Monograph: Technology-Enhanced Learning
(published jointly with Novática*)

Guest Editors: Carlos Delgado-Kloos and Fridolin Wild

8 Integrating Web-Based and 3D Learning Environments: Second Life Meets Moodle — Daniel Livingstone and Jeremy Kemp
15 Game-Based Learning in e-Learning Environments — Pablo Moreno-Ger, José Luis Sierra-Rodríguez, and Baltasar Fernández-Mañón
21 Use of Folksonomies in the Creation of Learning Experiences for Television — Marta Rey-López, Rebeca P. Díaz-Redondo, Ana Fernández-Filas, and José J. Pazo-Arias
27 Fostering Open Sensemaking Communities by Combining Knowledge-Edge Maps and Videoconferencing — Alexandra Okada, Eleftheria Tomadaki, Simon Buckingham Shum, and Peter J. Scott
37 Mobile Social Software for Professional Communities — Ralf Klamma and Matthias Jarke
44 Applying “Scrufty” Methods to Enable Work-Integrated Learning — Stefanie N. Lindstaedt, Tobias Ley, Peter Scheir, and Armin Ulbrich
51 Distributed Feed Networks for Learning — Fridolin Wild and Steinn E. Sigurdarson
57 Contextualized Attention Metadata in Learning Environments — Martin Wolpers
62 Free / Libre Open Source Software (FLOSS) Communities as an Example of Successful Open Participatory Learning Ecosystems — Andreas Meizsner, Rüdiger Glott, and Sulayman K. Sowe
69 New Objects in Formal Professional Learning: Replaying Meetings to Learn — Linda Castañeda, Eleftheria Tomadaki, and Peter J. Scott
76 UPC’s Moodle Platform: A Study on Architecture and Performance — Marcos Montero-Torres
81 IFIP and TC 3 — Jan Wibe

UPNET (UPGRADE European NETwork)

84 From ITNOW (BCS, United Kingdom)
Ethics in Computing
Robosoldier — David Evans

CEPIS NEWS

86 CEPIS Projects
Harmonise Outcomes — Peter Weiß
88 Selected CEPIS News — Fiona Fanning

* This monograph will be also published in Spanish (full version printed; summary, abstracts, and some articles online) by Novática, journal of the Spanish CEPIS society ATI (Asociación de Técnicos de Informática) at <http://www.ati.es/novatica/>.
Learning is change and the field of education is one which, by its very nature, has always been open to technological innovation. Today the emerging interdisciplinary field of Technology-Enhanced Learning (TEL) as a whole can be seen to be moving forward rapidly. In recent years in particular, major breakthroughs have been achieved, with significant support from European Commission IST funding, major national initiatives, and the enthusiastic dedication of organizations and individuals alike.

Research and development in TEL takes place at the boundary between education and technology to "provide socio-technical innovations (also improving efficiency and effectiveness) for learning practices, regarding individuals and organizations, independent of time, place and pace" [1]. Rather than "e-Learning", it is about technology support for learning activities.

Prolearn, the international network of excellence for Technology-Enhanced Learning, has drafted six vision statements (see Figure 1) that define future directions in the field. From the perspective of the individual, "everyone […] should be able to learn anything at any time at any place" to "increase [their own] employability", i.e. increasing job-flexibility through more competence and more professional choice while at the same time ensuring job-security through improved on-the-job performance. From the viewpoint of businesses and industry, learning must be "a means to support and enhance work performance" and "innovation, creativity, and entrepreneur ship at work" need to be promoted. To facilitate a competitive yet innovative market, take-up needs to be "consumer-driven […], based on increased market transparency and the availability of a wider range of offers". Finally, to extend the knowledge-based society as such, "access to professional learning for all" must be secured (all statements cf. to [2]).

Novática and UPGRADE published special issues on educational technologies five and ten years ago (and earlier as well). Looking back at those issues, we believe that today the field is much more established and that exciting recent developments promise a bright future. It will be interesting to see whether these promises will be fulfilled. However, while in the last special issue (UPGRADE IV/5 and Novática 165, 2003) the focus was on platforms, interoperability and standards, the view today has broadened further: within this issue we present a wide range of contributions with which we aim to cover both recent advances and emerging future topics.

The Guest Editors

Carlos Delgado-Kloos received his degree in Electrical Engineering from the Universidad Politécnica de Madrid in 1978 and his Ph.D. in Computer Science from the Technische Universität München (Technical University of Munich) in 1986. He is currently Full Professor of Telematic Engineering at the Universidad Carlos III de Madrid, where he is director of the online Master’s programme in e-Learning <http://learn.uc3m.es> and director of the Nokia Chair at the same university <http://www.it.uc3m.es/nokia/>. He is also Associate Vice-Rector of International Relations and Cooperation. Among his main interests are Internet-based applications, such as electronic publishing, e-Learning and e-Commerce. He has been involved in more than 20 projects with European (Esprit, IST, @LIS, eContentPlus), national (Spanish Ministry), and bilateral (Spanish-German and Spanish-French) funding. He has been the coordinator of the European funded project E-LANE <http://www.e-lane.org> on e-Learning and is a member of the Board of Directors of the LRN Consortium <http://dotlrn.org>, an open source educational platform. He has published almost 200 articles in national and international conferences and journals. He has also written one book and co-edited five. He holds or has held various posts in national and international bodies. In relation to e-Learning, it should be mentioned that he is the Spanish representative at IFIP TC3 on Education. He has been programme committee member or chair at more than 100 conferences and workshops, including vice programme chair of the IFIP’92 World Computer Congress, programme chair of DATE’2002, Telecom I+D 2003, EduTech2004, and EUNICE2005 and reviewer for several journals and research programmes (at a Spanish level, at a European level, at an EU-USA level, etc.). <cdk@it.uc3m.es>.

Fridolin Wild M.A. is researching within ProLearn, the EU Network of Excellence (NoE) for technology enhanced professional learning, and additionally within the EU IST funded iCamp project, where he is the technical manager and leads a work package on interoperability of social software tools for learning. Fridolin is the treasurer of the European Association of Technology-Enhanced Learning (EATEL). He works as a scientist at the Institute of Information Systems of the Wirtschaftsuniversität Wien (Vienna University of Economics and Business Administration). <fridolin.wild@wu-wien.ac.at>.
This issue is framed by two invited contributions. It is opened by a contribution from Pat Manson, Head of the Unit of Cultural Heritage & Technology Enhanced Learning at the European Commission. Thanks go to both ERCIM News, from which this contribution is reprinted with permission, and Pat Manson. As the person responsible for the strategy of research projects on Technology-Enhanced Learning at the European Commission, Pat Manson’s views on where the subject should be heading are interesting to read. The paper gives a definition to the concept of Technology-Enhanced Learning and therefore serves as a good introduction to the issue as a whole.

Jan Wibe’s contribution closes this special issue. Jan chairs IFIP Technical Committee TC 3, which is the TC devoted to education. In his article, Jan explains the objectives and history of the Technical Committee, as well as some of its activities in the near future.

Occasionally advances in technology suddenly open up possibilities to the public at large that were previously restricted to a closed group with specialized equipment. For example, 3D visualizations are not new; there is a long tradition of immersive and 3D technologies. Now, however, they are executable on anyone’s computer. And with this subtle change new applications arise, ones that previously no one dared to even think about. The paper by D. Livingstone and J. Kemp entitled “Integrating Web-Based and 3D Learning Environments: Second Life Meets Moodle” presents the open source Sloodle project, which combines Moodle, one of the most successful open source learning management systems, with Second Life, the popular 3D multi-user virtual environment that has attracted so many headlines lately. We believe that this integration effort will be just one of many to include 3D visualization in a virtual learning environment. Watch out for many more interesting developments to follow.

Multi-user virtual environments have often been connected to games, but this is not (necessarily) an aspect pursued in Second Life. Nevertheless, for educational purposes, games can be highly attractive. In fact, the so called serious games offer a high learning potential. P. Moreno-Ger, J.L. Sierra-Rodríguez, and B. Fernández-Manjón have studied this trend and identify in their paper “Game-Based Learning in e-Learning Environments” two critical aspects needed to achieve the integration of videogames and e-Learning environments; namely the existence of adequate authoring methodologies and the definition of integration models that allow a bidirectional exchange of information between videogames and e-Learning platforms.

In the future e-Learning will not only take place on a computer screen. There are many other devices that can deliver digital learning experiences. By M-Learning we mean learning through mobile devices and by T-Learning we mean learning using television. Each device has its own advantages and disadvantages and range of preferred application. In their paper entitled “Use of Folksonomies for the Creation of Learning Experiences for Television” M. Rey-López and co-authors describe some algorithms that relate TV programs and learning objects by using folksonomies.

A. Okada, E. Tomadaki, S. Buckinham Shum, and P. Scott report in “Fostering Open Sensemaking Communities by Combining Knowledge Maps and Videoconferencing” how visual thinking technologies can be used to create knowledge structures about and for conversations mediated through videoconferencing. Their qualitative and quantitative investigation identifies the four generic scenarios in the learning processes under examination: transmission, studio, negotiation, and assessment.
R. Klamma and M. Jarke outline how "Mobile Social Software for Professional Communities" can be researched and supported with the help of Web 2.0 enabled Social Software with a strong focus on highly mobile settings. In their contribution they first define Social Software and Web 2.0 in the context of knowledge work and professional communities. In the next two chapters they outline the context and current shortcomings. Following this, a research framework is outlined, consisting of social network analysis supported by visualizations on the basis of actor-network theory and with the help of the high-level goal-oriented modelling formalism i*. The accompanying application framework is illustrated with the example of an international, professional preservation community of a UNESCO world-heritage site in Afghanistan which is supported by a social software package for mobile communities called Virtual Campfire.

S. Lindstaedt, T. Ley, P. Scheir, and A. Ulbrich delve into new technological approaches for workplace learning in their article "Applying 'Scruffy' Methods to Enable Work-Integrated Learning". After defining their understanding of learning at the workplace, the authors summarize the shortcomings and technological challenges of current training approaches. They go on to argue in favour of hybrid approaches that combine "heat", coarse-grain models with "scruffy", applied models based on behaviour data and natural language processing. This hybrid approach is demonstrated by three application examples taken from the projects APOSDELE and DYONIPOS: automatic extraction of user context information from behaviour data, automated inferences about user competency profiles, and the automated matching of learning material based on their semantic similarity.

With their article "Distributed Feed Networks for Learning", F. Wild and S. Sigurdarson describe how modern social software technologies can be utilized in distributed learning applications. Through an extensive analysis of existing blogging standards and their support in today’s applications, they spot a shortcoming in the support facilities that are significant characteristics of successful communities. Although the open educational resource movement strives for inclusiveness, dynamics, heterogeneity, and the like (all aspects that are significant characteristics of successful FLOSS-communities), they have not yet achieved it. The authors identify still predominant traditional teacher-producer / learner-consumer role models to be responsible for this shortcoming while the underlying cause may be found in the immediate visibility and testability of outcomes in software development.

In "New Objects in Formal Professional Learning: Replaying Meetings to Learn" L. Castañeda, E. Tomadaki, and P. Scott investigate how recordings of online videoconferences can be used as learning objects in formal learning processes.

In "UPC’s Moodle Platform: A Study on Architecture and Performance" M. Montero-Torres gives an overview on how the Learning Management System Moodle can be deployed to give support to 30,000 students. Now that this platform is becoming increasingly popular, this is certainly an interesting experience to be shared.

Acknowledgements
Finally we would like to thank the Editorial Board of this Special Issue: Ingo Dahn (University of Koblenz, Germany), Yannis Dimitriadis (University of Valladolid, Spain), Alfredo Fernández-Valmayor (Complutense University of Madrid, Spain), Jesús González Boticario (UNED, Spain), Dai Griffiths (University of Bolton, UK), Gustaf Neumann (Vienna University of Economics and Business Administration, Austria), Abelardo Pardo (Universidad Carlos III de Madrid, Spain), Peter Scott (Open University London, UK), Marcus Specht (Open University Netherlands, Netherlands), and Jan Wibe (Norwegian University of Science and Technology, Norway). Also special thanks go to the editor-in-chief Llorenç Pagès for the smooth interaction.

References

Useful References on "Technology-Enhanced Learning"


Books

Journals

Conferences


Software
- ILIAS. <http://www.ilias.de>.

Organizations
- European Distance Education Network (EDEN). <http://www.eden-online.org>.