Journal of Universal Computer Science, vol. 19, no. 11 (2013), 1496-1499
submitted: 17/5/13, accepted: 28/5/13, appeared: 1/6/13 © J.UCS

International Research Projects on Socio-Semantic Technologies Applied to Education

J.UCS Special Issue

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Abstract: The volume 18, issue 1 of Journal of Universal Computer Science was devoted to present the main outcomes of 12 international research projects regarding technology applied to education. This special issue introduced a spread sample of educational projects around the world. The success of the call and the quality of the selected contribution aimed us to organize a new issue regarding educational research projects, but this time with a special focus on socio-semantic technologies applied to teaching and learning processed at all the educational levels. As result, we present the current JUCS issue including information and the main outcomes of 9 international research projects about technology socio-semantic applied to education.

Keywords: Knowledge Society; Socio-Semantic Technology-based Education; Research Projects; Education Trends; Open Knowledge
Categories: D.2, H.0, J.4, J.7, K.3, L.1, L.2, L.6, M.1

1 Introduction

With the belief that education is a key and essential element for knowledge improvement [García-Peñalvo and García-Carrasco, 03; García-Peñalvo, 05; García-Peñalvo, 08] and with the conviction of knowledge sharing is the only way not to fall in reinventing the wheel over and over again, a monographic special issue about technology-based educational projects was edited [García-Peñalvo et al. 12b].

The success of this previous special issue invited us to organise a special session in the XIV International Symposium on Computers in Education (SIIE 2012) held in Andorra last October 2012 [García-Peñalvo et al. 12c]. This special session joined international educational projects that highlight the socio-semantic technologies to improve and innovate the teaching and learning processes. Nowadays, topics regarding open knowledge [García-Peñalvo et al. 10], involving both open contents

and open education (with a special mention about Massive Online Open Courses – MOOCs [McAuley et al. 10]), communities of practice [Wenger and Snyder, 00] and social networking [Rennie and Morrison, 13], informal learning management [García-Peñalvo et al. 12a] and learning analytics [Ferguson, 12], among others, are mainly tackled in the current research project proposals. SIIE has a tradition of publishing selected papers [Ortega and Bravo, 01; Llamas-Nistal et al. 03; Bravo et al. 05; Fernández-Manjón et al. 07; Mendes et al. 08; Velázquez-Iturbide and García-Peñalvo, 09a; Velázquez-Iturbide and García-Peñalvo, 09b; Velázquez-Iturbide and García-Peñalvo, 09c].

Combining the best papers presented in the conference sessions with an open call, we have selected 9 projects that are introduced in Section 2.

2 Special issue contents

The first project is so called Teaching Innova. It is devoted to incorporate adaptive systems into LMS systems, which will be used both in academic learning processes and at workplace training activities. The most useful lesson learned from this experience is its great potential to be incorporated these ideas to MOOCs development in order to substitute the human effort and avoid the same orientation to the different user profiles that a MOOC joins. Following with adaptive systems, the second contribution, by Mahnane Lamia and Laskri Mohamed Tayeb, explores the relationship of thinking style and pedagogical activities to validate this specific psychological construct in the context of an Adaptive Educational Hypermedia System.

The third proposal is mEducator Project that exploits Linked Data principles for semantic integration and social interconnecting of educational data, resources and actors. It introduces a general approach to take advantage of the wealth of already existing educational data on the Web by allowing its exposure as Linked Data and by taking into account automated enrichment and interlinking techniques to provide a rich and well-interlinked graph for the educational domain.

Pais and Tasistro consider some issues concerning the role of formal logic in Software Engineering education. They promote the learning of formal proof through extensive, appropriately guided practice, proposing to adopt natural deduction as proof system and to make use of an adequate proof assistant to carry out formal proofs.

Santarosa et al. discuss the Brasil National Policy of the Inclusive Education and the distribution of Laptops – PROUCA, with a double aim, first operating under the logic of inclusion in the context of education and the other at digital inclusion. The results of the research project show that the distribution of laptops, labeling the offered tool under the concept of technological homogeneity and uniformity, imposes barriers to the care for diversity in a socio-digital inclusion scenario.

The sixth project is SLRoute devoted to create an integrated Massively Multiuser Online Learning (MMOL) platform that enables the creation, development and deployment of contents and activities for teaching Spanish in an ad hoc educational virtual world. Such environment promotes an immersive, creative and collaborative experience in the process of learning a foreign language. Also, the paper assesses the

validity and reliability of this technology throughout a Technology Acceptance Model (TAM).

Feidakis et al. propose a system that provides emotion awareness, both explicitly, by self-reporting on emotions through a usable web tool, and implicitly, via sentiment analysis. The system has been proved with university students, validating the explicit mechanism in real education settings.

The eighth proposal is called TRAILER, a project oriented to build a dialog interface between the companies and their employees to recognize the informal learning activities and take advantages in both sides of the problem. First, the employees, making visible their hidden informal learning acquired competences, could obtain benefits due to promotion in their professional development. On the other side, the company increases its internal knowledge just in order to make decisions and to improve its own knowledge management strategy.

The last paper, by Šošević et al. of this special issue is devoted to implement a support platform for learning about multimodal biometrics so called elBio. The paper also introduces a research study oriented to compare the traditional learning method with a learning method based on their support platform. Results of this research study speak in favour of using elBio support platform as a teaching tool.

Acknowledgements

This work is partially supported by Spanish Science and Innovation Ministry through the oiPLE project (ref. TIN2010-21695-C02) and also by the Regional Council of Education of Junta de Castilla y León through the projects GR47 and MPLE (ref. SA294A12-2). Also, with the support of the Lifelong Learning Program of the European Union. Project Reference: 519141-LLP-1-2011-1-ES-KA3-KA3MP. This project has been funded with support from the European Commission. This publication only reflects the views of the authors, and the Commission cannot be held responsible for any use that may be made of the information contained therein.

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