

## Chapter 7.22

# Pedagogical Sustainability of Interoperable Formal and Informal Learning Environments

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### ABSTRACT

Nowadays interaction and networks appear to be crucial. The impact that new technologies have had in every field has flowed into a rethinking of knowledge, knowledge management, teaching and learning, networks and the individual. Formal, non-formal and informal learning have become key words of this age. New technologies and the revolution of Web 2.0 social tools have deeply influenced learning approaches. However, the effectiveness of Web 2.0 educational tools depends on the pedagogical sustainability beneath and on internationally shared standards to facilitate interoperability. This chapter aims to discuss the pedagogical sustainability of interoperable formal and informal learning environments. Advantages and drawbacks will be highlighted, in terms of

technological and pedagogical effectiveness and appropriateness, through two case studies illustrating respectively the combined use of Moodle (LMS) and Elgg (PLE) at the University of Florence to facilitate lifelong learning, and a recent experience of integration of Moodle, Mediawiki and De.li.cious that we have carried out as PhD students in elearning at the Università Politecnica delle Marche.

### INTRODUCTION

The revolution that new technologies have brought about in every field is urging a new vision: knowledge and knowledge management, teaching and learning, social relations and the individual need to be reconsidered in the light of the current importance of interaction and networks. The knowledge society requires new roles and skills, and a new

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awareness as “active citizens” (Demetrio, 2002; Leone, 2009). Learning to learn has turned out to be a key skill to actively participate in society along life. Formal, non-formal and informal learning have become key words of this age; in particular, there is an increasing understanding that learning occurs for the most part outside the traditional formal situations.

Few years ago knowledge was a matter of categorization and hierarchies; today it is represented through networks and “ecologies” (Morin, 2008), it is diffused and distributed. As a whole, life is both a learning and a knowledge-based process.

Knowledge, people, and technology nodes represent useful resources. In this view, human mind, too, is a network, an ecology. It adapts to the environment and, accordingly, learning has become chaotic, continual, co-created and complex. Learning is an integrated process where changes with one element alter the entire ecology of the network. As a result, knowledge is subject to complex and adaptive systems (Siemens, 2006).

In this scenario, the changing role of education systems into networked organizations, into “ecologies”, is decisive in order to support learners in constructing various personal learning networks to deeply understand complex fields (Fini, 2008; Sclater, 2008).

Over next years, teaching and learning will go through essential changes. Massive use of new technologies and the revolution of Web 2.0 social tools are only two of the elements that have deeply influenced learning approaches, for three main reasons:

1. many web services are free and easy to use by a connection to the Internet;
2. people may access nodes of information and create knowledge;
3. learners are becoming technically proficient, networked, multi-tasking and lifelong learners (Seely-Brown, 2009; Siemens & Tittenberger, 2009).

The effectiveness of Web 2.0 educational tools depends on the pedagogical sustainability beneath and on internationally shared standards to facilitate interoperability.

In this regard, over recent years research literature has underlined a need for a new theoretical interpretation of teaching and learning methods in education (Catarsi, 2007; Conole, 2008a; Marconato, 2003) to support the new educational models that are being introduced in the light of the lifelong learning paradigm. Emphasis on the shift from formal to informal e-learning through knowledge management and sharing (Leone, 2009; Sclater, 2008; Trentin, 2005) has been placed, with particular attention to Personal Learning Environments (PLE) as learner-centred spaces.

Researchers (Annacontini, 2007; Varisco, 2002) have highlighted the necessity to look at the learning paradigm (Barr & Tagg, 1995; Jonassen & Land, 2000; von Glasersfeld, 1998) as the suitable framework to support an effective implementation of lifelong learning policies. The passage from the traditional instruction paradigm to the learning paradigm allows to give prominence to the learner’s needs and to the learning process, rather than to the teacher as a repository of knowledge and to teaching itself. The mission of the education system is to generate learning, to build meaningful learning environments and to bring forth student’s construction of knowledge (Leone, 2008a; Marconato, 2003; Trentin, 2001). Success is measured by student learning and achievement outcomes, learning growth and the quality of arousing students’ interest and engagement (Leone, 2008a).

In this view, information overload, diversity and distribution highlight the necessity for content and infrastructure applications to interoperate and exchange data in order to better support learners’ and educators’ needs.

Technology plays an important role in e-learning through the use of many systems relating to specific net-pedagogies (Stojanovic & Handschuh, 2002; Varlamis & Apostolakis, 2007; Trentin,

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