The Proceedings
of the
7th European Conference
on e-Learning

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Edited by

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Papers have been double-blind peer reviewed before final submission to the conference. Initially, paper abstracts were read and selected by the conference panel for submission as possible papers for the conference.

Many thanks to the reviewers who helped ensure the quality of the full papers.

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Preface

The 7th 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 chose 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 says 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
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Conference Executive:

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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 Ardus (Stevenson College, Edinburgh, UK); Mohamed Arteimi (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 Compestela, 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 Pegadogical and Technicological 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.

Pauline Armsby is the Director of Masters/Doctorate in Professional Studies Programmes at the Institute for Work Based Learning at Midddlesex University, London, UK. Her research interests include teaching, learning and knowledge production in professional doctorates and how ICT and coaching skills can be utilised to facilitate learning. Pauline is a chartered psychologist.

Lelia Ataliani was born in Nicosia-Cyprus. I have obtained my BSc(Hons)degree in Computer Science from Queen Mary College (London University)in 1989 and my MBA Degree from the University of New Haven in the United States. I have started my professional career as a programmer working for Integraph Corporation and then worked at various positions in privately held companies (Unisys, NCR, AME Gates) and at the University of Cyprus. In 1997 I have started my own company- Infotrend Innovations focussing in various areas of IT including the education sector. Since 1999 Infotrend has become Skillsoft Authorised Partners and we were the first company to introduce the concept of e-Learning in Cyprus. I have various professional memberships including the British Computer Society, Cyprus Computer Society, Patton Certified Executive, GTA certified Partner.

Darren Awang is a Principal Lecturer in Assistive Technology within the Department of Occupational Therapy at Coventry University. He is the course tutor for postgraduate studies in assistive technology and his applied research interests contribute to the Living and Working with Disabilty Applied Research Group at Coventry University.

Frank Bate has worked at strategic and operational levels on ICT integration projects for 15 years. He has helped to develop and implement e-learning tools in a range of contexts from childcare to oil and gas. He now teaches ICT integration to pre-service teachers and his PhD examines factors that influence how graduate teachers use ICT as they begin their careers. He is particularly interested in educational change including the transformative potential of ICT at personal, local and systemic levels.

Martin Belgrove is a Learning Technology Advisor at the University of East London. Prior to joining UEL he taught for 10 years in a variety of settings including secondary, further and higher education. His particular interests include computer mediated communication, podcasting and online communities. With an MA in Education he is currently completing his doctorate and is a Fellow of the Institute for Learning

Mario Belk is currently a Post-Graduate student of the Department of Computer Science at the University of Cyprus. His research interests are in Web Adaptation and Personalization Environments and Systems, Database Systems, Ontologies, Internet Technologies and the Semantic Web. He has contributed in several research publications and he is actively participating in numerous National and EU funded research projects.

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Adriana Beylefeld works as a senior lecturer in the Division of Health Sciences Education, UFS. For the past 15 years she has been engaged in student support and development. She is leader of a module on generic skills in the Learning Programme for Professional Medicine. She holds a doctorate in higher education and is passionately interested in the generation of useful knowledge through action research.

Delphine Billouard is a teacher in Information Systems and Computer Science at the University of Lyon 3 in France and is also a PhD candidate preparing a thesis on the integration of Virtual Learning Environments. She is a member of the Association for the Advancement of Computing in Education.

Mads Bo-Kristensen holds a PhD in Multimedia Education in Adult Second Language Learning from the Danish University of Education, a Post-graduate Diploma and a M.A. and in French as a Second Language from the Université de Franche-Compté, France, and a B.S. degree in Education from the Aalborg University (Denmark); Since 1985, has been involved in teaching Danish as a Second Language for adults – both as a teacher and as a developer of media and multimedia-based materials; At present, works for the Resource Centre for Integration (www.vifin.dk) as researcher, teacher and consultant (second language e- and m-pedagogy, and IT-based training courses for language teachers).

Paul Bouchard holds a BFA in music performance (Concordia), an M.A. and a Ph. D. in adult education (U. de Montréal),. He is a regular professor in the Department of Education at Concordia University (Montreal, Canada). His interests include research into aspects of learner autonomy, national and international policy in adult education, and the training of educators. He has participated in development projects in Haiti, Mali, Tunisia and Ecuador. He is currently the leader, composer and arranger of a jazz sextet, *Kuza Funk*.

Steve Bowman is currently Director of Information Services at Ravensbourne College of Design and Communication. He has 17 years experience of working in both Further, and Higher Education in the UK. He obtained a BA (Hons) in Library & Information Studies in 1991, an MA in Information Management in 2003, and is currently undertaking an MSc in E-learning, by e-learning! He is a Fellow of the Chartered Institute of Library and Information Professionals (CILIP), and the Higher Education Academy (HEA).

Salim Boulakfouf has received a Master in Human Computer Science from the University of Metz (2007). Since October 2007, he is a scientific collaborator at the Grand-duchy of Luxembourg University. He is currently working on the development of the distance learning platform in the e-learning research lab.

Maggie Carr is a lecturer in glasswork at Gorseinon College and also works with City & Guilds as a glass and mosaics adviser and external verifier. She has recently developed a new range of vocational qualifications for them designed to support the teaching of glass in the 21C.

Maggie Carson graduated from Southampton University with a degree in Nursing Studies in 1987and then worked in acute hospital settings for five years. In 1992 she became a Research Sister in the Wolfson Unit at Edinburgh University and completed her Master's degree in Public Health. She project managed several large epidemiological studies before moving into endocrinology where she co-ordinated the National Acromegaly Register and then the Scottish Growth Hormone Audit. An 18 month secondment to the Royal College of Nursing as a Clinical Leadership Facilitator followed. In 2007, she joined the staff of Nursing Studies and has a particular interest in leadership, the teaching of clinical skills and developing e-learning.

Antonio Cartelli is a researcher in Didactics and special pedagogy. He manages the Laboratory for Teaching-Learning Technologies and the Centre for ICT and on line teaching in the Faculty of Humanities at the University of Cassino - Italy. Among his interests are: misconceptions, mental schemes, Information Systems for research and teaching, Web Technologies in teaching research and their everyday application for the improvement of teaching and learning. He is also author of many papers and books concerning the themes he is interested in. Among the most recent ones there are "Teaching in the Knowledge Society: New Skills and Instruments for Teachers" and the "Encyclopedia of Information Communication Technology" co-authored with M. Palma, both published by IGI Global, Hershey (PA), USA.

Nadia Catenazzi graduated in Computer Science at the University of Milano in 1989, and receives a PhD in Information Science from the University of Strathclyde, Glasgow in 1994. She works four years as lecturer and researcher at the University Carlos III of Madrid (Spain). In 1998 she goes on with the research activity at Mediatech working on an e-learning project. Since 2002 she is collaborating as a lecturer and researcher within the Innovation Technologies Department at the University Of Applied Sciences Of Southern Switzerland (SUPSI) and with the Department of Computer Science and Communication at the University of Insubria in Varese (Italy). Her main research areas include electronic publishing, multimedia, e-learning, and, in general, new Internet technologies. She is the author of various international publications in these areas.

Therese Charles returned to education and completed her BSc Hons in Computing Science at the University of Ulster where she now continues to study for a PhD in the area of technology enhanced learning. This research is focused on utilising game design patterns and best practices to enhance student engagement with electronic learning content. After completion of the PhD Therese hopes to continue researching in the field of games enhanced learning.

Ing. habil. Sami Chatti works as senior research at the Institute of Forming Technology and Lightweight Construction (IUL), Technische Universität Dortmund, Germany. He obtained his degree in mechanical engineering with main focus on production engineering at the same university as well as his PhD degree in forming technology. He obtained his postdoctoral degree at the University of Franche-Comté, Besançon, France. Dr. Chatti dedicates a large amount of his time to teaching activities and the completion and promotion of nationally and internationally based projects aiming at the improvement of university education at national as well as European level.

Carol Clark is a Senior Lecturer at the University of the West of England in the City of Bristol, in the UK. Carol is known for her work in the development of education programmes for Community Children's Nursing and is Programme Leader for MSc/BSc Community Practice. Carol also has an interest in e-learning and its development within nursing programmes.   She has lectured and published on the topics of: web assisted learning and community children's nursing development.

June Clarke Iscurrently a Senior Lecturer in the Faculty of Organisation and Management at Sheffield Hallam University, England. I teach on a variety of courses – both at Undergraduate and Post Graduate level – all of which are predominantly Information Systems and e- business based. My research interests are mainly in the way in which e-based applications can be used effectively in order to enhance the student experience.

Cathérine Conradty is a PhD-student at the Z-MNU (Centre of Maths & Science Education), University of Bayreuth, in the research project "Learning emotions with Computer Aided Learning enviroments". Degree: B-Biology, M-Biology (LMU, Munich)

César Córcoles is a lecturer at the Computer Science, Multimedia and Telecommunications department at Universitat Oberta de Catalunya (UOC) in Barcelona. He holds a MSc in Mathematics (Universitat Autònoma de Barcelona). His research interests revolve around the teaching of Mathematics in web based environments with multimedia authoring tools.

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Valentina Dagienė is head of the Department of Informatics Methodology at the Institute of Mathematics and Informatics as well as Professor at the Vilnius University. She has published over 100 scientific papers

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Valentas Daniunas graduated from Vilnius University Physics Faculty in 1989. During 1989 - 1992 he worked at Physics Institute, in 1993-2000 at US organisation "International Executive Service Corps", later – at private consulting company "Tarptautinis verslo tinklas". Since 2006 he is head of the European Union Structural Funds project "Science. Scientists. Society", senior researcher at the Institute of Theoretical Physics and Astronomy of Vilnius University.

Nina Bonderup Dohn is an associate professor in Humanistic Information Science at the Institute of Business Communication and Information Science, University of Southern Denmark. Her main research areas are different forms of knowledge and their assessment, competence development, and e-learning. Currently these interests are being applied to questions concerning the possibilities and challenges which web 2.0 poses for education and competence development. She holds a Ph.D. in learning theory and an MA in philosophy and physics.

Nikolaos Doulamis received the Diploma degree in Electrical and Computer Engineering from the National Technical University of Athens (NTUA) in 1995 with the highest honor and the PhD degree in electrical and computer engineering from NTUA in 2000. He is currently Assistant professor of the National Technical University of Athens. He joined the Image, Video and Multimedia Lab of NTUA in 1996 as research assistant. His PhD thesis was supported by the Bodosakis Foundation Scholarship. From 2001 to 2002, he serves his mandatory duty in the Greek army in the computer center department of the Hellenic Air Force. From 2002, he is a senior researcher in the NTUA. Dr. Doulamis was awarded as the Best Greek Student in the field of engineering in national level by the Technical chamber of Greece in 1995. In 1996, he was received the Best Graduate Thesis Award in the area of electrical engineering with A. Doulamis. During his studies he has also received several prizes and awards from the National Technical University of Athens, the National Scholarship Foundation and the Technical Chamber of Greece. In 1997, he was given the NTUA Medal as Best Young Engineer. In 2000, he was served as Chairman of technical program committee of the VLBV'01 workshop, while he has also served as program committee in several international conferences and workshops.

Seán Duignan is a Lecturer in Computing at the Galway-Mayo Institute of Technology, Ireland where he teaches on undergraduate and postgraduate Computing / Information Technology programmes; specialising in the areas of applied networking, operating systems, and forensic computing. He is the director of the M.Sc in Computing at GMIT, and maintains an active research interest in computer science pedagogy.

Barry Eaglestone is a Senior Lecturer in Information System in the Department of Information Studies, University of Sheffield. His research specialises in database theory and technology, with interests in advanced applications, including education informatics. He has authored over 80 refereed journal and conference publications, and textbooks on relational, object and web databases."

Laraine Epstein is currently employed by Coventry University as a lecturer within the Department of Occupational Therapy teaching students on the undergraduate BSc course and students on other health related courses within the Faculty of Health and Life Sciences. Laraine leads a module on Assistive Technology and is a member of the admissions team. Her interest areas are within Assistive Technology and Equality/Diversity. She is the current Chairperson of the Disability Forum linked to the College of Occupational Therapists.

Lorna Everall started her career as a Knowledge Transfer Partnership associate and research fellow at Aston University, developing photonics technologies for a composite engineering company. She went on to join University technology spin-out Indigo Photonics, as key account manager, where she subsequently developed a series of patents on fibre sensing. Following their successful commercial exploitation in 2004 she joined Coventry University as one of the Business Development Managers. Lorna currently supports the development of Applied Research Groups at Coventry University, working with external and internal contacts to increase knowledge transfer and commercialise research activities.

Sotiris Fanou holds a Bachelors degree in Interactive Multimedia from Columbia College, Chicago, USA (with honours) and a Masters Degree in Informatics - Software Engineering from the University of Edinburgh, UK. He is also a Microsoft Certified Application Developer in Dot.Net technologies and has a total of more than ten years professional experience in software design and development. He is currently pursuing a PhD degree at the University of the West of England, Bristol, UK.

Cláudia Fernandes has a degree in Psychology with specialization in Organizational Psychology by the University of Coimbra (Portugal). Has also a Master Degree in Information Management by the University of Aveiro (Portugal) and a specialization in evaluation by the American Society for Training and Development (USA). Is a researcher on the personnel and organizational development areas with several university/enterprises projects and publications in the area. Has teaching experience in Higher Education settings and in the conceptualisation and implementation of innovative experiences. At the present is in the Technological Centre for the Metal Working Industry in Portugal in the areas of training, development and special projects.

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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.

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 forsee 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 ob 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

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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 intiative, 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

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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

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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

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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

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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. <u>Aims</u>: To introduce e-portfolios in the first semester of a first year undergraduate nursing programme to foster open independent lifelong learning. <u>Method</u>: 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. <u>Results</u>: 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. <u>Conclusion</u>: 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.

e-Learning and e-Citizenship Between PKM and PST

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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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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

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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

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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

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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

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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

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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

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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 8th 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

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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

Exploring a Professional Social Network Environment for Learning and Development

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Abstract: This paper seeks to explain and clarify how the recent development of Web 2.0 technologies has brought social networking into the teaching and learning experience in higher education institutions in the UK. The paper concentrates on the use of Emerald InTouch as an Open Source software platform originally based on the Elgg model and how InTouch has been customised to meet the specific needs of online learners. Supporting evidence is drawn from a collaborative project between Emerald Group Publishing and the University of Middlesex Centre for Excellence in Work Based Learning with specific reference to the experiences in two case studies based on the University's BA and Doctoral Programs. The paper concludes with observations and insights in to the use of social networking in a pedagogical setting. There is review of the successes and challenges of the project and interim results of an ongoing evaluation process with a discussion of the implications for future development of learner managed learning.
Keywords: Work based learning, social networks, web 2.0, pedagogy, Elgg, community of practice, e-learning

A Best Practice Approach to the Enhancement of the Learning Experience

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Abstract: In the first instance the design and implementation phases of the UNITE project pedagogical framework and related tools, the production of resource materials, teacher education and platform use, are presented. UNITE (Unified e-Learning environment for the school) is a European FP6 research project which aims to integrate innovative state-of-the-art technologies in e- and m-learning into secondary school classroom practice. A case for best practice is made through a discussion of the validation phase of the project which involved the quality control of the scenarios, the validation of the pedagogical processes and the evaluation of the pedagogical dimensions of the learning scenarios. These processes were based on feedback provided by teachers and students from the participating 14 European schools and pedagogical and technological experts. This feedback showed that UNITE has a huge potential as a powerful and integrated teaching and learning system. It can offer value-added in the areas of autonomous and collaborative learning. However for such a system to reach its full potential a culture shift needs to take place in schools and teachers need to be supported strongly in all the phases of planning, implementation and evaluation. They are to be supported not only through resource materials available in print and online but also through direct training and collaborative planning and implementation of scenarios. The UNITE scenarios were analysed according to Reeves' (1994) pedagogical dimensions. The different phases of the project present a pedagogical and technological recipe with the necessary ingredients for a best practice approach to the enhancement of learning experiences.
Keywords: e-Learning, m-learning, learning experience, learning scenarios, UNITE

Distance Reflective Learning in Lithuanian Young Programmers School

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Abstract: Developing abilities to master modern technologies and skills for problem solving are among the most important capabilities of an educated future citizen in a knowledge society. Problem solving by means of programming does not lose its importance in a contemporary school equipped with modern information technologies and remains a highly important part in the understanding of information processing. Programming with emphasis on algorithms remains core to the International Olympiads in Informatics and other competitions in Computer Science. Consequently, the introduction of algorithms and programming as

an abstract and powerful tool for understanding the algorithmic world and information technologies is advocated and supported by expert recommendations, e.g. as given by UNESCO and IFIP. In Lithuania, the idea of teaching algorithms and programming by distance (originally by correspondence using the ordinary post service, later applying internet-based means such as electronic mail and virtual learning environments) was started in the early 1980s. The Young Programmers School was set up at the research Institute of Mathematics and Informatics in 1981 and it has continued until now. It might be one of the oldest continually running distance learning schools for programming anywhere in the world. Various teaching methods have been used to attract students and to help them to learn deeper programming e.g. an overview for each submitted work, detailed teacher comments, questions and exercises depending on the student level, additional exercises and tasks. There is no doubt that learning algorithms and programming is effective only when students are actively involved – that is why solving tasks is the highest priority in the school. Tasks have to be selected to match student ability, they must cover as many theoretical problems as possible, and teach students algorithms and programming methods. Evaluation of developed algorithms is mainly a combination of two methods: it is based on automatic test grading on one side and manual analysis with remarks and comments produced by teachers on the other side. The contribution of algorithms and programming in developing students' abilities (such as thinking, reasoning, modelling, etc.) in connection with information technologies is recognized and we have been searching for ways to implement this in the best possible way. Accurate annual evaluation of each student's achievements as well as considered selection of teaching methods has enabled the Young Programmers School to improve year on year, so the school is based essentially on reflective teaching.

A Typology for Web 2.0

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Abstract: Web 2.0 is a term used to describe recent developments on the World Wide Web. The term is often used to describe the increased use of the web for user-generated content, collaboration, and social networking. However, Web 2.0 is a weakly defined concept, and it is unclear exactly what kind of technologies it covers. The objective of the paper is to develop a typology that can be used to categorize Web 2.0 technologies. Further, the paper will discuss which of these technologies are unique to Web 2.0. Often, Web 2.0 is described by way of different kinds of software; for instance, blogs, wikis, podcasts, RSS, and social networking sites. The problem with this type of description is that it fails to distinguish between different *types or categories* of technologies. As an alternative, the typology developed in the paper distinguishes between technologies on basis of, how - and in which contexts - they are *used*. In a given use context, it is not the technological characteristics themselves that are interesting. Rather, it is *the function* of the technology in a given learner empowered use context, which calls for specific characteristics that appear significant in the coupling of action to process. The typology suggested by this paper relates to four functions or use contexts, which are believed to be central to the potentials of Web 2.0: dialoging, networking and awareness-making, creating and sharing. Based on the typology, the paper identifies unique potentials of Web 2.0 in relation to design of a learning environment: 1) organizing communicative processes and 2) organizing resources. Organizing communicative processes is supported by Web 2.0's ability to provide a range of communicative tools that can be organized flexibly by students. Web 2.0 provides opportunities for communities and groups to organize their own communicative processes. Further, Web 2.0 supports organization of resources by empowering students to create, construct, manage and share content themselves. However, the main potential lies within collaborative creation and sharing in networks. Potentially, networking tools such as weblogs and social networking sites can empower students to move beyond their communities and groups by participating in broader networks with other students and other groups.

Keywords: Web 2.0, learning, dialogue, collaboration

Web Based Interactive Models for Science Education and Collaboration

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Abstract: For the distance learning and scientific cooperation the possibility to run software by Internet is essential. WebMathematica represents technically the most complex part of the website mokslasplius.lt (Scienceplus.lt), where a number of sophisticated interactive experiments from diverse areas of physics is realized. Enhanced by specially designed php-webMathematica module, it enables the realization of step-by-step training style pages where many of the intermediate steps can be evaluated and stored with the intention for later reuse in the process of presentation. AnyLogic software package allows one to develop interactive models of various physical systems of different nature: continuous, discrete or hybrid, and publish these models as java applets directly into Internet. We do present examples of web based interactive models collected under the title "Physics of Risk" - the new field of the applications of physics in social sciences and complexity.The article also analyses integration of various software packages, as open source content management system Drupal, server-side software (Tomcat server, webMatematica), java applets, specialized computer modelling tools for purposes of e-Learning, science popularisation and dissemination of educational information, paying particular attention to the easiness of access to the content of portal, its usability for practical educational processes, and visual appeal.
Keywords: e-Learning, computer modelling and simulation, educational web environment

Bringing Digital Multimedia in Mathematics Education

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Abstract: The increased interest for developing new representation techniques and tools for proving and demonstrating basic mathematical propositions and concepts is the forefront of educational research worldwide in the area of e-learning for mathematics. Although many novel ideas have been proposed for illustrating basic mathematical (i.e. geometrical) concepts, currently there is a lack of effective methods to dynamically reproduce an alternative representation of the underlying concepts. The proposed approach introduces valuable explanatory tools for efficiently supporting the learning objectives, enabling students to reach the core of each notion. In this work, a digital multimedia methodology is presented which implements the above dynamic representation approach. Recent, state-of-the-art trends in multimedia technology related to modern two or three-dimensional (2D or 3D) object modelling are utilised in order to efficiently reproduce a virtual mathematical environment in which selected mathematical concepts. Apart from the time-dependent dynamic representation, advanced user interaction features are also supported for determining various representation parameters (such as the view and lighting position, as well as the time resolution / speed). Additionally, accurate 3D sound projection techniques are employed in cases that the spatial sound information enhances the illustrated perceptual effect. For convenient access of the multimedia content, the proposed methodology includes a web interface and a multimedia database, offering advanced searching capabilities. In order to evaluate the performance of the proposed multimedia framework, a number of geometrical concepts are selected and applied for the instruction of corresponding high-school and university courses and will be presented in detail. The application of the proposed multimedia approach in these courses has shown that it achieves high student learning rates, even to non-mathematically-literate students, while it allows the teacher / lecturer to explain basic concepts that are otherwise difficult to introduce using conventional media.
Keywords: Digital multimedia, interactive education, mathematics

e-Learning as an Opportunity for Virtual Mobility and Competence Development Within European Universities

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Abstract: Article presents case studies of e-learning courses in higher education and examins them with respect to the added value they bring to the learning environment. Main benefits from the use of virtual environment in university teaching/learning are following: E-learning is a tool for development of higher order thinking skills through the support of an active learning process and mutual communication. In terms of teaching practice, it upgrades planning and organization of the learning process. On the content side, the virtual environment is supportive for understanding complex issues – it gives an access to diverse resources and possibility to link different information and reflect mutual relations. On the side of teaching method, e-learning provides students with an opportunity to develop knowledge independently by researching relevant resources and working with texts and materials in a process of reflecting and re-formulating ideas, building on them and amending them by personal contribution. It supports the interdisciplinary aspect of learning, enables students to approach problems from different points of view and actively handle the themes in a "scientific" manner. Students explore new ways of learning and prepare themselves for more decentralised learning and working arrangements. Also efficiency of meeting some of the learning objectives is being raised in electronic media by using diverse instructional strategies. Thus, the e-learning environment could be a starting point for "university level pedagogy" to value development of competences as much as acquisition of knowledge, which is currently neglected. In addition to this analysis, networks of European universities that create open spaces for virtual student mobility and represent a functional model of collaboration on different levels of education are introduced as models of "best practices". The virtual space opens opportunities to train collaborative competences and communication skills in a multi-cultural, international context. Description is focused on the existing higher education networks for sustainable development, the Virtual Campus for a Sustainable Europe (VCSE) and the PASDEL (practicing Sustainability through e-learning) network.

Keywords: Environmental and sustainable development literacy, curricular frames, electronic educational toolkit

Web 2.0-Mediated Competence – Implicit Educational Demands on Learners

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Abstract: The employment of Web 2.0 within higher educational settings has become increasingly popular. Reasons for doing so include student motivation, didactic considerations of facilitating individual and collaborative knowledge construction, and the support Web 2.0 gives the learner in transgressing and resituating content and practices between the formal and informal learning settings in which s/he participates. However, introducing Web 2.0-practices into educational settings leads to tensions and challenges in practice because of conceptual tensions between the inherent epistemology of Web 2.0-practices and of the educational system: Implicit in Web 2.0-practices is a conception of 'knowledge' as, on the one side, *process* and *activity*, *i.e.* as use, evaluation, transformation and reuse of material, and, on the other, the product side, as a *distributed attribute of a whole system* (such as Wikipedia) or community of practice (such as the community of practice of Wikipedia contributors). In contrast, 'knowledge' within the educational system is traditionally viewed as a *state* possessed by the individual, and learning as the *acquisition* of this state. This paper is an analysis of the challenges which these tensions lead to for the learners. The argument is that Web 2.0-mediated learning activities within an educational setting place implicit competence demands on the students, along with the more explicit ones of reflexivity, participation and knowledge construction, and that these demands to some extent are in conflict with each other as well as with the more explicit ones. A simple example of such conflicting competence demands is experienced when students develop a course wiki: The Web 2.0-competence demands here concern the *doing* something *with* the material. The copy-pasting of *e.g.* a Wikipedia-article without referencing it from this point of view is a legitimate contribution to the knowledge building of the course wiki. In contrast, educational competence demands require the student to participate actively in the formulation of the course wiki-articles. Copy-pasting without reference from this point of view is cheating. Here, the student is met with the incoherent requirement of authoring entries that display the acquisition of a knowledge state in a context where authorship is renounced and knowledge is understood dynamically and distributively. More generally, in Web

2.0-mediated educational learning activities, the student is required to manoeuvre in a field of interacting, yet conflicting, demands, and the assessment of his/her competence stands the risk of being more of an evaluation of the skill to so manoeuvre than of skills and knowledge explicitly pursued in the course.

Keywords: Web 2.0 in education, competence, epistemology, concepts of knowledge, concepts of learning

The COSMOS Approach for Teaching Science: An Architecture That Combines IEEE LOM Compatible Content With Multi-Lingual Science Educational Vocabularies and Rights

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Abstract: This paper presents the technical infrastructure of COSMOS educational web repository which allows for teachers and other users to to search, retrieve, access and re-use educational content and/or enriched lesson plans of interest. The repository is based on an IEEE LOM representation of the content which supports educational scenarios and learning activities as well. The architecture also supports tools for describing and managing digital content rights, which are interoperably represented using the Right Expression Language of the MPEG-21. |Such MPEG-21 representation is achieved through the ccREL (Creative Commons REL) description. Finally, on this representation we apply mechanisms for intelligent search and retrieval of the educational content under a multi-lingual framework.

Keywords: Science educational vocabularies, e-learning repositories, multi-lingual issues, rights management

Providing for Autonomous Hands-on Learning and Learner Mobility Using Virtual Computer Technologies

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Abstract: This paper reports on a number of learning design interventions implemented by the authors' on various Computing / IT degree programmes to facilitate learner autonomy and mobility within physical space, while at the same time providing a rich 'hands-on' learning experience for students. Each of the learning interventions is centred on the use of virtual computer technologies to support, enhance or replace aspects of the traditional physically-fixed laboratory work that usually forms part of a computing course. The authors suggest that virtualisation technologies have a central role to play as a laboratory platform in e-learning and blended learning environments, as well as in 'traditional' environments. The motivation for these virtualisation learning interventions was borne out of a desire to deliver a true to life, engaging learning experience for students. Under 'traditional' structures, hands-on situated learning is frequently hampered by the constraining administrative and technical realities that exist within computer science departments and other settings. Quite simply, computing laboratories, or teaching laboratories, are typically shared resources making "full-on" student engagement more difficult ("you can do X, but you can't do Y"). This is particularly problematic for subject areas such as operating systems, networking, and forensic computing, where unconstrained access to a computer system for investigative purposes is central to the philosophy of the disciplines themselves. Consequently, there may be a tendency to structure subject matter along an imposed pedagogical ordering rather than aligning it to a pedagogy appropriate to the discipline. To redress this imbalance, the authors employed virtual computer technologies to replace the 'sterile' physical laboratories that were in place. Because a virtual computer can be fully decoupled from the actual computer system that is hosting it, unconstrained user interaction can be facilitated when necessary, without threatening the integrity, security or subsequent usability of the actual host system. A number of learning design interventions using computer virtualisation are described in this paper, as are student and instructor experiences and feedback in using the technology. Finally the significance of this technology to the eLearning community is presented.

Keywords: Virtualisation, virtual computer technology, mobility of learning environment

Information Seeking for Lifelong Learning: One Size Doesn't fit all

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Abstract: Much research exists into formal aspects of learning – for example, the learning of students in college and university, and that of employees in work environments. Much less research has focused on less formal lifelong learning by citizens – and particularly into the web-based learning of this group. Within this relatively autonomous learning context, information seeking plays a central role. As well as enabling the delivery of specially devised learning objects and other pedagogically designed materials, the web offers opportunities as a vast learning resource of less structured and pre-digested learning resources accessible via effective autonomous information seeking. This paper reports the finding of a study of how the general public search for information on the web, focusing on the interactions between human individual differences (including cognitive styles, search experience and gender) and search strategies. The research aim was to contribute to a model of how different people search for information which might ultimately be capable of driving adaptive personalised search interfaces and mechanisms designed to support individual lifelong learners. The study involved sessions during which 91 volunteers were observed conducting a mixture of self-selected and prescribed Web searches. In addition, data was collected concerning individual differences between subjects. Statistical analysis determined complex links between searchers' individual differences (i.e., gender, experience and cognitive style) and the search strategies they deploy. Based on these results a tentative conceptual framework was synthesised depicting interactions between these variables. The links we have identified between individual differences and search strategies suggest that experience, gender and cognitive styles should all be taken into account when tailoring interventions to better support the individual.
Keywords: Lifelong learning, information seeking, cognitive style, web-based learning

Developing Knowledge Together: Involving People With Disabilities in Education Using Webcam

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Abstract: Evidence suggests that many assistive technology users are profoundly disabled (Hart, Buchofer & Vaccaro 2004, Petersson et al 2005) therefore involvement in the traditional class/lecture based approach to education can be demanding, particularly if transportation, communication systems and environment create additional barriers.This paper presentation will reflect on the process of involving people with disabilities in the education of undergraduate occupational therapy students studying an Assistive Technology AT) module. It will reflect on the use of webcams to enable students and disabled people to communicate and evaluates the process from both perspectives. Key findings identified positive aspects of involving people with disabilities, technical issues and training needs. This problem-based module focuses on facilitation of independence and choice through AT. Disabled volunteers share written case studies outlining specific difficulties for students to solve through investigating potential AT solutions. Mid-point, questions from students are emailed to the volunteers and towards the end, webcam discussions pose further questions to the volunteers. Data was gathered from the students via a module evaluation and by email from the volunteers. The key findings were; students valued access to "expert" users and engagement with "real people" in an educational environment, they appreciated opportunities to expand and clarify information. However additional less structured webcam opportunities were requested, whilst poor audiovisuals affected the experience. Volunteers enjoyed working with students and contributing to education. Equipment was installed in their homes with assistance from a carer/helper and training was required, initial anxiety was caused, however the learning opportunity was valued. Training, funding for equipment and technical support plus mechanisms for payment of the volunteers requires attention by educators. In conclusion, this paper will be of interest to those in health & social care education who want to embrace inclusive teaching by improving accessibility for people with disabilities to future professionals through a flexible and convenient media.
Keywords: Disabled people, webcam, assistive technology

Enhancing Business Support to SME's Through Continuous Work-Based e-Learning for Business Advisory Professionals

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Abstract: Small and medium sized enterprises (SMEs) are crucial to Europe's future prosperity and are essential in attaining the goal of "a sustainable economy based on knowledge and innovation". Alongside improving the institutional framework for business, business advisers are Europe's key players in developing innovation and growth within SMEs, and do so via a range of public and private support organisations – government business support bodies, enterprise agencies, business incubators, Chambers of Commerce, and private sector consultancies. Whilst the quality of business advisory services is excellent in many countries it is clear that good business adviser practice has been developed on an *ad hoc* basis through individuals own experiences, rather than as a result of a consistent, formalised training programme or through any transnational standards for business adviser training. This paper details, to the best of our knowledge, the first project aimed at developing a competency framework and training for business advisers across European borders through an online training package. The nature of the business support adviser, who is often a self-employed home-office worker, works alone, or is based in an out-of-town location, lends itself to an online training resource and this paper will look at the effectiveness of the training resource in enhancing their business support skills. While the importance of technical skills and knowledge relating to business start up and development are undeniably important, the training detailed herein incorporates a more pedagogical approach to business advisory training, recognising that essentially business advisers are not just valued for their business knowledge or experience, but rather for their teaching skills and their ability to facilitate behavioural change in their clients. Hence, the training resource focuses not only on "what" to advise, but "how" to advise, bringing together knowledge on how clients acquire knowledge and when they need to know it. The project responds to the need to increase the number of business advisers undertaking training by creating an attractive training package. A full assessment of training needs was carried out, identifying core business adviser competencies and an innovative training resource was developed which blends real life learning, interaction and assessment, with online course content. This paper details a pilot study of the training resource, carried out with a more than sixty business adviser practitioners from countries across Europe, including Poland, Hungary, Spain, Belgium, Ireland and UK.
Keywords: e-Learning, training, SMEs, business support, learning, workplace learning

Web 2.0: Engaging Those with Learning Disabilities

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Abstract: Tools such as wikis, blogs, social bookmarking and social networking allow Web surfers to socialise and to easily create and share content with others. Through the use of these tools the Web is being transformed from "Read Only" to "Read/Write", and from being a medium in which information is only transmitted and consumed, into being a platform on which content can also be created, edited and shared. This type of Web has been given the new name Web 2.0. People with learning disabilities are almost completely absent from using Web 2.0 technologies such as wikis and blogs for several reasons. The Web accessibility guidelines (WCAG 1.0, ATAG 1.0, UAAG 1.0) of the World Wide Web Consortium (W3C) target Web content creators and the developers of authoring and user agent tools oriented more towards a Web 1.0 based model where content is created by Web authors and consumed by Web surfers. This makes them less useful in a Web 2.0 environment. The guidelines also seem to prioritise the needs of sensory and mobility disabilities while paying less attention to cognitive and learning difficulties. In a three year study to be conducted at a university in the south west of England, I will try to develop an e-learning system based on Web 2.0 technologies using a participatory user-centred approach rather than mechanically follow the WCAG guidelines. This type of approach is expected to produce a more usable system and to enable a specific group of learning disability professionals to utilize Web 2.0 technologies. At the same time it will answer questions such as "Can health trainers with learning disability be involved in the design and development of software?" and "Can health trainers with learning disability use an integrated, Web 2.0 based, e-learning system to help them in their professional duties?" The project will also explore a set of best practices for the building and operation of such systems.
Keywords: Accessibility, Web 2.0, e-learning 2.0, learning-disabilities, participatory-design

Youngsters and Industrial Literacy: Why the m-Learning Approach?

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Abstract: With this paper the authors' intent is to explore and discuss an ongoing pilot-research on new approaches to learning using technology in non-formal learning and development contexts such as out-of-school activities and projects. The pilot-research design was based on three research groups: 1) use of traditional approaches - control group; 2) use of m-learning approaches; 3) use of b-learning approaches. The study' main objectives were to find out if the different approaches to technology' use caused any differences concerning on one hand, the practical and theoretical' knowledge acquisition and on the other, the satisfaction with the learning process. All of the 39 youngsters encompassed on the pilot-experience were aged between 13 and 15 years old and were on the formal teaching system. The infrastructure supporting this project included a Learning Management System (LMS), mobile phones, experiencing technical kits. The project main findings are: a) satisfaction levels are higher when using m-learning approaches rather than traditional ones; b) time used exploring the available and complementary resources was less significative when using traditional approaches, c) Self-learning was more pronounced on the m-learning strategies. Youngsters using m-learning and e-learning approaches ratter than traditional approaches have some particular ways of succeeding in the task completion, they use non-linear approaches and mind-mapping for solving the challenges, they are capable of performing multi-tasks at the same time and use iconic skills for communicating with peers. Based on the pilot-research project results, literature review and the authors' point of view there are some implications that arise for learners, practioners and researchers that must be taken in account: a) application context; b) mobility; c) learning over time; d) informality; and e) ownership. The challenge for all is one of understanding and exploring how best to use technological resources to support learning and engaging users on the activities leading to the learning and development taking in account the new ways for learning in the digital age (multi tasking, gaming, non-linear approaches). Mobile devices are a reality in everyday use, including by youngsters, and we must ensure that educational practise wherever formal or informal can include this technologies in productive ways.
Keywords: m-Learning; e-learning; non-linear approaches; self-learning; industrial literacy

Business Students' Perceptions of Computer-Assisted Learning and Simulations

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Abstract: Inquiry-based learning (IBL) is an emergent student-centred pedagogy that promotes active and deep learning and encourages student reflection and collaboration. As the use of technology has become increasingly mainstream in the delivery of higher education degree programmes, computer-assisted learning has facilitated the process of inquiry. More specifically, the use of computerised simulations that mimic real-life circumstances are a common means of assessing students' higher order thinking, as they require learners to apply their knowledge and skills to solve problems, resolve issues and make appropriate decisions. The purpose of the current study is therefore to examine students' perceptions of the use of computerised simulations for the purpose of assessment. The data were collected in the form of written reflections produced by Level 2 undergraduate management accounting students studying at a UK university during the academic year 2007/2008. The key findings of the study were that students felt that the simulation helped them to conceptualise their knowledge and understanding as the result of a detailed exploration of the relationship between theoretical concepts and work-based practice. The students claimed to have a much better understanding of the role of a management accountant within a commercial organisation and could therefore appreciate the relevance of the module content. Students felt that the simulation facilitated the development of their decision-making, collaboration and communication skills. Perhaps more importantly, students enjoyed the experience and were thus motivated to engage more fully with and take responsibility for their learning. However, whilst the study provides empirical evidence that computer-assisted IBL can support the learning process, institutions must ensure that the learning outcomes are well articulated and the necessary tutor and peer support networks are embedded into the learning environment. To conclude, this study provides an insightful contribution towards how IBL and technology-enhanced learning can be applied in the social science domain.
Keywords: Inquiry-based learning; computer-assisted learning; simulation, student perceptions, collaboration; engagement

Smart Assistant for Adaptive Course Preparation and Delivery in e-Learning Environments

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Abstract: Educated and skilled human resources and workers are real assets and a key of success and power for both nations and organizations. Therefore, education and training in general and Web-based Intelligent Tutoring Systems (ITS) in specific will expectedly play an important role in the future. Our first hypothesis in this research is that "adaptive" is a key for designing an effective ITS. Course adaptation must consider few essential dimensions: teaching strategies, student model that are based on background knowledge, learning style, and skills of each individual student, and the teaching approach suiting the instructor's cognitive model. According to their cognitive model, instructors, like all other experts in their fields, usually build on their selves' previous teaching experiences or the experiences of other experts. In this research, we investigated mechanisms supporting both authors and tutors in selecting the most appropriate learning materials for more effective learning outcomes. Authors need to prepare course materials that achieve specific objectives (e.g., syllabus and target skills). Students need to study with materials that match their learning styles and that build on their background knowledge. Therefore, our objective is to build a model and to suggest a framework and architecture for a Smart Instructor Apprentice (SIA) that provides instructors (authors and tutors) with intelligent Assistance in both Course Preparation and Delivery. SIA intelligently rewrites the course objectives according to educational theories and then adaptively selects the most appropriate Learning Objects (LO) from learning objects repositories (LORs) to align course objectives with students' models. SIA supports selecting the most appropriate LOs at both authoring and delivery stages of the educational process. SIA employs two main theories in building its model, namely, the revised Bloom's instructional design theory (RBT) and Felder & Silverman Learning style theory (FSLSM). In its model, SIA adapted the general structure of domain ontology to support RBT by accommodating new set of relations and a new definition of a concept. On the other hand, in order to support FSLSM, SIA suggested adding extra attributes to the LO's metadata attributes. SIA fulfils its job through a series of objectives rewriting steps and an LO selection strategy.

Keywords: Bloom's taxonomy, learning style, student model, adaptive e-learning, learning objects, objectives rewriting

Smart e-NoteBook: An Adaptive Hypermedia Learning Material Management Environment

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Abstract: Traditionally, students used their own study books that they use to write down their own notes and annotations, to summarize the material they learned, and to structure their learned knowledge. In addition, students also use these study books to review knowledge when needed, e.g., before exams and even after graduation when facing a lifework need. This research introduces the idea of smart personalization of student study multimedia e-Notebooks according to each specific individual student's profile (student model); a tool that adds to the power of e-Learning by imitating, with much more power, those traditional study notebooks. Smart e-NoteBook is an *adaptive multimedia hyperlinked learning material management environment* that supports students (or any users, such as researchers, teachers, writers, etc) during their different modes of use (study, review, or research to answer a question). Smart e-Notebook takes the instructor-provided multimedia material that is not usually prepared for a specific person (let us call it e-Notebook), and generates many personalized editions of *MySmart e-NoteBooks* one for each individual student that better suits his personal student model. The student model attributes that the Smart e-Notebook considers are the learning style (according to Felder-Silverman model) and the domain knowledge. To fulfil its task, Smart e-NoteBook assumes that the input e-Notebook multimedia course material submitted by the instructor is presented in the form of Learning Objects (LOs). In this research, we investigated the specifications and features, and hence, came up with a general model for the Smart e-NoteBook environment. A general framework for such an environment is suggested, architecture is designed and a prototype is being under development.

Keywords: Adaptive hypermedia material, e-book, e-annotation, learning styles, student model, ontology, adaptive e-learning, learning objects

Feedback Services for Exercise Assistants

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Abstract: Immediate feedback has a positive effect on the performance of a student practising a procedural skill in exercises. Giving feedback to a number of students is labour-intensive for a teacher. To alleviate this, many electronic exercise assistants have been developed. However, many of the exercise assistants have some limitations in the feedback they offer. We have a feedback engine that gives semantically rich feedback for several domains (like logic, linear algebra, arithmetic), and that can be relatively easy extended with new domains. Our feedback engine needs to have knowledge about the domain, how to reason with that knowledge (i.e. a set of rules), and a specified strategy. We offer the following types of feedback: correct/incorrect statements, distance to the solution, rule-based feedback, buggy rules, and strategy feedback. We offer the feedback functionality in the form of lightweight *web services*. These services are offered using different protocols, for example by JSON-RPC. The framework around the services is set up in such a way that it can easily be extended with other protocols, such as SOAP. The services we provide are used in exercise assistants such as MathDox, ActiveMath, and our own exercise assistant. Our feedback services offer a wide variety of feedback functionality, and therefore exercise assistants using our services can construct different kinds of feedback. For instance, one possibility is to start giving correct/incorrect feedback, and only start to give semantically rich feedback on individual steps when a student structurally fails to give a correct answer. Another possibility is to force the student to take one step at a time, or to follow one specific strategy. In this paper, we describe the feedback services we offer. We briefly discuss the feedback engine that serves as a back-end to our feedback services. We will give examples of how to use our services. In particular, we will show a web-based application that uses the feedback services in the domain of simple arithmetic expressions.
Keywords: Feedback, web service, exercise assistant, strategy

Developing the Capacities of Public Servants Through e-Learning: Profile and Interactive Experiences of Public Management Students

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Abstract: Good governance is a very important ingredient towards attaining development. It plays a crucial role in poverty alleviation as well as in attainment of the Millennium Development Goals. These targets will only be achieved if the government is able to provide policies and services that are responsive to the needs of the people. Hence, it is important to have highly trained public sector that are able to contribute to the crafting of relevant institutions as well as in the delivery of basic services that are efficient and effective. The study aims to provide a profile of the Master of Public Management (MPM) students who are currently enrolled in an online mode of learning at the University of the Philippines Open University (UPOU). It also reveals their interactivity experiences and their opinions regarding the use of elearning to build the capacities of public servants. The results show that indeed, there is a positive feedback on the use of elearning as a tool in developing the capacities of the the public sector. The profile shows that the students have the capability to influence the decisionmaking processes and program implementation from national and local government, public enterprises and other fields. This could lead to positive inputs in good governance, most especially in the delivery of services that will make an impact in poverty alleviation. The profile of the students also shows that they are located in various parts of the country and even overseas which means that elearning is accessible to all regardless of their location. The presence of students working for the private sector and non-governmental organizations (NGOs) also leads to a better understanding of how partnership and collaboration could be developed among these sectors. In terms of interactivity, the elearning tools are found to be effective in order to foster learning and interaction not only between the professor/tutor and students but among the students themselves. They claim that they learn to appreciate and understand more about their work in the public sector without compromising their own jobs with demanding time schedules as well as the time that they spend with family. It is suggested that professors/tutors should be more efficient in using interaction tools in order to enhance the learning of the students. The development of short courses for the public sector should also be continued to address the specific knowledge and skills that they want to achieve. These courses can be offered to other interested public sector employees who are interested in taking up short courses only and do not really have the time to take a graduate course. **Keywords**: e-Learning interactivity, public sector capacity development

To Podcast or not to Podcast? Students' Feedback on a Different Learning Experience in Histology

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Abstract; Students who battle to be academically successful, especially in traditionally "difficult" subject areas such as histology, usually experience problems with content overload, time management and inappropriate learning approaches. Lecturers, on the other hand, often find themselves in a double-bind: high workloads restrict the support they can offer and insufficient skill and expertise prevent them from making use of innovative teaching methods. This paper reports how a senior lecturer in histology, a technology expert and an educationist in the School of Medicine, University of the Free State joined hands to make the content of a lecture on muscle tissue accessible in a web environment in the form of a podcast. A snapshot descriptive study was done to ascertain whether students accept this novel mode of learning, whether they are skilled enough to use the method independently and whether this approach positively influence their learning. 148 first-year medical students participated in the study. Their experience of the learning opportunity was evaluated by means of a satisfaction questionnaire (n=142). Cognitive gains were evaluated by comparing the examination marks in the question on muscle tissue with marks obtained in two other histology questions in the same paper. Respectively 87% and 85% of respondents described the method as meaningful and exciting. Also, 87% of respondents said that they found the histology content more comprehensible as a result of the podcast. Whereas only 10 students (7%) indicated that their level of computer literacy was a stumbling block, the great majority (92%) confirmed that they enjoyed studying with the help of a computer. 113 (80%) experienced the method as time-saving and 85% said that they would use the facility for revision purposes. A mere 30% could declare that it was easy to absorb knowledge through the medium of sound. Marks obtained in the question on muscle tissue were significantly higher (4.2/5) than in the other two questions (4.1/6 en 3.5/5). Although the histology podcast was well received, it was also evident that, since not all students naturally absorb information through sound and they still rely heavily on notes, the development of listening skills deserves a higher priority to what is currently the case in the first-year curriculum. Both the World Federation for Medical Education and the World Health Organisation endorse the integration of computer technology into medical education. In line with these directives, but also from a practical viewpoint, which is to motivate students to pay more attention to a traditionally "killer subject"such as histology and to empower the lecturer to focus on the problems of struggling students, rather than covering content, the project has significance. It shows how the combination of a podcast lecture and existing images into meaningful web-based learning objects that are accessible in multiple formats, help students with different levels of computer competency to prepare and revise the learning content independently and effectively. Data on the impact of the new method, albeit on a small scale, have the potential to lead to the improved application of the method in other similar subject areas.
Keywords: Computer technology in medical education; podcasting; histology; technology-assisted learning; independent learning

ELDO: An Ontology for the Cataloguing of e-Learning Design

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Abstract: Recently there have been many both open and private courseware repositories appearing on the web. In general however, there has been great commitment to building communities that facilitate the liaison between users/suppliers, but quite a modest employment of sometimes very elementary cataloguing systems. When the ILOR project (Italian Learning Object Repository) was launched, which created an Italian LOR experience, CERTE (Research and Development Centre for Elearning Technologies Centre – Omniacom.org) wanted to undertake the rigorous construction of an eLearning Design Ontology (ELDO), starting with university didactic requirements and with the Dublin Core metadata (DCMI) model, to then compare them with the SCORM LOM model and with a careful analysis of the application area. The research has already produced a stable cataloguing model which integrates DCMI, LOM SCORM in a metadata structure called PLOM2 (Pegasus Learning Object Metadata) by Pegasus LMS® technology used for implementation. PLOM2 is already used for cataloguing the current repository while awaiting the final ontological model (PLOM3). The research-development cycle described here corresponds with a bottom-up process that was conducted starting from three repertories: the cataloguing of courseware produced for University of Ferrara's distance-learning degrees and Masters, the DCMI base set and the LOM originating from the IMS model, adopted by SCORM. However, the project had already detected potential classification difficulties operating with the bottom-up process only. Many categories in fact (especially associated with users, their work and training organization, and course planning etc.) could not find an adequate placement

within the model. An R&D process was therefore envisaged parallel to the top-down modality dedicated to ontology construction. The starting point was once again the university courseware cataloguing requirements. Beginning with these needs, ELDUM (eLearning Design unified model) was designed. This is a model of thematic depiction built from the correlation between the mapping class-concepts and their correlation with specific relation-properties. A database was placed alongside ELDUM's dynamic conceptual map that allowed the gradual archiving of both classes and properties. OWL is used as a reference model due to the frequent randomness of definitions, while Protégé is used for building the ontology. The objective is to obtain a stable version of ELDO by the end of 2008, in order to provide first PLOR and then ILOR ,with a stable ontological instrument. Finally it is important to note on the semantic analysis of content side that it is operating with a Pegasus LMS®OKM Open Knowledge Management module, for the semantic analysis of texts, the automatic construction of glossary and thesaurus, as well as the automatic marking of the same texts going on to be catalogued.

Keywords: LOR Learning Object repository, e-learning ontology, e-learning design, e-Learning design cataloguing, learning object cataloguing, semantic cataloguing

Student Vision Regarding an Ideal e-Tutor in Romania

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Abstract: E-learning is an educational system of distance-learning through which the students have the possibility to continue their studies at a graduate or post-graduate level. In e-learning, the tutor is an expert-person looking for the development and the education of his/her students. In the e-learning literature, most of the time, different technical aspects are treated, while the psychological and pedagogical aspects have very little space. Therefore there is an open gap in this area. Little research of this type is known from Romania where the online system was started about 5 years ago. In this study we investigate the psycho-pedagogical aspects of the role of a tutor in e-learning from a student perspective. In this respect we made a questionnaire that was sent to the students of main online Romanian institutions. This investigation complements a similar research made from the tutor perspective in Romania, presented at (Goga 2007). From the answers that we received, some interesting conclusions can be made that are presented in this paper.

Keywords: e-Learning, e-tutoring, roles, competencies, online instruction, psychology, pedagogy

The Role of Meta-Cognition in web Searching to Support Inquiry-Based Learning

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Abstract: Since Flavell's work in the 70s, there has been an ongoing interest in the impact of metacognitive skills on a person's ability to learn effectively. As people increasingly make use of the World Wide Web to research topics and find out information, interest has begun to focus on use of metacognitive skills in this context. This paper describes results of a study in which 400 people were asked about their usage of metacognitive skills in the context of web searching. Results reveal key points about the way people perceive their use of metacognitive skills, as well as the use of the questionnaire methodology in the context of metacognition.

Keywords: Meta-cognition, web searching, inquiry-based learning

E-mbedding *E*-nhancing *E*-valuating - Students' Perspective on the use of e-Learning to Develop Study/Information Literacy Skills

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Abstract: Developing competent study/information literacy skills is a key component in the concept of supporting student learning in Higher Education and generic modules to support this development are often

offered alongside academic modules in universities.   However, for mature part-time students who may have considerable professional and life experience, traditional study/information literacy skills programmes designed for 18 year-old school leavers may not be appropriate. Furthermore, for students on vocational programmes the link between academic study and practical application in the workplace may need, at least initially, to be made explicit. This study centres on the experiences of students on a Foundation Degree in Professional Development (FDA PD) designed as continuing professional development for support staff in schools studying part time at a university in the North West of England. This programme has developed an embedded e-learning approach which locates the development of academic skills within the curriculum contextualised within subject modules with explicit links to practice. The university's discrete study skills programme, Springboard, has been adapted for use on the degree. Students are directed to activities to support their taught sessions using on-line material on the university VLE (WebCT) designed to link academic theory with practice (Carr, 1987). This also introduces students to the concept of e learning and by means of a skills audit allows identification of need at an early stage in their academic career. This type of e delivery has been shown to improve learning and deliver enhanced learning outcomes for students (Oliver, 2001). There is also the opportunity for self-regulated learning (Perry et al, 2006), for the student to move from dependence to independence (Bach et al, 2007) for participation to develop self-confidence, relieve anxiety and self-doubt which is often present in mature non-traditional learners (Richardson, 1994, Grow 1991) and for competency based feedback at an individual level which can help students understand their unique bundles of competencies (Dooley & Lindner 2002). The paper focuses on initial findings from the first cohort of students on the FDA PD and reports from their perspective in terms of the usefulness of Springboard in developing their academic study skills. Experiences are reported using questionnaires, assignment evidence and e-learning measurements. Data has been gathered using qualitative methods and the experience of these learners is reported in terms of the following key questions:

Keywords: Part-time, mature-student, e-learning, study-skills, self-regulated learning

Identity Crisis: Who is Teaching Whom Online?

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Abstract: Evidence from a grounded analysis study (Greener 2008) of UK teachers using blended learning (face to face and online learning using Learning Content Management Systems) suggested that the relative identities of teachers and learners could change online affecting the role an individual or group took in the learning process. In relation to the teacher's role, the development of the Community of Inquiry model by Garrison, Anderson and Archer (2003) can help us to disassociate the role of "teacher" from the potentially all-powerful individual at the head of a physical classroom, to the three overlapping types of presence online (social, cognitive and teaching) described in the model. While Palloff and Pratt (2001) merely touch on the need for faculty to give up a degree of control (p153) when teaching online, this study supports more closely the Garrison et al analysis. Not only was there support for the idea of quieter students and those being taught in a non-native language changing roles and becoming more dominant in asynchronous communication online, but the teacher's status was also challenged, both in asynchronous and synchronous messaging and through the students' access to web resources from universities world-wide. It seems that human nature abhors a vacuum online as teachers in this study experienced ways in which identity could be constructed through text discussion, based on perceived effort, curiosity, maturity and perceptions of others' learning preferences and behaviours. Pedagogic focus affected teachers' perceptions of what kinds of learning could be achieved through LCMS technologies, with learner-centred teachers defiantly optimistic about the affordances of online learning despite the technical, political and confidence barriers experienced. They were prepared to step back after their initial input in "designing" the learning environment, once learners had started to feel at home there, moving towards a situation where learners sourced and shared resources, set agendas and contributed to debate, while the teacher was able to become a reinvigorated learner within the virtual group. This study of enthusiastic teachers in Higher Education innovating at a time of transition to digital environments offers a challenge to less enthusiastic online teachers as their traditional authority status is changed with role shifts and conflicts. The potential equalising effect of the medium between learner and teacher does not enhance the role of the learner at the expense of the teacher, but puts both in the happy position of learner, albeit with concessions to the teacher's additional experience and knowledge.

Keywords: Online learning, teacher role, pedagogy

e-Learning and Web 2.0 in the Humanities – Development, Testing and Evaluation of Didactic Models Beyond the Distribution of Online-Material

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Abstract: This paper deals with the possibilities and limits of applying e-Learning in the Humanities based on results from comprehensive student and teacher surveys as well as perennial and intensive e-Learning consulting services. These services have been provided for the Department of Philosophy and Humanities at Freie Universität Berlin (FUB), Germany, within the framework of the project "FU e-Learning" (FUeL) funded by the German Federal Ministry of Education and Research (BMBF). The focus of the project, and of this paper, is on solutions to integrating e-Learning and face-to-face teaching that can be realized with manageable time and effort. This paper states, based on empirical findings, that the basic application of e-Learning (in the sense of limiting it to online distribution of information and material) is firmly anchored in university teaching in the Humanities. However, more complex scenarios that entail not only administrative but also pedagogical benefits are not yet part of everyday teaching in the Humanities. This paper analyses the reasons for the below average implementation, and proposes a number of measures to overcome this situation. These measures include, among others, propagating prototypical scenarios and best practice examples, proposing didactic models for e-Learning suitable to university teaching, improving the lecturers´ e-competence by offering training and consulting services, and introducing concepts and tools of e-Learning 2.0. The effectiveness of these measures is illustrated in two ways: First, by means of the results of evaluation activities accompanying a project on developing and testing complex e-Learning scenarios for the Humanities, where within six months after the implementation of the measures, the quantity and – most notably – the quality of e-Learning usage at the institute increased considerably. Second, by means of a case study of e-Learning 2.0 in the Humanities at FUB, which illustrates how the easy-to-use and collaborative Web 2.0 applications can be integrated into everyday teaching at a low cost, while at the same time meeting the specific demands of learning and teaching methods in the Humanities.
Keywords: Web 2.0, humanities, blended learning, evaluation, e-learning

Use of Internet Resources to Improve Education Delivery - A Case Study in Bangladesh

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Abstract: This study concerns the use of Internet resources for education delivery in Bangladesh. Usage of Internet and accessibility to computers in Bangladesh is very low and ICT supported distance education is only provided by one university which delivers the education via video, radio and mobile phones – no "traditional" e-learning via Internet is given. Despite the low Internet usage and lack of "traditional" e-learning, educational organizations in Bangladesh can benefit from re-using learning material from Internet - most notably in time and cost savings in content development and quality improvement of the learning content. The aim of this paper is to describe how open content and free-to-use learning material are used by educational organizations in Bangladesh; which potential benefits and disadvantages they can see with re-use of learning material or open content; which potential benefits and disadvantages they can see with creating their own learning material. The number of universities in Bangladesh is constantly growing which means that every effort to improve the education delivery - both in terms of improvement for the educational organization (e.g. time and cost savings in content development) as well as improvements on the actual quality of the education – is highly valuable. Findings show that the most mentioned advantages with re-use of learning materials are that is saves time and that teachers' can get access to up-to-date knowledge. The most mentioned disadvantage is that the content is not suitable for the context of the Bangladesh students and adaptations to the material have to be made. The teachers also mean that the main advantage with creating their own material is that is helps them develop as teachers, but they do, however, feel that creating their own content is very time consuming.
Keywords: Open content, learning material, advantages, disadvantages, Bangladesh, developing countries

Use of International Internet Discussion Boards to Promote Health and Technology Knowledge and Skills in Nursing Education

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Abstract: The education of health care professionals cannot be limited solely to the study of health care systems within one's own region or country. Active participation in the global community requires nurses to develop an expansive view of health care. In addition, nurses need to develop communication skills enabling them to interact globally in the pursuit of better health for populations. Experience is required with technologies to enhance global communication in relation to health. Theoretical Framework: Social constructivism.

Design: Evaluation study using a descriptive survey and content analysis of an online student discussion group. Sample: 21 pre-registration undergraduate nursing students from one university in the United Kingdom and 13 nursing students (10 pre-licensure and 3 graduate students) from one university in the United States.

Method of Data Collection: Students were divided into small groups and participated on two discussion boards via WebCT. The objective of the discussion boards was to facilitate exchange on issues related to health concerns and behaviors common to the respective geographical regions. A self–completion on-line questionnaire was developed to evaluate the educational benefit of the discussion groups in facilitating knowledge exchange. Method of Analysis: Descriptive statistics for survey items and content analysis of the narrative comments on the survey and the discussion board. Findings: While some variation between the students from the different countries was identified. Students generally found the experience beneficial and gained a greater insight into different health care systems. Discussion board narratives indicate some common health concerns among students on both sides of the Atlantic. Student comments on the evaluation survey indicate a preference for a real-time format. Application to Nursing Education/Practice: International discussion boards are a cost-effective and pedagogically sound strategy for facilitating student learning regarding global health issues. They also increase student familiarity and competence with online tools relevant to the healthcare setting. International discussion boards are a cost-effective and pedagogically sound strategy for facilitating student learning regarding global health issues. They also increase student familiarity and competence with online tools relevant to the healthcare setting.
Keywords: International discussion boards nursing health

Developing Information Literacy Skills by Using e-Learning Environments in Higher Education

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Abstract: The fast-paced development of information and communication technologies has opened new challenges and possibilities in the area of higher education. The ability to research, evaluate, and display information effectively and efficiently are the demands of today's universities. In the face of the increasing knowledge-intensity in practically all areas of employment, the competent use of information has furthermore become an important aspect of employability and life long learning. However, university courses to foster the development of information literacy do not always meet the demands and necessities of students. Considering these demands, the project i-literacy at the Institute for Media and Educational Technology at the University of Augsburg, Germany, is developing an infrastructure to increase the level of information literacy to ensure the quality of academic performance and foster key competencies. The aim of the teaching-/learning environment is a didactical support for the developement of information literacy skills in general and key competencies for scientifically working with knowledge specifically. The didactical framework and methods applied in this endevour are closely knit to previous knowledge and competencies of the students. The didactical concept aims at combining learning abilities with a framework that enables them to achive high academic standards in the use of information and knowledge. The project provides a multilevel approach which sees e-learning as a key concept in teaching and learning and is based on an e-

learning plattform which serves in part as a self-study ressource and in part as component of blended-learning curricular courses.

A new Open Source web Statistical Tool

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Abstract: Professionals of education have to develop new instruments of evaluation. These tools have different goals (e.g., questionnaires, examinations, tests) and different forms (paper and pencil, computer assisted testing). Even though the use of all sort of evaluation tools increased during the last decades, academics, teachers and practitioners of the educational field have often difficulties to verify the psychometric qualities of their instruments. This is also the case for evaluation tools used via e-Leaning (e.g., pre-test skills or learning potential assessment before training, skills acquisition testing after learning, etc.). Many reasons can explain this: there are no user-friendly softwares available, they are expensive, and the interpretation of the results is difficult. To provide a solution to this problem, educational and psychological labs of the Laval University (Quebec) and of the University of Luxembourg have developed a user-friendly open source web tool. Files created in different formats (e.g., Excel) can be downloaded and data are analysed quickly and without the requirement of being a computer expert. Classical Test Theory (e.g., difficulty and discrimination indices, Cronbach's alpha) as well as Item Response Theory (e.g., item characteristic curves, test information function) are used. With a minimum of tables and graphics, the neophyte psychometrician will be able to choose good items for testing groups varying on age, abilities or cultural aspects. An interpretation support is currently being implemented. The objective of this proposal is to present a new instrument aimed to verify the psychometric properties of an evaluation tool. The paper also concerns the difficulties of choosing good items and response options. Different empirical data sets from cognitive tests, attitude questionnaires and multi-choice questionnaires will be used for demonstration. The procedure used to analyze the data and the interpretation of the results will be discussed.
Keywords: Evaluation Items-analysis user-friendly web

The Teaching Buddy: Speech and Language Technologies for Assisting and Assessing Instructional Practice

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Abstract: In this work we present a new tool, the Teaching Buddy, based on automatic speech and natural language processing technologies primarily intended to facilitate the observation and analysis of instruction in support of teachers' professional portfolio development and assessment of instruction. From the education point of view, our system is predicated on the theory that teachers develop best in a community of practice. The Teaching Buddy is a tool that enables this community of practice to reach deeper and more meaningful levels of analysis by allowing the professional development team to provide better, consistent, and evidence-based insights and feedback to the practitioner. From the technology point of view, the Teaching Buddy leverages existing state of the art automatic speech recognition (ASR) and natural language understanding (NLU) technologies together with instructional discourse analysis frameworks as well as mature and well established instructional assessment frameworks. The Teaching Buddy is structured in five layers: the data capture layer, the speech recognition layer, the natural language understanding layer, the evaluation and scoring layer and finally, the presentation layer. The results of the analysis can be used by an expert, mentor, or professional development team to provide the practitioner with constructive, evidence-based feedback. In this paper we first introduce the Teaching Buddy and describe in detail its five layers. We then illustrate how our system works by following the analysis process that the Teaching Buddy carries out using a brief lecture segment of a Discrete Mathematics course at the college level. We conclude our paper with a summary of what we believe are the most promising areas of future research including a brief survey of potential target delivery frameworks, including Eclipse and Sakai.
Keywords; Assistive educational technology, educating the educators, computer–aided assessment, instructional practice evaluation, community of practice, instructional discourse analysis

Listening to the Learners' Voices in HE- How do Students Reflect on Their use of Technology for Learning?

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Abstract: The importance of the Learner's Voice and thus of listening to students' views has been evidenced in various high profile initiatives in the UK. The work presented here is from the JISC Learners' Experiences of E-Learning Phase 2 Learners Journeys STROLL project. The seven JISC funded projects were set up in 2007 to investigate *inter alia* the changing views of students in their use of technology to support their learning. The **STROLL** (**ST**udent **R**eflections on **L**ifelong e-**L**earning) project has recruited a diverse range of students from both Higher and Further Education backgrounds with the aim of researching the students' experiences of learning in a technology rich environment and their progression in their use of learning technologies over the two years of the project's timescale. STROLL is a largely qualitative study with students participating from across the University of Hertfordshire (UH) and Hertford Regional College (HRC) by recording their own video and audio diaries of their learning experiences. Using the students' choice of camcorder, web camera, or digital voice recorder they recorded their daily learning experiences of using technology, including a range of e-learning tools and the University's own MLE (Study Net). The project started in March 2007 and completes in March 2009 with the final round of student diaries to be collected in October 2008.

The project's aim is to research and document the students' answers to the following questions:

How do learners experience change through their learning journey?

How do students use and make choices about their time?

How do students use e-learning tools to support their learning?

How do students use their personal technologies?

The qualitative data from the students reflective diaries collected so far was first transcribed. The transcripts were analysed and colour coded according to the themes. Concept maps were created for each student's diary detailing their reflections on learning. Further concept maps of quotations relating to the research questions above were developed to identify comments which were particularly relevant to the themes. Finally Nvivo™ is also being used to support and track the large quantities of data. The project team will present results from the first three sets of video and audio diaries, including sample video and audio clips of the students' reflections. This paper presents some of the early findings in terms of the ease with which students interact with technology and the choices they make about what they use and when and where. The discussion includes consideration of the research methodologies, since the use of personal video diaries to record reflections on learning, is so far a rarely used method of capturing data on students' reflections.
Keywords: Student experience, e-learning, social uses of technology

Humanistic Approach to Technology Domination in Technology Enhanced Learning

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Abstract: In this article we tried to show how technical perspectives on technology enhanced learning (TEL) integrate into learning theories with the intention to widen technical horizons in discussions on TEL. We discussed two in our opinion most present understandings of technology in learning, the dictum of "invisible software" and the exclusiveness of task-oriented approach of technology, and tried to make clear in which theoretical tradition they can be ordered. By that and by showing on theoretical approaches that represent other perspectives, especially the humanist one, we hope to have opened the technical perspective for new and different approaches to TEL. As a result we opened a discussion on two questions we believe are today crucial in TEL: who takes responsibility for learning in personal learning environments (PLE) and what role the content (respectively domain-specific knowledge) has in the "era of task-conscious learning proponents". Our conclusions were that, firstly, learning responsibility in TEL and PLE is carried by learners only indirectly as it is the technology that allows personalization and by that carries direct responsibility for learning. And secondly we believe that for TEL the learning model has to stress the content part of learning. We suggested

the model of parallel learning that stresses dichotomous and dialectic character of learning theories which often present two alternative approaches (task- and learning-conscious, skills and domain-specific knowledge, technology and content). Like we have argued in this article in our opinion the academic TEL discussion focuses too much on task orientation, therefore our model advocates building learning process upon the learning-conscious domain.

A Learning Metronome! An Experience in Vodcasting

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Abstract: The use of podcasts and latterly vodcasts is becoming more widespread in the field of e-Learning, blended Learning or, as we will refer to it, technology-enhanced Learning (t-eL). There are many studies taking place across the sector in the development and deployment of podcasts, one wide ranging and beneficial study is the IMPALA project based at the University of Leicester in the United Kingdom. This paper will focus on the concept of using a series of vodcasts as an 'educational metronome' to pace students' engagement with their studies. This initial study is based on a cohort of twenty-three post-graduate students , nine male and fourteen female, of a variety of ages and experience (although all have been involved professionally in education for at least four years) undertaking a technology-enhanced Learning continual professional development (CPD) programme which leads to a M.Sc. technology-enhanced Learning qualification. The course is delivered in a blended-Learning mode with each of the three modules per year having three face-to-face sessions of three hours spread over a twelve week period inter-woven with on-line self-directed individual and group work. The participants are all experienced educational professionals in the Higher Education and Further Education sector from the region. They range from novice adopters of technology in their pedagogy with a desire to develop their capabilities in technology-enhanced Learning to more advanced practitioners wishing to use their expertise more efficiently and gain underpinning knowledge and understanding of the subject. The range of disciplines that the participants cover is a broad selection of the sector's teaching areas. One of the outcomes is to create a 'good enough' approach (both in the vodcasts' production quality and resources, e.g. time, hardware and software, cost of the vodcasts) to developing podcasts and vodcasts that can be adopted within a range of disciplines, by educators with a wide variety of experience and be embedded transparently into the normal pedagogy of educators. The study endeavours to explore the use of vodcasts to enter the 'learning window' of the students and positively affect the pace of application to specific topic learning thereby improving both the students' attainment and the students' learning experience.

Keywords: Technology-enhanced learning, learning metronome, vodcasts, podcasts, window into learning, Web 2.0

I The Development of Formal and Informal Learning Online Through Online Communities of Practice and Social Networking

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Abstract: Social networking is new phenomenon made possible on a global scale with Web 2 technologies. Participation is significant with some of the more popular sites boasting membership of millions of users. Although many are simply online social spaces, others are a platform of choice for cultural or interest groups and friends to meet for the exchange of ideas and information. Parallels can be drawn between social networks and online communities of practice, challenging our thinking about learning and pedagogical approaches that use the Internet as a tool. A qualitative approach was used to examine the development of formal, non-formal and informal learning online with a group of disaffected young people using an online community of practice and social networking as a tool. This paper will argue that whilst the technology components of the Internet itself have changed little, social networks indicate a fundamental shift in the way we use those technologies allowing significant learning to take place. This is particularly marked in the way that young people use these networks for debate, collaboration and information exchange through text, chat and a range of multimedia tools. This paper will further argue that where social networking becomes effectively integrated into an online community of practice, the boundaries between formal and informal learning are blurred offering a powerful dynamic to take learning forward for all of the participants in measurable ways. Whilst some models of e-learning focus solely on content or courseware delivery that are designed to provide opportunities for formal learning which can lead to qualifications, social networks are

often perceived as providing opportunities for discussion, participation, interaction and potentially informal learning. The social interactions within an online community are strengthened by a participative and dynamic environment where users influence and help to define its structure.

Implementing Nationwide e-Learning Projects - A Guarantee of a Better Future

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Abstract: Modern society is based on information, and this has led to the use of IT&C being used as a reference point for systemic changes being implemented in educational systems. Since the beginning of the information revolution, challenges have been shaped by three major factors. These directions, highlighted at the Lisbon and Feira Summits, are the equipping of schools, the training of teachers and the provision of necessary resources. The Lisbon Strategy, which aims to make the European Union the most dynamic and competitive knowledge-based economy in the world, places special emphasis on education. The Lisbon strategy intends to rely on relevant experience gained by European countries with regard to their individual educational programs and projects to archive its social and economic goals. This strategy has the potential to reinforce innovation, to sustain excellence, and to create opportunities for further multidisciplinary developments. At SIVECO we are working to accelerate the process. Our sensible premise for advancement bases itself upon the need to form transferable competencies, to rethink teaching-learning strategies as well as the evaluation of national educational systems. Advances in Information and Communication Technology (ICT) models, technologies, and infrastructure can only occur if we develop new generations based on specific understanding techniques, cognitive tools for living and working in tomorrow's knowledgeable Europe. However, the development of effective programs should be oriented towards delivering improved education and training to the European workforce. Nowadays, we are witnessing a revolution in education. This revolution is directly affecting the tools used by teachers and pupils as well as the way that these new IT&C resources act as an agent for change when introducing new pedagogical paradigms in schools. While the basic principles remain the same – with teachers teaching students in the classroom – ICT tools allow for enhanced interactivity and advanced communication between the main beneficiaries, by improving personal experience, exercises and direct experimentation methodology. Romania implemented a major educational program starting with 2001. The IT-based Educational System, which aims to support the objectives of the educational reform in conformity with the European strategies, was an ambitious endeavor initiated by the Ministry of Education and Research. The strategy of the Romanian government aims to utilise ICT to support its involvement in the educational reform, as it conforms to the eEurope action plan developed by the European Union in 2005. SIVECO Romania has developed many successful eLearning products and packages. Almost every educational institution in Romania currently utilises at least one of these popular packages, with 3300 Secondary schools and all High schools benefitting from nearly 1700 of these IT-based packages.

Keywords: e-Learning, educational system, educational software, computer-assisted learning, information technology

e-Learning Strategies in Technical Part-Time Studies – Constructivist and Collaborative Approaches to Learning and Teaching

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Abstract: The behaviourist theory has been underlying the curriculum and pedagogy of technical education at university level for many decades. The preparation of students for the workplace, however, requires an educational programme that provides not only job skills but also problem-solving and collaborative work skills. Therefore the traditional behaviourist framework no longer complies with the demand for learning environments that foster interdisciplinary and collaborative learning. Consequently, a new learning theory is urgently needed. Constructivism, as an alternative, provides a viable theoretical framework for the pedagogy and curriculum of technical education. According to Doolittle (1993) it replaces the concept of teaching as a transmission of knowledge and skills from teacher to student with a new understanding of both student knowledge construction and the relationship between teacher and student. Therefore, teachers today are no

longer supposed to be instructors, but guides, coaches and facilitators. Students should instead be seen as meaning-making, self-regulated and socially interacting individuals, who actively engage in the learning process. Accordingly, technical education needs to merge the traditional need for learning core knowledge and skills with the modern emphasis on knowledge construction, self-regulation, collaboration and adaptability (Doolittle 1999). Knowing how to learn, taking ownership of one's own learning, applying technical and social skills and anticipating and adapting to changes in the workplace, these are elementary prerequisites for both developing and implementing successful lifelong learning strategies and building a successful career. The need for change in higher technical education requires constructivist approaches that aim to leave behind traditional behaviourist notions of learning and teaching, focusing on blended learning environments that foster self-regulated and collaborative learning to prepare students for the workplace. Experience shows that it is quite a challenge to shift from more traditional approaches to learning and teaching towards more progressive, process-oriented ways. Exploring some of these ways and the theory behind it are the primary aims of this paper.

Keywords: Blended learning, constructivism, collaboration, technical education, virtual learning environments, lifelong learning

Redesigning the Moodle Interface for use in Primary Schools With a Ratio of one Computer per Student

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Abstract: The growing trend of one laptop (or one computer) per child, and its pilot implementations in schools in Greece and Cyprus, has shown the need for reexamining the way we administer and deliver content in the classroom. Especially in Cyprus and Greek public (primary) schools, the mixed-ability groups that exist in every classroom require the teacher to handle simultaneously at least 5 different levels of students. A case study of using Moodle for teaching Language, History and Geography in a primary school in Cyprus and a primary school in Greece (http://www.mathisis.org), has shown the benefits that can arise from such an implementation. Moodle can enable the teacher to deliver content in an organised way to the students through lessons that are closely tied to the curriculum, whenever and wherever that is appropriate. By defining the topics (Language, Geography, History) and then evaluating the chapters in which technology will have an added value, we begun developing content for the lessons. One of the main obstacles in the implementation was the interface of Moodle. Moodle was never designed for use in primary education, especially for delivering and administering content. The open source nature of Moodle, along with the versatility of its themes and the expandability provided by add-on modules, allowed the heavy customisation of the interface, as well as the addition of several modules that were considered of great added value to the learning process. Such modules allow the deployment of interactive educational games (using the Game module) or video conferencing using DiDio (under test), or third-party whiteboard tools such as Scriblink (http://www.scriblink.com). Guidelines were also created for the development of lessons, so that consistency was kept even one volunteer groups of teachers were developing content. Parents were also introduced to the environment of Mathisis.org, and they were given a number of presentations to familiarise them with the benefits of Learning Management Systems. For various lessons, students from Dasoupolis Primary School (Cyprus) collaborated with students from Kalyvia Primary School (Greece) using Forums, Chatroom, Instant Messaging Software (Skype). Lessons were developed that encouraged the collaboration between students from both countries, covering such topics as the need for schoo uniform, environmental education etc. User logs showed that students were using the Chat room to talk on various issues (including leisure topics) even during weekends. Currently, Mathisis.org is at version 3 and a major revision is expected September 2008 with additional content development. The first part of the implementation was focused on the useability of the platform itself. The second part of the implementation (September 2008 – June 2009) will focus on learning outcomes using Moodle.

Keywords: Moodle, open source, e-learning, learning objects

Introducing Adaptivity to e-Lessons to Enhance Student Learning

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Abstract: In order to improve the learning process for students with different pre-knowledge, personal characteristics and preferred learning styles, a certain degree of adaptability must be introduced to eCourses. In learning environments that support such courses students can explicitly choose different paths through their contents or can be directed to different parts of the instructional material depending on the pace of their advancement in acquiring new knowledge. However, so variously structured and fully functional eLessons can be realized only in an environment that supports multiple modes of successful learning. This paper presents the basics of the implementation of such an environment. The authors first advocate why adaptability is useful in eLessons, and subsequently offer the possibilities for its implementation, by using and extending an Open Source Learning Management System Moodle. As a result, eLessons have useful ability to reference parts of other eLessons within the course from any point of the current eLesson. Conditional jumps from one learning object to the other, i.e. tracing students' advancement and modifying their learning paths, are introduced as well. Additionally, instructional designers are offered the means to construct adaptive sequencing in a pre-test => study => post-test structured activities. Therefore, learners may either skip or review learning activities depending on the outcome of the diagnostic tests. eLessons can be developed as sets of interconnected topics that are able to exchange information between them and students' learning paths in a more flexible way. Hence, eCourses can consist of numerous interrelated eLessons, providing improved reusability of learning material and extended flexibility for both teachers and learners. The proposed solution is based on well-known theoretical postulates, as well as needs emerged in contemporary practice. Its special strength is recognized in user-friendly implementation which makes the development of (semi-)adaptive eLessons quite straightforward, using a somewhat upgraded regular learning management system.

Keywords: Adaptation, individualisation, learning preferences, personalization, student-centred approach

Design of an e-Learning System for Accreditation of non-Formal Learning

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Abstract: This paper deals with issues related to the non-formal learning in vocational education, and the role of ICT for providing appropriate accreditation model in such education. The school is no longer the sole and the most attractive source of information and knowledge. Quick access to unlimited sources of information is widely available due to modern technologies. The traditional concept of literacy has been gradually extended to a multimedia literacy referring to students' abilities to read, write, and communicate with digitally encoded materials - text, graphics, still and moving images, animation, sounds. The way the people learn is changed as well. The existence of non-formal learning that is not provided by an education or training institution has been widely recognised. This type of learning does not typically lead to an official certification. The presented conclusions are based on the Leonardo da Vinci project LeoSPAN. The project aims to develop a multi-level model based on trans-national experience. The study has been carried out as a partner contribution on the analyses of the non-formal vocational training (VT) for low skilled people. The paper emphasises on the development of a model and a prototype of an adaptive eLearning system that ensures the pre-defined learner outcomes. One of the advantages of the eLearning system is the flexibility for people who upgrade and improve their knowledge.
Keywords: Non-formal learning, e-learning, evaluation, item response theory, computer adaptive testing

A User Interface for Simultaneous Moderation of e-Discussions

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Abstract: Effective moderation is a crucial factor for successful synchronous discussions. The importance of moderation is even higher in technology-mediated and distributed e-discussions. Additional indirection of communication and reduced expressive density, such as limited gestures, mimics or intonation, require special effort to reduce the risk of potential discussion problems such as miscommunication or lack of involvement. Useful group sizes for Computer Supported Cooperative Learning (CSCL) applications may vary, depending on tools and communication channels involved. In many synchronous e-discussion forms, the ideal group size is small, often smaller than the typical size of a class. In these and other situations, parallel work in smaller groups can be considered for classroom use of CSCL. Due to their co-location requirement, traditional direct discussions naturally limited moderators to observe one discussion at a time. Means of telecommunication eliminate this limitation – from a technical point of view, a moderator could observe multiple discussions simultaneously. However, the task of simultaneous moderation turns out to be a cognitively challenging task. Without assistance, moderators are easily overstrained, resulting in mediocre or poor moderation performance – and hence, in mediocre or failing discussions. Parallel moderation not only requires moderation to be effective, but also to be efficient. Within the Argunaut[1] project, a dedicated system for moderation assistance was built, suitable for both single and multiple simultaneous discussions. This paper describes the system's user interface for moderators. It focuses on the translation of simultaneous moderation challenges into an appropriate user interface and on insights gained in the design-driven development process and from user involvement during the development of the system. Each of the parallel discussions may need to be viewed from various perspectives (e.g. the current state, recent development, participant's activity over time or social relations in the group of participants), resulting in a large amount of complex information to be observed. Computationally, the presentation of dense information is accomplishable via information visualisation techniques. However, this cognitively highly demanding approach is inadequate for real time classroom use. Hence, a main goal was to reduce the cognitive load of the moderator. Three strategies were employed: a) the transfer of trivial observation tasks to the computer (e.g. detecting participant inactivity over a prolonged period of time), b) focused visualisations with low complexity that allow the moderator to quickly grasp important situations and c) a comprehensible workflow that takes a moderator's specific and extended focus into account.
Keywords: e-Discussion, moderation, participative design, user interface engineering

Kansei Colour Aesthetics in an Interactive Learning Environment

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Abstract: Many educational programs are designed with more consideration on their functionality whilst very little consideration is given to the aesthetic needs of the users. Colours contribute strongly to the aesthetic value of the design while acting as an agent either to enhance or to impair the communication. With the proper use of colours in learning environments, designers have the ability to enhance the usability while satiating the user's aesthetic needs. This paper derived from the preliminary research was conducted to investigate the usability of affective quality of colour in designing interactive learning environments. This paper also focuses on aesthetic components of a design, to what extend colour has an ability to improve quality of content. In this paper we attempt to explore the users colour preferences using Kansei Engineering techniques and emerge with better solutions to design interactive learning environments for adult learners.
Keywords: Interactive learning environment, Kansei Engineering, colour, aesthetics

Learning Objects and Virtual Learning Environments Technical Evaluation Tools

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Abstract: The main scientific problems investigated in this article deal with technical evaluation of quality attributes of the main components of e-Learning systems (referred to here as DLE – Digital Libraries of Educational Resources and Services), i.e. Learning Objects (LOs) and Virtual Learning Environments (VLEs). The main research object of the work is the effectiveness of methods of DLE components evaluation. The aim of the article is to analyse popular existing LO and VLE technical evaluation tools, and to formulate new more complex tools for technical evaluation of LOs and VLEs based on requirements for flexible DLE, as well as to evaluate most popular open source VLEs against new more complex criteria. Complex tools have been created for the evaluation of DLE components, based on a flexible approach. The authors have analysed existing tools for technical evaluation of LOs, and it was investigated that these tools have a number of limitations. Some of these tools do not examine different LO life cycle stages, and other insufficiently examine technical evaluation criteria before LO inclusion in the repository. All these tools insufficiently examine LOs reusability criteria. Therefore more complex LO technical evaluation tool is needed. It was investigated that this new more complex LO technical evaluation tool should include LO technical evaluation criteria suitable for different LO life cycle stages, including criteria before, during and after LO inclusion in the repository as well as LO reusability criteria. The authors have also examined several VLE technical evaluation tools suitable for flexible DLE, and it was investigated that these tools have a number of limitations. Several tools practically do not examine VLE adaptation capabilities criteria, and the other insufficiently examines general technical criteria. More complex VLE technical evaluation tool is needed. Therefore the authors propose an original more complex set of VLE technical evaluation criteria combining (1) General (Overall architecture and implementation; Interoperability; Internationalisation and Localisation; Accessibility) and (2) Adaptation (Adaptability; Personalization; Extensibility; Adaptivity) VLE technical evaluation criteria. The authors have also selected and propose to use the universal, clear and convenient DLE components' evaluation rating tool, and have evaluated three most popular open source VLEs against technical (both general and adaptation) criteria in conformity with this rating tool.
Keywords: Managing quality in e-learning, technical evaluation, virtual learning environments, learning objects, repositories

The Teaching and Learning of Pronunciation in the Language Classroom and the use of Modern Technology

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Abstract: Is pronunciation taught adequately in the language classrooms? How can the full potential of modern technology for learning and teaching pronunciation be exploited? What materials are available

today? Pronunciation teaching is an area receiving a great deal of attention worldwide in different languages, and the present study was undertaken in this intriguing area of linguistics in relation to the educational scene in Cyprus. It concerns public secondary schools, i.e. Gymnasia. The purpose of this study was to investigate views and practices in the area of English Language Teaching (ELT) with respect to Pronunciation Teaching and the use of modern technology to achieve this. For this reason, six sources of data were reviewed. Firstly, a questionnaire was administered to teachers of English in order to see how they viewed pronunciation in relation to the other language skills and how they approached it in class. Furthermore, syllabi and the curriculum for teaching English were collected and reviewed on the basis of the Common European Framework of Reference for Languages. The information included was compared and contrasted with the content of an interview which the Ministry of Education provided to the present author. The actual textbooks taught at public Gymnasia were also examined in order to acquire a general idea of how the area of pronunciation is viewed and practised in Gymnasia of Cyprus. The findings generally viewed pronunciation as a generally neglected area in Cyprus, and stressed the need for producing a curriculum with special reference to pronunciation and technology. The final part of the paper discusses practical applications and suggestions on using new technologies in the classroom to practice pronunciation, following current research in the area that proves its effectiveness in pronunciation instruction: CAP (Computer Aided Pronunciation), pronunciation software available today, teaching-learning pronunciation websites, Web 2.0 for pronunciation and finally electronic pronunciation dictionaries.

Promises, Challenges, and Realities of a Design-based Approach to e-Portfolios

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Abstract: Electronic portfolios can be powerful learning tools, whose process of construction can offer its creator insights into their own learning, by engaging them in knowledge construction and reflection. Even though reflection can be facilitated through the use of e-portfolios it cannot be taken for granted, with several examples in the literature citing problems with productive reflective thinking. Most of the literature on e-portfolios has focused on the use of such tools in teachers' professional development. In this context, in spite of the frequent mentions of how portfolios can create opportunities for reflection, the concept has remained ill-defined, resulting to problems in assessing it, supporting it and designing for it. In this paper, we examine how a design-based approach to e-portfolios can support middle-school students' reflective learning in science. We present a web-based tool designed to support students' reflective inquiry in science and explain how the e-portfolio features can support students' ongoing inquiry investigations. Data from a study with thirteen pairs of 6th grade students using this e-portfolio tool are used to illustrate the main affordances of the tool in supporting sense-making and reflection. The data sources included pre- and post-tests assessing students' conceptual understanding of the investigation they were solving, all the artifacts created using the web-based portfolio, and videotaped discussions of three of the pairs. Findings provide evidence that this approach supported students in their learning by structuring the students' task and offering them tools for reflection; challenges and areas of future work are also identified. This work contributes to addressing to what we see as two gaps in the existing e-portfolio literature: a) the lack of extensive literature on the use of e-portfolios to support the moment-by-moment learning of younger learners; b) offering functional definitions of reflection, at a level that will be informative to design and teaching. The findings provide support for the role of e-portfolio tools in supporting learning as it unfolds, but also highlight the need for additional foci in e-portfolio research.

Keywords: e-Portfolios, reflection, inquiry, science learning, web-based tools

Knowledge Ticket System – A Knowledge Broker for Universities

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Abstract: Knowledge at universities is traditionally transferred from lecturers to students during lectures or (for quite a while) within virtual learning spaces. Students are responsible for learning and practicing difficult learning matters by themselves or in small, often self organized study groups. Regarding the coincidental formation of study groups knowledge within universities is unequally distributed and cannot be used optimally. The core idea of this paper is a knowledge ticket system for universities, a platform for the

exchange of knowledge and expertise to foster communication between students and to strengthen the team spirit at universities. Virtual tickets represent the currency needed for every exchange. The allocation and transfer of tickets is modeled using Petri nets. The sophisticated broker, feedback, rating and reward functionalities are described and explained. We focus on knowledge mediation in personal learning environments. Concluding, we propose an implementation of the knowledge ticket system within a portal technology. The outlook comprises several future scenarios for introducing the proposed knowledge ticket system at universities.
Keywords: Knowledge management, elearning, personal learning environment, ticket system

Handling Large Classes Using Computer Aided Assessment in Blackboard

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Abstract: The use of virtual learning platforms (VLEs) to support student learning is increasing within the Higher Education sector fuelled by an agenda which now recognises both the diversity and wide ability range of student cohorts and the need to focus attention on, and improve, student retention. The time available in face-to-face module delivery is frequently insufficient to provide for the learning needs of many students who either require more support or for some reason cannot attend scheduled classes. However without some requirement to engage with the VLE some students fail to make adequate use of its many advantages. The introduction of computer aided assessment through the VLE forming part of the assessment process ensures that students do engage, for many students motivation to learn is strongly coupled with assessment. However, in dealing with large cohorts of students the work involved in both preparing and administering tests can be overwhelming and restrictive. Problems can also arise associated with ensuring the fairness and rigour of the assessments set up given that students undertake on-line assessments unsupervised by academic staff, (Weippl 2005), (Marais et al 2006). The experiences gained in setting and deploying on-line assessments in the Blackboard VLE are described. The approach adopted harnesses features of MS Word and Excel and the mail-merge facility to generate a large number of variants of individual questions to be generated which can then be uploaded directly to Blackboard through file upload. The method offers a means of ensuring the equity of the questions set whilst minimising the possibility of students copying the results of others or colluding and some of the experiences of using this approach with large student groups within a number of engineering modules are described.
Keywords: Computer aided assessment, retention, Blackboard VLE, question pools

Learner Profile Supports Interaction Between Objects in e-Learning System

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Abstract: In the distance training systems via Internet (e-Learning systems) or on-line learning systems now, learner model is being researched mainly to provide learning materials suitable with capacity and backgrounds of each individual learner. With a virtual learning environment like this, the supporting of interaction between instructors and learners is very necessary for the lack of direct communications (face-to-face), but there are still not concerned properly. Thus, learners are very easy to place themselves in isolation and lose their sense of direction in on-line learning process. Our paper proposes a learner model based on context of learner demands and especially undergraduate education conditions of developing countries (as Vietnam), it supports interaction between objects in system: learners and learning materials, learner and instructor/tutor, and learner and group learners.
Keywords: e-Learning, adaptive system, e-course, Knowledge Graph (KG), learner profile, Learning Management System (LMS)

Enhancing Design Pedagogy Through e-Learning Strategies

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Abstract: Presently, in design activities in second level education, the language and practice of design is complex and unclear. The aim of this paper is to discuss the effects of implementing a web-strategy approach to design activities, with particular emphasis on the active and visual preferential learning styles and 'right-brain' design activity. The web-strategy is composed of focus areas, lessons and tasks necessary for the holistic development of the learners design ability. The structure of the web-strategy is revolved around the key topics of contextual history of the designed artefact, concept development, development of sketching techniques and thinking as a designer. It is anticipated that the web-strategy's key topics will develop students' design ability and creativity within design activities of the technologies subjects by acknowledging students' preferential learning styles and right-brain cognitive activity. The design web-strategy was assessed by comparative analysis of a control and experimental project completed from September 2007 to May 2008. The initial control project (P1) received no input from the web-strategy. In the secondary experimental project (P2), a major element of the intervention strategy was web-based through active-visual e-tutorial media. The control and experimental project were carried out amongst a range of students as a comparison study from which the factor of experience was determined. For the purpose of this paper, the focus group of participants, consisting of 96 second level (high school) students range from different school types. The participants varied in terms of academic achievements, handedness, educational background and other demographics. This paper discusses the methodologies applied and identifies key outcomes to further refine and develop a 'best practice' web-strategy for design activities pedagogy.

Keywords: Web strategy, design ability and creativity, brain hemispheres, preferential learning styles, technologies

Integration of e-Learning Systems With Repositories of Learning Objects

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Abstract: This paper describes a communication model to integrate repositories of programming problems with other e-Learning software components. The motivation for this work comes from the EduJudge project that aims to connect an existing repository of programming problems to learning management systems. When trying to use the existing repositories of learning objects we realized that they are mainly specialized search engines and lack features for integration with other e-Learning systems. With this model we intend to clarify the main features of a programming problem repository, in order to enable the design and development of software components that use it. The two main points of this model are the definition of programming problems as learning objects and the definition of the core functions exposed by the repository. In both cases, this model follows the existing specifications of the IMS standard and proposes extensions to deal with the special requirements of automatic evaluation and grading of programming exercises. In the definition of programming problems as learning objects we introduced a new schema for meta-data. This schema is used to represent meta-data related to automatic evaluation that cannot be conveniently represented using the standard: the type of automatic evaluation; the requirements of the evaluation engine; or the roles of different assets - tests cases, program solutions, etc. In the definition of the core functions we used two different web services flavours - SOAP and REST - and described each function as an operation for each type of interface. We describe also the data types of the arguments of each operation. These data types consist mainly on learning objects and their identifications, but include also usage reports and queries using XQuery.

Keywords: e-Learning; learning objects; content packaging; repositories; web services

The Enhancement of Reusability of Course Content and Scenarios in Unified e-Learning Environment for Schools

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Abstract: With the expansion of e-learning, the understanding and evaluation of already created e-learning environments is becoming an extremely important issue. One way to dealing with the problem is analysis of case studies, i.e. already created environments, from the reuse perspective. The paper presents a general framework and model to assess UNITE, the unified e-learning environment for schools, from the reuse perspective. UNITE is the e-learning environment of the ongoing EU project (FP6 IST-26964, 2006-2008, http://www.unite-ist.org/). UNITE assets are described using feature diagrams (FDs) telling us about the internal structure of UNITE; representing relationships among the compound and atomic features, thus enhancing better transparency of UNITE and in this way empowering reuse. The factors of UNITE influential to reuse with some concrete results are also presented. We provide analysis aiming to extract from the model the relevant information of two kinds: (1) which is influential to reuse in a positive sense, i.e., enhancing reuse (e.g., application of meta-design methodology for the scenarios description, classification of subjects in metadata, use of content management tools (e.g., Course editor, Metadata editor), multi-linguistic approach, international and local collaboration between teachers and students in e-learning scenario implementation and delivery, and methodological support, etc.) and (2) which is hindering reuse (e. g., age of the students, differences in national syllabus and national educational programmes, language, cultural and communication problems). Despite of some limitations of FDs, we found this notation useful because it allows the explicit representation of various aspects of the complex system (i.e., UNITE) focusing on variability of features and possible relationships and constraints. We focus on the aspects such as evaluation of the UNITE platform including tools, scenarios and content variability.
Keywords: Computer supported learning, e-learning environment development, meta-design, mobile learning, reusability

Automatic Student Coaching and Monitoring Thanks to AUTOMATON. The Case of Writing a Compiler

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Abstract: Evaluating programs written by students is a repetitive and time-consuming task. Too often, this evaluation is done once the development is finished, leaving the students no time to change and enhance their program. In an effort to solve this problem, we developed AUTOMATON, a tool capable of automatically analysing the functional capabilities of pieces of code written by students. The current version of AUTOMATON has been built as a *complete*, *flexible* and *customisable* tool. It provides two kinds of functionalities. On the one hand, AUTOMATON *manages* the student's assignments, their *evaluation* and the *reporting* of the results. On the other hand, AUTOMATON provides support for *coaching* and *monitoring* an exercise, possibly supervised by a human tutor. Reachable through a web-interface, available 7 days/week and 24 hours/day, AUTOMATON is a precious virtual tutor for the students. Indeed, AUTOMATON provides them feedback within a couple of minutes. Using this feedback, the students can increase the quality of their work several times until the deadline. For the tutor, discharged of the technical manipulations, continuous monitoring of the students' progress becomes possible. Furthermore, AUTOMATON provides useful pieces of information that allow coaching the students more efficiently by focusing on relevant points. In this paper, we examine various pedagogical scenarios and show how AUTOMATON can be customised to support them. We explain the main functionalities of AUTOMATON and show how they can be used to the benefit of the students and the tutor alike. AUTOMATON has been in service at our university for ten years, mainly for a compiler writing exercise, an important part of the *syntax and semantics* course, and integral part of the curriculum. We describe in detail how we use AUTOMATON as a continuous incremental evaluator in this context. The description focuses on both technical and pedagogical issues.
Keywords: Automatic evaluation, e-coaching, e-monitoring

Integrating the in-Classroom use of Mobile Technologies Within a blended Learning Model

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Abstract: The paper presents the key findings of a Higher Education Academy Pathfinder research project that investigated the in-classroom use of mobile technologies to support formative assessment in the context of an institutional blended learning strategy. Technologies used included electronic voting systems, mobile phones and inbound SMS messaging, Tablet PC's, interactive tablets and podcasting and audio technologies. The rationale to the project was that rapid in-class feedback would help students focus their learning on areas of weakness and diminish misunderstandings. From the staff perspective it was considered that rapid feedback would enable the teacher to more rapidly identify students' misconceptions and challenges, and be able to adapt teaching practices and where necessary the blended learning approach. Thirteen academic staff members with between 4 and 20 years HE teaching experience from 7 different faculties used mobile technologies in the classroom over an academic year with class sizes ranging from 15 to 500. Each staff participant was assigned to one of two mentors who provided support and guidance throughout the year. A mixed-methods methodology (questionnaires, interviews, reflective journals, classroom observations) was used to collect data from academic staff, students and mentors. In addition, attendance records, assessment strategies, assessment tools and assessment records are compared with those from the previous year. Data was collected before, throughout and at the end of the project. The student response has been positive, with 88% of students agreeing or somewhat agreeing that the integration of mobile technologies in the classroom provided them with an overall positive experience. Staff feedback was also positive with a number of cases emerging of how staff adjusted their teaching practices.
Keywords: Mobile classroom blended learning feedback interaction

e-Accounting at the University of Vienna – Developing Applicable e-Learning Tools for Large-Scale Accounting Classes

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Abstract: The eAccounting project at the University of Vienna is a universally applicable example of a Virtual Learning Environment (VLE) meeting the challenging requirements of large-scale accounting classes. A Learning Content Management System (LCMS) containing dynamic applications enables students with an unequal level of knowledge in accounting subjects to work in individual and cooperative learning environments by the help of eAssessment, as well as to deal with a complex, multidimensional nexus. Thus, eAccounting supports mass lectures predominantly attended by non-native speaking first-year students with a multinational background and heterogeneous pre-knowledge in accounting subjects. The didactical challenge was to figure out appropriate eLearning tools for large-scale classes, improve the learning performance of accounting classes and solve the heterogeneity of the students' pre-knowledge. Following the Blended Learning approach, a combination of compulsory eAssessment and collaborative learning applications substitutes ex-cathedra teaching. Moreover, weekly eTests require dealing with the contents of the following in-class session and support a continuous learning process during the semester. Information and Communication Technologies (ICT) are used in an individual way and in a collaborative way, such as customized Web 2.0 applications. They strengthen the social integration of foreign first-year students and support positive group dynamics online and in real life. Also, eAccounting provides an accompanying online VLE-integrated tutoring system as well as a section with Frequently Asked Questions (FAQ) and a Learning Content Management System (T/LCMS). The University of Vienna has chosen Blackboard Vista, Fronter and Moodle to comply with the eLearning goals. With ambitious efforts the Faculty of Business, Economics and Statistics implements an integrated VLE that covers the entire field of accounting. Enhancing an applicable T/LCMS reflects the demanding requirements of large-scale lectures through developing both, dynamic eLearning as well as a homogeneous eTeaching architecture.
Keywords: Accounting, blended learning, e-assessment, e-bologna, large-scale classes, Virtual Learning Environment (VLE)

What is Your Response? It's Time to get Personal

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Abstract: This paper describes a study which used a personal response system (PRS) for formative assessment and feedback during taught sessions. The aim of the study being to see whether there was a positive impact on the students' final grades in the end of module summative multiple choice question assessment. Previous research into the use of a PRS demonstrated the effectiveness of the tool to increase classroom interactivity. On evaluation, 98.5% of students identified the PRS as being easy to use, 92.5% perceived that the PRS was beneficial to their learning and 86.5% stated that it was a useful tool for preparation for examination. At the beginning of the module each student was issued with an individual, identifiable handset, which was programmed with a unique code. During the module delivery, six to eight multiple choice questions were given to the students each week as formative assessment on the topic covered. The data was saved and collated. The formative scores were then made available to the students to enable them to monitor their own progress. Each handset was linked to a database which contained the students' demographic details. This process allowed the module leader to identify individual student achievement. Student confidentiality was maintained, as the formative scores were released only using the unique code. The aim of the study is to identify whether the teaching and learning strategy improved overall cohort achievement in comparison to the previous cohort. Additional objectives being to discern whether the individual PRS scores can be used to predict individual student performance at summative MCQ examination, and whether attendance at the PRS sessions was in itself an indicator of success.

Keywords: Blended learning; course design; personal response system; formative assessment

Strategies for Embedding eLearning in Traditional Universities: Drivers and Barriers

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Abstract: This paper addresses the question: how can elearning be embedded in traditional universities so that it contributes to the transformation of the university? The paper examines elearning strategies in higher education, locating the institutional context within the broader framework of national and international policy drivers which link elearning with the achievement of strategic goals such as widening access to lifelong learning, and upskilling for the knowledge and information society. The focus will be on traditional universities i.e. universities whose main form of teaching is on-campus and face-to-face, rather than on open and distance teaching universities, which face different strategic issues in implementing elearning. Reports on the adoption of elearning in traditional universities indicate extensive use of elearning to improve the quality of learning for on-campus students, but this has not yet translated into a significant increase in opportunities for lifelong learners in the workforce and those unable to attend on-campus. One vision of the future of universities is that 'Virtualisation and remote working technologies will enable us to study at any university in the world, from home'. However, this paper will point out that realisation of this vision of ubiquitous and lifelong access to higher education requires that a fully articulated elearning strategy aims to have a 'transformative' rather than just a 'sustaining' effect on teaching functions carried out in traditional universities. In order words, rather than just facilitating universities to improve their teaching, elearning should transform how universities currently teach. However, to achieve this transformation, universities will have to introduce strategies and policies which implement flexible academic frameworks, innovative pedagogical approaches, new forms of assessments, cross-institutional accreditation and credit transfer agreements, institutional collaboration in development and delivery, and, most crucially, commitment to equivalence of access for students on and off-campus. The insights in this paper are drawn from an action research case study involving both qualitative and quantitative approaches, utilising interviews, surveys and focus groups with stakeholders, in addition to comparative research on international best practice. The paper will review the drivers and rationales at international, national and institutional level which are leading to the development of elearning strategies, before outlining the outcomes of a case study of elearning strategy development in a traditional Irish university. This study examined the drivers and barriers which increase or decrease motivation to engage in elearning, and provides some insights into the challenges of embedding elearning in higher education. While recognising the desirability of reaching out to new students and engaging in innovative pedagogical approaches, many academic staff continue to prefer traditional lectures, and are sceptical about the potential for student learning in online settings. Extrinsic factors in terms of lack of time and support serve to decrease motivation and there are also fears of loss of academic control to central administration. The paper concludes with some observations on how university elearning strategies

must address staff concerns through capacity building, awareness raising and the establishment of effective support structures for embedding elearning.

Teaching Internet Search Skills: Some Evidence-Based Lessons

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Abstract: Recent studies at the University of Sheffield have looked at the Web searching behaviour of children, and of the general public. One looked at the range of information resources used by school children, and included an in-depth, qualitative analysis of searches by children aged from 12 to 15. It also included interviews with teachers and educationists. The second study involved qualitative and quantitative studies of searches by members of the Sheffield public. A comparison of the findings of these studies has provided useful guidance on the question of how best to teach Web search skills. Some of the key points are presented here . Observations of children and interviews with their teachers suggested that they needed little training in the technicalities of Web searching, but would benefit from a greater understanding of issues relating to the evaluation of Web-based material and its appropriateness to their needs. Many members of the general public were hampered by detailed, but inappropriate technical knowledge. Their approach to searching was often too mechanistic, and they needed to develop a more strategic, metacognitive approach to the use of search engines. In teaching Web search skills, it is proposed that lessons be developed around three foci: training in technology, evaluation of information, and understanding of the on-line environment.

e-Learning in Greece: Application in the Area of e-Marketing

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Abstract: In today's rapidly changing and increasingly competitive marketplace, educational institutions have to positioned and assert themselves, adopting appropriate e-learning strategies, which could fit in their working patterns. The current situation in the Greek environment reveals the interest of the educational institutions to exploit the emerging field of e -learning in order to develop knowledge workers, support a global education community and sustain the growth of the new e- economy. As a result, successful e-learning projects are based upon adequate market analysis in order for the educational institutions and all the participants in the educational procedure to respond to e-challenges in a systematic manner. This paper aims to record the current situation in Greece, regarding the perceptions of students towards e - learning philosophy. Primary research was conducted with the participation of 343 undergraduate and postgraduate students of the departments of Applied Informatics and Business Administration of the University of Macedonia and the department of Marketing of the Technological Educational Institution of Thessaloniki. The main issues raised from the adoption of an e- learning program are examined and comparative statistical data are presented. Furthermore, the paper focuses on the educational area of e – marketing and examines e learning as an appropriate medium for delivering the information and skills needed, to manage e-marketing operations effectively. The potentiality of the sample to attend courses in the above area in a postgraduate level through e-learning procedure is also considered. The basic subjects that have to be analysed in order to implement a successful adoption of relative courses are examined, taking into consideration sample's specific needs and requirements.

Using a Blended-Learning Approach to Support Parent Education in Math and Science

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Abstract: At a time when mathematics and science provide essential knowledge tools and the foundations for lifelong learning skills, cross-national studies of student achievement indicate lack of mathematical and scientific competence for a considerable proportion of the student population across Europe. Acknowledging the central role of parents in children's learning, the EU-funded project SMASH (**S**uccess in **MA**th and **S**cience at **H**ome) aims to raise the educational standards of European youth in mathematics and science by cultivating underlying home cultures as springboards for learning. The project consortium is currently developing, and will then pilot test and deliver an innovative intercultural parent-trainer training course and related resources for professionals involved in parent education initiatives. Through the adoption of a blended learning approach that combines e-learning with physical meetings, the course will equip these professionals with current knowledge, techniques, and implementation tools for the provision of high-quality, culturally differentiated parent training in mathematics and science education. Individuals completing the course will be trained to offer programs designed to educate parents of elementary and middle school children (ages 6-15) in how to best support their child's mathematics and science learning at home using pedagogically sound strategies and technologies. Parents unable to attend parent-training sessions could still study independently using the project knowledge base, which will provide open access to all of the project's outputs and resources. This, in turn, will contribute towards improved parental participation in children's learning. Parents will be empowered to understand and implement reform, providing a home environment that enhances children's scientific development and prepares them to meet the challenges of the digital age.

Keywords: Mathematics, science, parent education, blended-learning

Web-Based Discussion as a Supervision Method in Nursing Students' Clinical Training

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Abstract: The purpose of the empirical study was to describe how nursing students use web-based discussion forum as a tool for sharing their experiences as learners during their clinical training and how the lecturer can use it as a tool for supervision and supporting the students' learning process. Clinical training is an essential part of nursing education. New innovative methods are needed for supervising the nursing students. There is a shortage of nurses in hospitals and the lecturers have little time for supervision. It is therefore difficult to supervise students by traditional methods which do not promote reflective learning particularly well. At a Finnish University of Applied Sciences, 25 nursing students took part in web-based discussion on a Moodle platform during their eight-week clinical training period. The discussion was supervised by two lecturers. All in all, 395 comments were mailed. Data was collected in 2005. The material was analysed by using a categorisation and a thematic analysis process. Finally, the results were reported according to modified Salmon's (2002) 5-stage model of Teaching and Learning On-line and Mezirow's (1981) levels of reflection. The activity in discussion was liveliest from the second week to the sixth week. By sharing feelings and experiences, the students motivated each other. The students noticed the value of peer support and they started to learn from each other as well. By reflecting on their experiences, they advanced in their learning process and at the same time in their reflective thinking process. The lecturers had a possibility to support and follow the professional growth process in a new evidence-based way. Web-based discussion is an effective way to supervise learning in nursing education. Students work as peer supervisors in lively dialogical conversation. By connecting theoretical knowledge with the practice, students can understand things and their consequences in contexts. This leads to deeper understanding and better clinical skills. Web-based discussion can be used as a supervision method in all fields of education.

Keywords: Web-based discussion,e-learning, clinical training, nursing, supervision, reflection, learning

Learning English Through Game-Based Design – Reflections on Performance and Teacher/Learner Roles

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Abstract: In this paper I shall discuss the potential of educational games (Serious Games) for teaching and learning English online focusing on user engagement, performance and design. As suggested by for instance Gee (2004) games can prepare learners for real-life action including social practices that involve language. Gaming may in this sense be understood as a way of performing that involves situated actions and interactions as well as triggers deep engagement and investment on the part of the player. The focus of the paper will be on how the designed space of a platform for learning English as a foreign language in primary school (www.mingoville.com) produces learner participation and learner involvement in the context of a formal learning environment. How do learners respond to the educational design of the platform in question and how do they perform language learning through the game-based design of the platform? How does the role of the teacher facilitate different approaches to language learning in the game-based environment? The paper builds on data from a research project, *Serious Games on a Global Market Place* (2007-2010) in which the Mingoville.com platform has been studied in the context of English as a foreign language in Danish primary schools. On the basis of the initial results from the pilot project I am proposing that performance and engagement through Serious Games for language learning should be understood in the context of gaming and learning as both separate and interconnected processes. In this field the mediating role of the teacher is particularly significant.
Keywords: Serious games, Computer Assisted language Learning (CALL), teacher-learner roles, educational design

Applying Internet-Based tele-operation Technologies to Remote Engineering Experimentation in Solar Energy Engineering

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Abstract: This paper presents the experience from the use of the solar energy e-learning laboratory (Solar e-lab) in Cyprus, (http://e-lab.hti.ac.cy), and demonstrates the benefits of remote engineering in the field of solar energy. The aim of the solar e-lab is to use the Internet as an additional tool to make the laboratory facilities accessible to engineering students and technicians located outside the e-lab premises. In this way, the solar energy e-learning lab, its equipment and experimental facilities are available and shared by many people, thus reducing costs and widening educational experiences. The Solar e-lab comprises a pilot solar energy conversion plant which is equipped with all necessary instrumentation, data acquisition, and communication devices needed for remote access, control, data collection and processing. The installed hardware and software include features for controlling external devices, responding to events, processing data, creating report files, and exchanging information with other applications. The system enables real-time, remote control, data acquisition and evaluation. It allows remotely located students and users to conduct experimental work in the field of solar energy over the Internet in an interactive and independent way. Students from other institutions can have remote access to the system, via the Internet, through a booking system which is available to control the access time for the equipment by the instructors.Within the four years of its operation the Solar e-lab is been accessed by users from over 400 locations from 75 countries spread all over the world and continents. Furthermore, a number of colleges and Universities use the solar e-lab as part of their training programmes. There is an interactive communication between the students of the above institutions and the solar e-lab helping them to accomplish the assigned work in due time.
Keywords: Remote engineering, remote laboratory, real world experiments, e-learning, internet, booking tool, solar energy

e-Learning: Strengths and Weaknesses Pros and Cons in a Global Education and Training Methodology

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Abstract: In our times we have experienced an unprecedented, magnificent and rapid change in technology,and science, The implementation of such developments in economic, social,educational,technological and industrial sectors necessitated increased qualifications of all manpower involved. However, the anticipated results were not attained, partly because a great number of people in many countries, including members of EU did not fulfil the expectations, and partly because in a host of geographical areas worldwide people were quite unaware of the vast prospects of the systems. This is due, mainly to lack of proper competencies of people, as a result of inadequate education, limited knowledge spread, and reduced skills. In an extended span of time, educationists and other academics have proposed educational reforms which did not change the environment drastically. This should be attributed to poor educational standards and mental inabilities and deficiencies of people to enable them cope with the requirements of advanced technology which is developing in a much quicker pace as compared with that of human beings .About 13 years ago a new technological approach to the instructional course delivery was introduced under the term e-Learning. This paper will review notions and arguments based on extended research and studies in order to improve the ability of a general audience in order to understand the contribution of e-Learning to the distribution of knowledge.It will ,also, address to researchers, educational consultants, course providers and users and attempt to exchange ideas and experiences with them. A review of varying definitions will be provided and discussed, implementation of the system in education and training will be purported, strengths and weaknesses of both the system and users will be cited and emphasized and the pros and cons will be traced. Finally, the importance of familiarization of users with the system will be pinpointed and recommendations for improvement of the system will be tabled.
Keywords: Definition, knowledge, implementation, familiarization, education/training, strengths/weaknesses

Conversion and Delivery of Courses via a Course Management System

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Abstract: Higher education institutions attempt to embrace online learning because it is viewed as being technologically current, institutionally profitable or a means of survival. In this endeavour, courses are converted for online delivery within various course management systems (CMS). At a university under review, a number of courses have been implemented in an online environment, but these CMS implementations done, reflect only static displays of presentations and a lot more work needs to be done. We have looked at the implementation of four courses across three faculties, examining various pedagogical dimensions of the courses against the method of delivery and course accessibility. The experiences of the teacher and student suggest that with respect to converting to the online learning environment, various things must be considered in order to exploit more of the online possibilities. The research findings may be helpful for teachers implementing courses within a course management system.
Keywords: Conversion; e-learning; CMS; assessment; course delivery

The Challenges in the Secondary School e-Learning Process

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Abstract: Together with the wide implementation of electronic and blended educational methodologies the family of e-learning systems that support this process also grows. The promising features of such technological novelties are very attractive for many organizations such as universities, businesses and governmental structures. However most of e-learning systems are oriented to support the academic levels of education. Soon after the universities many high schools also have implemented e-learning systems as an additional option to the traditional educational process. The lack of precise analysis of educational needs and matching of those needs to the features of the concrete electronic system may lead to unpredictable flow of the educational process. This is furthermore complicated by non-experienced in e-learning school staff. These facts provoke searching for new decisions and development of completely new e-learning platforms

better matching the requirements of the target group. This article presents a new approach in development and implementation of an e-learning platform for the secondary school educational level. The meaning of the term "platform" is redefined and now unifies technological and pedagogical frameworks. The paper is focused on the pedagogical and didactical challenges during the realization and validation of the system. The first step in realization is adequate definition of user requirements. To answer the problem an original data driven bottom up approach was used. A semi-quantitative evaluation of the user requirements was implemented. A numerous e-learning systems were analyzed to look for state of the art educational features to be included. The unique validation process outlines the quality of the integrated platform. The correspondence between the sets of platform features and the user expectations is proved by "Case records" methodology. This methodology extends the capabilities of Walkthrough approach. The results from the study are applied in the project "UNITE" - partially supported by the European Community under the Information Society Technologies (IST) priority of the 6th Framework Programme for R&D.

Keywords: e-Learning, education, secondary school, validation, user requirements

Evaluating the Impact of Video-Based Versus Traditional Lectures on Student Learning

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Abstract: Recently, computer assisted learning has emerged in an attempt to incorporate advanced levels of technology into higher education institutions. However, there is no clear evidence that such a movement can improve student learning. Most importantly, since today there has been a general limited effort for an objective evaluation of educational innovations including the application of videos. Therefore, this study was conducted and carefully structured to provide an objective assessment of the impact of lectures with the use of video clips on student learning over traditional teaching methods. Five postgraduate students at a Higher Education Institution in the UK participated and experimental control was achieved using an alternating-treatments design. Overall, participants experienced sixteen 5-minute lectures, half on kinesiology and half on psychological issues for children, delivered by either traditional or video-based methods. The impact of either teaching method on their learning was measured by scoring on especially designed multiple-choice quizzes. The questions reflected upon the learning objectives of each learning material. Results showed that video-based lectures were at least as equally effective as standard teaching lectures. Similar data were collected during 1-, 2-, and 3-week follow-up measurements. These results come in agreement with the current literature reinforcing the suggestion that the use of videos in education may hold great promises. Certainly, technology cannot be a panacea for educational problems neither a replacement for traditional modes of learning. However, a combination of technology with current learning and teaching models would enhance the overall quality of education provision.

Keywords: Higher education, video-based lectures, learning, single-case research methodology, teaching

Demand Led e-learning to Support Small Businesses

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Abstract: Most approaches to the development or support of SMEs tend to offer those SMEs 'what is good for them' in the eyes of 'experts'. Training providers offer a 'supplier led' approach to delivering training to SMEs by offering SMEs a suite of 'qualifications' which are delivered at set times, at set locations and using a traditional 'face to face' delivery method. SMEs are notoriously difficult to approach in this way and are reluctant – or unable - to pay for support. This is why many such well-intentioned initiatives fail. SMEs are owned and run by committed, busy people often driven by a belief in their product or service but also often short of some of the wider set of skills needed to transform hard work and commitment into constructive effort and sustainable business. Time is an issue and flexible delivery is the key! The 'demand' of SMEs is rarely qualification based and shorter more focused skills training is required. E-learning as an alternative to traditional delivery methods can offer a flexible training option for SMEs but there is a need to convince SMEs of this. Grimsby Institute was a partner in a European Social Funded Equal project which focused on delivering ICT based solutions to SMEs. Recently Grimsby Institute is a major component in a, Local Enterprise Growth Initiative (LEGI). The LEGI project in North East Lincolnshire (UK) has taken the bold step of working in the community it aims to serve with 'in-reach' workers. Their role is to engage SMEs in qualitative research by dialogue which identifies their concerns and their needs before identifying what can be translated into appropriately-targeted learning experiences or on-line materials developed quickly and cheaply. This paper traces the way in which the concept has developed and describes the process that

emerged following this 'immersion' in the target community. The evidence will be used to inform training providers and policy makers on the future development and delivery of training solutions for SMEs.

Education in your Face(Book)!

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Abstract: This paper describes the initial stage of a one-year research project on the potential value of Facebook as a social networking tool within Higher Education. The project is being run within the School of Architecture and the Visual Arts (AVA) and funded internally by the University of East London (UEL). Research into Facebook was felt to be necessary since there are clearly identifiable risks for an institution or individual in terms of, for example, reputation, when using Social Networking Sites. The main research question was, therefore, whether the educational benefits of using Facebook outweigh the risks and, if so, how the risks could be eliminated or adequately managed. There are two stages to the project. During the first stage – currently near completion – we aim to clarify the positive and negative factors associated with the use of Facebook for educational purposes. This is the major focus of this paper. We have collated the major issues cited in the literature and then illustrated these with the reported experience of just a small group of staff and students using Facebook during the academic semester beginning February 2008. Conclusions at this stage are necessarily tentative, but already we have an impression that there are certainly educational gains to be made through the use of Social Networking Sites – with the usual caveat that the tool should be a good fit in the educational context. At the next stage we aim to use our literature and data analysis in the creation of a questionnaire which will be administered to a much wider number of staff and students in a wider number of contexts, thereby achieving greater statistical validity on which to base our final conclusions. If positive, the final conclusions can then inform such things as institutional policy, contracts of use, and 'good practice guidelines' for staff and students.

Case Study – Using a Wiki to Teach Information Decision Science

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Abstract: The Carlson School of Management at the University of Minnesota, Information and Decision Science Department (IDSc), has developed a wiki textbook for our undergraduate core curriculum course. Starting in the Spring Semester of 2008, all seven sections, (approximately 400 students), are using the course wiki textbook taught by four different instructors. The web based wiki contains over 200 articles; ranging from classics discussing databases to recent articles describing internet security. The wiki textbook was originally developed to deal with the rapid changes in the information technology field and the challenges of keeping a traditional textbook current. In addition to providing timely content for students, there are a number of other benefits in using a wiki textbook.

In the current semester no issues have been reported, and the students have identified several benefits:

Students only need to have access to an internet browser

Students are able to download and save posted readings

There is no text book to purchase and a savings of $180 for each student

The total saving for first semester for all students exceeded $70,000.
No text book for students to carry

Students print-out and carry only the materials required for each. The wiki site has fourteen topics or chapters, and each topic is broken down into four sections. Section One has learning objects, topic terminology, key concepts and selective readings, Section Two is primarily case studies or analytic articles on the topic. Section Three (Additional Material) is a place holder for several articles if students want to study the topic further. Section Four (Student Sandbox) is for student interaction and active learning

assignments. This paper focuses on the following: Basic setup, Faculty site, Student site, Security (access and monitoring), Content, Searching, Copyrights, Editing, Multiple instructors using the same site, Maintenance In discussion with several book publishers and authorities on using technology in the classroom, the University of Minnesota feels this topic has tremendous potential both for students and educators in the field of technology.

Keywords: Wiki, Web 2.0, collaboration, innovation, textbook

Introducing a Model for Creative e-Learning Pedagogy - Case Craftopolis

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Abstract: How to apply the principles of constructive and experiential learning in web-based learning environments is an intriguing question. While cognitive learning corresponds to academic knowledge such as learning vocabulary, constructive learning refers to a situation where the student consciously processes information based on previously learned information. Also, experiential learning refers to applied knowledge. By putting the students in the context of solving a problem, the students play an authentic role while investigating the problem, studying the information needed to solve the problem and developing solutions. In our presentation, we will discuss the results of a Leonardo da Vinci pilot project e-Craft Idea Tutor (e-CIT). The case is called Craftopolis which is a creative e-learning environment aiming to foster creative thinking, multidisciplinarity and use of ICT in the crafts field. The end users of the Craftopolis are second level craft students and teachers in the EU area. After analysing pedagogic principles in the context of creativity, we started to create Craftopolis where World Wide Web would provide a context of a problem. Qualitative research and analysis were used during the development process. The research focused on the state of art analysis, creativity, usability and attractiveness of e-learning environments. Craftopolis was tested by the end users and evaluated twice during its development process. The findings supported the need for a high usability of an e-learning environment and positive attitudes towards a story based learning environment.

One of the main challenges was how to create an attractive and functional learning environment and how to create a learning environment with a suitable pedagogic approach that would adapt and support creativity. Research was done on the most suitable methods. Issues in usability regarded the general usability, finding relevant information, language and ICT skills and possibilities to use ICT in schools. Usability issues were solved with simplifying the structures, by creating simple and clear areas, limiting the amount of work for the teacher and by using metaphors in the learning environment. The Craftopolis uses elements of the story-telling society. Stories are used as metaphors and engaging elements, to focus attention and foster the memorizing process. The learning environment itself is a story, each task is a story and stories are used as source of inspiration. The creativity in the learning environment is supported by the tasks, which are structured around creativity theories. The pedagogic solution is constructive. The learning environment guides students towards independent working through tasks divided in three levels of difficulty. The learning process is guided by the teacher, who also selects the most suitable tasks for each study group and moves the whole study group to the next level all together. The novelty values of the Craftopolis can be defined as: creating a model of virtual creativity pedagogy, that guides students towards independent thinking and problem solving; offering a modular structure applicable to various fields; unifying old and new, and updating and bringing old traditions to this day; introducing a highly user friendly learning environment.

Keywords: Creativity, experiential e-learning, storytelling, craft sector

The Use of e-Learning in Adult Learning: A Comparative Study Between Six European Countries

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Abstract: e-Learning is nowadays a very common term not only among academics and students but among people of all disciplines. E-learning has been witnessing an unprecedented expansion in higher and tertiary education. In addition, life-long learning is a key factor for professional, personal and social success of adults in tomorrows' society. The aim of the present study is examine the use of e-Learning among six European countries; Belgium, Cyprus, Germany, Italy, Poland and Spain. Participants from various universities of the

six countries were asked to complete an online questionnaire that would reflect their choices and opinion regarding the e-Learning environment they use. A comparison between the responses of the six countries is included. Results suggested there are cross-country differences in choices and opinion on the use of the e-Learning environment. Specifically, Belgium and Poland seem to have the same views on the topic of e-Learning, whereas Cyprus, Germany, Italy and Spain seem to differ in their responses across the various topics examined. Recommendations for future actions include stimulation of students and instructors to use an e-Learning environment as a communication tool and as a didactical tool for teaching purposes; stimulation to use modern ICT methods not only to communicate but also to acquire and exchange knowledge.

Keywords: e-Learning tools, ICT, adult education, life-long learning

Supporting Teachers' Pedagogical and Content Knowledge of Statistics through Distance Learning

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Abstract: In a world where the ability to analyze, interpret and communicate information from data are skills needed for daily life and effective citizenship, developing a statistically literate society has become a key factor in achieving the objective of an educated citizenry. Recognizing teachers' ongoing professional development and learning as a linchpin of instructional innovation and success for their students, the paper presents an EU-funded project exploits the affordances offered by ODL technologies to help improve the quality of statistics instruction offered in European schools. The project consortium has developed an online professional development course targeting elementary and middle school mathematics teachers around Europe. The course aims at helping teachers improve their pedagogical and content knowledge of statistics through exposure to innovative learning methodologies and resources, and cross-cultural exchange of experiences and ideas. A pilot delivery of the professional development course has just been completed. Twelve in-service teachers participated in the course, originating from three of the partner countries – Cyprus, Spain and Greece. To evaluate the applicability and success of the course, there was also a follow-up classroom experiment upon completion of the course. Participating teachers developed and delivered teaching episodes integrating the use of the course tools and resources provided to them. We describe the pedagogical and didactical approach underlying EarlyStatistics, the course content and structure and some preliminary findings from the pilot delivery of the course.

Keywords: Statistics education, teacher's education, distance learning

Specifying and Analyzing Strategies using Petri Nets

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Abstract: In a recently written paper, a language has been described for specifying strategies for procedural exercises. The language is implemented using parser combinators which results in a powerful mechanism. Depending on the user's background, for example teachers, this language could be too abstract. Many developers of e-learning material don't have a formal background and need intuitive tools for building educational material. In this paper, an alternative mechanism based on Petri nets is introduced, which can be graphically represented. For users not familiar with grammars and parsers, this could be a more intuitive approach.

Keywords: Petri net, feedback, e-learning, procedural skills

An Empirical Investigation of User Experience in e-Learning Environments

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Abstract: The immense growth of collaborative technologies in the recent years has created appealing opportunities for communication, group work and learning that go beyond time and space boundaries. The increasing use of collaborative systems –in workplaces and educational settings alike– has made an effectual difference on the ways people collaborate and learn. There is however a huge gap between the available functionalities and their usefulness as perceived by the users. In an empirical study we examined the experience of distant groups of students communicating through videoconferencing. In addition to the audio and video channels the students used the Mixed Reality (MR) application we developed. The MR application created a common virtual space between dispersed users which allowed them to point at objects and people in it. Video-ethnography and participant observation were employed for data collection in combination with experimental methods. The findings suggest that when distant students use media artefacts alongside their discussions it is easier to work together collaboratively and avoid misunderstandings which are common in distant communications. In particular, we observed that technology, through media artefacts, provides a novel means of enhancing collaboration which is regarded as a prerequisite of effective learning. In this perspective we discuss how such resources can be applied in practice in e-learning initiatives such as group projects where students are expected to liaise, convey ideas, solve problems and negotiate remotely with their industrial sponsors. The findings can inform the design and application of useful and functional ICT tools for e-learning environments to effectively support collaborative learning practices between distant group members.
Keywords: Technology-enhanced learning, collaborative technologies, media artefacts, collaborative learning, mixed reality, video-ethnography

The "Living Museums" project

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Abstract: We present the characteristics of an ongoing project "Living Museums", which involves non-technological and technological researchers; we propose to use different Web 2.0 tools with an open methodology which assures social participation, reduces digital divide and invite people to think about what could be a "Living Museum" for a citizen. The development of learning projects based on the heritage capital from the different communities of the members that participate and the possibilities of learning in social networks. The main conclusions focus on participants´ satisfaction, the learning of technological competencies and the discovery of the social network as a learning environment.
Keywords: Web 2.0, social networks, digital life, museums, education

DZEMUj: A Tool for Mining in e-Learning Tests. Description and Experience

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Abstract: We introduce DZEMUj, a system for mining in e-learning data, namely in electronic tests and DIA, DZEMUj Intelligent Assistant. DZEMUj farther extends capabilities of the e-learning module of the Information system of Masaryk University and offers a set of tools for data analysis. DZEMUj enables to find

the most difficult and/or the easiest test queries, to discover associations between answers and also between behaviour of students. We shortly describe data preparation, namely data transformation and data pre-processing. Then we focus on knowledge discovery and knowledge visualization - a scatter plot, RadViz and frequent patterns. DZEMUj has been testing on data from the e-learning module of Information System of Masaryk University since January 2008. DZEMUj is quite efficient. For 507 students, 80 different questions, 10 questions in a student test, the analysis finished in less then 1 minute. DZEMUj is implemented in python, java and R. We conclude this part with evaluation of DZEMUj. Then DIA, an intelligent assistant for DZEMUj is described.

Who Supports the Support Workers? e-Learning for Support Workers of Students With Disabilities

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Abstract: This paper discusses the results of an investigation regarding the support of people with disabilities in educational settings. The results indicated a lack of standardization in training and gaps in the knowledge and attitudes of educational professionals regarding how to appropriately support people with disabilities in higher and further education. The paper discusses a pilot project for offering workplace training on skills and techniques for a group of educational professionals, support workers of people with disabilities, through an online course in a virtual learning environment.

School Transfer from Primary to Secondary Education

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Abstract: The research focuses on the sensitive issue of changing schools from primary to secondary and addresses the intellectual, emotional, social and environmental concerns encountered during this transitional period. It also examines the perceptions of parents and teachers. The hypothesis of my project is that there are difficulties in adjusting to   a new educational setting because of the demands imposed by the changes involved in the transfer process   from primary to secondary. The difficulties could be expressed in terms of the way children react to school transfer in the intellectual, social, emotional, organisational and environmental settings. The changes involve the size and the more complex organisation of the new school, new forms of discipline and authority, the possibility of losing one's friends, making new acquaintances, having more than one teacher, becoming the youngest instead of being the oldest, different teaching methods, the prospect of being bullied and more demanding homework. For some this transitional period is considered as a natural course, while for others it is thought of as a traumatic experience. Some describe the differences between primary and secondary school as a challenge but others see it as a gap. However, school transfer from primary to secondary education should not be considered as an instant event covering only the transitional period between primary graduation and enrolment at the secondary school but a process starting well before the top year of primary school and spanning the year-to-year transition during their whole schooling career at the secondary school The findings of this research suggest that a considerable percentage of the children that move from primary to secondary education find it extremely difficult to adjust to the new schooling environment socially and intellectually and this difficulty is often long lasting. At the same time, though the overwhelming majority of pupils seem to be adjusting to the new sector of education relatively easily, this adjustment refers more to the existing state of affairs and the unofficial culture of secondary education and less to a desired even transition from year-to-year within the same school. To overcome the above deficiencies, an Induction Programme is proposed for the pupils transferring from primary to secondary education, which addresses the problems of school transfer and those of year-to-year transition during the whole schooling career of a student at the secondary school.

Enhancing English Language Learning Through ICT

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Abstract: The use of Information and Communication Technology (ICT) in language teaching, however attractive to students and teachers, should result in a genuine increase in knowledge. Furthermore, it should, in some measurable way, contribute to the efficiency of teaching and learning, whether in terms of quality or quantity. These were the criteria based on which we undertook the implementation of a course management system (CMS) called *Moodle*, a free, open source software package, for English language courses at the Technical University of Crete. This e-learning platform was used for English courses, mandatory in the departments of Production Engineering and Management, Computer and Electronic Engineering, Environmental Engineering, and Mineral Resources Engineering. Our goal was to increase student interaction with the course material, including exercises, assignments, readings, and video interviews, augmenting participation in the learning process and the acquisition of new knowledge. As a by-product, we wanted students to gain heightened degrees of responsibility and autonomy in relation to their own learning. Weekly schedules, quizzes and activities were added that required continual student monitoring of the e-class. Online assignment submissions and contact with instructors via e-mail facilitated communication between student and instructor. The overall result has been positive. Student "attendance" in the virtual classes is significantly higher than the actual number of students who had attended tradition classes before the e-classes were implemented. Credit value given to quizzes and assignments as a percentage of the final mark has certainly motivated student interaction, consequently increasing student knowledge. Because the system allows for self-monitoring and self-assessment, students have reported that they have more control over their learning. Furthermore, the e-learning platform has been invaluable to the instructors, allowing for regular evaluation of how well the class materials are helping students to satisfy the knowledge requirements of the courses.

Keywords: e-Learning, autonomy in language learning, ICT and English for academic purposes, online teaching and learning

Blended Learning in Teaching Operating Systems

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Abstract: This article presents a topic connected with the introduction to the blended learning method in operating systems. SLES 10 (Suse Linux Enterprise Server) was the operating system used in this experiment. Within the confines of the experiment, students were assigned to small groups. These groups had classes using the blended learning method. A special application was used that allows the students' exercises to be checked. This application sends the results of performed exercises automatically to the server where the exercise is checked. The studies the students took part in were not stationary studies. In this article I present the way to carry out blended learning together with the description of the methodology and algorithm of application that allows exercises to be conducted over the Internet. The students participated in three training sessions and each of them participated in every training method. The training modules were selected so that each module would be the same level of difficulty. The students that were selected had been tested for the knowledge required for each module in this experiment. Furthermore, the students that had obtained similar test results were chosen to participate in the experiment. The students were teamed up in groups in such a way that the overall average students' grade in each group was the same. The methods used in the experiment included traditional ones (lectures and exercises) with the possibility of using the CBT (Computer Base Training) form materials. The next form included traditional forms of lectures, where exercises were done with the help of the LSM- ILIAS system. Also, students used a written application with an automatic machine that checked the exercises that were done. They were able to communicate with an instructor using the Skype communicator. The last training method was a mixture of synchronous and asynchronous e- learning. A common commercial tool widely available in the market for synchronous- learning was employed. In this case we didn't focus on the functionality of the application but what was important for the experiment was its availability and low price. The application that we used in the experiment had a lot of drawbacks, but the purpose of this experiment was to compare the training methods, not the properties of the applications used in it. This experiment ended with a practice exam for all of the students. The final conclusion of this article is to compare practice exam results and the efficiency of the applied methodology. The students that were using the synchronous and asynchronous teaching methods together had the best results. Additionally, there was a need to create a system integrating the e- learning

system with the school's management system. This helped to automate the systems and enabled them to function better for long distances.

IT Competence Perfection Applying the Applying Distance Teaching System

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Abstract: Lately methods of distance teaching develop and are introduced particulary rapidly. Distance teaching is characteized by separating teacher and learner in space and/or time, giving more notable management and control of teaching process to the learner and discretive teacher's and learner's communication, based on modern information technologies. Presented distance teaching system distinguishes itself with all above mentioned features, directed for teaching and learning to personal computer users in a accordance with the programe prepeared of the course European Computer Driving Licence (ECDL) 4 version. It's the tipical, as communication chanal using internet, distance teaching system, established to work by the principle "customer/server" (Ablonskis, Pinikas, Radvilavičiūtė, 2005, 165 -171) .The practice of using this system have shown its benefit for all who strive to master or test their ITC usage knowledge or in making ready for taking ECDL tests. In 2007 more then 1000 participants successfully used this system in various learning means.
Keywords: e-Learning, distance learning, ECDL, European Computer Driving Licence

Effective e-Learning Tricks or Strategies in Online and Hybrid Courses

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Abstract: As the distance learning environment has evolved into a more convenient and simple to use teaching platform; the current course management tools (CMT) such as BlackBoard / WebCT do not offer sufficient strategies for the enhancement of the student learning experience in the virtual world. This paper addresses a new approach, showcasing a few tricks that course instructors can employ to create an effective virtual classroom environment with regard to an existing CMT, to an extent where most educators can gain significant confidence to employ and assess these tricks in these virtual classrooms. Some of the tricks or strategies that will be discussed in the paper are use of online grading and the utilization of a Instructor Guest Student Access (IGSA) in a course or session '*instructors*' enter the course and can disguise themselves *posing* as '*students*' to motivate, monitor how students participate and progress in their virtual learning environments such as chat sessions or discussion threads. The need for instructors entering a classroom discussion board, blog or chat sessions and participate in the discussion threads as students will provide a novel opportunity to the instructor to motivate, and create an active e-learning environment in his or her courses. The paper will detail those strengths together with other student tracking and assessment strategies. The author has tested the use of *guest -login role* in underrepresented community colleges and university settings and strongly feels that the approach of adopting IGSA has had a significant impact on student success, potentials for improving, and retention rates in a virtual learning environment. The author will also address and present the challenges where the role of IGSA would be far effective and could be better implemented.
Keywords: "Black Board", student learning, chat sessions, discussion thread

Practically-Oriented e-Learning Quality Assurance. Empirical Findings and Making use of These for the Promotion of e-Learning Quality in Everyday University Teaching

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Abstract: New Media has become a part of university teaching and in many institutions it already belongs to daily teaching activities. An important factor for an effective, long-term establishment of e-learning scenarios at a modern institute of higher education is the implementation of ongoing processes

that focus on quality promotion. In the first part of this paper, the model of a practically-oriented e-learning quality assurance – which was developed at Freie Universitaet Berlin and is currently being applied here – is introduced. In the foreground the focus is on taking into account the perspectives of the individual participating groups as well as the direct feedback of the results into the ongoing project work; this includes the initiation and handling of change processes. Apart from the targets that were set and the concept that was developed, the paper presents basic findings of the qualitative and quantitative evaluation activities that have been realized to date. By presenting these findings, the second part of this paper provides an overview of what everyday e-learning looks like at a large university with more than 100 courses of study and about 34,000 enrolled students. How exactly does this everyday teaching look, what can be said about the acceptance and added value of this e-learning implementation? Often such questions can only relate or pertain to individual projects that are financed through monetary means, if at all. At Freie Universitaet Berlin, with the aid of wide-scale online surveys, students and teachers of all of the departments and institutes were questioned as to their experiences with the implementation of e-learning (respondents: n=2,417 / students, n=308 / teachers). With regard to the status of the e-learning implementation, the results of these surveys show that the basic application of e-learning (in the sense of limiting it to the online distribution of material and information) is firmly anchored. According to the students, this supports the efficiency of their work. Interactive, communicative and collaborative scenarios were implemented less often and the added values of these applications were evaluated quite diversely by students from the different departments. Finally, the paper illustrates how these results flow into the ongoing process of e-learning implementation. As examples, two concrete measures of e-learning quality assurance are described.

Keywords: Quality assurance, evaluation, online surveys, e-learning in everyday university teaching

Information Literate Through Blended Learning

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Abstract: Europe, in 2010 wants to be the most renewing and competitive knowledge-based economy in the world. It is necessary to work smart with information and therefore develop skills and understanding to locate, process and use information effectively. Students nowadays work very proficient with programs like Google and MSN, but don't handle information - or communication resources- very critically. The problem is not in finding information as much as in selecting the correct information from the enormous offer. Therefore we think it's necessary to help students to become information literate, using a didactic model by means of which information literacy can be acquired. In this article we emphasize on a good learning environment through a competence based blended leaning concept and the relevance of additional training for teachers, to be able to assist students getting more information literate in a structured way.

Keywords: Blended learning, online coaching, e-learning, knowledge society, information literacy

Developing a Screen-Capture Reusable Learning Object for Undergraduates

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Abstract: This paper details the process of how two Reusable Learning Objects (RLOs) were created for hospitality management undergraduates at University College Birmingham (UCB). The rationale for this project developed from the teaching team who decided that an element of online content would be appropriate to support students who were required to use an MS Excel spreadsheet to monitor finances during the planning stages of managing a themed dinner. The RLOs created were screen-capture graphic files with accompanying audio commentary that showed how to input income and expense figures into a spreadsheet. The purpose of the RLO was to provide a resource which students could access and watch independently as necessary. During the planning weeks prior to the function, the student finance manager is required to input and update budgeted figures received from colleagues who adopted other management roles. The student finance manager must input the actual figures a week after the dinner has taken place. The spreadsheet is used to analyse variances that have occurred between the budgeted and actual figures and this forms part of the assessment.

Scheduled face-to-face tutorials each week provided students with the opportunity to discuss with the tutor any issues they had with the spreadsheet. Despite this, it was found that students did not always admit to fully understanding all aspects of the spreadsheet or which figures to put in what cell, this despite comments being attached to many of the spreadsheet cells and a session devoted to how to use the spreadsheet. The

teaching team decided to create and trial an online resource that would meet the need of providing further support to students about how to use the spreadsheet. Another purpose of the RLO was that by students familiarising themselves with how to use the spreadsheet, this could promote independent learning which we try to instil in our students. The present work provides an example to those aspiring to create similar Learning Objects (LOs) to support teaching and learning. With the ongoing discussions on the diversity of the student population, sharing of online resources amongst institutions and the variety of repositories that are available to teachers, it is hoped that this paper will share best practice on how a free RLO can be created with minimal technical knowledge. This paper outlines a very economical and feasible solution that requires no programming skills. It will be of interest to teachers with little knowledge or experience of creating LOs but who would like to develop their first resource which can be used in their teaching.

Learners' Preferences on Visual Elements in Web-Based Instruction: An Individual Approach

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Abstract: Web-based instruction has become an increasingly important aspect of higher education. It represents new possibilities for teachers to structure, represent, adapt and integrate various learning content and materials to be accessed and learned by their students. However, there still remains a huge area of research regarding individuals' differences in terms of their preferences on web-based technological environment. The study presented in this article aims at investigating how students' characteristics affect their learning preferences on the visual elements that are provided by web-based instructions. For this study, visual elements are those visual screen design elements which provide linear and non-linear instruction, orientation and navigation information in web-based instructional programs. 58 students volunteered to take part in the study. They were undergraduates from Brunel University. They had to learn a programming topic known as Extensible Hypertext Mark-up Language (XHTML) using a web-based instructional program with visual elements. A Cognitive Style Analysis (CSA) test was performed to classify students as either Field Dependent (FD) or Field Independent (FI) or Field Mixed (FM). Level of domain knowledge of the subject content for each student was also recorded. A semi-structured interview was performed at the end of the experiment to provide evidence for the students' preferences on the given web-based instructional program. The findings suggest that the students' preferred visual elements available for linear or non linear instruction depends on their personal characteristics such as cognitive styles and domain knowledge of the content. The findings also revealed that low domain knowledge of the subject content and FD students depended a lot on some of the visual elements available for orientation and navigation information in the tutorial. The implications of these results are further discussed in this paper. This measure would be worthy of future investigation, especially when aiming to construct a robust design according to individual needs so as to result in higher satisfaction and effective learning in web-based instructions.
Keywords: Web-based instruction; visual elements; individual differences; preferences

Experts on e-Learning: Insights Gained From Listening to the Student Voice!

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Abstract: The Student Experience of e-Learning Laboratory (SEEL) project at the University of Greenwich was designed to explore and then implement a number of approaches to investigate learners' experiences of using technology to support their learning. In this paper members of the SEEL team present initial findings from a University-wide survey of nearly a 1000 students. A selection of 90 'cameos', drawn from the survey data, offer further insights into personal perceptions of e-learning and illustrate the diversity of students experiences. The cameos provide a more coherent picture of individual student experience based on the totality of each person's responses to the questionnaire. Finally, extracts from follow-up case studies, based on interviews with a small number of students, allow us to 'hear' the student voice more clearly. Issues arising from an analysis of the data include student preferences for communication and social networking tools, views on the 'smartness' of their tutors' uses of technology and perceptions of the value of e-learning. A primary finding and the focus of this paper, is that students effectively arrive at their own individualised selection, configuration and use of technologies and software that meets their perceived needs. This 'personalisation' does not imply that such configurations are the most efficient, nor does it automatically

suggest that effective learning is occurring. SEEL reminds us that learners are individuals, who approach learning both with and without technology in their own distinctive ways. Hearing, understanding and responding to the student voice is fundamental in maximising learning effectiveness.

Institutions should consider actively developing the capacity of academic staff to advise students on the usefulness of particular online tools and resources in support of learning and consider the potential benefits of building on what students already use in their everyday lives. Given the widespread perception that students tend to be 'digital natives' and academic staff 'digital immigrants' (Prensky, 2001), this could represent a considerable cultural challenge.

Keywords: Student voice, evaluation, student experience, e-learning

Enhancing Blended Learning – Developing a Community Based Methopedia

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Abstract: This paper will present some theoretical, methodological and technical discussions of the community based Methopedia wiki, which is under development, and will launch in its first incarnation September 2008. Methopedia is one activity within the EU-funded multilateral ICT project "Community of Integrated Blended Learning in Europe" (COMBLE), which is composed of partners from business, university and education. Methopedia is envisioned to be a community based wiki-system, combined with social networking features, where trainers and teachers from various sectors (vocational training, enterprises, universities, and public bodies) can consult, discuss, describe and share blended learning methods and methodologies. The aim of the COMBLE project and Methopedia is to contribute to leveraging the quality of education and training in Europe by engaging practitioners and researchers in developing, sharing and promoting innovative blended learning concepts and methods. To enable practitioners to share methods and learning designs an important task is to construct a shared, flexible pedagogical model/template for describing these. The model, which we outline in this paper, through discussing and synthesising literature within the field of learning design, needs to be further developed through theoretical and conceptual discussions. However, based on existing research, we argue that it is necessary that the model is developed through engaging the partner-network of trainers from business and education, and position them as co-creators of models and frameworks. We conclude the paper by discussing and outlining requirements and functionalities, some of which follow from the discussion of learning designs and blended learning, while others are related to the technical and socio-technical aspects of Methopedia.

Keywords: Sharing best practices, blended learning methods, community based wiki, learning designs, learning activities, Methopedia

Automatic Verbalization of Mathematical Formulae for web-Based Learning Resources

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Abstract: Engineering students have traditionally had a lot of difficulty in reaching the objectives they have to cover, laid out in the different Mathematics courses. In a distance learning environment, both the learning methodology and the students' profile (adults with family and professional responsibilities and with usually insufficient previous knowledge levels) are elements which aggravate these difficulties. In particular, it is mathematical notation which is necessary and ubiquitous in this kind of learning that presents a problem for the expression of content: verbalization is not a simple task and it is not easy to write using common digital resources. This second factor is especially significant in distance learning. Mathematical expression verbalization tools have been developed with the goal of improving teaching quality in courses requiring scientific and technical notation unknown to many students. These tools have been integrated in web-based

learning material, written in MathML, pertaining to a basic mathematics course for engineering at the UOC (Universitat Oberta de Catalunya). A first test with a group of students has been carried out with very satisfactory results. Because of this initial success, we believe that this application improves the communication competences of students in courses with high mathematical content, reducing semantic confusion and so easing communication between students and teachers. From a technological point of view, it means including a new functionality to a formulae editor based on the MathML standard.
Keywords: Mathematical notation, verbalization, web-based engineering courses, MathML

e-Learning Network for Language Training

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Abstract: The paper describes a strategy for establishing a network of European centers involved in e-Learning and language training. The network will be developed based on existing and future partnerships and projects. Partners' roles are going to be distributed: while some of them are specialized in language teaching and training, other partners are software companies specializing in developing Web technologies and tools or research and training centers having high level e-Learning related competences. It is expected that such distribution of competences among the partners will lead to the necessary responsiveness of the network to the clients' expectations, market changes and technological advance. The network is also expected to bring relevant contributions to the way in which language learning is provided through e-Learning technologies, positioning itself as a mover and shaker in the field. The common, technologically distributed infrastructure of the network will be able to provide the required intranet facilities, technical services to the network's members and an e-Learning platform to be accessed by the trainers and other participants. Web tools like forums and content repositories will also be included in the infrastructure.

The e-Learning related activities of the network will be mainly realized by staff from five main professional profiles developed during previous partnerships: e-Learning System Leader, e-Learning Project Manager, Expert in e-Authoring, Expert Developer of Innovative Contents for e-Learning and European Certified Net-Trainer. The training paths for the first four professional profiles, in terms of Objectives, Content, Material, Phases, Times, Checks etc, have already been developed and are now also during a transfer of innovation phase. The future European Certified Net-Trainers belonging to the network will be trained following a harmonized training framework provided by the European Net-Trainers Association (ENTA), a framework already implemented in 13 European countries during previous projects. The first language courses addressed by the network activities will be those developed during the ongoing Learning Language For Work (LLFW) project. LLFW aims to address the barriers to employment/employability experienced by migrant workers and other minority ethnic groups who require support to learn the language skills they require for employment as they move between member states of the enlarged European Union. Since, at least for the moment, e-Learning methodologies are not regarded effective for teaching the LLFW courses due to the students' specific situation, the network's objective in this case will be using e-Learning and blended learning only for training the language trainers. The training of trainers will include not only the LLFW specific methodologies, but also courses developed during previous projects of the partnership: Introduction to e-Learning, e-Learning for Trainers, Introduction to Telework and Telework for Trainers.
Keywords: e-Learning, network, language training

Tagging Electronic Resources for Modules – A Case Study in Web 2.0 People and Technology

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Abstract: The aim of the TERM project - *Tagging (extra, external) Electronic Resources for Modules* - is to investigate the extent to which social bookmarking can be used to promote collaborative learning. The motivation for doing this is to enable students to get more value from the informal collections of on-line resources that they may gather to support their learning. The study has two main strands: identifying the barriers to sharing resources; and exploring potential solutions. The latter has focussed on exploiting both the social and technology opportunities provided by "Web 2.0". The human side of sharing resources has been explored through qualitative surveys with both Computing and Art and Design students to understand the sources of information that they find most useful in their studies, how they currently record and manage references to on-line resources, and their attitudes to sharing this information. These were then reassessed

following a pilot study on the use of social book marking. The technology associated with sharing resources has been explored through the use of the del.icio.us social book marking service. A range of options for using the service were evaluated for their practicality, usability and manageability. The options included individual versus group accounts, and stand-alone access versus integration with the institution's VLE. This led to the development of a shared tagging system within the VLE, linked to a shared delicious account, which was then evaluated with one of the cohorts of students from the survey phase. Evaluation of the TERM VLE enhancement and its use by students raises a number of interesting but potentially conflicting findings relating to their attitudes, their actions, and the technology required to support them. The majority of students were positive about tagging and sharing, but a significant minority were still using technology that did not facilitate sharing. In addition, while the students wanted to be able to share their resources, they wanted to be able to do this outside of the VLE which provides a common platform for doing so. This highlights the tension between the development of shared taxonomies versus the desire for individual control and autonomy. The initial results of the study support the desirability of developing collaborative resource sharing, and of the use of web 2.0 platform technology in doing so. As such, they would be of interest to projects engaged in developing collaborative teaching and learning practice and the technological challenges associated with it.

Keywords: Collaborative learning, Web2.0, social tagging, virtual learning environment, folksonomy

Learning-by-Doing Gender

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Abstract: E-learning is more than a simple and even neutral device which helps to organise a given way of learning. Different surveys show that students abilities and their interest in working with platforms are dependent on social factors they depend on media related competences, which, in turn, depend on students' self-assessment and on their attitude towards the medium. Furthermore, self-assessment and the construction of one's own gender identity are strongly linked. In our society learning is regarded as a technological device: Technology and gender are part of society/culture (they influence and are influenced by culture), technology is regarded as male, technoscepticism as female: communicativeness and communicative skills are regarded as female and so on. This is the basis of the theory of a co-construction of gender and technology: the social construction of technology and of gender are interrelated – gender and technology interact. So university students' media competences are highly interconnected with self-assessment on the one hand and with gender identity on the other hand. In our empirical research project we use a mixed method approach to examine university students' self assessment of their working with learning and we examine the co-construction of technology and gender. How does, if at all, gender identity influence e-learning competence and contrariwise, how does competence influence gender identity? In relation to the co-construction of gender and technology we ask whether there is an interrelation between the compulsion to use learning and doing gender, i.e. students' gender-related self-assessment. Our analysis of students' self-assessment and of the construction of their (gendered) identity as well as the analysis of the interrelation between students' self-assessment and structural and social factors will disclose aspects of media competence, of the co-construction of gender and technology and of the social construction of gender. Our main targets are students' self-concepts as well as the interplay between technology and gender, our main research tools are qualitative interviews in conjunction with questionnaires.

Keywords: e-Learning, gender identity, ICT, sociology, education

Understanding the Experience of non Contributory Online Participants (Readers) in NCSL Communities

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Abstract: This study explored the range of participation taking place in the National College for School Leadership (NCSL) online communities. Whilst it was recognised that the degree of participation might reflect community members' choice, there was a wish to ensure that barriers did not prevent fuller participation when it was sought. A literature review with a dual focus was made the two elements; firstly literature about factors affecting online participation was examined and then literature about dynamic motivation theory was considered. A survey generating numerical and text based responses was constructed based on this dual review. Both were thought to be relevant to the nature of members' participation. After a pilot study,

alterations in the survey were made and the revised version was sent to 2,600 recently active community members. Over 750 replies were received. Analysis produced a very rich picture of motivational factors affecting participation in online communities. Benefits of various types of online interaction were put forward and suggestions about barriers to online interaction were made. This paper suggests that it would be possible to improve overall participant experience in online communities by recognising the importance of the role of non-contributory participants and by reducing perceived barriers that prevent a desired level of interaction.

Modelling of Qualitative Technology Based e-learning Course Development

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Abstract: High education level in society is one of the most important preconditions for long term development, but economic crisis all over the world creates danger of increased self-sustaining poverty in the future, which brings insufficient education with it. Most of the students after graduating from secondary school are forced to look for a job; therefore it is very important to provide them qualitative e-learning possibilities using the available technological solutions. The aim of the research is to give theoretical base and to work out a qualitative e-learning course model focused on technology development. The framework of e-learning course modelling is based on Kaschek (Kaschek et al. 2003, 2004) Abstract Layer Model which is one of most popular and effective model of web-based e-learning course. E-learning course model is focused on students acquirement which is defined by different layers. The Model is worked out like a cycle which goes through several pyramid layers. Each of the abstractions is involved with specific modelling task which ensures qualitative e-learning course development. To accent technology importance in qualitative e-learning course development Kaschek model is supplemented with extra layer – technological layer. At this moment the most popular and reasonable technological solution of e-learning is based on world-wide web and PC's usage, but there is also other technologies which can be used to make e-learning course more effective. New technologies give new possibilities for communication to make information exchange process comfortable and accessible, but the problem is that these already developed information systems cannot communicate with mobile devices and therefore not taking advantage of one of the fastest developing modern technology industries. By viewing different pedagogical approaches in relation to the learning theories and learning principles, it is possible to see which technologies support this feature and vice versa, which pedagogical approaches need to be used to improve learning quality using moderate technologies. The paper presents theoretical precondition of qualitative development of e-learning course in perspective of common and moderate technologies.

Keywords: e-Learning, technology, mobile technology, modelling, pedagogical approaches

Structural Steel Design e-Learning Portal

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Abstract: The design of steel building structures throughout the member states of the EU is moving rapidly from National Codes to unified Eurocodes. Despite this unification considerable differences will still remain, partly due to National Annexes which provide specific factors which must be used when designing in that particular country. Each country will also have its own body of non-conflicting complementary information (NCCI) which will take into account national variations in design approaches, including Health and Safety requirements. In addition there may be differences in the way in which the procurement process proceeds. When engineers are going to produce designs in their own countries, they will need to be aware of both the National Annexes and the NCCI, and read these alongside the appropriate European Codes of Practice. A problem then arises when engineers need to produce designs in other European countries, either for a company based in one state or as individuals working in the free market. Designers in this position will have to familiarize themselves quickly with the country-specific National Annexes and NCCI.

Trying to improve this situation, a strong trans-national partnership is collaborating on a project which aims to develop an ICT-supported, flexible training approach to enable designers to apply Eurocodes in accordance with the national regulations and practices of different member states. The portal developed, that uses a

public domain, incorporates facilities for course presentation, forums, blogs, and commercialization and on line translation. More specifically it is intended to redesign a real multi-storey steel-framed building, originally designed to a national code, according to the National Annexes, NCCIs, national regulations and normal practice of each of the partner countries. The design brief and basic building form will remain constant, but each partner country has made detailed modifications to ensure compliance with its own local practice. The resulting web-based material will lead designers through a complete case-study and direct users to tools and resources to assist them to undertake their own designs, as well as highlighting the key differences in local practice.

Motivations and Perceived Usefulness of Technology in Higher Education

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Abstract: This study investigates student experiences with learning and teaching technologies using data obtained through an online survey of 553 students. The following specific questions are addressed in the study. What type of learning and teaching technologies do students use for their study and how often do students use these technologies in a learning week?

Do students find these technologies useful or do they use them by compulsion?

What is the perceived usefulness that students attach to these technologies?

Given the increased number of students with part-time jobs, does technology play any role in enhancing student engagement with their studies?

The data obtained is used to describe technology use patterns. Student perceived benefits of learning and teaching technology are discussed along with the perceived constraints in technology use. Likert scale type questions were asked about a wide range of technologies including those used to enhance face to face contact and those used in flexible learning. The results show that students have a preference for technologies that enhance flexible learning such as podcasting, web based activities and online discussions. A large number of students also indicated that PowerPoint slides were useful but their effect was mitigated by improper use and ill designed slides. The results show that the majority of students find that technology enhances their learning experience but are constrained by lack of training for specific technologies, poorly designed virtual learning environments and ill equipped staff. Contrary to general belief (re Oblinger's 'Net generation' or Prensky's 'digital natives'), students have a strong affinity for face to face learning and find that the text book is still the primary source of learning; technology is seen as a way of enhancing learning rather than the main learning vehicle itself. Overreliance on technology is identified as one of the main problems in learning with technology. The results also suggest that flexible learning technologies play an important role in study engagement for students who work longer than 10 hours a week.
Keywords: e-Learning, learning technology, student experience

Improving the Matching Process of e-Mentoring in Luxury Hotels

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Abstract: Purpose – This paper examines the effectiveness of an innovative e-mentoring programme introduced in an international group of luxury hotels. **Design / methodology / approach** – This paper employs the survey method, with quantitative and qualitative data analysis. The research model was developed from a literature review. **Findings** - Whilst mentoring programmes have generally gained increasing popularity in various organisations, in the recent past the success of e-mentoring has attracted little empirical research. E-mentoring is a vehicle for providing a guided mentoring relationship over large distances, largely through email, but also by using technology, including the voice over internet protocol (VOIP). Questionnaires were administered to a 193 people engaged in a pilot e-mentoring programme. A unique model was developed and now needs to be applied to a range of organisations and their e-mentoring

programmes. There are three key elements to the model: firstly, the introduction of weighted criteria, which allows mentees to select those elements that are most important in the achievement of their personal learning objectives in the mentoring programme. Secondly, the mentee is encouraged to interview potential mentors before making a final choice. If global mentoring is to be successful, this interview will require web conferencing facilities so that the proposed matched pairs can also observe one another. The third aspect is the evaluation by both mentor and mentee at the end of the relationship in order to close the communications loop and to be able to assess the overall effectiveness of the matching practice and so encourage continuous development and enhancement of the process. **Originality / value** – A novel and innovative model was developed from a literature review and tested in a large international group of luxury hotels. It will be of value to managers and HRD researchers. **Research limitations / implications** – The model should be further tested, applied and refined as necessary. **Paper type**– Research paper

Keywords Training; e-mentoring; mentoring; HRD; blended learning; eHRM

e-Academy for International Development of Transfusion Medicine – A Unique Institution

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Abstract: This paper describes the filling of an important higher education gap focused at leadership development in transfusion medicine in restricted economy countries. Organization – Through a WHO initiative the University of Groningen established an Academic Institute for International Development of Transfusion Medicine (IDTM). The Institute technically supported by Exencia Ltd created a web-Academy to provide access to a special post-graduate Master course on Management of Transfusion Medicine (MMTM). The e-Academy has an operational e-coordinator (Exencia) and an MMTM course leader (IDTM) who communicate electronically with the fellows. Operational contents – The MMTM course is composed of an e-learning phase with 9 e-books that provide modular educational information on general and operational management aspects in transfusion medicine. The 9 e-modules (12 months) are organized in two clusters 1) general managerial elements e.g. organization and structure, legal and regulatory aspects, human resource management, and economical aspects and costing; 2) managerial aspects of the transfusion medicine core business e.g. societal interface, clinical interface, process management and quality management. Each e-book contains chapters that accommodate one week e-study and an e-self test. Each module is concluded with a time controlled e-exam. The material is user friendly organized: off-line e-books can be studied and e-exams taken.The e-Academy provides a growing e-Library to allow easy access to academic literature to be studied along the e-books. Conclusion - The IDTM e-Academy allows fellows to study the MMTM course user-friendly while at home, preventing unnecessary travel and living costs for a longer period of time in a developed country environment.

Keywords: e-Academy, e-learning, higher education, transfusion medicine, e-library

Blended Learning in Action

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Abstract: The paper illustrates a practical experience of blended learning applied to vocational training in the waste management field within a European partnership of 9 countries and 8 different languages. Potential advantages and issues of blended learning use for training have been identified from various piloting sessions of testing within different target groups in various countries. In particular, they concern personalized training support, roles and actors separation useful in large scale context but increases training management complexity, and the importance of the course designer as aggregator, integrator, and mediator in the development process.

Keywords: Blended-learning, personalized learning, vocational training, roles, actors, waste management

e-Learning and Digital Dialogue – From Speech Acts to Collaborative Knowledge Building

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Abstract: Much research concerning communication and e-learning assumes that written asynchronous communication plays a significant role in relation to the central learning aspects of collaboration and reflection associated with e-learning. While asynchronous virtual Learning environments (VLEs) have been widely applied, synchronous communication technologies (also know as virtual meeting environments, VMEs), such as videoconferencing (VC) and personal video conferencing (PVC), have only in limited proportion been adapted into e-learning contexts, despite their possibilities for providing a broader communication channel and, thus, facilitating a more multi-semiotic/multi-modal communication between learners in distributed settings. Modern digital communication technologies, offers - in a variety of aspects - a principled and valuable communicative and dialogic potential, in text as well as audio and video, for realizing and materializing these expectations with respect to design and delivery of education and processes of e-learning. In a broad perspective, the communicative and dialogic potential of digital technologies presents itself, not only in relation to VLEs, but also when it concerns the latest synchronous image and video based communication technologies, like e.g. VMEs. This technological potential for supporting specific elements in collaborative and dialogic elements in an e-learning process should be found in their ability of digital communication technologies for enabling and enhancing – in a variety of ways – communication, reflection and dialogue between learners. This article addresses the use of VC and PVC as mediating technologies in processes of communication and collaboration and examines its communicative and reflective potential in relation to e-learning. The article presents the hypothesis that PVC offers a hitherto uncovered potential for supporting the engagement of learners in an e-learning process through generating incitement for participation (involvement) and reflection. This hypothesis is discussed, theoretically, through the optics of participation and reflection, and with reference, on the one hand, to ontological insights concerning processes of action and co-action (collaborative knowledge building) in virtual spaces, and, on the other hand, to the relationship between imagery and documentarism (presence).
Keywords: e-Learning, participation and reflection, global democratic dialogue, citizenship, collaborative knowledge building

e-Portfolio in Primary School: Children's Self-Awareness Through Digital Tools

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Abstract: EPortfolio is an improvement of traditional portfolio. It is an opportunity to show skills and abilities using certificate titles and also multimedia documents. This makes it possible to show capabilities for the so-called "soft skills", which are not easily certified with traditional instruments. The digital portfolio, introduced in primary schools, would be an effective knowledge instrument for children and families, beyond being a valuable tool for teachers. Through a description of him/herself, the child would be able to recognize their emotions, to check their own capabilities and to develop self-guidance. This could be a way to help him/her to modify their behaviour in relation to the objectives that he/she wants to achieve. In this way each child would be participatory and responsible for his/her own learning.We present a case study that highlights the best practices used for the construction of digital portfolio by 8-year-old children in primary school. This has been an interesting challenge, having to take into account the operating limits of school resources, teacher' skills and the meta-cognitive ability of the children themselves. The implementation of ePortfolio was developed through several activities. The first task was the design of the shared home page, followed by the retrieval of collected, classified and digitized material. Another activity was the use of tools to allow children to create their own digital logo to be included on their home page. Furthermore, children completed questionnaire-guides and recorded digital sounds and movies. The creation of each electronic page, was preceded by its corresponding paper version to locate elements in the page space. In this way, each child was involved in the 'on line' publication issues.

The produced ePortfolios were very good in complexity and quality. The outcome, from an educational point of view, was twofold. First of all, the children developed many useful skills for web comprehension: hypertext and hyperlinks, multimedia, digital artefacts… On the other hand, they identified the needed elements for an

accurate self-assessment of their skills. This reflection by the child regarding their abilities helped them acquire greater understanding of themselves, their abilities and their way of relating to others and the world.

The art of Learning in a Virtual World: Sculpting Zeros and Ones

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Abstract: Learning tools and techniques ought to provide us with efficient and adaptable solutions that meet the uniqueness of the individual education needs. In time, these needs can prove very diverse and changing. Blended learning aims to provide an effective combination of different modes of delivery, models of teaching and styles of learning and it is widely recognized that it is ubiquitous. We can blend technology, locus, pedagogy, chronology, roles, focus, direction, and so on. In this respect, we believe that blended learning should provide not only a combination of learning technologies, but also a comprehensible map of learning models meant to support efficient and qualitative decisions in defining an optimal path to knowledge. We live in a society abundant with data. How can we make the complex clear? How can we not only survive, but make the best usage of the streams of zeros and ones that leave us inundated with data and starved for tools and patters that give them meaning? How can we find what we need? How can we control the explosion of information and, even more, turn it into our advantage? How can we venture in a pursuit of excellence in learning? This paper is a quest for answers and solutions as it includes an expansive view of learning delivery meant to provide lots of scopes for new approaches to blended learning which focus on business needs. One important question that companies ask their trainers is: what will the next generation expect from employers? The upcoming generation of business talents will have needs—and parameters for personal and organizational success—that are far different from their current workforce counterparts. Training them to be outstanding performers and team contributors will be the No. 1 organizational development challenge between now and 2020. In this paper we shall present our search for a better comprehension of what elements characterizes interesting, good or successful blended learning in different media, and we shall bring forth an innovative and emerging view of blended learning that moves beyond the boundaries of traditional training. In this perspective, we shall present the MOBNET-Learning Project that Advanced Technology Systems has developed in partnership with "Carol I" National Defence University in Bucharest, the Research Institute for Artificial Intelligence of the Romanian Academy and other 2 private companies. This project has been financed through the "Partnership" national funding scheme and develops a blend that integrates mobile learning solutions, and knowledge management systems. We also promote the notion of blended m-learning as a future solution in learning environments.

Keywords: Blended learning, mobile learning, KMS, web of learning

The Development of Models for Identifying and Promoting Best Practice in e-Learning and Virtual Campuses

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Abstract: This paper explores a number of key issues that have been identified as being important in the identification and evaluation of best practice within the context of e-learning and virtual campuses. The 'Promoting Best Practice in Virtual Campuses' (PBP-VC) project is a two year European Commission Education Audiovisual and Culture Executive Agency (EACEA) co-financed project that is aimed at providing a deeper understanding of the key issues and success factors underlying the implementation of virtual campuses and e-learning. The PBP-VC project team have been working with stakeholders from a number of large virtual campus projects across Europe in identifying and exploring key issues relating to best practice. The importance of developing a practical framework for identifying, evaluating and promoting best practice in virtual campuses and e-learning can be demonstrated by the significant number of high profile e-learning and virtual campus failures both within Europe and globally. In many cases their failure has been quite spectacular with £millions being wasted as a result some quite basic errors in overlooking key best practice

issues that have occurred across several large-scale projects. This paper will provide a description of the different elements comprising models for best practice that has been developed by the PBP-VC project.

Teaching the Content "Globalization" Evaluation of an Established e-Learning Course

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Abstract: The content globalization is too complex to integrate it in a typical e-Learning course. New ways of teaching methods and course design are described in the following paper. The new methods and designs enable a special tutoring system to implement the content of globalization. These new cognitions are based on a concrete example of an established and evaluated e-Learning course. Important for a successful performance of an e-Learning course with the content of globalization is the reduction of the learning content as well as a modular structure and flexible adaption to the interests of the participants.

"But surely it's harmless?" Developing a Multimedia Ethical Misadventure for web Delivery

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Abstract: Ethics training for those engaged in research with humans is standard practice in most research institutions. However, the ethical requirements of social research have changed greatly over the past two decades (Tolich, 2001). Researchers now need to consider many new regulations and ethical reguirements (Israel & Hay, 2006). In this new culture of compiance e-learning can be used to provide contemporary guidelines and case studies for up-to-date ethics training for staff and postgraduate students. This paper reports on the development of a multimedia web-delivered interactive scenario constructed and delivered using the e-learning authoring and delivery tool, SBL Interactive. The scenario shows what can happen if ethical considerations are ignored. While working through this fictional scenario, participants are "fly-on-the-wall"-type observers of an unfolding drama. They must click their way through the scenes, each one following the other in a chronological order. At various stages, video vignettes are shown or audio played involving two or three-way dialogue, often to emphasis tension between the major fictional characters. At frequent points through the scenario, trainees are asked to reflect and comment on what is taking place, either though short quizzes or longer deliberations which link back to ethic principles. The entire development process was documented starting with initial concept through to the final output. This process involved initial conception, story-boarding, development of dramatic tension, humour, irony and scope for user reflection. The paper will describe this process, and propose some general principles for developing interactive e-learning scenarios of this nature. It will also describe the aspects of SBLi which aided authoring, as compared to standard web authoring tools. The core scenario can be used in many ways; as a stand-alone exercise, as a walkthrough with a tutor followed by discussion or as part of a much larger lesson to name just a few. This scenario has been made available to all New Zealand Tertiary institutions to customise for their own ethics training purposes.

Ontology Based Cross-Sectorial and Socio-Cultural Transfer of Proven e-Learning Solutions

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Abstract: The paper describes a methodology for adaptation/transfer of proven e-learning solutions (learning objects (LOs) and courses), developed for a specific industrial sector and specific national/regional environment, to (1) another sector (assuming that the LOs are thematically applicable in other sectors) and/or (2) different national/regional specifics.

A successful adaptation/transfer process is to be started with an accurate identification of the necessary changes in the LOs, followed by the adjustment to specific cultural, legislative and other issues in case of the

transfer to different national/regional specifics and the adaptation of content, specific terminology, examples etc. related to a specific sector adaptation. Keeping in mind that the aspects relevant for a specific sector/culture can appear at many different levels within an LO, the identification of 'issues' which have to be adapted in LOs can be very time consuming, leading to many potential quality problems in the adapted LOs (e.g. wrong terminology, examples or references irrelevant for the target users in other countries etc.). The approach proposed is to use ontologies, relevant for the LOs, as a means to facilitate their adaptation. The rationale for such 'Ontology approach' to support adaptation of the LOs is to clearly indicate sector specific terminology as well as culture-specific issues in the original LOs which have to be adapted for an another industrial sector and/or cultural/social/regional context.

The process of preparation of the existing LOs/courses including identification of the related ontologies (for different sectors, socio-cultural aspects) and connection of the specific issues with these ontologies is described first. In the next step the adaptation to another sector and another culture through a mapping/correlation of the corresponding ontologies or ontology classes is described, whereby the main part of the creative work is related to ontology mapping or "replacing". This part assumes an appropriate translation of the LOs/lessons, which should be done by highly competent experts for related thematic issues, as well as by the experts for socio-cultural aspects. The application of such 'ontology approach' allows for an effective support of the adaptation process by ICT tools. The methodology has been examined on examples of e-learning courses targeting provision of a cost-effective, comprehensive corporate training system for SMEs in the recycling domain.

Keywords: e-Learning, ontology, LO transfer, tagging, corporate training, LO localization, learning context, training in recycling sector

Employing Web 2.0 Tools to Enhance Active Learning in Courses Requiring Group Projects

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Abstract: There are definite benefits in assigning group work, a form of collaborative learning, to students as part of their gradable course activities. Projects involve "learning-by-doing", improve student participation in the education process, and group projects or collaborative learning in general foster critical thinking, develop positive interdependence, improve problem-solving strategies, internalize content knowledge and promote retention rates, achieve better results, improve personal achievement satisfaction and enhance interpersonal communication skills. Unfortunately, there are also certain concerns relating to group work that need to be addressed by educators. These include: Fair task allocation between group members; Efficient management and coordination of project activities; Uniform presentation and level of work of project deliverables; Grading of project to reflect the whole group's work; Lack of clear objectives; lack of support and training; Difficulties in accommodating different work schedules and other cultural and language differences of members, and; "Social loafing and free riding" which is the term used to describe inequality of contribution and effort among group members. In certain courses, such as Systems Analysis and Design, Software Engineering, and other, a group project is of major importance. Thus, educators will always be willing to investigate new ways and tools to address the above pitfalls while harvesting the fruits of collaborative learning. The authors of this paper became aware of the potential contributions of the Web 2.0 tools, such as weblogs and wikis, towards collaborative projects and decided to explore their use to address the issues concerning group projects. They deployed these e-tools in an MBA course of E-Business which requires the students to work in groups so that they develop a company's strategic plan on an e-business initiative. Results of this small-scale pilot study and student feedback are included in the paper. These could be helpful to educators interested to introduce and further explore the use of Web 2.0 tools in courses which involve group work.

Keywords: Web 2.0 in education, computer-supported cooperative work, collaborative learning

Cooperation Models for National e-Learning Development in Estonia (Example of the Estonian e-Learning Development Centre)

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Abstract: In this article evolvement of the Estonian e-Learning Development Centre will be analysed during its five years of operation. Attention will be paid to processes that were the drivers behind the formation of the Estonian e-Learning Development Centre and contributed to its sustainability.

How much Personal and Sensitive Information do Cypriot Teenagers Reveal in Facebook?

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Abstract: Web-based social networks are becoming increasingly popular over the past few years. With over 60 million active users worldwide, Facebook has become a major meeting portal for people of all ages, especially teenagers. This network offers attractive means for communication and interaction, but also raises security and privacy concerns. Studies that investigate whether young people are aware of what type of personal data they disclose in social networking environments revealed not only a high level of concern but also a high level of ignorance. Major concerns revolve around the possibility of sexual predators and pedophiles finding and then assaulting adolescents who carelessly or unwittingly reveal identifiable information on their personal profile pages. Nevertheless, privacy concerned individuals join networks and reveal a great amount of personal information. For example, although members are concerned about privacy issues in Facebook they are willing to share identifying information and develop new relationships where the perceived privacy level is weak. Moreover, only a minimal percentage of users change the highly permeable privacy preferences. However, currently no research is available concerning numbers, behavior, and perceptions of young Cypriot people using Facebook. In the context of the European safer Internet project "EU Kids Online," this study explored how the youth of Cyprus use social networking sites, on the example of Facebook. We evaluated the amount of information youngsters disclose and we studied their usage of the site's privacy settings. We sought to empirically ascertain the types of information Cypriot youth are publicly posting through an extensive content analysis of randomly selected Facebook profile pages. For each member, various types of disclosed personal and sensitive information were analyzed, for example name, gender, profile picture, and contact information. Other parameters involve quantification of activities published, such as number of personal photos uploaded, membership in groups etc. Preliminary results show that Cypriot Facebook youth members are also willing to share personal information as the majority of the participants published their full name, gender, birthday and hometown. In addition, Cypriot youth actively use Facebook and its possibilities with activities such as joining groups, supporting causes, and using applications. Surprisingly, Cypriots are less likely to disclose contact details.

Enhancing e-Learning Environments with Users' Cognitive Factors: The Case of EKPAIDEION

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Abstract: We are now witnessing an extensive and gradually increasing use of the World Wide Web space, proved to be a quite favourable way of communication, due to its speed, simplicity and efficiency. Distance learning (or eLearning) is considered one of the most rapidly evolving application areas of the Web that improves the traditional educational processes and methodologies of knowledge transfer. In recent years, there has been significant research and experimentation around the adaptation and personalization of the eLearning hypermedia that mainly concerns the timely delivery and adjustment of the content to user's needs and perceptual characteristics. This paper provides a new comprehensive way of reconstructing eLearning content; by creating a user profile based on specific metrics of cognitive processing parameters (such as cognitive style, cognitive processing speed efficiency and working memory factors) that have specific impact into the information space. The combination of the cognitive user profile and the 'traditional' user characteristics (e.g. age, gender, profession) could become the main personalization filter for eLearning environments. Such approach may be proved to be very useful in assisting and facilitating a student to better

understand eLearning content.. In view of that, an adaptation and personalization Web-based environment, namely EKPAIDEION, has been developed. An evaluation with approximately 128 users has been conducted with the results being highly promising and encouraging, since there has been identified significant increase of learners' academic performance when interacting with our personalized eLearning environment that is matched to their cognitive styles and visual working memory span capabilities.

A Research Study About "e-Learning Training Needs" of Vocational High School Teachers in North Cyprus

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Abstract: Day by day, the *e-learning divides* between *teachers* become somewhat more obvious and more important. The teachers, who are e-literate, are starting to prove themselves to be more effective than the others. On the other hand, the vocational high school teachers in North Cyprus, also, face a challenge of updating their knowledge to make appropriate use of the e-teaching methods in their classes. Hence, it was a presumption that the teacher training activities should be delivered to these schools. Of course, to reveal this fact, a research study is done. The purpose of this research is to determine the e-learning training needs of the vocational high school teachers, in North Cyprus. A questionnaire consisting of 32 items was developed by the researchers; the validity and reliability of it is checked. According to the expert views, the questionnaire is divided into 3 factors: Technology-based e-learning applications; web-based e-learning applications and administrative e-learning applications subjects. In North Cyprus, there are 12 vocational high schools and there are about 490 teachers in these schools. The number of the filled questionnaires used in this research is 398. The following are the scales used in the questionnaire: Excellent, quite good, good, basic and needs to be improved. Where, some of the measured subjects in the questionnaire are: Usage of the vocational e-learning equipments; preparation of course materials by using multimedia presentation software; usage of e-software tools for preparing e-quizzes. Descriptive statistics were used to analyze and report this data. As a result of this research, it was found out that: *North Cyprus vocational high school teachers have e-learning training needs about the technologic-based, web-based and administrative e-learning applications*. To fulfil the necessities of a teacher e-learning training program an action plan should be prepared, collaboratively with the e-learning experts. This research study claims to be the first and a unique study for determining e-learning training needs of vocational high school teachers, in North Cyprus.

Keywords: e-Education, vocational education, e-learning, teachers, training needs, e-learning divide

Blended Learning as a Means to Differentiate and Optimise Corporate Training

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Abstract: In current corporate environment, characterised on the one hand by a tightening competition, turbulence and permanent change and on the other hand by an effort to develop interorganisational learning and sharing of knowledge within networks of strategic alliances, the importance of corporate training and other ways of organizational learning has been growing. Changes and further positive development of corporate training are virtually impossible without the establishment and application of human resource development strategy, the important component of which is a corporate training strategy, combining effectively a systematic approach to this organisation development programme with the opportunities of blended learning. It is this strategic approach, that leads to redefining of corporate training, which has been recently understood in theory as well as in practice as a systematic process of fulfilling training and mainly individual and team developmental needs through the application of blended learning so as to maximise mutual positive effect of applied instruments (andro-didactics methods, techniques and organizational forms of adult education). The effectiveness is measured by a reduction or optimisation of costs invested in staff training and development, practical application of the learned knowledge and a positive effect on performance efficiency (competency-based development and performance appraisal) as well as the motivation and retention of "key players", the so-called hi-performers and hi-potentials.

The paper deals in detail primarily with theoretical as well as practical aspects of the verification and application of an effective combination of corporate training methods and forms in the above mentioned context and also in relation to other target groups of staff which are not key for the organisation in the

situation concerned, but the opportunity of training and development is nevertheless provided to them. The matrix of value added of a working position in organizational hierarchy and of the importance of an employee for the organisation (based on performance appraisal) is used as a criterion to classify employees into different target groups (in total four target groups are presented). The paper concludes with a summary of starting points and fundamental changes in the approach to corporate training and an overview of conditions that may positively influence the effectiveness of blended learning in companies.

Keywords: Corporate training, blended learning, needs analysis, target groups, e-learning

Content Development within a European e-Learning Project: Guidelines, Results and Reflections

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Abstract: UNITE is an e-learning research project (partially funded by the EU, under FP6), where a number of e-learning scenarios have been developed, covering different educational contexts, pedagogical concepts and subjects (e.g. Environmental Studies, Mathematics, Information and Communication Technologies, and many other), bridging thus the gap between formal and informal learning settings. The various scenarios have been designed by secondary school teachers (with the help of the project's domain experts) baring in mind the corresponding diverse cultural and educational backgrounds of the school environments they would be implemented in. All scenarios were supported by relevant electronic resources, material, or in other words content that was either developed from scratch, or adapted from existing sample resources. There were two consecutive e-learning scenario implementation phases in the project. After both implementation phases, the teachers were asked to complete questionnaires in order to capture facts on the one hand and their personal beliefs on the other. Therefore, this paper constitutes a study of the entire content development process within the course of UNITE, presents a summary of the guidelines that were given to the participating teachers and examines the results of the process separately in the two scenario implementation phases, comparing the two, presenting findings and drawing conclusions. Special emphasis is placed on the factors that might have influenced the teacher's performance in content development.

Keywords: e-Learning, content development, scenario implementation

Content and Intense Cooperation, not Technology, are Essential for Quality Outcomes in e-Learning

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Abstract: The experiences with e-learning at the faculty of Medicine and Health sciences of Ghent University are evaluated in this paper. The aim is to delineate the conditions necessary for e-learning to bring quality improvement in education and knowledge acquisition. Since 2002 several digital logistics were introduced to improve the educational process. The print library was transformed into a full digital information system, constantly available on the web. Next to broad online journal access, e-Books now cover the entire curriculum. A wide variety of bibliographic and factual databases, a fast working interlibrary loan system, dissertations database, open access sources, institutional archive and academic bibliography, easy access to instructional materials, are all available for our users. The library space has changed in a digital study-platform with 160 desk top computers, 100 of which in a networked e-class. The digital course system offers on-line communication with and between educators and learners, and includes group collaboration possibility, Wiki and portfolio. Software programs are available using server-based computing. Despite the introduction of appropriate technology, its use is incomplete and the overall quality outcomes in knowledge acquisition seem limited. After six years of availability of all these digital auxiliaries, only a limited number of courses offer interactivity. The content of the learning platform is greatly limited to syllabi and PowerPoint presentations; the contact education is given primarily in class lectures and tutorials. Moreover we observe a limited use of the offered information resources and facilities. And above all, we have no single indication that our students acquire more knowledge. Two major factors relate to quality outcomes: content management and cooperation/collaboration. For both factors we list examples of activities which might promote the educational outcomes: 1. Improvement of content management: Promote constantly resources and facilities, development of new educational digital resources, integrate digital resources in the curriculum, develop a (multi-centre?) archive of educational materials, constantly measure student workload (to avoid information overload), train the staff in the use of digital resources (students get formal education), develop alternative assessment methods

2. Better cooperation: Integrate the materials over individual courses (recognition and booster effects), change the expectancies and attitudes of both educators and learners, create a team responsibility for education, improve technical support for the teaching staff in the construction of digital learning output, train the educators in e-course and e-evaluation design. e-Learning certainly has the potential of improving the quality outcomes of education, but this depends largely on content management, and more importantly, on human commitment to intensively collaborate and network between all participants in the learning process. Technology alone cannot produce any real beneficial effect on knowledge acquisition. Technology without added value is not worth the effort and investment.

e-Learning in a Course on Animal Welfare

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Abstract: According to Gardner (1999) the learning process consists in constructing theories. The student characterizes information that he/she receives in class, and develops hypotheses, predictions and experiments. The immediate and relatively limitless access to educational information provides the possibility to facilitate the process of generating and reviewing theories (perceptions that the students have of the information they receive) in an on-line and continuous manner during a course. Our objective was to analyze how students used course information on the Moodle course management system for a recently proposed course entitled Animal Welfare (course year 2007-08). The course is offered to Agricultural engineers in their third year (5 year degree). Thirty-three students took the course, 21 female students and 12 male students. We analyzed the number and types of entries that the students made (visits, downloads) from 08/11/07 to 16/01/08, as well as their project work and final marks. There was a direct relation between the use of the platform before events related to exams or project work, while between tasks, the use of the platform was reduced. More than 35% of the visits involved checking to see whether there were possible changes in web page content or tasks, without any further actions. There was no direct relationship between the use of Moodle and the final mark. The final mark of female students (6.1/10) was significantly higher (P<0.001) than male students (4.9/10) but female students did not use the Internet platform more than the males. Nonetheless, the male students that failed the course made 72% of their downloads six days before the final exam while those that received a mark above 8/10 made more regular downloads.

How can a Blind Engineer Access the Curriculum?

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Abstract: The arrival of a student who is Blind in the School of Systems Engineering at the University of Reading has made it an interesting and challenging year for all. Visually impaired students have already graduated from other Schools of the University and the School of Systems Engineering has seen three students with visual impairment graduate recently with good degrees. These students could access materials – and do assessments – essentially by means of enlargement and judicious choice of options. The new student had previously been supported by a specialist college. She is a proficient typist and also a user of both Braille and JAWS screen reader, and she is doing a joint course in Cybernetics and Computer Science. The course requires mathematics which itself includes graphs, and also many diagrams including numerous circuit diagrams. The University bought proven equipment such as a scanner to process books into speech or Braille, and screen reading software as well as a specialist machine for producing tactile diagrams for educational use. Clearly it is also important that the student can access assessments and examinations and present answers for marking or feedback (by sighted staff). So the School also used innovative in-house tactile methods to represent diagrams. This paper discusses the success or otherwise of various modifications of course delivery and the way forward for the next three years.

Adoption of Web 2.0 Technologies in Education for Health Professionals in the UK: Where are we and why?

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Abstract: This paper describes the findings about the use of Web 2.0 technologies in the education of health professionals in the United Kingdom (UK). The work is part of a wider study scoping the use of e-learning.

Its objectives were to:Explore issues influencing implementation and use by both early and late adopters. Identify barriers to implementation and good practice, Review the employment of e-learning within curricula representing a range of teaching models.. In phase one, a postal survey obtained data from 25 higher education institutions relating to their uptake and development in this field. A second phase identified four case studies, two from early and two late adopters, reflecting the features identified from phase one. In the case studies, interviews and focus groups with students and staff were conducted to gain a deeper understanding of the issues which were significant to them. The main findings suggested e-learning development and use varies, with a spectrum of employment across the sector. The predominant engagement is with instructivist learning approaches managed through a Virtual Learning Environment with only limited experimentation in interactive learning online. This paper will discuss the findings from the study where they relate to the limited use of Web 2.0 technologies. It will include a discussion on the moral, legal and ethical implications of current and future developments.
Keywords: Web 2.0, survey, case study, e-learning, web based learning

WELL: Web-Based Learner Library for e-Learning 2.0

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Abstract: We suggest a framework for the design and evaluation of a Web-based learner library for eLearning 2.0. Our proposed framework, named WELL (Web-based Learner Library), is intended to guide the design of a learner library that aggregates a collection of Learning Objects (LOs). Key enablers of this framework are: 1) mashup as an assembly architecture of a selection of Web contents using 2) several Web 2.0 social software such as: folksonomy, bookmarks, RSS aggregation and a personalized search application, and 3) a genre-based ontology that guides the development of content and instructs semantic annotation. The merit of WELL is with its theoretical grounds and associated empirical evidence. This paper takes an integrated approach towards the user perspective based on attributes of effective and useful learning experience while also considering various relevant perspectives that motivate eLearning 2.0 such as the content perspective, the pedagogical perspective and the technological perspective. We present findings that demonstrate the feasibility and usefulness of WELL based on our experience with it in an academic setting and discuss preliminary results from empirical evaluation. The paper begins with an introduction to Web 2.0, Learning Objects and eLearning theories. It then continues with a discussion of Learning Objects followed by the description of WELL and its associated genre-based ontology. We continue with a discussion of the evaluation of design that precedes the presentation of selected results based on several evaluation workshops. We conclude with a discussion and suggest directions for future research.
Keywords: e-Learning 2.0, learning object, usefulness, genre-based ontology, social software

How Reproducible Research Leads to non-Rote Learning Within a Socially Constructivist e-Learning Environment

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Abstract: This paper discusses the implementation of a new e-learning environment that supports non-rote learning of exploratory and inductive statistics within the paradigm of social constructivism. The e-learning system is based on a new computational framework that allows us to create an electronic research environment where students are empowered to interact with reproducible computations from peers and the educator. The underlying technology effectively supports social interaction (communication), knowledge construction, collaboration, and scientific experimentation even if the student population is very large. In addition, the system allows us to measure important aspects of the actual learning process which are otherwise unobservable. With this new information it is possible to explore (and investigate) the effectiveness

of e-based learning, the impact of software usability, and the importance of knowledge construction through various feedback and communication mechanisms. Based on a preliminary empirical analysis from two courses (with large student populations) it is shown that there are strong relationships between actual constructivist learning activities and scores on objective examinations, in which the questions assess conceptual understanding. It is also explained that non-rote learning is supported by the fact that the system allows users to reproduce results and reuse them in derived research that can be easily communicated.
Keywords: Statistics education, reproducible research, social constructivism, non-rote learning

Narratives of Student Experience

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Abstract: This article describes how students make sense of their own learning in a project called Affordances for Learning, working with Foundation Degree students at Portsmouth University, and discusses in detail the methodological issues that have informed this work. The research uses narrative methodology to engage with the actual process of learning, by capturing the students' own voice (both literally and metaphorically) as they make sense of their learning strategies and experience, within the gestalt of their stories and sub-stories. The main aim of the research is to provide rich empirical descriptions of what is important to students as they become practitioners or professionals in their field. While the research acknowledges the contribution of current research such as the IPA and its use in the LEX project, this study is informed by different theories, such as applied linguistics and critical discourse analysis, complexity theory, actor network theory and in particular, ecological psychology. The data shows that the process of story telling is itself a process of learning. Students are often engaged in articulating and exploring some of their own tacit understandings of their learning strategies and experiences while they tell their stories. This approach allows us to integrate the researcher's need to construct evidence-based accounts of learning, based on the students' own voice on the one hand, with the student's needs for expressing, articulating, representing, reflecting on, and making sense of their learning on the other hand.
Keywords: Narrative, gestalt, complexity, nested, identity, affordances

The Implications of SCORM Conformance for Workplace e-Learning

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Abstract: This paper explores the impact that SCORM conformance has had on workplace e-learning, with reference to a project in which the author was involved. She and her learning design team were requested to "repurpose" some materials that had originally been designed for face-to-face teaching into SCORM conformant e-learning materials, with the aim of enabling learners' progress to be tracked via a Learning Management System (LMS). In order to fulfil this brief, the learning materials would have to have been stripped of all the collaborative, productive and communicative aspects of their pedagogy. Both the learning designers and management had to engage in a steep learning curve in order to find an alternative solution that was both pedagogically sound and administratively efficient. It is suggested that this anecdote highlights some of the challenges facing the corporate sector in terms of the management of learning content.

To put the issues into context, an overview of SCORM is given, and its aims are described. Some related terminology - Sharable Content Objects (SCOs), LMS and Learning Content Management System (LCMS) – is defined. It is noted that SCORM conformance has two main aims: the ability to deliver content on any Learning Management System, and the ability to track learners' actions and scores when they use the materials. It is argued that, while the higher education sector has chosen to emphasise the first aim, focusing more on the development of stimulating learning content that can be shared across disciplines and across institutions, the corporate sector has emphasised the second aim, focusing more on tracking learners' progress through learning programmes. It is suggested that this is one of the explanations for the continued proliferation of relatively rigid, behaviourist style teaching materials for workplace e-learning. This pedagogical model is considered in relation to the military and programming origins of SCORM, and a number of more innovative approaches to workplace e-learning from the recent literature are discussed.

The paper concludes by arguing that, for corporate e-learning programmes to be successful, all stakeholders need to be included in the strategic decisions, and all stakeholders need to engage in a learning process to understand each others' points of view and explore the available options and their consequences. This study will be of value to anyone who needs to develop SCORM conformant courses, as well as managers who are

charged with overseeing such projects, or developing an organisational training strategy involving an LMS/LCMS.

Assessment of the Growth of Knowledge in Collaborative Learning Networks

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Abstract: "If you have an idea and I have an idea and we exchange these ideas, then will each of us have two ideas…?" (After G.B. Show.) How we can define the term 'growth of knowledge' in case of scholars who share their knowledge and digital resources in support of research, teaching, and public service using the new practices and technologies of Web2.0? Several different uses of the term of 'growth' are identified, some uses concerning individual level and some collective level notions. They are critically reviewed to assess their strengths and weaknesses with respect of collaborative – learning and research – networks. Rational appraisal of strategies for improving knowledge should appreciate different learning objectives. We analyze and develop meta-models to assess complementary technologies from problem-based pedagogies to knowledge and community centered approaches that influence the architectural structure and communication protocols of a learning network (LN). Problems and solutions for a number of simply-parameterized learning scenarios, such as the open nature of the exchange of ideas affecting the evolution of the network of interdependent technologies are presented. Different implementations of collaborative learning networks (Groove based, Moodle, and Drupal) are discussed from the point of view of their architectural advantages.