

Preface

Motivation and problem statement

The diffusing lifelong learning (LLL) vision, emerging practices with social semantic computing technologies and research findings signal the need for more personal, social and participatory approaches that support learners in becoming active users and co-producers of learning resources, rather in gaining control over the learning process as a whole, and in pursuing personal life goals and needs. In particular, there is an increasing understanding that learning occurs for the most part outside the traditional formal situations, especially for adult lifelong learners.

Emphasis on the shift from formal to informal e-learning through knowledge management and sharing has been placed, with particular attention to Personal Learning Environments (PLE) as learner-centred spaces, against Learning Management Systems (LMS) as organisation-centred platforms that neglect individual differences and potential. Nevertheless, investigations are motivated by the numerous educational theories, implications and challenges that the concept of PLE has posed. Moreover, since research literature points out the role of scaffolding in activating higher order learning competencies (McLoughlin & Lee, 2010), in-depth studies need to be carried out about how self-regulation can be scaffolded by a PLE.

The dichotomy LMS vs PLE has been transformed into models of integration of the two in some research literature (Giovannella, 2008; Leo et al., 2010). However, the smooth integration of formal and informal learning environments for adult lifelong learners, on the background of a student-centred framework, requires an attentive design of the underlying technological architecture. Indeed, this change in perspective towards student-centred technology-enhanced learning environments has brought about a rethinking of knowledge, knowledge management, teaching and learning, networks and the individual. Information overload, diversity and distribution highlight the necessity for content and infrastructure applications to inter-operate and exchange data in order to better support lifelong learners' and educators' needs. Personalisation, trustworthiness and assessment on the collection of resources are actual research issues.

In relation to personalisation of learning, LMSs, the formal learning component of the integrated environment, are weak. Educational and psychological theories argue that learners have different ways in which they prefer to learn, and that students with a strong preference for a specific learning style may have difficulties in learning if the teaching approach mismatches it (Felder & Silverman, 1988; Felder & Soloman, 1997). On this basis, models for the detection of learners' learning styles need to be evaluated, and adaptive educational systems that could be integrated in a LMS need to be investigated.

Finally, trustworthiness and assessment on the collection of resources call for a thorough analysis of suitable Social Semantic Web tools to be adopted within the integrated learning environment.

Research issues

The aim of this research is to devise and validate a format, that is a plan for the organisation and arrangement of a specified learning path, for the characterisation of adult lifelong learners' PLEs. In order to realise this goal, investigations regarding three research questions have been conducted:

1. How do adult lifelong learners learn?

The provision of a suitable format for the characterisation of PLEs requires a sound knowledge of lifelong learners' characteristics and learning profiles, first. In this work, European Union (EU) reports about LLL policies and achievements, and relevant research literature have informed the development of the *SSW4LL (Social Semantic Web for Lifelong Learners)* format, starting from its needs analysis and learning framework sections.

2. How can self-regulation be scaffolded by a PLE?

Through an extensive study of the theoretical background of the personalisation of LLL and relevant research literature outcomes, implications and challenges of the concept of PLE have been discussed. Further, the smooth integration of formal and informal learning environments has been proposed, on the background of a student-centred framework for adult lifelong learners. To this end, several models for the detection of learning styles have been sieved through to choose the most effective to be applied in the scenario of this research.

3. How can adult lifelong learners' PLEs be characterised?

The exploration of the synergy of formal and informal learning in the dynamic construction of a lifelong learner's PLE has started the evaluation of added-value technological components among many available in the web-based learning landscape. A range of adaptive mechanisms and Social Semantic Web tools have been

considered, as applications for providing implicit and explicit characterisation of adult lifelong learners' PLEs. As a result, the *SSW4LL* system has been built on Moodle 2.0 integrated with adaptation (conditional activities) and Semantic MediaWiki, Diigo and Google+ as Social Semantic Web tools.

The *SSW4LL* format has been implemented and evaluated with respect to its efficiency in supporting adult lifelong learners and making the characterisation of their PLEs easier for them.

Within this work, two general aims concerning all three parts of research exist. First, research conducted within this study aims at proposing concepts and approaches which are suitable for adult lifelong learners in general, rather than for one specific target within. However, the concepts and approaches are implemented and evaluated by addressing a cluster of novice learners in the course domain, but professionals in a specific field.

Secondly, since the objective of this research is to devise a format for the characterisation of adult lifelong learners' PLEs by combining the advantages of formal learning environments with those of informal learning environments, the resulting technological architecture should not lose its simplicity and should still be easy to use for teachers-facilitators.

Structure of the book

This book is organised in 4 chapters. The first chapter illustrates the current shift from formal to informal learning. An introduction of LLL is provided, describing definitions and main policies in Europe, and lifelong learners' characteristics, needs analysis and expectations. The third section of the chapter develops a sound analysis of the theoretical background of personalisation of lifelong learning: implications and challenges of the concept of PLE are discussed, as well as adaptive mechanisms and Social Semantic Web as tools for implicit and explicit personalisation of learning.

Chapter 2 starts the development of the characterisation of a PLE as a LLL tool by detailing the *SSW4LL* format. After an overview about the aims, possible scenarios and elements of the format, a motivated choice of adult lifelong learners' needs that *SSW4LL* aims to meet is developed. Subsequently, the chapter illustrates the learning paradigm and strategies that underpin the *SSW4LL* format. Then, the *SSW4LL* system, the technological architecture, is presented as a whole made up of components of formal and informal learning environments. The formal learning environment is devised by Moodle 2.0; a description and an evaluation of Moodle 2.0 features are provided, with a focus on the potential of its conditional activities as a suitable mechanism of learning adaptation. Concurrently, this part identifies the benefits of the Felder-Silverman learning style model, which was selected as the most suitable learning style model for the use in LMSs. The elements of the informal learning environment, Semantic MediaWiki, Diigo and Google+, are presented and their implications within the *SSW4LL* format are discussed. The next section of

the chapter deals with the organisation of the format: the resources needed, a user case scenario and a flow chart of the steps of the format implementation are outlined. Finally, a SWOT analysis provides evaluation elements for the format.

Chapter 3 reports the case study *SSW4LL 2011*: its design and implementation steps and issues are detailed, and outcomes are discussed.

Chapter 4 concludes the study by highlighting its contributions and discussing limitations and future directions.

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