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on e-Learning**

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Edited by

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## **Preface**

The 7<sup>th</sup> European Conference on e-Learning, ECEL 2008, hosted by the University of Cyprus once again demonstrates the interest in this important subject. More than a hundred and fifty papers have been chosen for presentation from nearly three hundred submissions. As usual the papers range across a very wide spectrum of issues, all of which are pertinent to the successful use of e-Learning applications. It is clear that the role being played by e-Learning in the pedagogical process is considerable and that there is still ample scope for further development in this area. One might say that in this field of study we have only just begun to realise its potential and we are still scratching the surface.

The range of researchers from various universities and institutions in different countries is impressive. It is clear from the research being done all over the world that the role which e-Learning plays today and may play in the future is truly global. The really important outcome of this global reach is that research and new ideas may easily be shared among both the academic community and those practitioners in other organisations who wish to be informed of the most recent thinking in the field.

ECEL 2008 promises to be a special event and the University of Cyprus have arranged for this conference to be held at Agia Napa which is one of the many outstanding locations in Cyprus. I look forward to exchanging ideas with you there.

Dr Dan Remenyi  
Trinity College Dublin  
Ireland

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[Karin Tweddell Levinson](#), Danish University of Education, Denmark  
[Dr Roy Williams](#), University of Portsmouth, UK,

### *Conference Committee:*

The conference programme committee consists of key people in the e-learning community around the world. The following people have confirmed their participation:

Ariffin Abdul Mutalib (University Utara Malaysia); Shafqat Ali (University of Western Sydney, Australia); Abdallah Al-Zoubi (Princess Sumaya University for Technology, Jordan); Jane Arduis (Stevenson College, Edinburgh, UK); Mohamed Artemi (7th of April University, Tripoli, Libya); William Ashraf (University of Sussex, UK); Anders Avdic (Orebro University, Sweden); Simon Bachelor (Gamos, Reading, UK); Joan Ballantine (Queen's University Belfast, UK); Trevor Barker (University of Hertfordshire, UK); Orlando Belo (University of Minho Campus de Gualtar, Portugal); David Benito (Public University of Navarre, Pamplona Spain); Yongmei Bentley (University of Luton, UK); Daniel Biella (University of Duisburg-Essen, Germany); Radu Bilba (George Bacovia University, Romania); Eric Bodger (University of Winchester, UK); Stephen Bowman (Ravensbourne College of Design and Communication, UK); Willem-Paul Brinkman (Delft University of Technology Netherlands); Ann Brown (CASS Business School, London UK); Norrie Brown (Napier University, UK); Mark Brown (Massey University, Palmerston North, New Zealand); Joan Burgess (University of Winchester, UK); Elizabeth Campbell-Page (Equinexus LLC, Washington, DC, USA); Jose-Raul Canay Pazos (Universidade de Santiago de Compostela, Spain); Giuseppe Cannavina (University of Sheffield, UK); Sven Carlsson (Lund University, Sweden); James Carr (University of Newcastle, UK); Maggie Carson (Edinburgh University, UK); Antonio Cartelli (University of Cassino, Italy); Maria Celentano (University of Lecce, Italy); Satyadhyan Chickerur Sona College of Technology, Salem, India); Barbara Class (University of Geneva, Switzerland); Lynn Clouder (Coventry University, UK); Thomas Connolly (University of West of Scotland, UK); Ken Currie (Edinburgh University, UK); Valentina Dagiene (Institute of Mathematics and Informatics, Vilnius, Lithuania); Christopher Douce Institute of Educational Technology, Walton Hall, UK); Yanqing Duan (University of Luton, UK); Colin Egan (University of Hertfordshire, Hatfield, UK); Bulent Gursel Emiroglu (Başkent Üniversitesi, Turkey); Ariwa Ezendu (London Metropolitan University, UK); Bekim Fetaji (South East European University, Tetovo, Macedonia); Andrea Flora, (Ionian University, Corfu, Greece); Tim Friesner (University College, Chichester, UK); Martin Graff University of Glamorgan, UK); Roz Graham (University of Winchester, UK); David Guralnick (Kaleidoscope Learning, New York, USA); Richard Hall (De Monfort University, Leicester, UK); Martin Harrison (Loughborough University, UK); Mike Hart (University of Winchester, UK); Patricia Harvey (Greenwich University, London, UK); Paul Haslam (University of Winchester, UK); Misha Hebel (Dogwhistle Ltd, London and Cass Business School, UK); Alan Hilliard (University of Hertfordshire, Hatfield, UK); Uwe Hoppe (Bildungswerk der Sächsischen Wirtschaft, Germany); Cathy Horricks (University of Waikato, Hamilton, New Zealand); Stefan Hrastinski (Uppsala University, Sweden); Akbar Ali Jaffar Ali (Majan College, University College, Muscat, Oman); Amanda Jefferies (University of Hertfordshire, Hatfield, UK); Noraini Jones (University of Nottingham, Malaysia Campus, UK); Paul Jones (University of Glamorgan, UK); Michail Kalogiannakis (School of Pedagogical and Technological Education, Crete); Jana Kapounova (University of Ostrava, Czech Republic); Harald Kjellin (Stockholm University, Sweden); Jasna Kuljis (Brunel University, UK); Sunaina Kumar (Indira Gandhi National Open University, New Delhi, India); Eleni Kyza (Cyprus University of Technology, Lemesos, Cyprus); Maria Lambrou (University of the Aegean Business School, Greece); Andy Lapham (Thames Valley University, UK); Mona Laroussi (Institut National des Sciences, Appliquées et de la Technologie, Tnis and Lille, Tunisia); Fotis Lazarinis (Applied Informatics in Management and Finance, Greece); Denise Leahy (Trinity College, Dublin,

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# Biographies of Conference Chairs, Programme Chair and Keynote Speaker

## Conference Chair



**Dr George Papadopoulos** (Ph.D.) holds the (tenured) rank of Professor in the Department of Computer Science, University of Cyprus. Professor Papadopoulos' research interests include component-based systems, mobile computing, multimedia systems, open and distance learning, parallel programming and high performance computing, GRID technologies, cooperative information systems and service oriented computing. He has published more than 100 papers as book chapters or in internationally refereed journals and conferences. Furthermore, he serves in the Editorial Board of 5 international journals and has served as a Co-Chairman, Steering or Program Committee member in more than 70 international conferences and workshops. Professor Papadopoulos is a recipient of an 1995

ERCIM-HCM scholarship award. He has been involved or is currently participating, as coordinator or partner, in over 30 internationally and nationally funded projects (total budget for his participation more than 4 MEURO), including 9 FP5 and FP6 IST (in the areas of tele-medicine, component-based systems, bioinformatics, e-learning and Internet technologies), 3 EUMEDIS (in Open and Distance Learning), 1 INCO-DC, 1 eTen (in tele-medicine) and 7 LEONARDO ones (in vocational training). He is the Director of the Software Engineering and Internet Technologies Laboratory

## Programme Chair

**Dr Roy Williams** designs learning spaces and knowledge management applications at the Flexible Learning Studio in the Faculty of Technology at the University of Portsmouth, and he is also the e-learning coordinator for the Faculty. He researches and published widely on e-learning, knowledge management, both on the practical design and application, and on the theory of learning and knowledge management. He currently has a grant from the Higher Education Academy in the UK to apply the theories of complex adaptive systems and ecological affordances to learning. He is actively involved in the European and International Conferences on e-learning, knowledge management, and business research methods and has edited the Electronic Journal of e-learning. He has held posts of Professor and Chair of Communication, Visiting Professor of Education, Visiting Examiner, Executive Board member of the IBA, the South African Broadcast regulator, and set up the joint-venture publishing company, Sached Books Pty Ltd



## Biographies of contributing authors (in alphabetical order)

**Giovanni Adorni**, born on March 26, 1952, received the Dr. Ing. Degree in Electrical Engineering from the University of Genoa (Italy) in 1976. He is a Full Professor of Computer Engineering at the School of Science of Education of the University of Genoa, teaching “Foundations of Computer Science” and “Web Design”. He coordinated several national and international research programs on artificial intelligence, computer vision, robotics and e-learning. He received several international prizes; among them he has been appointed as Fellow of European Coordinating Committee for Artificial Intelligence. He has authored and co-authored over two hundred scientific papers in international journals, contributed volumes, and conference proceedings.

**Annika Andersson** is a PhD-student of Informatics at Örebro University, Sweden. Her research is focused on Electronic Government and ICT4D (Information- and Communication Technologies for Development) and she is currently participating in two e-learning projects in Bangladesh and Sri Lanka. Annika has authored many publications at international conferences and has also been called in as ICT consultant for the Swedish government. Annika is a member of the Swedish Program for ICT in Developing Regions (SPIDER), funded by the Swedish Agency for International Development Cooperation (Sida), where she also coordinates PhD-students working in the field.

**Alla Anohina** is a lecturer in the Department of Systems Theory and Design and a leading researcher in the Institute of Applied Computer Systems of Riga Technical University. She defended the doctoral dissertation and obtained the doctoral degree in Computer Systems in 2007. Her main research fields are e-learning, intelligent tutoring systems, computer-assisted assessment systems and artificial intelligence. She has seven years' experience of teaching in the field of computer science. She has participated in several research projects related to the development of educational software.

**Elaine Arici** is a part-time doctorate student in the School of Education, University of Nottingham where she has the post of IT Subject Specialist for the Undergraduate Programme. Her research interests are related to the process of e-learning implementation and drivers of change in Higher Education institutions.

**Paulo Almeida** is a Systems Engineer and a MSc student at the Department of Informatics, the University of Minho, Braga, Portugal. He has been working for several years on re-engineering Professional Schools' business processes and technological infrastructures. He has also work done on the fields of systems integration and networks design and administration. He is currently leading projects on e-learning. He is the Chief Information Officer at the Professional High School Centro de Formação Profissional da Indústria de Calçado.

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# An Ontological Model for Learning Content Design

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**Abstract:** The rapid development of the World Wide Web and the increasingly use of Information and Communication Technology (ICT) in learning context in the last few years has brought great opportunities in the way educational resources can be made available to teachers and learners. On the other hand, some problems emerged as a result of this proliferation of contents, such as the difficult management and accessibility of these materials. In response to these problems, new models are needed for the process of learning content design, based on environment and tools enabling users to capture, represent and share their knowledge. In our opinion, semantic technologies could support instructional designers and teachers in achieving such goals. Currently, the design of learning objects and educational paths in the field of web-based courses is mainly oriented to the serialization of instructional resources with the aim of creating shareable content objects (according to the standard SCORM). In the daily practice, teachers and authors cope with the conceptualization of their domains of interest. We suggest moving the generalization level from the contents to the definition of the contents' schema. In order to make it possible, we propose an ontological model intended to be implemented in e-learning content authoring environments. It is based on a simple framework that essentially defines a hierarchical structure through part-whole relationships (*Course, Module, UnitOfLearning*), topics (the subjects of units of learning) and their relationships. After the ontology description, we present our implementation strategy that is based on Topic Maps (TM) paradigm, an ISO standard whose aim is to represent knowledge structures and associating them with information resources. The main elements in the TM model are *Topic, Association* and *Occurrence*. A topic is a symbol used within a topic map to represent one (and only one) subject; an association represents a relationship between two or more topics, while an occurrence is a representation of a relationship between a subject and an information resource. Therefore two layers can be identified into TM standard: a *knowledge layer* that represents topics and their relationships and an *information layer* that describes information resources. In addition, semantic information is stored within the TM in a standard language, thus it can be easily exported over the Internet and many systems can re-use and interoperate with the XML Topic Maps (XTM) representation of the topic map (an XML-based encoding scheme defined into the same ISO standard). The layered structure also enables instructional designers to define different maps based on a common repository of resources so that personalized learning paths can be defined while the contents at the occurrences level remain the same and different educational strategies can be implemented. At the end of this paper, we introduce our future projects and some related works.

**Keywords:** Learning design, learning content design, semantic web, ontology, topic maps

## e-Accessibility of Higher Education Websites

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**Abstract:** The Web is widely used as a delivery channel and the importance of E-accessibility to digital resources is now widely acknowledged. E-learning is a new paradigm in contrast to traditional face to face educational system and Web is a necessary tool and information medium for all E-learners. The web channels help E-learners to access information anytime anywhere. Therefore the necessity to make sure the availability of electronic accessibility for all E-learners is now becomes an ever increasing practical, social, moral and legal obligation in today's modern era. By developing a series of guidelines and designing standards the World Wide Web Consortium (W3C) has played an important role to achieve the goal of E-accessibility and to ensure that Web resources can be accessed by people with special needs. Unfortunately too many web designers still think of Web as a purely visual medium, and are unaware even that visually impaired people can access the web. In the current population there are significant numbers that are visually impaired. These people tend to be excluded from the socially popular vehicle for entertainment, shopping and more importantly education. That is the use of the World Wide Web as a mechanism by which those services and facilities are provided. This matter is of so much concern that governments and specialized bodies such as Royal National Institute for Blind (RNIB) in UK have produced recommendations. Therefore, web developers and designers should make sure that the information available on the web is completely accessible to people with disabilities. This paper reports on the results of the accessibility tests that were conducted for the universities of the UK and the USA and claims that a very little importance has been paid to the features of websites accessibility for disabled E-learners.

**Keywords:** e-Accessibility, WCAG 1.0, tools, universities, UK, USA

# Artificial Intelligence Tools for Student Learning Assessment in Professional Schools

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**Abstract:** The necessity to maximize the learning success of the students as well as to produce professionals with the right skills to fulfil the market requirements raises the question of closely following and assessing the learning paths of the students of Professional Schools. To solve at once problems and difficulties that arise during the learning process, we need to develop technologies and tools that allow the monitoring of those paths, if not in real time, at least periodically. Supported on a knowledge base of student features, also called a Student Model, a Student Assessment System must be able to produce diagnosis of student's learning paths. Given the wide range of students' learning experiences and behaviours, which implies a wide range of points and values in students' models, such a tool should have some sort of intelligence. Moreover, that tool must rely on a formal methodology for problem solving to estimate a measure of the quality-of-information that branches out from students' profiles, before trying to diagnose their learning problems. Indeed, this paper presents an approach to design a Diagnosis Module for a Student Assessment System, which is, in fact, a reasoner, in the sense that, presented with a new problem description (a student outline) it produces a solved problem, i.e., a diagnostic of the student learning state. We undertook the problem by selecting the attributes that are meaningful to produce a diagnosis, i.e., biographical, social, economical and cultural data, as well as skills so far achieved, which may drive, as constraints or invariants, the acquisition of new knowledge. Next, we selected the metrics that would allow us to infer the quality of the ongoing learning, i.e., the degree of expertise on the currently attended learning domains. To collect these indicators we used the Moodle e-Learning System. Both, attributes and metrics, make the student model. Finally, we designed a reasoner based on Artificial Intelligence techniques that rely on the Quality-of-Information quantification valuations to foster a Multi-Valued Extended Logic Programming language, a key element in order to produce diagnosis of the student learning paths. Confronted with a new case, i.e., a student model, the reasoner evaluates it in terms of its QI and outputs a diagnostic.

**Keywords:** Artificial intelligence, multi-valued extended logic programming, rule based programming, quality-of-information, MOODLE

## Letters from the Field: e-Learning Students Change of Learning Behaviour in Sri Lanka and Bangladesh

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**Abstract.** This paper reports the findings from two case studies on e-learning in Bangladesh and Sri Lanka. In these countries much hope is set on e-learning as a means to disseminate education to a larger population, but statistics show that drop out rates from e-learning courses are much higher than from traditional, classroom based, courses. In this paper it is argued that one reason for this is that the introduction of e-learning and a more student-centred learning model involves a drastic shift for students who are brought up in very teacher-centred didactic educational cultures. In order to investigate how this change in learning is perceived by its main stakeholders (i.e. the students) visits to learning centres in Sri Lanka and Bangladesh were made during 2007 and 2008. To capture the students' opinions an open approach was chosen where students were asked to write letters about which major challenges they experience in changing their learning behaviour and completing the courses. Altogether the study is based on 107 student letters that have been analyzed and coded based on major differences and challenges identified by the students. Findings show that most students find learning on their own to be the major difference. They find this challenging because they feel very distant and because they do not know how to learn on their own. They have difficulties in managing their time and a lack of flexibility combined with a sloppy administration makes it even worse. Students used to being spoon-fed and learning by memorizing obviously need much support in taking ownership of their own learning in order to be able to learn by themselves. By comparing and mapping these findings to solutions suggested by existing research this study therefore suggests that support functions should be provided for students on 'how to be an online learner' and on 'how to learn by yourself'. The teacher interaction and presence should also, at least in the early stages of the course, be frequent and active in order to make the student confident in his or hers ability to learn on their own. Finally,

course flexibility (in regards to delivery mode and pace) should be high and much effort should be put into creating a supportive and well-organized administration.

**Keywords:** e-Learning, developing countries, educational structures, pedagogical differences, learning behaviour, support functions

## **Learner's Support in the Concept map Based Knowledge Assessment System**

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**Abstract:** The paper is dedicated to the concept map based knowledge assessment system which has twofold goals in the context of the integration of technology into the traditional educational process: 1) to promote learners' knowledge self-assessment, and 2) to support the teacher in the improvement of the learning course through systematic assessment of learners' knowledge and analysis of its results. The goals are reached by the use of concept maps as an assessment tool and by providing opportunities to extend an initially created concept map for next assessment stages and to present a learner information about his/her errors at the end of each assessment stage. The system has been being developed already for 3 years by continuously improving its functionality. At the moment it offers not only a graphical user interface for manipulations of concept maps by the teacher and learners and the presentation of information about learners' errors, but five tasks of different degrees of difficulty and an intelligent algorithm for the comparison of teacher's and learner's concept maps. Its current development focuses on the identification and implementation of different kinds of learner's support intended not only to help the learner to solve concept map based tasks, but also to tutor the learner during the assessment process. The overview of the system is given specifying its goals and the scenario of usage. Related works are described focusing on learner's support in similar assessment systems based on concept maps. Two dimensions of learner's support are identified, that is, help and feedback, and their different kinds are described in-depth focusing on suitable types of tasks, implementation mechanisms and nature. The paper clearly states which kinds of learner's support have been already implemented in the concept map based knowledge assessment system and which ones are in the stage of the implementation.

**Keywords:** Concept map, knowledge assessment system, learner's support, help, feedback

## **e-Pioneering: A Mentoring Approach to Institutional Technology Adoption**

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**Abstract:** This paper is concerned with the implementation of e-learning practices. It is based on action research involving administrative and academic staff in the School of Education, University of Nottingham. It presents the processes, outcomes and emergent mentoring model for organisational change in e-practices during a two year initiative. The aim was to identify areas of particular e-learning need that could enhance the learning experience of students through 'quick gain' projects, and move the School to majority adoption of e-learning practices. The paper will outline the developments within the initiative and propose an e-mentoring model that might be adopted by other HE staff wishing to develop e-learning practices in their own context.

**Keywords:** e-Learning, e-learning implementation, higher education, mentoring

## **Prediction of Reading Performance Using the MAPS (Mental Attributes Profiling System) Multimodal Interactive ICT Application**

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**Abstract:** Current literature has put special attention to the issue of reading difficulties. Poor reading performance can suggest possible problems such as dyslexia and other learning disabilities. It is thus

important to ensure the early identification of the problem when this exists and provide early intervention to children when needed. The authors of this paper have developed a battery of Internet based applications which collectively operate as a screening test of cognitive abilities capable not only to predict children at risk (e.g., possible dyslexics), but moreover to equip the teacher with a profile of mental abilities relevant for choosing and designing personalized remediation programs. A further constrain that was put was that the system should be language independent, i.e., rely on cognitive rather than language-based measures. This study evaluated the capability of the new computerized cognitive battery of tests to predict reading performance. The MAPS (Mental Attributes Profiling System) battery addressed eight major domains of language-independent tests that have been frequently linked to reading development and/or disability: (1) short-term visual memory, (2) short-term auditory memory, (3) auditory discrimination, (4) visual discrimination, (5) lateral awareness, (6) categorization, (7) sequential processing, and (8) navigational ability. A set of Rapid Naming of pictures and letters and word reading tests (Word Identification and Word Attack) of students attending Grade 2, 4 and 6 was used as the dependent variable of MAPS in predicting reading performance. The analysis of the results suggested five predictors as the strongest, for predicting reading performance; these were lateralization, auditory memory, categorization, sequencing and auditory discrimination. The results suggest these five predictors can be used for early identification of children at risk in order to avoid potential problems in their later learning development.

**Keywords:** Reading performance, profiling system, auditory discrimination, lateralization, categorization, sequencing

## The Skillsoft Growth Model

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**Abstract:** The Skillsoft Learning Growth Model-Integrating Learning into the life of the Enterprise in five Manageable Stages. As organisations enter into more advanced forms of learning, it is critical that they have a plan for future development. The Skillsoft Learning Growth Model is being used by organizations around the world to chart their course toward the most efficient and effective corporate learning possible. The business world is changing faster every day. To keep up, employees must adapt, change and learn at every opportunity. Utilizing learning is a proven way to stay on track, on time and ahead of competition. The journey to performance-oriented learning is one that requires partnership between learning professionals, business peers and executives. For those on the journey, this model will be a valuable aid. The Skillsoft Learning Growth model is a framework that describes the maturity of a learning organization and its programs and helps organizations move forward and overcome predictable hurdles at each level. The goal is to increase learner performance and organizational success and help organizations foresee what lies ahead. An envisioned future, will in turn help them manage the issues and develop a sound, meaningful learning strategy. The model deals with the integration of technology to enhance business impact and organizational learning and it consists of five stages. It is very important to identify the major drivers for adoption of e-learning at each stage, the training department's role within the organization, the use of blended learning, the target audience, the usage patterns and the business case for learning. The first two stages (Supplemental and Targeted) make use of generic e-Learning content to address the workplace skills that cannot be addressed efficiently by more traditional methods(e.g. classroom) or developed quickly using course development tools. Essentially, the two stages establish a baseline deployment of e-Learning and allow the learner time to adapt to using new methods.

The third stage (strategic) is guided by an executive leadership that envisions increased potential of business-focused learning. In this transformational stage executive leadership is needed to move from a more familiar training paradigm to one that is focused on building business-fit learning paths centered on strategic job competencies. The later stages (stages four and five) are more complex in their structure. Success depends heavily on executive sponsorship of performance-focused learning programs that address strategic business demands and human capital goals. It is important to move beyond the training-as-usual mindset and realize that reducing the cost of training will never be a strategic goal. If training is used strategically, it will save both time and money as well as the business itself.

**Keywords:** Learning growth, training, learners, e-learning



# **PebblePAD: Big Splashes or Mini Ripples? Reflections on Electronic Portfolio Usage on a Blended Learning Course**

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**Abstract:** This paper provides a personal reflection on the introduction of an electronic portfolio (e-portfolio) into a new blended learning assistive technology (AT) course in the UK. The reflection is based upon a preliminary module evaluation of a group of postgraduate mature students from health, social care and charity backgrounds. Within the last few years there appears to have been a surge in e-portfolio usage as an educational tool, for example, within engineering settings, medical schools and nursing education. Health and social care professional education in the UK now places a strong emphasis on reflective practice. Given these developments, an opportunity arose to integrate reflective spaces into each AT module using the university's e-portfolio tool, PebblePAD. I will review some of the key drivers promoting the use e-portfolios within the wider educational context alongside local examples. However, the main focus of the reflection will be on describing the rationale for using an e-portfolio within the AT course and how student reflections and e-portfolio usage were embedded within the introductory module. In the final module session, five students completed an in-depth module evaluation of their reflective experiences. Qualitative responses were collated and analysed to identify prominent themes. Evidence from students' evaluations are also examined in conjunction with selected literature in relation to assessing the impact of integrating formative reflective tasks with the e-portfolio tool. Key learning points are explored particularly in relation to offering students choices in reflective tools available and the need to carefully consider the use of e-portfolios with reflective tasks as part of summative or formative assessment. It is anticipated that these reflections will stimulate debate and the concluding critical question checklist will be helpful for other educators that are considering the use of an e-portfolio to support the reflective process within their teaching and learning approach.

**Keywords:** e-Portfolio, evaluation, assistive technology, choice, critical reflection

# **Patterns of ICT use in Australian Schools by Beginning Teachers: The three Rs**

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**Abstract:** This paper explores findings from a West Australian study that examines the ways in which 35 beginning teachers use information and communications technologies (ICT) in their teaching. The educational policy environment in Australia explicitly supports ICT integration, and this is translated into targeted initiatives covering infrastructure, equipment, electronic learning materials and professional development. However, for all the energy expended to encourage teachers to use ICT, it seems that few teachers take full advantage of the significant opportunities that they present. A number of reasons have been posited to explain this, the most compelling of which are bound up with teachers' skills in harnessing ICT and their pedagogical beliefs about teaching itself. In the spirit of Cuban's (2001) investigation into teachers' use of computers in the Silicon Valley, this study presents an in-depth examination of a cohort of teachers (2006 graduates) that are digitally literate and familiar with contemporary, student-centred theories of learning. It is suggested that these teachers may be likely to integrate ICT into their teaching in innovative ways, and the primary research question - to what extent is ICT integration, a feature of beginning teachers' classroom practice? - is aimed, at least in part, at confirming or challenging this assertion. The study tracks these teachers through their first three years in the profession, gathering evidence through a mixed method approach that helps to understand the dynamic nature of participants' beliefs about teaching and attitudes towards ICT within their socio-cultural context. As expected, the study has found that most participants are competent users of ICT. Participants also articulate pedagogical beliefs that aim to engage students in active meaning making. However, observations reveal that participants' ICT competence and stated pedagogical beliefs do not necessarily translate into classroom practices that optimise the use of ICT for learning. For example, none of the participants have used Web 2.0 tools although most claim to value electronic communication and rapid publishing. Using a schema developed by Newhouse, Clarkson and Trinidad (2005) where ICT use is considered on a continuum from Inaction to Transformation, it is apparent that most participants are at early stages of development. There seems to be a mismatch between the ideals that participants hold to be important and their capacity to use ICT to help realise these ideals. The use of ICT has been limited to a combination of three Rs: reward, rotate and reinforce. These themes, which will interest teachers and education managers, are explored in this paper along with a consideration of how different socio-cultural settings impact on participants' evolving pedagogical identities. **Keywords:** ICT, ICT integration

# Using e-Learning Tools to Build a Community of Distance Learners: A Progress Review and Call for Collaboration

**Martin Belgrove, Julia Griffin and Brian Makepeace**  
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**Abstract:** The paper is an interim progress statement of a two year research project into how a higher education institution may develop online student support systems that effectively help build a community of distance learners. In doing so it seeks to investigate means of creating and maintaining learner social presence, similar attention is paid to the provision of non-academic support of learners and engendering a sense of identity and belonging to their learning community. Drawing together theoretical and practical perspectives the paper is of interest to those engaged in supporting online learners. It looks how online collaboration and communication tools may be deployed to create a social community within online learners. The paper recognises that non-academic support plays an essential role in setting the quality of student experience within distance learning and therefore is crucial to optimising success and retention rates. The utilisation of online technologies potentially permits institutions to prevent isolation amongst distance learners and narrow the gap between the experience of on-campus and off-campus students through increased sense of community and belonging. We explore the work of the project to date in doing so it identifies the context of the project, the strategic importance and the rationale for conducting research into the key areas of investigation. We present the findings of the literature review and the preliminary research findings looking at usage and participation including barriers to participation and requirements for effective support identified by learners. This aspect looks at identified usage trends of existing facilities and looks at student perceptions of existing provision and the nature of support systems they would like to see incorporated. We then outline future research activity in the provision of appropriate student support mechanisms and the measurement of their effectiveness along with the attendant project tasks set within the timescale. The project also represents an opportunity to seek collaborative exploration of the issues in conjunction with national and international partner higher education institutions. The paper is of interest to practitioners engaged in supporting online learners along with those involved in the provision of distance learning based higher education, particularly those concerned with programme design and those responsible for the non academic support of distance learners.

**Keywords:** e-Learning community, distance learning, learner support

## Learning to hit the Ground Running – The Online Way

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**Abstract:** On the road of transition, many people in South Africa still lack the skills needed to participate in society. The South African Government committed itself to empower its citizens with the skills and competencies required to function optimally in the world of work. To ensure that people "hit the ground running" when they enter the labour market, the National Qualifications Framework (NQF) stipulates critical, cross-field learning outcomes as exit requirements at all levels of education and training. In adherence to this framework, a major curriculum review in the School of Medicine, University of the Free State, was introduced in 2000. An increased focus on helping students develop not only subject-specific and professional skills, but also lifelong learning skills, and a commitment to achieve a synergistic relationship between learning and technology, were among the goals of the review. In 2000–2006, a face-to-face instructional approach was used in a module on generic skills for first-year medical students. Task-oriented activities were used to develop proficiency in skills such as communication, collaboration and the use of computers. However, challenging logistics and cumbersome paper-based portfolio assessment prompted the relocation of this module to an online environment. Since constructivist learning theories claim that generic skills development is encouraged in environments conducive to deep learning, authentic content, social negotiation, reflexivity and tasks requiring active involvement of students, were emphasised. No consensus exists in the literature regarding the benefits of computer-assisted learning. Online learning could even be dangerous in the hands of students who struggle with self-regulatory tasks. This study aimed to evaluate the acceptability and effectiveness of the new approach to skills development. A snapshot descriptive study investigated whether students could identify with the technology-based approach and whether the delivery process permitted deep, constructivist learning. The questionnaire survey and nominal group discussion used to capture student feedback, form part of a more comprehensive action research project aimed at internal quality assurance and on-going improvement of generic skills development. The results indicate that online learning not necessarily leads to enhanced critical outcomes, thus highlighting the vital role of methodology in skills development. The study further confirms that technology is only a tool and not an end in itself in addressing

the skills needs of a diverse student population. Ultimately, the "how-to" knowledge gained by relocating paper-based learning content to an online environment, may be applicable to other similar contexts.

**Keywords:** Lifelong learning; generic skills; online learning; constructivist learning; action research

## **Evolution of the Roles of the Actors in the Context of the Implementation of an "Environnement Numérique de Travail" in a University**

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**Abstract:** The integration of Information and Communication Technologies (ICT) in teaching became a major problem in the university world. Thus, institutions of higher education are interested in tools supporting distance learning and groupware since many years. In France, the Ministry in charge of higher education developed the concept of "Environnement Numérique de Travail" (ENT) with an intention of maintaining coherence between the multiple projects. This article has three main objectives: first evaluate the way education is transformed by the integration of an ENT, then study the way the roles of the various actors evolve in that context and finally discuss the implications of these evolutions for the integration process. We decided to use a qualitative approach and more specifically a case study. The integration of an ENT in our university allowed us to answer the research questions. This study highlights the evolution of the teachers' roles in the context of the implementation of an ENT. New teachers' roles are identified: educational designer, facilitator, expert and technician. We finally study the impact of these roles' evolutions on the integration process and propose some hints to facilitate this integration.

**Keywords:** e-Learning, information and communication technologies in education, change management, Environnement Numérique de Travail (ENT), distance learning, actors

## **Mobile City and Language Guides - New Links Between Formal and Informal Learning Environments**

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**Abstract:** One of the major challenges in second and foreign language education, is to create links between formal and informal learning environments. *Mobile City and Language Guides* present examples of theoretical and practical reflections on such links. This paper presents and discusses the first considerations of *Mobile City and Language Guides* in language centres, upper secondary schools and universities. The core concept of *Mobile City and Language Guides* is *geotagging*. Geographical locations can be geotagged either through GPS or by marking positions directly in, e.g., *Google Earth* or *Google Maps*. Students or teachers can add various kinds of information to geotags: Photos, audio, text, movies, links, vocabulary and various language tasks. This allows the student, in self-defined learning contexts, to down- and upload location-based materials with his or her mobile phone, for immediate or later processing. More and more students are able to afford mobile phones with multimedia and broadband Internet. The potentials of user-generated mobile- and web-based content are increasing. In these years, the internet is moving from the so-called Web 1.0 to the more user-centered Web 2.0, i.e. Weblogs, YouTube, Google Maps, MySpace, Flickr, etc. In an educational context, Web 2.0 represents an interesting development of the relatively monologue Web 1.0, where traditional homepages often only allow minimal interaction with the site content. This paper investigates the opportunities that *Mobile City and Language Guides* seem to give second and foreign language students to learn from informal, location-based, experience-based and authentic materials; and discusses how language centres, upper secondary education and universities can involve informal learning contexts through student use of mobiles with broadband and Internet technology supporting second and foreign learning. *Mobile City and Language Guides* is only of several possible mobile and Internet-based language educational scenarios. The challenge for the future, therefore, is to develop and implement new, meaningful and exciting scenarios that strengthen the linkages between formal and informal learning environments.

**Keywords:** Second and foreign language education, formal and informal learning, broadband mobile technology, web 2.0

# Some Factors to Consider When Designing Semi-Autonomous Learning Environments

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**Abstract:** This research aims to answer the question, “in what ways do mediated learning environments support or hinder learner autonomy?”. Learner autonomy has been identified as one important factor in the success of mediated learning environments. The central aspect of learner autonomy is the *control* that the learner exercises over the various aspects of learning, beginning with the decision to learn or not to learn. But as Candy (1995) points out, there are several areas where learner-control can be exercised. The first are the motivational-intentional forces that drive the learner to apply some determination (or “vigour”) to the act of learning. They are the *conative* functions of learning and include learner initiative, motivation and personal involvement. They are often associated with *life goals* that are independent of the actual learning goals pursued within the strict confines of the learning environment (Long, 1994). The second area of learner-control is the one comprising the “nuts-and-bolts” of the act of learning, such as defining learning goals, deciding on a learning sequence, choosing a workable pacing of learning activities, and selecting learning resources (Hrimech & Bouchard, 1998). These are the *algorithmic* aspects of learning, and in traditional schooling, they are the sole responsibility of the teacher. In mediated learning environments, it can be shared between the platform and the actual learner. Just a few years ago, learner control was necessarily limited to these two sets of features, conative and algorithmic. Today however, with the proliferation of educational offerings in both the private and public sector, as well as the developments in educational technology, two other aspects of the learning environment emerge as important areas where learner-control can be exercised. The *semiotic* dimension of learner-control includes the symbolic platforms used to convey information and meaning, for example web “pages”, hypertext, video/audio multimedia, animation, each of these platforms bring with them their own set of possibilities and limitations. Finally, all learning environments exist in their own distinct *economic* sphere where decisions about whether, what and how to learn are made on the basis of cost-benefit, opportunity cost, and extrinsic market value. We will examine the implications of each of these areas of learner-control, and share our analysis of a series of 13 interviews with cyber-learners, based on this framework.

**Keywords:** Self-directed learning, learner autonomy, educational policy, international development

## Integrating Web 2.0 Features into a Learning Management System

**Salim Boulakfouf and Denis Zampunieris**

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**Abstract:** The e-Learning world is overcrowded by Learning Management Systems. Whatever they are Web-based or stand-alone software, lots of them are mere content delivering platforms and only a few provide a good end-user satisfaction. Since now two years, the University of Luxembourg is designing its own Web-based distance learning framework and faces the same problems. Besides, a growing advent called Web 2.0 is gaining ground in various application fields. Briefly speaking, Web 2.0 is about content management and new ways of communication and interaction between users. Currently, this technology is more and more viewed by scientists as a new way of learning. As a consequence, this trend directly competes with e-learning systems. But in the meanwhile, most of features that could be qualified as Web 2.0 compliant could easily be shaped into learning management systems and be a way to overcome their current limits. For instance, users of these future integrated systems would be attracted not only to study a course, but also because they can communicate with other users in a collaborative way and learn from each other. Our paper describes how we challenged this situation by shaping Web 2.0 skills into our e-learning platform named *SPOTLight*. We designed a brand new solution with innovative interactions and learning perspectives. The paper is structured as follows: first, an overview of the framework is described, followed by social and pedagogical issues of the problematic. Second, a brief introduction to the state of the art of Web 2.0 provides further understanding of collaboration potentialities on the Internet and an analysis details the constraints we faced for each feature according to our context, resulting to a set of tools we decided to integrate into SPOTLight. Afterwards, the development management procedure we used for the implementation is detailed. Indeed, integrating Web 2.0 features creates important new issues in terms of user interface, which make us rebuild the core architecture using software as a service model. Finally, this paper outlines our future strategy about new features from the Web 2.0 world we will progressively add to SPOTLight. **Keywords:** e-Learning platforms, Web 2.0 technologies, web-based learning management systems, collaborative on-line learning

## **“Here Comes Trouble”: A Positive Architecture of Disruptive Education**

**Stephen Bowman**

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**Abstract:** This paper will examine the concept of learning as a disruptive activity, it will be particularly of interest to e-learning practitioners and developers who require an understanding of the nature of the learning experience. It will put forward a range of theories concerning the nature of learning, information and knowledge, the nature of psychological change – and Brooks’ Fundamental Equation model which attempts to quantify this change, and the place of boundary or ‘threshold’ events in knowledge structure change. This micro element of change will be mapped to wider theories of how paradigms change as put forward by Thomas Kuhn, and the theory of anarchic development as proposed by Paul Feyerabend. The paper concludes by putting forward methodologies which may point the way to the implementation of these theories in the pedagogic development of e-learning.

**Keywords:** e-Learning, knowledge structures, paradigms, pedagogy, threshold events

## **Two-fold Learning: Learning by Developing and Learning by Playing**

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**Abstract:** This paper describes the “Learning by playing” project, an initiative that involves secondary-school students in the development of didactic software for children of the primary school. This project, started in 2006-07, is the result of a collaboration between the “Istituto Tecnico Commerciale Enrico Tosi” (Italy) and eight primary schools. This work has a two-fold didactic objective. On one hand, it aims to motivate secondary-school students to learn the Visual Basic (VB) programming language through the development of didactic games for children. On the other hand, it aims to encourage and support learning and competence acquisition of primary school learners, through the use of the developed interactive games and activities. Didactic software, produced in various disciplines, including mathematics, history, Italian grammar, science, music, and English, is made freely available via Web. As emerged from a preliminary evaluation, the project was successful in reaching the two initial objectives. From the secondary school students point of view, the initiative increased the interest for the VB programming subject as well as to improve their learning outcomes. The presence of a customer represented a strong stimulus for students who had to develop programs to be used in a real context rather than abstract didactic exercises. Many students were so involved in this activity that they proposed improvements and extensions which were not originally foreseen and required them an extra work. In addition, it is worth noting that some students took the initiative to develop brand new games to propose to the primary school teachers. From the primary school point of view, the computer support and the use of multimedia elements contributed to stimulate children interest and motivation. Children can follow their own learning pace, can repeat an exercise as many times as required, can play and compete with another classmate, with positive results for any child, but specifically for foreign children, in terms of learning outcomes. Most of the results reported above are derived from questionnaires. Additional findings will be collected in the future using other evaluation methods such observation, logging files, task analysis with different samples of users, etc. This would allow a more direct feedback to be obtained for possible improvements. In conclusion, the “Learning by Playing” experience has demonstrated to be a profitable case of collaboration across grades and across schools.

**Keywords:** Learning by playing, K-12 education, multimedia learning, didactic games

## **i-learn – Complete Online Delivery for Arts and Crafts: A Case Study**

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**Abstract:** Education is more memorable if it is fun. This is especially true in the world of e learning where physical isolation from the tutor and other students can be problematic. Fun is a strong motivator and one of the criteria for the courses developed for **i-learn** is that the course materials are clear, fully illustrated, well designed and a pleasure to look at, and a pleasure to read and work from. **i-learn** aims to deliver the courses

completely online with no face to face element, and to do this effectively we are applying all the current pedagogical principles in as creative a way as possible. Videos, galleries, forums and blogs all help to create an international online cohort of students that supports how our young people work, and use the Internet. It is also very important for the retention of student numbers to ensure that a strong email relationship is built between the student and the designated tutor, which allows constructive assessment and feedback and helps in the development of the student's skills. The teaching materials and the Online Course Management System will specifically support Art, Craft and Design Courses. This will mean that delivery systems only need to be developed once to support all current partners in Norway, Romania, Turkey and Wales and potential new partners from other parts of Europe. It will also mean that online security, which is a growing problem, will also only need one central solution for all partners. Students can access the courses from wherever they may live - all they need is the Internet. Therefore, specialist courses become accessible and cost effective. The project supports the 'Widening Participation' agenda allowing students who live in rural areas or have specific access difficulties to join the courses and acquire knowledge, skills and qualifications. It also supports the development of innovative e-learning content. The learning materials are designed to give students an underlying understanding of the basic principles of Art and Design, which can then be applied to the particular skill they are learning through practical activity. The courses are based on a new suite of Creative Vocational courses developed by City & Guilds and offer international accreditation, supported by Europass Certificate supplements. **i-learn** aims to make learning a pleasure and the Online Centre a dynamic and developing institution.

**Keywords:** Art, craft, design, online courses, e-learning, i-learn

## **Sowing the Seeds of Learner Autonomy: Transforming the VLE into a Third Place Through the use of Web 2.0 Tools**

**Fiona Carroll, Rita Kop and Clare Woodward  
Swansea University, UK**

**Abstract:** Learners, particularly adult learners, make choices as individuals about the level of control imposed by others on their learning. Indeed, the choice to study through an institution and tutor on a classroom based course or the choice to study on a course mediated through technology, will mean a different level of control being imposed on the learning process by different actors and on different aspects of the learning itself. This paper draws from these ideas to explore the concept of an online educational 'place' and the impact this might have on the learning experience. In detail, it will engage with the concepts of Oldenburg's 'Third Place' (i.e. a place where people can gather beyond the realms of home and work), and Fisher's 'Information Grounds' where people exchange information while participating in a specific activity. The paper is interested in the concept of learner autonomy and will primarily examine whether the creation of an online 'place' can play a role in the building of a teaching and learning model where the learners increasingly take control and share information. The case study documented in this paper is from a two year online adult learning programme. The emphasis of the study has been directed towards the development of a 'third place' where students can build up their confidence to take full control of their own learning experience. To encourage this ownership of knowledge, web2.0 technologies such as wikis, blogs, podcasts and social book-marking have been implemented to give students the opportunities to connect their learning to their particular experiences and thus personalise the learning. The focus has been on the development of a 'place' where interactive and stimulating content is used to engage the student and encourage them to take control. To achieve this, close attention has been paid to the visual design of the virtual learning environment (VLE) as well as the strategic use of multimedia within the course material. Throughout the programme, collaborative activities have been emphasized to broker the development of a learning community. This paper will investigate the role of the tutor in developing autonomy in online learning and ask whether it is possible to turn a Virtual Learning Environment into an effective Third Place where students have the confidence to exchange information and build knowledge relating to the course.

**Keywords:** Learner autonomy, third place, Web2.0, e-learning, learning experience

## **From Hype to Reality: e-Portfolios in Nursing**

**Maggie Carson and Anne Robertson  
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**Abstract:** This paper explores two issues: 1. Problems of integrating e-portfolios into the first year of a nursing undergraduate curriculum 2. Student use and ownership of said portfolios. E-portfolios are hailed as providing digital spaces for students to use and explore creative aspects of their own learning. Nursing is said to be both a competency based profession with set criteria and outcomes but also a reflective profession which champions individual personal development. Universities purport to develop transferable

skills and foster personal development but they also have a tradition of rigorous academic standards. There are conflicts both within and between nursing and university education. **Aims:** To introduce e-portfolios in the first semester of a first year undergraduate nursing programme to foster open independent lifelong learning. **Method:** First year students (24) completed a learning styles questionnaire and an adapted SEUISS evaluation form to assess their level of IT skills. At the end of Semester 1, the same students completed an evaluation form and participated in group discussion, exploring the integration of taught IT skills within the curriculum and their use of the e-portfolio and WebCT. **Results:** Students reported that over the semester their IT skills had improved. The majority had appreciated the importance and value of having an e-portfolio but had not identified learning objectives and failed to engage with the features available: <50% of students had used a blog or chosen to showcase their work and the maximum reported amount of time spent working on their portfolios by most of the students was 30 minutes/week. **Conclusion:** By focusing on improving IT skills rather than sharing with the students the philosophy behind e-portfolios we feel we contributed to their lack of engagement. In retrospect we feel that in failing to identify and address the philosophical conflicts that exist in nursing education ourselves and in not making these explicit for the students we disadvantaged their engagement with their e-portfolios.

**Keywords:** Nursing, e-portfolios, WebCT, IT skills

## **e-Learning and e-Citizenship Between PKM and PST**

**Antonio Cartelli**

**University of Cassino, Italy**

**Abstract:** IT (Information Technology) and ICT (Information and Communication Technology) are undoubtedly changing mankind's contexts and environments but, what's more, they are modifying subjects, communities and the whole society. As a consequence citizenship has gained new meanings, and national and international institutions have been forced to define new key competences to be developed by new generations to better face the challenges in the knowledge society. The school is strongly involved in the definition/development of new teaching-learning strategies to reduce the gap between people's expectations and what school is required to do for people's cultural growth. On this side many suggestions have come from university and research; constructivist and socio constructivist instruments and techniques, with the involvement of new technologies contribute in the development of rich learning environments. Virtual learning environments (VLE) and constructivist learning environments (CLE) are probably the frontier for the changes to be introduced in everyday teaching. On another hand it has to be noted that ICT is strongly influencing students' personal knowledge construction by increasing the relevance of informal education with respect to formal education. As a conclusion the following question is straightforward: "what are the instruments and the strategies students (and, more generally, people) must have to consciously and freely move in the knowledge society and to autonomously acquire information and build new knowledge?". To answer to the above question the instruments and the methods usually adopted by corporate have been applied to individuals, and Personal Knowledge Management (PKM) has been developed. In the author's opinion together with (PKM), a further method can be defined: Personal Strategic Thinking (PST). They both contribute in helping people to get and select information, in building new knowledge, in finding routes for solving problems and in making the right choices in everyday life. The implementation of practices by means of ICT, the author proposes in the paper, can be seen as an educational method for the implementation of the above strategies.

**Keywords:** Constructivist learning environment, digital literacy, e-citizenship, information literacy, personal knowledge management, personal strategic thinking

## **Syllabus Flexibility and Adaptation to the new European Higher Education Area Through the Inclusion of e-Learning**

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**Vila, Betlem Sabrià Bernadó and Alexandra Saz Peñamaría**

**University of Andorra, Sant Julià de Lòria, Principality of Andorra**

**Abstract:** This paper examines the process of introducing virtual learning methodology into the University of Andorra (Universitat d'Andorra) and the way in which this process will bring greater flexibility and help in bringing syllabuses more into line with the European Higher Education Area (EHEA). University education in Andorra began in academic year 1988 -1989 with computer and nursing studies, with the aim of meeting the needs of Andorran professionals in these areas. From the very start a high degree of flexibility was built into

the syllabuses by means of tie-ups with universities abroad in order to enable student mobility, as well as to widen the range of specialties. Another factor in syllabus flexibility from the beginning has been collaboration with the local business sector to offer advanced vocational training designed both for professionals in the sector, and for specialisation in the course of the students' curriculum. During academic year 1997-1998 virtual training began being offered in the University of Andorra through collaboration with universities abroad. This change brought greater flexibility in the existing syllabuses, both in the offer of specialties and in learning methods. During academic year 2004-2005, following the guidelines laid down in the University of Andorra Strategic Model, 2003-2007, the own virtual learning environment was launched, which enabled the development of training programmes with content specific to Andorra aimed at an extremely wide public. Likewise, the virtual learning environment has become a useful support tool for the classroom training programmes that provide supervision and personal monitoring of the students. The central purpose of the study is to analyse the different structures, learning methodologies and institutional collaboration that make up the University of Andorra educational model. It also sets out to examine how closely it is in line with the EHEA.

**Keywords:** e-Learning, European Higher Education Area, virtual learning environment, flexibility, mobility

## **Game Inspired Tool Support for e-Learning Processes**

**Marie-Thérèse Charles, David Bustard and Michaela Black**  
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**Abstract:** Student engagement is crucial to the success of e-learning but is often difficult to achieve in practice. One significant factor is the quality of the learning content; also important, however, is the suitability of the process through which that material is studied. In recent years much research has been devoted to improving e-learning content but considerably less attention given to enhancing the associated e-learning process. This paper focuses on that process, considering in particular how student engagement might be improved using techniques common in digital games. The work is motivated by a belief that, with careful design, e-learning systems may be able to achieve the levels of engagement expected of digital games. In general, such games succeed by entertaining players, building on their natural curiosity and competitiveness to encourage them to continue to play. This paper supports a belief that by adopting some of the engagement techniques used in games, e-learning can become equally successful. In particular, the paper considers how the learning process might become a form of game that helps sustain continued study. Factors affecting engagement and elements of digital games that make them engaging are identified. A proposal for improving engagement in the general teaching and learning process is then outlined. The approach taken is to encourage involvement by rewarding desirable behaviour, including the completion of specified challenges, giving regular feedback on performance measured against others in the same class. Feedback is provided through a web-based tool. The paper describes the tool and outlines an exploratory assessment of both the tool and approach through action research. Results for two linked university modules teaching software development through the Java programming language are presented. The results so far are very encouraging in that student engagement and performance have increased, especially at the weaker end of the class. Limitations of the approach are also outlined, together with an indication of future research plans.

**Keywords:** e-Learning, digital games, engagement, feedback, action research

## **Unified Course Design for European Production Engineers**

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**Abstract:** Today, the mobility among production engineers is very low, partly because the education and training level differs considerably among EU countries, being almost beyond comparison. To increase the mobility and to unify the production engineering education in Europe at BSc-level a two-year pilot project, "European Production Engineering Certification" (EPRODEC), which is granted by the EU Programme Leonardo da Vinci, has been started. Partners of EPRODEC are institutes from Universities and the industry sector as well as engineering associations in Sweden, Germany, England, Denmark, Estonia, Belgium and Spain. The aim of EPRODEC is to provide an appropriate "European label" to the graduates of the accredited Production Engineering (PE) programme. The objective is to develop an accreditation system and organisation that will implement the certification process for education and training within the field of Production Engineering all over Europe. Creating a unified accreditation system will make it easier to compare qualifications and skills. The paper presents some of the ideas behind EPRODEC and the first results. A new unified course and curriculum design with a modular structure, strategies for organisation and



certification systems, implementation of e-learning methodologies in PE will be shown and can be transferred and implemented in other education fields.

**Keywords:** Production engineer, education, certification system, curriculum, accreditation, course design

## **Web-Based Learning Using a 'Library of Activities' to Assist and Support Students and Mentors**

**Carol Clark and Christine Stevens**

**UWE, Bristol, UK**

**Abstract:** The drive from the UK Government's modernisation agenda and The NHS Plan (DH, 2000) is to ensure that student nurses gain the knowledge and skills necessary to provide the care needed of patients and clients. Also quality of the student experience in practice is vital for student nurses to ensure quality care of patients and clients in increasingly complex health and social care services (DH,ENB, 2001). It is acknowledged that whilst students need to be active in their own learning they also need support to identify their learning needs. A 'Library of Activities' was developed to assist the students and mentors in gaining the knowledge and skills. The 'Library of Activities' is an on-line structured framework that assists students in identifying their learning needs and guides the students in achieving their learning outcomes/competencies whilst in practice placements. It also assists the mentor/supervisor to identify valid evidence that the student needs to demonstrate the achievement of the learning outcomes/competencies. The webpages allow interaction between the student, academic, and mentor, all of whom have access to the activities online working in partnership to promote discussion and further learning. The 'Library of Activities' will enable more direct support and regular feedback to be made available to the students, giving them a greater opportunity to develop as competent practitioners and bridge any theory-practice gap. The 'Library of Activities' provides a common core of guidelines to ensure standards are known and maintained and common language is thus available to mentors and students. All activities are student led, enabling the students to provide written evidence of achievement of their learning outcomes which they then retain in a portfolio of learning. These activities consist of questions, interactive exercises and suggested resources that will enable the student to integrate theory and practice. The Library of Activities uses a variety of activities to ensure that students and mentors can access resources appropriate to their learning needs and styles. One of the activities is a crossword that requires the student to complete in order to demonstrate their knowledge, for example in communication. The activities are intended to be discussed with their mentors and taken to work based learning days for further discussion and analysis with group members. The Library of Activities is still evolving and evaluation to date from students and mentors is that it is a useful resource in enabling the student nurses in gaining the knowledge and skills necessary to provide the care needed of patients and clients.

**Keywords:** Work-based learning; library of activities; portfolio of learning; student support; theory-practice gap; partnerships in learning

## **Enhancing the Student Experience Using Web 2.0 Technologies (Wikis, Blogs and Webcam Recordings) to Encourage Student Engagement and to Develop Collaborative Learning: a Case Study**

**June Clarke, Jayne Hunter and Marc Wells**

**Sheffield Hallam University, England, UK**

**Abstract:** The use of Web 2.0 technologies on the Digital Economy module first began as part of a TQEF funded project during 05/06 delivery. Part of the coursework assessment requires the use of the technically demanding software package Dreamweaver. Support material in the form of Blackboard quizzes; FAQs; and screen capture demonstrations together with additional seminar material relating to the module was prepared and feedback from students was very positive and encouraged a greater level of student engagement and interaction. Following a post delivery review, the module team therefore reworked the group coursework element and revised the presentation of seminar and workshop materials to ensure that students accessed all material at an appropriate time and were encouraged to engage more actively with the module. For the 06/07 delivery each group was provided with voluntary access to wiki pages as a secure collaborative environment to record their group's assessment ideas and to work on them accordingly. Not all groups used the facility but all groups were required to post up their final website and presentation slides and comments to their wiki pages by the date of the assessment presentation itself. This case study will examine in detail how students and staff engaged with the wikis, blogs, podcasts and webcam recordings in the 07/08 module delivery. We will then discuss how Web 2.0 technologies have impacted on the students' engagement with the module; the impact, if any, on

the quality of their work; the impact on the feedback process; and how, exactly, the student experience has been enhanced.

**Keywords:** Collaborative learning, wikis, webcams, blogs

## **Making Technology Work for you: Why Might Academic Staff Want to Engage With and Promote e-Learning? A Case Study**

**June Clarke and Marc Wells**  
**Sheffield Hallam University, UK**

**Abstract:** Technology is an integral part of University life whether academics feel comfortable using it or not and the use of the Blackboard Virtual Learning Environment has now become part of everyday life at a number of Institutions. How effective its use is, however, and how academic staff might be encouraged to engage further with and to develop their use of Blackboard to the advantage of both themselves and their students is another matter. This case study examines the setting up of a Special Interest Group in Technology in the Faculty of Organisation of Management at Sheffield Hallam University, England. The aim was to create a forum where both emerging and established technologies could be piloted, evaluated and, if appropriate, integrated into the learning, teaching and assessment process. Academic staff, together with the Faculty's IT & Multimedia team were to come together to share ideas and experiences in a supportive environment and when appropriate involve students in the process. This new initiative was launched in May 2008 with an event entitled: "Make Technology Work for You". Faculty academic staff were given a personal invitation to attend a two hour session based around the theme of how technology could be used to enhance assessment, group work and feedback. How the session was organised, what content was covered and what the follow up from it has been will be detailed. Based on the results of questionnaires and staff interviews the following questions will be examined: Have more Faculty staff now engaged with Web 2.0 technologies and how do they view integrating such technologies into their teaching practice? Are they willing participants in the e-learning process or would the educators actually prefer to avoid it whenever possible? Although an evolving work in progress, this case study will raise many issues concerning the development and delivery of e-learning and will also stimulate debate around integrating successful e-learning and blended learning across the curriculum rather than being concentrated around a small number of enthusiastic users.

**Keywords:** e-Learning technologies, blended learning, staff engagement

## **The net Generation's Engagement With and Expectations of Web 2.0 Technologies During HE Studies - Case Studies at Undergraduate Level in the Faculty of Organisation and Management**

**June Clarke and Marc Wells**  
**Sheffield Hallam University, UK**

**Abstract:** The extended use of the range of available Web 2.0 technologies has been examined and trialled across a number of modules at different levels in the Faculty of Organisation and Management, Sheffield Hallam University, England. The technologies used to date include wikis, blogs, podcasts, e-portfolios and webcam recordings and have become an integral part of the delivery on specified modules and used in the teaching, learning and assessment process for those modules. This paper examines the levels and types of student engagement paying particular attention to differences, if any, perhaps determined by the nature of the subject discipline. It charts the development and incorporation of Web 2.0 technologies on a range of modules and examines how they have been used in different ways as part of module delivery. The focus is very much on the students' perceptions of how the technologies have been used and how effective they deem that use to be. What benefits does Web 2.0 actually provide them with in terms of their total learning experience including the feedback process?. Using online questionnaires and student interviews the focus is very much on the learner's experience of e-learning throughout the various case studies involved. Although many students engage with Web 2.0 technologies on a daily basis are we correct in assuming that they expect to use those technologies during their Higher Education studies for pedagogical purposes or do they view them as merely social networking tools? What are the actual benefits as seen through the eyes of the student users and what message can staff take from the students' feedback?

**Keywords:** The net generation, Web 2.0, online collaboration, student engagement

# Computer vs. Textbook: Effects on Motivation and Gain in Knowledge

**Cathérine Conradty and Franz Bogner**

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**Abstract:** Compared to textbooks computers are considered as an innovative “new medium” in the classroom. It raises high expectations with regards to increased motivation or cognitive learning effects (Schaal, 2006). The new medium may inspire students but it may simultaneously reduce cognitive learning achievements, for instance because of substantial cognitive overload (Sweller, Merrienboer and Paas, 1998; Mayer 2001). Combined with a perhaps even gender-related low self efficacy or self competence or an underestimation of the subject matter (Salomon, 1984) computers may be counterproductive in lessons. However, a lack of updated studies exists about the interest of young students in computer-aided learning (Rattanapian and Gibbs, 1995; Teh and Fraser, 1995). Furthermore, according to Passing and Levin (2000) girls are not motivated by computers. Our empirical study monitored efficacy in knowledge gain and motivation of computer-aided and textbook-based educational units in a Biology lesson. Our subjects were altogether 393 8<sup>th</sup> graders. A main objective focused on gender effects of an autonomous teacher assisted learning via interactive software and a comparison group attending an equivalent lesson with an appropriate textbook. Both lessons were completed with a short recapitulation by the teacher. A third group closed the computer-aided lesson with a repetitive quiz with feed-back at the computer instead of the teacher-centred consolidation phase. We focused on the effects of computer-aided and textbook-guided learning as well as of the teacher assistance on gender, cognitive achievements levels and intrinsic motivation. We used a quasi-experimental BACI design with pre-, post- and retention-test. Empirical data of intrinsic motivation were collected with the Intrinsic Motivation Inventory (IMI: Deci, Schwartz, Sheinman and Ryan, 1981) just as well the students’ experience with computer by questionnaires immediately after the lesson. We recorded significantly higher post-test scores in textbook-based lesson compared with a computer-aided one. The difference, however, faded away in the retention-test. In general, girls gained higher scores than boys, especially with textbook-aided learning. The latter came along with girls reporting of less perceived tension (IMI-T) in textbook-based lesson. The teacher-centred consolidation phase had no effect on the post-test results, but increased the long-term knowledge just as well as the students’ interest in the subject (IMI-I). Girls reported a higher perceived competence (IMI-C) than boys in computer-aided lesson without teacher-centred consolidation phase. In general the girls’ intrinsic motivation was affected by our intervention but not the boys’.

**Keywords:** Evaluation of e-learning; e-learning effectiveness; gender issues; intermedia comparison; learning motivation; cognitive load

# Web 2.0 tools in pre-Service Teacher Education Programs: An Example From Portugal

**Clara Pereira Coutinho**

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**Abstract:** The main goal of this project was to verify the importance of providing technological-rich experiences with Web 2.0 tools in pre-service teacher education programs as a way for teacher’s to integrate technologies in the classroom as transformative learning strategies. As educators in a public university we assume that the failure of ICT integration in Portuguese schools is due to a lack of professional development of teachers in technology-supported pedagogy. Different Web 2.0 tools – blogs, wiki, Google Page Creator, Google Docs – were explored by pre-service teacher’s with different pedagogical goals: to build individual/group e-portfolios, to enhance cooperation and collaboration, to facilitate interaction and communication competencies. Results are presented and discussed in order to infer a set of guidelines to help teacher educators and professional development providers to incorporate in teacher education programs regarding the use of Web 2.0 technologies for teaching and learning.

**Keywords:** Web 2.0; teacher education; internet; pre-service teacher





































































































































