of the disciplinary domain. But as far as it is possible to encourage communication, interaction, and collaboration in e-learning environments, this model is to be supplied with news methods that allow achieving orchestrated interdependence and autonomy in e-learning. The new idea is well summarized by the image of a community, a virtual learning community. (V. Cabero, 2006; García Aretio, 2003; Hudson, 2005; Paloff & Pratt, 1999). In the most evolved development of these, we can find the virtual correlate to the community of practice, that is, “a shared domain of interest” where “members interact and learn together” and “develop a shared repertoire of resources.” In others words, it is the place where learning happens (Wenger, 1998).

In this pedagogical approach, the new role of the teacher is a turning point for the development of e-learning (V. Kearsley, 2000). In the last years many e-learning courses have been developed at high schools, universities, and enterprises and many lessons are to be learned from them. In the most successful experiences, the key factor is the presence of a specialized trainer who ensures the effectiveness of the Web-based learning process. This trainer is skilled and competent in interaction, communication, and knowledge building through virtual spaces. In other words, this professional is the tutor online, defined as follows by Seoane and García:

Tutor online is the teaching staff that follows a group of students on a part of their learning path, ensures the efficiency of teaching-to-learning process, promotes the achievement of aims and skills predicted for the academic initiative that he leads, by creating a context of collaborative and active learning, and evaluates how pre-established aims were achieved for students and for the academic intervention (quality management).

Of course, the teacher staff in schools is yet far from reaching such a level of acquaintance and competence as is to be found in a proper tutor online. Nevertheless, according to the variant reality of schools and the different target learners they serve, in certain kinds of educational institutions teachers functions are getting nearer to this profile, as far as they have in their classroom an increasing variety of pupils. This is the situation of centres devoted to adult education, vocational training centres, and secondary schools providing courses to adult and young adult people who need to improve their educational outcomes and validate the skills developed in their job. In this field much is to be made in order to prepare ordinary teachers to become adult teachers with skills and competences allowing them to bring to their pupils an attractive, flexible, and accurate learning. In many cases this involves that they too have to learn the new skills needed in the knowledge society.

Developing Teacher Training Programmes using ICT Skills:

Teacher training as an efficient way to develop the skills needed for e-learning is not simple. As a matter of fact, it is a long-term aim which should be reached step by step through minor formative actions. The role of formal learning as a first step towards lifelong learning is reinforced by the Recommendations of the European Parliament and the Council on key competences. Its first aim is to ensure that "initial education and training offers all young people the means to develop the key competences to a level that equips them for adult life, and which forms a basis for further learning and working life." It is important to notice that e-learning involves the capability to acquire knowledge and develop skills within Web-based means. E-learning, when properly led, facilitates the metacognitive awareness needed in the field of "learning to learn."

Therefore, ICT in this context is just an enabler in a new means to learn that should also encompass several key elements such as learning design, collaborative learning, and social contexts. In spite of the fact that younger generations have grown up with ICT and are thus "digital natives" (V.Prensky, 2001), they are far from being digitally literate. Preliminary research released by Educational Testing Service (ETS) on November 14, 2006, shows that many students lack the critical thinking skills to perform the kind of information management and research tasks necessary for academic success. On the other hand, most teachers are "digital immigrants." This situation in the average classroom reflects the digital divide that currently exists in Europe. Furthermore, quite often teachers feel less competent than their pupils in this field, and this is the reason why they do not risk integrating ICT to a greater extent (V.Barnes, Marateo, & Ferris, 2007).

Therefore, when designing a teacher training course, a balance between technical and didactic contents is to be reached. In many cases the new ICT tools are introduced to teachers without pointing out clearly which are the didactic benefits they provide, or how far they could ease their daily work. Moreover, a great amount of funds are spent on courses whose results are rarely incorporated into the daily work in the classroom.

A few questions are to be asked when designing teacher training courses:

• What kind of skills does the course intend to facilitate?

• Are these new skills profitable for teachers at the end of the course, or could they even take advantage of them as they are attending the course?

• If the didactic advantages are clear, is the related ICT presented as a means or does the course focus mainly on it?

• How far does the course allow teachers to develop their creativity to incorporate the new skills in their own learning context?

With these questions in mind, we will present the experience of a teacher training course that took place in 2005-2006. The study of this case will provide some basis for profitable conclusions.

Training Teachers for Formal Adult Education within open Learning Methodology: A Case Study:

The Educational Department of the Regional Government of the Canary Islands, Spain, offered a training course to the teacher staff working for adult education. It was held during 5 months (from February to June 2006), and certificated 100 training hours. It was carried out as a blended learning course, that is, there was one compulsory faceto- face meeting per month. It took place at three different islands (Lanzarote, Tenerife, and Gran Canaria), and 246 teachers from the seven Canary Islands registered. The participants worked at primary schools, vocational training centers, secondary schools, and "Escuelas Oficiales de Idiomas" (schools devoted to foreign languages). The "Curso de educación de personas adultas en modalidad no presencial" had as its main goal to introduce adult education features, in order to develop the required skills for open education, using ICT as a helpful means.

The general learning objectives of the training course were stated as follows:
a. To approach teachers to the theories and practices related to adult education.
b. To deliver basic knowledge about the specifications of this field of education.
c. To recognize and analyze the features of distance learning, the related methodology and specially the tutorial and advisor role of the teachers.
Accordingly, the course structure aimed to combine individual and group learning activities, supported on the Internet, through a learning management system (LMS), and completed with face-to-face sessions, once a month. Previously, all participants had to attend a workshop in order to get basic skills on the use of a LMS, both as a student and as a tutor. In this case, it was Moodle 1.5.4., a well-known course management system designed to help educators create online courses with opportunities for rich interaction, integrating resources, and activities as well as assessment tools. The workshop was totally face-to-face, in groups of 20 participants, to allow hands-on experience with a computer under the guide of an instructor, during a total of 25 training hours.
The contents of the course comprised five different thematic units:
• Adult education features
• Distance learning
• Tutoring in adult education
• Designing learning contents for adult education
• ICT supported distance learning

Every Unit was introduced by a face-to-face session in which some practical examples of the previous activities and units were given, the main topics of the new unit were underlined and directions for the further activities were offered. The face-to-face sessions were scheduled as large classes meetings (about 80 people) where the tutors acted mainly as traditional teachers, developing topics and giving general advise to follow the Unit. During the month, between face-to-face sessions, the teachers who had given a lecture in the ordinary one-to-many way, changed their function and supported open many-to-many discussion, as tutors online in the virtual main course. Therefore, during the five months the course was developed, every participant counted on the support and guidance of the tutor team, which, not only designed and delivered the learning contents and activities of each Unit, but also provided chat meeting, forum discussion, personal e-mail advice and technical support. At the end of the course, participants could choose between designing a learning Unit or creating learning content for a specific subject in the context of adult education.

A Blended Approach:

The course was developed under a blended form, as a proper way to initiate teachers into e-learning. Blended learning is indeed another evasive concept (Oliver & Trigwell, 2005) that some authors relate to the frustration of e-learning in general terms (Bernabé, 2004). But for the goals and features of the course contents and the target audience, it was the chosen model (Valiathan, 2002). The benefits of such a decision were the following:
• **Organization of the course:** As the number of participants was about 250 teachers with only four instructors, a completely online development of the course would have been very difficult to fulfill without a rather high rate of attrition. The long duration of the course was another factor of risk to be taken into account. (V.Diaz & Cartnal, 2006).

• **Pace to develop ICT skills:** The blended approach of the course shifted gradually from a full face-to-face beginning in the workshops to an almost complete online development for the final assessment (V.Driscoll, 2002). In the meantime, the monthly sessions allowed the instructors to reinforce the motivation of participants, present the best results of the proposed tasks, and increase the informal meeting of trainers and trainees at the coffee- breaks. Moreover, it allowed learners to gradually move from the traditional role in a classroom, to the active participation in the virtual classroom through forums and chats as a public way to share experience and build

knowledge. Thus, the implementation of the course fostered the development of higher ICT skills as essential to the learning process.

• **Course contents:** The same course had been delivered in previous years through a classic distance learning schedule which involved a lot of individual work with a handbook, and the fulfillment of individual tasks to be delivered at the monthly meeting; the use of a computer was previewed as a way to deliver written contents to the participants and to allow them to ask questions in between. The blended form allowed the reutilization of written contents and made a step forward, as the virtual classroom was the central point of the course and the face-to-face sessions were intended to reinforce the online learning.

• **Learner centred methodology:** Due to the very broad variety of interest, working contexts, and previous experience on ICT and adult learning of participants, the blended approach made it easier to present the common points and bring together the different learning situations in the face-to face classroom, and to work in more detail the difficulties and interest of participants almost on demand, in the virtual classroom. It was possible to minimize the tendency to dispersion of participants that grows as a long term online course develops, and helped trainees to keep in mind the main goals of the course.

The course was led and coordinated by a team of four tutors who were actually teachers at the same educational levels as the participants and had a broad experience in adult open education, creation of learning content, online tuition, and as teacher trainers. Apart from the "common main course," in the virtual environment every participant had a "practice course" to test and develop the contents and activities of the course. Therefore, they developed a double role in the virtual environment, as students in the "common main course," and as teachers in their own "practice course." On demand, 288 practice courses were implemented, as participants could choose whether to develop their tasks alone or in small collaborative teams. It was in the virtual common course where the social dimension of the proposed learning path took place. Beside unit contents and tests, special attention was driven to foster and promote the use of communicative tools such as forums, chats, and internal messages. E-mail was another possibility to ask tutors for help or advice, but its use was limited to the moments when strong technical problems took place within the virtual environment.

The forums were the main way to develop communication throughout the whole course. A glance at the many logs they received made it clear: there were 42,816 logs in all the available forums (i.e., 147 logs per participant), being the general forum the most visited. It was the place not only for general matters about the course, but mainly to share experiences, to make open questions, and to recommend further information or Web sites always in the scope of the aims of the course. Most of this discussion was started out by the participants and sometimes produced long threads of conversation, often moderated by the tutors. Chat was used only by recommendation of the tutors as a part of the contents of the course, not having an important role in other situations. Internal messages were used mainly to keep in touch with other participants, while the main way to ask for advice to the tutors was the forums. The tutors always answered in less than 12 hours, being the average time of answer 2 hours after the question was made. Another particular feature of the course was the three online workshops, devoted to technical issues that participants might need, when creating their own contents and courses. The goal of these workshops, as stated in the course syllabus, was to improve the digital literacy and ICT skills, in accurate information search in the Web, authoring tools and standards contents formats, as pdf, and audio files creation.

Though attendance at these workshops was not compulsory, almost every participant took part in at least one of them. As they began to develop self-made contents, they became more aware of the fact that surfing the Internet is not so easy, making digital contents properly accessible through the Web requires some special attention, and multimedia learning contents were something they could experiment with. By the end of the course, only 26 participants had never

entered the course, and for the rest of them only 5 delayed in the delivery of the activities required for assessment.

The initial dropout rate was 10%, but the number of participants throughout the whole course stayed the same. At the end of the course, a evaluation questionnaire was answered by the participants. It considered course development and organization, tutors, work, communicative skills, and adequacy, usefulness, and interest of course contents. Unfortunately, the results are not yet available from the department that carried out the course. Nevertheless, according to the posts sent by participants after the end of the course, it was most successful. They reported to have learned a lot and were interested in attending further courses of this kind because of it flexibility and quality. When asked after the final on-ground meeting, the tutors also expressed their satisfaction with the development of the course, the attendance of participants, and the learning results.

The Consequences:

Some important issues from this reported course could be summarized as follows. In spite of the fact that the aim of the course was to introduce teachers into adult education and lifelong learning and to enable them to create specific learning contents for adults, the final results also included other outcomes.

• About one third of the teachers had never before used online communication tools such as forums, chat, or messages. Many of them considered these to be part of the younger generation's habits. Through the steady use of them, they were aware of their learning usefulness as means not only to foster motivation and social skills, but also to generate a more accurate learning.

• The use of these tools also had as a result that most teachers could express more clearly their own expectations during the course, being thus a way to improve metacognitive skills. The forum was a great help to reaching better learning outcomes, but it is also remarkable that some of the participants also stated that though they were rather "lurkers" at the forums, as they felt uneasy when sending posts. This was not an obstacle to reach the course objectives. In other words, their learning styles did not suit for active public written participation, but they could benefit from the group interaction, merely as lurkers.

• In spite of the fact that collaborative learning was not a goal in this particular course, nor its chosen methodology, the communication flow was so rich that it introduced some kind of collaborative synergy that was present in the final activities.

• The course benefited from a flexible design that allowed the tutors to adapt it to the demands of participants. It seems that in this case, the proper use of a LMS, like Moodle, as the main space for communication, made it possible that the on-ground meetings were considered more as an introduction to the tasks that were proposed to be fulfilled during the following month than as the core of the course. From the point of view of the tutors, the core of this course was the interaction and the work carried out in the virtual environment, while the face-toface sessions were rather a companion to this than the contrary. As usually happens, participants wanted to learn real things, ideas, tips, and resources that could easily improve their work with adult pupils. And by doing so, they were involved step by step in a new ICT environment and tested new technological tools because they could foresee the benefit of them.

• Of course, there were participants who did not learn as much ICT during the course. But for most of them this was the first time they had to harmonize their daily routines, their work at school, and their virtual and almost daily presence in the course during several months. They wanted to take the best advantage from their effort experiencing thus by themselves some of the conditions their adult learners have to face in order to obtain valuable learning results.

• Furthermore, the use of peer to peer communication made it possible in the most remarkable cases to investigate the use of a LMS as a virtual environment relevant for learning activities as

well as a for collaborative work and for the dissemination of teaching experiences and strategies. Under these circumstances the first steps to develop a virtual community of teachers could have been taken, if the required leading conditions to sustain it had been given.

Conclusion:

As stated by the European Parliament and the Council, the aims of education are "personal fulfilment, active citizenship, social cohesion and employability in a knowledge society." In such a social context a broad educational policy is needed. Teaching, even in formal contexts, deals no more with the transmission of a set of predefined learning contents, but it shifts towards the development of capacities that enable citizens to adapt dynamically to a rapidly changing world. From this starting point, it is obvious that teacher staff needs to be enabled to accomplish the required functions in an always evolving society. This implies that a large scope policy for teacher training is to be developed in order not merely to obtain a certain list of new skills, mostly those related to the use of ICT in learning situations. It actually involves that teachers require training to apply their skills to new problems, under new conditions. They should thus develop skills into competences, and, by doing so, integrate in their work ICT solutions that fit to the didactic objectives, renew teaching and learning methodology, facilitate communication, give place to creativity, and allow pupils to learn at their own pace. By doing so, they will be closer to the profile of a tutor online, as a practitioner that successfully takes advantages of the virtual environments for collaborative work and learning communication.

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