Ubiquitous Teachers' Training and Lessons Learned with the *uProf!* Model

T

Sabrina Leone
Università Politecnica delle Marche, Italy

Giovanni Biancofiore
giovannibiancofiore.com, Italy

INTRODUCTION

The current landscape of open and smart learning challenges calls for disruptive educational policies and systems (Li, Chang, Kravcik, Popescu, Huang, Kinshuk & Chen, 2015; Middleton, 2015). All stakeholders (i.e., policy makers, educational institutions, teachers, learners, parents) have renewed roles and degrees of participation in the learning process. Undeniably, though, teachers are on the frontline. On the one hand they are required to absorb their shifting function into facilitators in technology-enhanced learning environments, and on the other hand they are pressured to become more aware lifelong learners.

This technological uptake and consistent change and innovation have been urged by the decisively faster pace that economic systems, social relations and individuals have had since the diffused embracing of Web 2.0, that is the web of social networking tools (Leone & Guazzaroni, 2010), towards Web 3.0, that is a more connected, open and intelligent network thanks to semantic applications (Spivack, 2013).

Definitely, living, working and learning are smarter and smarter, that is they seamlessly accommodate next generation technology (i.e., smartphones, tablets, tablet PCs, sensor network nodes, contact-less smart cards, RFID and QR codes), socialised (Leone & Biancofiore, 2015), and ubiquitous, that is wireless and characterised by high mobility and embeddedness (El-Bishouty, Ogata, & Yano, 2007; Leone & Leo, 2011a). Most

European countries have made significant investments over the last years with a view to ensuring universal access to information and communication technologies (ICT), with considerable success (Education, Audiovisual and Culture Executive Agency, 2011). Specifically, embedding ICT in education and training systems has required relevant changes across the technological, organisational, teaching and learning environments of classrooms, workplaces, and informal learning settings; further efforts, though, are required in this direction (European Commission, 2008; Education, Audiovisual and Culture Executive Agency, 2011). A precondition for using computers in educational contexts is that they are widely available and users are familiar with them. With reference to formal education, data (Education, Audiovisual and Culture Executive Agency, 2011) show that currently no great disparity between schools in availability of ICT equipment exist, but a lack of educational software and support staff still affect instruction. Thus, the solution to an effective use of ICT in education and training is not technology itself, but an advancement in understanding how smart technologies are and can be used to support learning, and what are the barriers in the way of success.

Being an ICT-integrating teacher means going beyond ICT skills, and developing an understanding of the complex relationships between pedagogy, content and ICT (Alayyar, Fisser & Voogt, 2012). Moreover, while in most European countries centrally promoted online resources and

general pedagogical support are available to guide teachers' practical implementation of innovative technology-enhanced learning in the classroom (according to TIMSS - *Trends in International Mathematics and Science Study 2007*) (Education, Audiovisual and Culture Executive Agency, 2011), no research literature seems to document the activation of tailored in-class techno-pedagogical tutoring to teachers during the implementation. A later study carried out on behalf of the European Commission (Pelgrum, 2010) shows that teachers often have difficulties in implementing ICT in the teaching-learning process and that they need support to accomplish this task. Finally, the outcomes of more recent research experiences (Leone, 2013) highlight that teachers perceive in-class techno-pedagogical tutoring as a basic need for the enhancement of their professional skills and, as a result, of their students' learning.

This article illustrates features and outcomes of the experiences with *uProf!*, a model for teachers' professional training in ubiquitous learning by tablets and Quick Response (QR) codes. The model was designed, implemented and successfully validated in 2012 within a full-immersion, learner-centred and metacognitive course for 80 Italian high school teachers who are part of a school network for the enhancement of curriculum continuity from middle into high school. Later on, *uProf!* has been used to provide continuous professional training and tailored in-class tutoring during these teachers' first implementations of technology-enhanced learning experiences.

BACKGROUND

Ubiquitous devices allow to create a Computer Supported Ubiquitous Learning (CSUL) environment. A CSUL could be embedded in everyday life (Ogata & Yano, 2004) and is characterised by permanency, accessibility, immediacy, interactivity, situatedness and adaptability (Curtis, Luchini, Bobrowsky, Quintana, & Soloway, 2002; Leone & Leo, 2011a). Learning theories for CSUL are authentic learning (Brown, Collins & Duguid,

1989), situated learning (Lave, & Wenger, 1991) and learning by doing (Schank, 1995).

These premises highlight the strong potential that ubiquitous learning (uLearning) provides to a lifelong learner, that is to the activator of economical, cultural and social growth of our society and of the systems within. In a lifelong learning vision, the individual is a primary resource of knowledge: the individual's empowerment extends progressively to his/her context and to society as in a network. Empowerment has to be considered as the success key of the relation between a community of practice and the organization to which it is linked. The "double link" described by Wenger & Mc Dermott & Snyder (2002) is crucial for the survival and the development of both, community of practice and organization: the first conducts the improvement of its members' expertise through informal interaction and learning; the second relies on experts grown in the community of practice to identify and implement strategies, to focus on objectives and outcomes of its units.

Through this process old and new borders of knowledge, competence and skills merge and widen. Coherently, traditional educational systems need to evolve into more open and flexible systems, systems that could allow users to choose a learning path according to their learning styles, needs and interests, at any time along their life. In a lifelong learning vision, change and learning are strictly linked: change requires learning and, vice versa, no learning takes place without change (Leone, 2010).

As a result of the current evolution of education systems, the aims of vocationally-based education are beyond training and instruction, to encompass the development of standard features essential to professional competence and lifelong learning (Savery & Duffy, 1994). These include the acquisition of domain knowledge and competencies, and of generally applicable competencies (i.e., ability to adapt to change and participate in change, communicate, collaborate in groups, and be self-directed lifelong learners) (Minasian-Batmanian, Koppi & Pearson, 2000).

Related Content

The Information System for Bridge Networks Condition Monitoring and Prediction

Khalid Abouraand Bijan Samali (2012). *International Journal of Information Technologies and Systems Approach (pp. 1-18).*

www.irma-international.org/article/information-system-bridge-networks-condition/62025

Technology and Terror

Maximiliano Emanuel Korstanjeand Geoffrey Skoll (2018). *Encyclopedia of Information Science and Technology, Fourth Edition (pp. 3637-3653).*

www.irma-international.org/chapter/technology-and-terror/184073

Multimodality Medical Image Fusion using M-Band Wavelet and Daubechies Complex Wavelet Transform for Radiation Therapy

Satishkumar S. Chavanand Sanjay N. Talbar (2015). *International Journal of Rough Sets and Data Analysis (pp. 1-23).*

www.irma-international.org/article/multimodality-medical-image-fusion-using-m-band-wavelet-and-daubechies-complex-wavelet-transform-for-radiation-therapy/133530

Massive Open Online Courses and Integrating Open Source Technology and Open Access Literature Into Technology-Based Degrees

Maurice Dawson, Sharon L. Burton, Dustin Bessetteand Jorja Wright (2018). *Encyclopedia of Information Science and Technology, Fourth Edition (pp. 7898-7911).*

www.irma-international.org/chapter/massive-open-online-courses-and-integrating-open-source-technology-and-open-access-literature-into-technology-based-degrees/184486

Maturity for Sustainability in IT: Introducing the MITS

Martijn Smeitinkand Marco Spruit (2013). *International Journal of Information Technologies and Systems Approach (pp. 39-56).*

www.irma-international.org/article/maturity-sustainability-introducing-mits/75786