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Outcomes of International Research Projects on Technology Applied to Education

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Abstract: Technology-based education or technology applied to education is a key issue in Knowledge Society. There are several conferences, journals and specialized books that reflect the researching advances in this area, but there exists a huge experience background and efforts regarding international research projects development on technology-based education that not always spread their outcomes in a suitable way. This special issue includes information and the main outcomes of 12 international research projects on technology applied to education organized in 7 papers.

Keywords: Knowledge Society; 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

Knowledge Society needs technology as a medium for its development [Lytras, 2010]. Education is a key and essential element for knowledge improvement [García-Peñalvo and García-Carrasco, 2003; García-Peñalvo, 2005]. There are many and many direct and indirect activities that involve technological aspects for enhancing education and learning processes. Learning technologies and technology-based education case studies are continuously reflected in different formal publications, as reports, conference and workshops proceedings, scientific journals and specialized books, and informal evidences through vertical social networks or educational related blogs.

Other important source of experiences is the huge amount of international research projects on technology-based education that are developed all over the world. Most of them have very interesting outcomes but these results are often enclosed inside or so near to the working-group that have carried out the project,

failing in the spread or dissemination activities and causing researchers to reinvent the wheel over and over again.

The main goal of this special issue is to join in a monographic a high level sample of technology-based educational projects supported by different organizations and institutions. These projects must fulfil the following requirements:

- The main topic of the project is technology applied to education into an international scope.
- The project must be funded by a prestigious public or private organization.
- The project should be in the last year of its development or finished in the last two years.

According the requirements above, 7 papers have been selected, introducing 12 different projects that are presented in Section 2.

2 Special issue contents

European Union supports several programmes regarding technology-based education. The European Commission's Lifelong Learning Programme (http://ec.europa.eu/education/lifelong-learning-programme/doc78_en.htm) enables people at all stages of their lives to take part in learning experiences, as well as helping to develop the education and training sector across Europe. There are four sub-programmes which fund projects at different levels of education and training, i.e., **Comenius** for schools, **Erasmus** for higher education, **Leonardo da Vinci** for vocational education and training, and **Grundtvig** for adult education. Also, there are other projects in areas that are relevant to all levels of education, so called Key Actions, such as language learning, information and communication technologies, policy co-operation and dissemination and exploitation of project results are funded through the transversal part of the Programme. Regarding Lifelong Learning Leonardo da Vinci Programme, Gatteschi *et al*. introduce the TIPTOE Project which tackles the problem of interpretation and application of the EQF (European Qualification Framework) [EQF, 08] principles from a practical perspective, by specifically focusing on a sector that is considered of primary importance for the markets and for the partnership: the trade sector. In this project, partners propose a methodology capable of mitigating both the gap between the different European education and training systems as well as the (cultural) differences in the content and interpretation of occupations within the European labour market.

While Lifelong Learning Programme is mainly oriented to practice and experimentation in different educational contexts, European Union Framework Programme bundles all research-related European Union initiatives together under a common roof playing a crucial role in reaching the goals of growth, competitiveness and employment. Research and advance in the education field and specially in learning technologies are common issues in Framework Programme projects. This programme is the most presented in the special issue with 5 projects. Caballé *et al.* introduce ALICE (Adaptive Learning via Intuitive/Interactive, Collaborative and Emotional Systems) project related outcomes. The main goal of this project is to build an innovative adaptive environment for eLearning combining personalization

collaboration and simulation aspects with an affective/emotional based approach, able to contribute towards overcoming the existing limitations of current eLearning systems and content. Specifically, in this paper authors introduce a new paradigm so called Collaborative Complex Learning Objects (CC-LO). This is a special type of Learning Object that aims to leverage the knowledge elicited during live sessions of collaborative learning, augmented with author-generated information, to produce interactive and attractive resources to be experienced and played by learners.

Sloep *et al.* present three Framework Programme projects that address aspects of networked learning: idSpace, LTfLL and Handover. idSpace assumes the existence of a community of innovators, for which it has built an online platform that allows them to share and ultimately create knowledge. LTfLL takes a tooling perspective, its starting point is the availability of textual artefacts that are accessible online for (automatic) text analysis; the tools cover individual learning and collaborative knowledge building, either separately or jointly, and the networked learners are then given targeted advice on how to proceed in their learning efforts. Finally, Handover project is regarding informal learning about 'handing over' patients between health-care workers, such processes may be optimized through staff training.

Boticario *et al.* are the responsible of the EU4ALL project.EU4ALL develops a general framework to address the needs of accessible lifelong learning at Higher Education level. This framework consists of several standards-based interoperable components integrated into an open web service architecture aimed at supporting adapted interaction to guarantee students' accessibility needs.

Educational projects also appear in industry programmes. Fonseca *et al.* introduce the PLAYER project, supported by the European Commission, under the Competitiveness and Innovation Framework Programme. This project uses serious games in order to enable learning entrepreneurial skills progressively, by guiding users to develop a business idea in the form of a business plan.

Alier *et al*. presents a set of projects supported by the Science and Innovation Spanish Ministry INNPACTO Programme that involves an international consortium in order to advance in educational tool interoperability. They introduce the LearningApps project that aims to reduce the learning tools dispersion by creating a space where teachers and educational institutions can easily find these tools, and as well as to build and personalise – with a single click – their own e-learning environment in the cloud. The authors present LearningApps as an evolution and continuation of two previous projects: Campus and SUMA projects.

The last paper of this special is devoted to Open Knowledge in Higher Education [García-Peñalvo et al. 2010].This paper is rooted on a cooperation initiative among the Polytechnic University of Madrid and a set of Latin-America Institutions. Thus, Tovar *et al.* introduce two actions called "Strategic for development and research of Open Educational Resources" and "A technological framework applied to engineering academic and research networks". These actions are focused on the area of open educational resources (OER) and particularly the educational content of the OpenCourseWare (OCW) model.

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