

ECEL 2007
6th European Conference
on e-Learning

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Edited by

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Trinity College Dublin, Ireland

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Preface

This year is the 6th European Conference on e-Learning (ECEL 2007), which is being hosted by the Copenhagen Business School in Denmark. The Conference Chair is Rikke Orngreen from Copenhagen Business School and the Programme Chair is Karin Tweddell Levinsen from the Danish University School of Education, Copenhagen, Denmark

Pernille Rattleff from the Danish University of Technology with Lars Birch Andreasen from Danish University School, of Education will give the opening keynote address on the topic of "Challenges in Implementing e-Learning at Universities". The second day will be opened with a keynote by Joyce Malyn-Smith from the Education Development Center, Inc. Newton, MA, USA

The main purpose of the Conference is for individuals to present their research findings, work in progress and conceptual advances in many different branches of e-Learning as well as to come together to share knowledge with peers interested in the same area of study.

A key aim of the conference is about sharing ideas and meeting the people who hold them. The range of papers will ensure an interesting two days.

With an initial submission of 155 abstracts, after the double blind, peer review processes there are 77 papers published in these Conference Proceedings. These papers represent research from Canada, Denmark, Germany, Hong Kong, Israel, Italy, Norway, Sweden, United Kingdom, USA.

I hope that you have an enjoyable conference.

Karin Tweddell Levinsen
Programme Chair
KALE@dpu.dk

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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:

Abdallah Al-Zoubi (Princess Sumaya University for Technology, Jordan); Jane Arduis (Stevenson College, UK); Mohamed Arteimi, (7th of April University, Libya); William Ashraf (University of Bradford, UK); [Anders Avdic](#) (Orebro University, Sweden); Joan Ballantine (Queen's University Belfast, UK); Ruth Barrett (University of Hertfordshire, UK); Orlando Belo (University of Minho Campus de Gualtar, Portugal); David Benito (Public University of Navarre, Navarre-Spain); Yongmei Bentley (University of Luton, UK); Amine Berqia (University of Algarve, Faro, Portugal); Daniel Biella (University of Duisburg-Essen, Germany); Radu Bilba (George Bacovia University, Romania); Eric Bodger (University of Winchester, UK); [Willem-Paul Brinkman](#) (Brunel University, UK); Ann Brown (CASS Business School, UK); Mark Brown (Massey University, Palmerston North, New Zealand); Norrie Brown (Napier University, UK); Joan Burgess (University of Winchester, UK); Elizabeth Campbell-Page (Equinexus LLC, Washington, DC, USA); [José-Raúl Canay Pazos](#) (Universidad de Santiago de Compostela, Spain); Sven Carlsson (Lund University, Sweden); [James Carr](#) (University of Newcastle, UK); Maria Celentano (University of Lecce, Italy); [Antonio Cartelli](#) (University of Cassino, Italy); [Satyadhyam Chickerur](#) (Sona College of Technology, India); Barbara Class (University of Geneva, Switzerland); [Lyn Clouder](#) (University of Coventry, UK); Thomas Connolly (University of Paisley, UK); Eileen Costelloe (Institute of Technology, Dublin); (Institute of Mathematics and Informatics, Lithuania); Ken Currie (Edinburgh University, UK); Christopher Douce (Institute of Educational Technology, Open University, UK); Yanqing Duan (University of Luton, UK); Colin Egan (University of Hertfordshire, UK); Ariwa Ezendu (London Metropolitan University, UK); Bulent Gursel Emiroglu (Baskent University, Ankara, Turkey); Bekim Fetaji (South East European University, Macedonia); Tim Friesner (University College Chichester, UK); [Martin Graff](#) (University of Glamorgan, UK); Roz Graham (University of Winchester, UK); David Guralnick (Kaleidoscope Learning, USA); Richard Hall (De Montfort University, UK); Mike Hart (University of Winchester, UK); [Misha Hebel](#) (CASS Business School, UK); Tali Heiman (The Open University, Israel); [Alan Hilliard](#), (University of Hertfordshire, UK); Uwe Hoppe (Bildungswerk der Sächsischen Wirtschaft gGmbH, Chemnitz, Germany); Cathy Horricks (University of Waikato, New Zealand); Stefan Hrastinski (Jönköping International Business School, Sweden); Huseyin Uzunboyulu (Near East University, Cyprus); Akbar Ali Jaffar Ali (Majan College (University College), Muscat, Oman); Amanda Jefferies (University of Hertfordshire, UK); [Paul Jones](#) (University of Glamorgan, Wales); Michail Kalogiannakis (ASPETE Crete, Greece); Jana Kapounova (University of Ostrava, Czech Republic); Harald Kjellin (Stockholm University, Sweden); Jasna Kuljis (Brunel University, UK); Sunaina Kumar (Indira Gandhi National Open University, India); [Maria Lambrou](#) (University of the Aegean Business School, Greece); [Mona Laroussi](#) (Institut National des Sciences Appliquées et de la Technologies, France); Kate Lennon (Glasgow Caledonian University, UK); Karin Levensen (Copenhagen Business School, Denmark); Mariana Lilley (University of Hertfordshire, UK); [Henrik Linderöth](#) (Umeå School of Business and Economics, Sweden); Jörgen Lindh (Jonköping International Business School, Sweden); Ying Liu (Cambridge University, UK); Francis Maietta (Real Thinking Company, UK); Christina Mainka (Napier University, UK); Chittaranjan Mandal (Indian Institute of Technology, India); Stan Marek (Napier University, UK); Augustino Marengo (University of Bari, Italy); [Peter Mikulecky](#) (University of Hradec Kralove, Czech Republic); Mike Mimirinis (Middlesex University, London, UK); Ali Moeini, University of Tehran, Iran; [Pam Moule](#) (University of the West of England, UK); [Minoru Nakayama](#) (Tokyo Institute of Technology, Japan);

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Biographies of Conference Chair, Programme Chair and Keynote Speakers

Conference Chair



Dr Rikke Orngreen

Dr Rikke Orngreen is Assistant Professor in the Department of Informatics, Copenhagen Business School, Denmark UK where as project leader on the CaseMaker Project she collaborates with the CBS Learning Lab. CaseMaker is an e-Learning platform under development, supporting the development of, teaching with and learning with cases.

Her primary interest is within managing, design and use of knowledge systems in an HCI perspective. I.e. information and communication systems ranging from information portals to more complex collaborative e-Learning systems. She has experience from praxis with HCI and Interaction Design (in all its phases), multimedia development as well as a particular interest for case-based development, teaching and learning.

Programme Chair

Dr Karin Tweddell Levinsen has a long professional experience within the fields: pedagogy, content architecture, interaction design and the transformation of learning objectives and material into design of learning applications for cd-rom and web. During her professional carrier, Karin has continued research in e-Learning, and she has recently (May 2006) defended her Ph.D. thesis on collaborative online teaching and learning on university level, based on a long term case study of a Danish master programme. She is now working as a researcher at the Danish University of Education and as a pedagogic consultant at the Danish Technical University Learning Lab.



Keynote Speakers



Lars Birch Andreasen is Associate Professor in ICT and education in the Department of Educational Anthropology at the Danish Pedagogical University in Copenhagen. He participates in the research programme on Media and ICT in a Learning Perspective. He received a PhD at The Danish University of Education in 2004 on the topic of 'Collaboration in Virtual Learning Environments'. He also holds an MA in Cultural Sociology from the University of Copenhagen (1994).

Dr Pernille Rattleff holds a M.Sc. in national economics from the University of Copenhagen (1992) and a Ph.D. in educational studies from the Danish University of Education (2001). From 1997 she has been employed at the Danish University of Education, from 2004 as an Associate Professor. Pernille Rattleff's research is within the field of use of technology-support in educational settings and the implications of the use of technology for learning in the workplace. Pernille has a systems theoretical approach and has particular focus on the communicative aspect of teaching. She is teaching at the university's master programmes of education – aiming to re-think the didactic design of the educations using videostreaming and asynchronous computer



conferencing and is a member of the Research Programme of Media and ICT in a Learning Perspective at the Danish University of Education and actively taking part in the project of establishing the Danish University of Education as an IT-pedagogical frontrunner university.



Dr Malyn-Smith is Director of Strategic Initiatives in Workforce and Human Development for Education, Employment, and Community Programs at EDC, is Principal Investigator for the ITEST (Information Technology Experiences for Students and Teachers) Learning Resource Center. Her professional interests focus on how people develop technology skills and translate those skills into intellectual pursuits and economic opportunity. In addition to the ITESTLRC, Dr. Malyn-Smith

leads several pivotal national and international IT initiatives, including the NSF Advanced Technological Education (ATE) funded project IT Across Careers (ITAC) and EDC's Power Users of ICT Initiative.

Biographies of contributing authors (in alphabetical order)

Nektaria Adaktilou is a PhD Candidate working at the Remote Sensing and Image Processing Group at the University of Athens. She has considerable experience in the area of Remote Sensing Applications and is currently specialized on the production of model educational material about its principles. She has participated in 11 research projects and is the author of 8 journal and conference papers.

Stephanie Allen has extensive experience creating e-Learning solutions for diverse audiences. She has worked as an instructional designer and project manager at several multimedia development companies and Brigham Young University (BYU). Stephanie currently works as the Assistant Managing Director at BYU's Center for Instructional Design, an organization dedicated to improving teaching and learning across the university's campus.

Terry Anderson is Professor and Canada Research Chair in Distance Education at Athabasca University – Canada's Open University. He has published widely in the area of distance education and educational technology and has co-authored or edited five books and numerous papers. Terry is also the director of CIDER – the Canadian Institute for Distance Education Research (cider.athabascau.ca) and the editor of the International Review of Research on Distance and Open Learning

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A Learning Platform for the Introduction of Remote Sensing Principles and Applications: A Pilot Phase

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Abstract: The purpose of this study is the design, development and evaluation of a learning platform for satellite remote sensing principles and applications at an introductory level in Higher Education Institutions in Greece. Satellite Remote Sensing refers to sensors mounted on satellite platforms, that record the amount of energy reflected from or emitted by the Earth's surface. It is an interdisciplinary thematic area that combines principles from physics, chemistry, informatics, etc. Remote sensing is a technique that has played a vital role in providing data concerning the impact of human activities on the environment, which is in turn needed to make informed decisions. In the learning platform proposed, the emphasis is put on the learner rather than on technology and the learning media. The learning environment is interactive and supports collaborative experiences. Methodologies and didactics are a primary concern of the study, while the evaluation process constitutes one of its key elements. During the process, a series of features are taken into account, starting from the function and usability of the overall system to how these features are integrated to facilitate learning and what principles are applied to guide the way the learning tool works. During the first phase of the formative evaluation the platform has been assessed for its technological and pedagogical aspect, based on a series of indicators. These indicators describe and characterise features and services provided by the platform. The learning tool will be shortly integrated in the University curriculum for one period of the specific course, in order to collect feedback from students and experts so as to make all the necessary adjustments and follow it up in a second year to validate decisions made. Meta-evaluation will be applied in order to make sure that learners' and experts' comments and experience are incorporated into continuous improvement and development of the course resources.

Keywords: e-Learning platform, remote sensing, course design, evaluation, collaborative learning

Who Needs a Need Analysis?

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Abstract: Many organizations begin designing and developing e-Learning solutions without conducting a needs analysis. Often this occurs because the e-Learning sponsors or designers naively believe that they understand the learners and the instructional context. Later, when an e-Learning solution isn't implemented or when the learners do not engage in the learning experience, it becomes apparent that the e-Learning developers should have taken the time to conduct a needs analysis. The answer to the question: "Who Needs a Need Analysis?" is everyone.

This paper demonstrates the value of needs analysis by showing and explaining examples of effective e-Learning solutions that were drastically changed from the originally-requested outcome based on needs analysis data. It also identifies and introduces readers to a number of tools that can be easily implemented to conduct effective needs analyses.

Keywords: Needs analysis, e-Learning design, instructional design, learner analysis

Groups, Networks and Collectives in Social Software for e-Learning

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Abstract: Understanding the affordances, effectiveness and applicability of new media in multiple contexts is usually a slow and evolving process with many failed applications, false starts and blind trails. As result, effective applications are usually much slower to arise than the technology itself. The global network based on ubiquitous Internet connectivity and its uneven application in both formal education and informal learning contexts demonstrates the challenges of effective use of new media. In this paper we attempt to explicate the effective use of the Net for learning by differentiating three granularities of networked social organization. These are defined as the Group, the Network and the Collective. The paper explores the consequences of this perspective, observing that each has both strengths and weaknesses in different contexts and when used for different applications.

Keywords: Social software; web 2.0; e-Learning

Podcasting in an Advanced Computer Science Module: Supporting Constructive Learning.

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Abstract: This paper reports on a project to determine firstly, how podcasting was being used to support students following a final year module in Computer Science. Evidence is provided that challenges some of the common assumptions the University of Hertfordshire regarding audio podcasting, notably that of mobility. The second part of the paper reports on an initiative to use podcasting more constructively in the module to provide reflective commentaries on group project work to be submitted by groups online. A brief informal comparison is reported in the paper between the group audio reflections and those submitted more traditionally on paper by individual learners. Learners reported that enjoyed producing the audio and there was evidence of deeper engagement in the process. This might have been due to increased motivational from the audio creation process or possibly because other members of the group were involved in the production of the audio reflections and would view the combined result.

Keywords: Podcasting, audio files, constructive learning, reflection

Learning and Teaching Mathematics on-Line: Which are the Main Difficulties?

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Abstract: Why has the full potential of Internet for learning and teaching Mathematics not been exploited? In the present paper we outline the main problems put into evidence by our experience in using e-Learning instruments for teaching Calculus in a Computer Science Degree course and describe some possible solutions. There is no doubt that learning Mathematics is effective only when students are actively involved: this means that practice has a relevant role. We wondered which kinds of exercises are more effective in teaching Mathematics on-line. Surely, practicing in a virtual environment is quite different from attending classroom lessons and there are several further difficulties in designing and implementing exercises for on-line use; therefore, we try to make some conjectures about features that make exercises attractive and, at the same time, instructive. Integrating Virtual Learning Environment (VLE) with Computer Algebra System (CAS) partially solves problems about authoring mathematical questions. Unfortunately, some questions about interoperability and reusability arise; consequently we took into consideration IMS Question & Test Interoperability (QTI), discussing the difficulties encountered in following the lines of its specifications for setting mathematical questions.

Keywords: Mathematics, e-Learning, computer algebra system, computer-aided assessment

Measuring Success in e-Learning – a Multi-Dimensional Approach

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Abstract: In 1999 Northumbria University published a strategy document entitled “Towards the web-enabled university”. This prefaced an assessment of need and of available platforms for developing online teaching and learning which, in turn, led in 2001 to the roll out and institution-wide adoption of the Blackboard Virtual Learning Environment (VLE) now referred to as our eLearning Platform or eLP. Within a very few years we had over 90% take-up by academic staff and the eLP had become integral to the learning of virtually all our students. What has always been relatively easy to measure has been the number of users, frequency of use, number of courses, levels of technological infrastructure, etc. However, with the publication of the Higher Education Funding Council for England (HEFCE) e-learning strategy in 2005 it became apparent that such quantitative data was not particularly helpful in measuring how the university matched onto the 10-year aspirations of that document and its measures of success.

Consequently an on-going exploration was embarked upon to try to measure where we were and what we should prioritise in order to embed e-learning, as envisaged within the HEFCE strategy. This involved a number of key approaches:

- The measures were broken down into manageable sizes, creating 16 measures in all with descriptors for “full achievement” through to “no progress to date” with suggested sources of information which would support the description. A series of interviews with key staff were set up in which they were asked to rank where they felt the university stood against each measure and what evidence would support their views.
- An academic staff survey was developed on-line which invited staff to explore a number of statements based around the HEFCE criteria and express degrees of agreement. This was followed up by a range of face-to-face interviews.
- An online student survey was developed and students were asked to express degrees of agreement with these. Student responses were followed up with an independent student focus group exploring issues in greater depth.

The outcomes of the three approaches were then combined and an interim report prepared which identified strengths and areas for further development. Some of the latter are already being addressed. Subsequently, the university has joined phase 2 of a national benchmarking e-learning in Higher Education exercise, running from May to December 2007, supported by the Higher Education Academy (HEA) and the Joint Information Systems Committee (JISC). During this exercise we are engaging in a deeper exploration against a wider set of criteria, based upon the “Pick & Mix” (Bacsich, 2007) methodology. Pick&Mix comprises 20 core criteria and the option of a number of supplementary criteria. Through this approach we will be able to set a baseline for where we currently are and it will allow us to revisit criteria later to measure our progress in those areas we identify for development.

This paper shares methodologies used, identifies key outcomes, reflects upon those outcomes and offers readers the opportunity to reflect upon their own institution’s e-learning practice.

Keywords: Measuring, benchmarking, methodology

Reusability of 2D and 3D Course Content for Replicated Experiments in Virtual 3D Environments

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Abstract: The production of 3D learning content is often expensive, especially if realistic models, non-deterministic simulations, and special user interaction are required. This paper reports on experiences and conclusions in a project concerned with the historical replication of interactive key experiments in psychology. Utilizing a new generalized synthesis model for the replication of virtual laboratories, interactive virtual experiments and simulations are described by utilizing standardized modeling languages or formal mathematical methods. Thereafter, the interaction and simulation logic is embedded in a 2D or 3D spatial model description. Production costs have been reduced by 50-70% by reusing existing assets, simulation and geometrical models, and predefined parameterized geometric layouts.

Keywords: Replication of psychological experiments, virtual laboratories, 3D environment, educational multimedia

The Enhancement of Student Engagement by Utilising a “Minimal Tracking” Technique

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Abstract: The advent of e-learning provides us with a range of new ways to track the learning activities of our students, alongside well-established ways from the past. Here we explore how some simple tracking mechanisms can be used to predict a student’s eventual performance. The intention is thereby to provide the student and tutors with early indicators that may predict poor performance or withdrawal from the course. Previous investigations have concentrated upon attendance as predictor of performance. We have repeated this approach in a somewhat different subject from that used in the earlier investigations, and have also found a strong correlation between attendance and performance. Another possible performance indicator may be derived from interactions with a Virtual Learning Environment. Most studies of such interaction have looked at these in detail to gain understanding of how online forums contribute to the learning processes. For the purposes of performance prediction, we have chosen a simple measure, the total number of interactions, and have found this also to be correlated with performance. This raises the possibility that a simple measure of activity (readily obtainable from most VLEs) might be used in managing courses to achieve overall better student performance and higher retention rates.

Keywords: Tracking, attendance, VLE interactions, performance, retention, blended learning

How to Score With e-Learning

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Abstract: This paper describes the process of evaluation of e-learning in a small specialist Higher Education (HE) college in the UK. The college introduced a Virtual Learning Environment (VLE) approximately eighteen months ago supported by the college e-learning advisory group. Following the successful introduction and usage of the VLE the advisory group highlighted the need to evaluate the college e-learning provision and engage with the Higher Education Academy (HEA) e-learning benchmarking project. The HEA project enabled institutions to select a methodology from a range of e-learning benchmarking methodologies and be supported in the use of that methodology by a consultant. The methodology chosen by the advisory group was Pick and Mix. This paper goes on to discuss the selection of the Pick and Mix methodology, the context in which it was used and how the framework and qualitative techniques were particularly suited to the college and its e-learning provision. The limited time-frame of the project is discussed in relation to the “institutional readiness” of the college to engage with the evaluation process. Practicalities of the evaluation process and “scoring” of the results are described. The paper concludes with a description of future directions which may be taken in “Subject-based” E-valuation techniques.

Keywords: e-Learning, benchmarking, virtual learning environment, pick and mix, practice-based

A Nurse Prescribing Programme Incorporating e-Learning

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Abstract: In order to become a UK Nurse Prescriber, a First Level Registered Nurse must undergo an approved University based educational programme, which consists of theory, and a period of practice supervised by doctors. The Nursing and Midwifery Council (NMC) requires nurses undertaking this programme have some formal university attendance and to be assessed in practice. Successful students are recorded on the national NMC register. Since October 2004, the University of Winchester has used blended learning incorporating e-learning for the delivery of the Nurse Prescribing Programme using online material developed by Emap Publishing in conjunction with the University of Stirling. This paper discusses the effectiveness of the programme and the evaluation of the initial six cohorts (*127 students*) who studied the Nurse Prescribing Programme undertaken by e-learning through the University of Winchester.

Keywords: Nurse prescribing, evaluation, e-learning, Designated Medical Practitioner

Is a Blended Learning Approach Suitable for Mature, Part-time Finance Students?

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Abstract: Blended learning is a pedagogy that is sometimes heralded as the answer to some of the problems which part time students face. Creating a module for part-time students with some e-learning elements is time consuming and resource intensive. Therefore it must be demonstrated that the investment in such innovations will benefit the students and create wider learning opportunities in the most effective manner. A small investigation has been conducted which has looked at the learning needs of part-time finance students at The University of Winchester to see whether a blended approach would have benefited their studies. The results of this investigation have been used as the basis for developing the course to allow a more blended style. This paper attempts to outline how the course was designed and to do a preliminary analysis of the use of blended learning for part-time mature finance students.

Keywords: Blended-learning, finance, part-time, mature-student, e-learning

From Socio-Technical Approach to Open Education: MIS and ICT for the Definition of new Educational Paradigms

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Abstract: The paper reports first of all the author's hypothesis for the revision of the socio-technical approach when special MIS (Management Information System) are introduced in corporate, organizations and in more general contexts. The above idea emerges from the results of some experiences described in the text, where the introduction of Information Systems (supported by ICT) both for the creation of communities of practices and professional communities and for their growth and evolution are discussed. The experiences reported in the paper are based on the planning and carrying out of web sites having the features of online information systems. They are concerned with two special situations, students attending palaeography university courses and teachers involved in an after degree master course. Notwithstanding the different contexts the two situations have a common feature which can be summarized as follows:

ICT and especially web technologies have been used to implement working and/or studying processes,

People had to follow the new procedures to accomplish their work.

All the discussed situations have other common features but, for the importance they have in the finding of a new teaching paradigm, only the common effects they induced on the individuals and on the communities involved in the experiences will be analyzed here in a greater detail.

The description of the main ideas in the most relevant educational philosophies and the comparison of their features with those from the new income, the "implementation of practices by means of the ICT", lets the author state that a new educational paradigm has been found. Like augmented reality and simulation in virtual environments the new paradigm is based on the use of the ICT; differently from the other ones, which produce an increment of the data from reality or model reality to create learning situations, the new paradigm strongly involves people and communities in the analysis of the processes and in the development of learning strategies. At last the definition of open education is proposed. It is the consequence of the adoption of the open source software for the systems the author used in the different experiences, but it is also a paraphrase of the already accredited definitions like open source, open learning etc. The open appellation in open education is derived from the features of the TETIS platform (i.e., one of the systems described in the experiences) and means that every actor in an educational process can access and manage his/her personal data, but can also access synthetic data (when authorized) from the other actors. The students in open educational procedures can better understand processes' evolution, can compare different processes to define learning and studying strategies and have more chances to become the right citizen in the knowledge society.

Keywords: Communities of learning, communities of practice, e-learning, ICT, implementation of practices by means of ICT, MIS, teaching paradigm, open education, socio-technical theory

Applying Object-Oriented Principles to the Analysis and Design of Learning Objects

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Abstract: This paper forms part of a broader work examining the application of Object Oriented (OO) principles to the design and development of e-Learning material and its use within Learning Content Management Systems (LCMS). The preceding qualitative research has demonstrated the benefits of creating an OO methodology for the analysis, design and development of Learning Objects (LOs). Such benefits mainly include the high reusability, adaptability, standardization and time and cost effectiveness of LO development and use.

This paper focuses on defining a model for Object Oriented Learning Object (OOLO) analysis and design, as a first step towards a more extensive OO e-Learning methodology that will extend to OOLO implementation and use. The Unified Modeling Language (UML) notations are used to represent the relevant OO concepts, such as class structure, inheritance, aggregation, polymorphism, etc. The notations may be extended to reflect the specific needs of LOs. The main idea concentrates on developing a predefined hierarchy of OOLOs, which will be something similar to the Application Programming Interface (API) of OO languages such as Java. The existing OOLOs can be used as they are or they can be extended, through inheritance mechanisms, to create new ones. The OOLOs can then be combined using aggregation or other relationships to design, on the fly, larger learning units such as courses.

Planned further work includes the definition of an appropriate language (probably a hybrid OO and markup language) for implementing the OOLOs and the relationships between them, as well as relevant tools to enable the design and development of e-Learning content incorporating the proposed methodology.

This work is expected to enable e-Learning course developers and instructors to easily design and create standardized, highly reusable and adaptable e-Learning material, by extending and assembling existing LOs that encapsulate content, metadata, standards and operations, minimizing in this way the need to get involved with time-consuming and repetitive activities such as application of standards and metadata entry.

Keywords: e-Learning design methodologies, object-oriented learning objects, UML, learning object inheritance hierarchies, metadata inheritance, learning object assembly

Ontology-Based Learning in Project Management

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Abstract: This paper presents the SinPers system, a web based learning environment in project management, capable of building and conducting a complete and personalized training cycle from the definition of the learning objectives to the assessment of the learning results for each learner. The SinPers system is developed within the SinPers project. The SinPers project started in 2005 and it is being financed by the Romanian Ministry of Education and Research, CEEEX grant no. 82/2005. Project SinPers is run by the National Institute for Research and Development in Informatics, Bucharest, (www.ici.ro) and the Academy of Economic Studies, Bucharest, (www.ase.ro). SinPers project concentrates both the market demands in e-learning for adults (mainly project managers from different activity domains), and the capitalize the emerging concepts and technologies regarding Internet usage, man-computer interaction, multimedia technologies, knowledge management, according to the ICT FP7 – *Information & Communication Technologies* objectives. The system is proposing to solve some present limitations of the e-learning systems, especially those referring to the flexibility / adaptability of the learning process assisted by the computer and to the promotion of the traditional didactical methods. At the end of the project in 2008, the SinPers system will be accessible on the web, as a self-training portal. This paper focuses on the organization of project management content according to the course ontology developed by the author. Applying the ontology learning approach for the project management domain requires adopting a standard for the domain concepts and project managers competencies. This standard is ICB – International Competence Baseline of the IPMA – International Project Management Association. Besides the main objective of content personalization, the ontology based approach adopted in the SinPers project presents the following advantages: unitary interpretation of the content structure by the different users categories, the explicit specification of the domain, facility of reusing the knowledge domain and a critical analysis of the knowledge domain.

Keywords: Project management, ontology, advanced learning technologies, knowledge management

A Model Driven Architecture and Toolset for Building Immersive Software Engineering Teaching tools

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Abstract: There is considerable evidence that learning is enhanced within immersive environments which allow students to experiment with the concepts and techniques to be learned, computer simulations providing one such mechanism. Such techniques have been shown to have value when the material to be learnt is remote, distributed, dangerous or expensive to produce for the classroom. Teaching the concepts underlying software engineering practice and database use faces specific challenges since the concepts being taught are highly abstract and the kinds of commercial tool which use the concepts deliberately hide the techniques being taught from their users in order to facilitate use. Turning a design document into a program or optimising a database query are two examples of this.

We have constructed teaching tools in the form of immersive environments which allow students to work directly with the structures underlying programs and data storage, as well as the processes underlying software and database development. The tools allow the student to edit a set of structured documents, either textual, e.g. a program, or graphical, e.g. an ER diagram. The programs permit the students to edit documents and explore the relationship between two documents and the processes which transform one into another.

Based on our experience of building tools such as these, we have extracted a generic model of structured document environments. The model describes the learning environment as a set of manipulable documents displayed on the screen and further describes the documents as structured collections of fragments, the correspondences between the fragments in the documents and the processes which manipulate the documents. For instance, we can describe ER diagrams and SQL data definition statements, relate fragments of one with fragments of the other, and describe the process of turning an ER diagram into a set of SQL Statements. Using this model we have constructed a toolset which supports the construction of the teaching tools without the need for programming and a prototype development environment to use the toolset.

The paper describes the model and prototype and concludes by considering the need for a deeper model of the underlying concepts so that the relationship between document types can be more cleanly established. It concludes that the technique should be applicable to any domain describable by a set of documents and proposes a theory of immersive environments of this time.

Keywords: Virtual learning environments, immersive environments, software engineering, model-driven

Exploring Virtual Opportunities to Enhance and Promote an Emergent Community of Practice

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Abstract: The paper explores the use of an online space which creates additional opportunities for communication and the provision of mutual support for a geographically dispersed community of practice. It examines strategies for making online participation interesting and attractive for participants. The effectiveness of the online space in adding to a sense of community for participants will be explored by evaluating online discussions over time and direct elicitation of participants' views using a questionnaire. A key part of the paper is to explore theoretical concepts relating to Communities of Practice and in particular to Emergent Communities of Practice. The community in question relates to the Centre for Inter-Professional e-Learning (CIPeL), a Centre of Excellence in Teaching and Learning (CETL), funded by the Higher Education Funding Council in England (HEFCE). It is based on a collaboration between Coventry University and Sheffield Hallam University. The project comprises fourteen core members, including two Learning Technologists, nearly forty Secondees who create Learning Objects for CIPeL, critical readers and student interns. This adds up to sizeable community of practice. However, with the exception of core members, participation in the project is on a part-time basis and members work in geographically dispersed places. It is therefore difficult for members to have a sense of community and benefit from each other's expertise and support. The solution is a strategic use of an online space, including the use of focused discussion topics, the opportunity to share early versions of Learning Objects produced by Secondees for exploration and comments by peers and the sharing and evaluating of relevant Internet resources. The strategy includes exploiting face-to-face encounters of members for the purpose of promoting the online space by showcasing recent developments within it and if possible, inviting members to contribute to online debates at such events. The underlying philosophy is that online contributions need to be boosted in the face-to-face context in order to make the virtual space interesting in the more solitary context of an individual's office or home. A second strategy is to periodically send out a short 'newsletter' to alert members of new elements in their Community Site, in order to encourage them to visit the online space and feel invited to participate. The research raises several key questions: Why does it require a great effort to motivate members to participate in this virtual community when it is potentially to their benefit to do so? This is not just an emergent community of practice; this community is engaging in innovative practices in more sense than one: Inter-professional learning is a new and emergent field and in an important sense, so is the practice of designing learning materials in the form of re-usable learning objects and similarly, teaching by utilising learning objects. Can the theory of communities of practice and emergent communities of practice shed light on these complex and inter-related issues and help us design more effective learner community support in the future?

Keywords: Communities of practice, learning objects, online design, online collaboration, community development support

Visualizing Interaction Traces to Improve Reflexivity in Synchronous Collaborative e-Learning Activities

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Abstract: EMediatheque is a collaborative, synchronous e-learning platform developed by eLycée S.A.S, providing various collaborative tools such as shared whiteboards, instant messaging, shared web browsing, synchronous multimedia viewing, etc., on top of a multi-party video-conferencing system and a highly configurable UI. This platform allows students and teachers to meet and communicate in virtual classrooms, and perform collaborative pedagogical activities involving the use of various sorts of resources (audio, video, Web, etc.) and document co-construction.

The originality of eMediatheque is that it was designed to support the tracing of meaningful user interactions with the platform (actions perceivable by the user), allowing to build a rich and contextual usage history that we refer to as the primary trace. It also comprises a real-time trace visualization system that transforms and abstracts the primary trace (with respect to the ongoing activity) into a more understandable form to the user, in order to provide a reflexive perception of its own activity. These visualized traces support interactive parameterization (filtering, merging, etc.), may be shared and confronted, and provide shortcuts for generic operations (undo/redo, replay, etc).

In showing its own trace to the user, we expect to provide a reflexive dimension to the activity in order to improve the pedagogical process. In this paper, we discuss practical issues of the use of traces in such a context: how to build a trace-enabled collaborative platform; how to set up interactive trace visualization. We also discuss the potential benefits regarding reflexivity and awareness, and the main difficulties in building up a visualization that makes sense for the student or the teacher in the context of his or her pedagogical activity.

The discussion is illustrated by a concrete application: a simple activity where two students co-translate a cartoon and can use their traces to be aware of their past actions.

Keywords: synchronous collaborative e-learning, virtual (digital) classroom, trace based-system, interactive trace visualization, reflexive activity

Using Web 2.0 Technologies to Engage With and Support the net Generation of Learners

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Abstract: Web 2.0 social software offer new pedagogic opportunities to support and empower the Net generation of learners to create their own personal learning agenda and dynamic learning environments. This paper presents learners experiences of using Web 2.0 social software, such as videos and podcasts linked to Wiki contributions in a collaborative online learning environment. In addition to, a private blog which was provided for learner reflections and the University Managed Learning Environment (MLE): which included a private group area and a discussion forum to support the group based assessment. Within the Wiki environment, learners were presented with the learning design by the tutor using text, short videos and podcasts created using Web 2.0 technologies. Learners were given a choice in selecting the most appropriate technology to complete their individual and group tasks and to present these as a group linked to Wiki contributions.

This paper outlines the setting up and the implementation of a multi-mode assessed collaborative student learning environment and identifies the different approaches used by learners. Evidence is provided from learners' contributions to the core task captured through the Wiki, and in the form of illustrations of Wiki contributions and images of video recordings. Learner attitude was measured using a pre and post test questionnaire and by students own reflections of their lived experiences captured using a blog.

There are some interesting findings including the learners preferred technology for learning, and alternative technologies used which were not provided in this study. In addition, findings are presented relating to what learners did with the different technologies, including student approaches to learning, how the technologies helped or hindered learning and learner attitude to the use of the alternative technologies. These findings will add to the debate on how we engage with and support the Net Generation of learners.

Keywords: The net generation, collaborative learning, web 2.0, social software, wiki, social constructivism

Engaging the YouTube Google-Eyed Generation: Strategies for Using Web 2.0 in Teaching and Learning

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Abstract: YouTube, Podcasting, Blogs, Wikis and RSS are buzz words currently associated with the term Web 2.0 and represent a shifting pedagogical paradigm for the use of a new set of tools within education.

The implication here is a possible shift from the basic archetypical vehicles used for (e)learning today (lecture notes, printed material, PowerPoint, websites, animation) towards a ubiquitous user-centric, user-content generated and user-guided experience.

It is not sufficient to use online learning and teaching technologies simply for the delivery of content to students. A new "Learning Ecology" is present where these Web 2.0 technologies can be explored for collaborative and (co)creative purposes as well as for the critical assessment, evaluation and personalization of information.

Web 2.0 technologies provide educators with many possibilities for engaging students in desirable practices such as collaborative content creation, peer assessment and motivation of students through innovative use of media. These can be used in the development of authentic learning tasks and enhance the learning experience.

However in order for a new learning tool, be it print, multimedia, blog, podcast or video, to be adopted, educators must be able to conceptualize the possibilities for use within a concrete framework. This paper outlines some possible strategies for educators to incorporate the use of some of these Web 2.0 technologies into the student learning experience.

Keywords: Web 2.0, e-Learning, YouTube, blog, Wiki

VETlife – Continuing Veterinary Education Arranged by e-Learning

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Abstract: By German law continuing veterinary education has to be organised by the universities and the veterinary associations. The University of Veterinary Medicine Hanover, the Centre of e-Learning-Excellence, the Association for e-Learning Business and the Veterinary Association in Lower Saxony decided to cooperate to establish new structures for the use of e-Learning-techniques in continuing veterinary education.

First a survey was carried out to learn about the veterinarians' use of computers and need for e-Learning. About 4000 veterinarians in Lower Saxony were informed about the survey by the German veterinary journal. They could complete the questionnaire online, per fax or per mail and 212 veterinarians responded. A Non-Response-Bias-Test showed no significant differences between early and late respondents and proved an adequate sample.

The major ways of training were journals (92.45%), congresses (81.13%) and the internet (52.83%). The number of continuing education activities veterinarians are involved in per year varies (one or less 14.62%, two 27.83%, three 23.11%, more than three 29.25%). Reasons for not attending an interesting event are too expensive fees (72.17%) or travel costs (53.77%), too long journeys (41.51%), too little time for the family (35.38%) or the need for a practice stand-in (21.23). An alternative could be the use of e-Learning: 42.45% would definitely use this learning method, 34.91% would like to try it and only 10.85% do not want to use it at all. So far only 26.42% have used e-Learning.

As a first result an e-Learning module about dealing with an epizootic crisis on the example of the avian influenza was created by the University of Veterinary Medicine Hanover with several other partners and supporters. It is distributed free of charge by the internet for all German veterinarians.

The next step of the cooperation is the creation of an interprofessional e-Learning-platform for all occupation groups dealing with veterinary medicine (including veterinary nurses, food and meat inspectors, agriculturists, etc.).

Keywords: Veterinary medicine, interprofessionalism, continuing education, e-Learning-platform, cooperation, target group analyses

Using a Quality Framework to Evaluate e-Learning Based Experiences

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Abstract: Nowadays, Universities and other higher education institutions invest a lot of resources to integrate Information and Communications Technologies (ICT) in their learning processes. In particular, e-Learning platforms have been incorporated to support the traditional campus-based activities. However, the application of these platforms is not enough to improve learning and teaching processes. Innovative methods are required to design and evaluate ICT enhanced learning experiences that contribute to change the traditional face-to-face teaching in this context. This work is focused on evaluating this kind of experiences and more specifically, on providing procedures to guide their evaluation when e-Learning platforms are used.

Different approaches to evaluate the impact of e-Learning platforms have been developed. A first approach is based on models that represent specific teaching and learning processes concerning ICT enhanced learning environments and the elaboration of frameworks to evaluate their impact on these processes. A second approach focuses on the evaluation of ICT enhanced learning environments regardless of the learning processes in which these environments are used.

The proposed evaluation method is based on the specification of learning processes supported by a “quality management” framework that allows the evaluator to organize and control the different steps or workflows during the lifecycle of a learning experience based on e-Learning platforms. The twofold approach used in the presented method helps to elaborate evaluation mechanisms (e.g. teacher/student questionnaires) adapted to a specific learning context (e.g. a course or a lesson about a technical subject) and systematically structured according to the quality management of e-Learning-based experiences (e.g. a “blended-learning” course technique). The evaluation results can be checked using criteria such as the efficiency or the effectiveness (e.g. academic grades) to validate the method. A case study has been developed during the 2006-2007 academic year for the method validation in the context of an e-Learning experience in an Operating Systems course under the Poliformat platform.

Keywords: e-Learning based experience, evaluation method, quality framework, e-Learning platform

Collaborative Online Training Methods in Global Production Flow

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Abstract: Large companies may reinforce their competitiveness in the world market by transferring their internally developed know how and working processes to Small and Medium sized Enterprises (SME) that are recipients of outsourcing contracts within the global production flow. Lack of adequate quality assurance systems and know how transfer guidelines have led to unexpected failures and the requirement for expensive repair procedures. EU directives, harmonized standards, and new training methods promote new production systems where outsourcing of knowledge-based production is frequently used as a necessary process. The regulated European manufacturing industry enhances a new market for trans-national on the job know-how competence transfer where effective, possibly remotely located in-company skills upgrading processes and mentoring/tutoring solutions constitute critical business activities within successful production frameworks. Production standards, guidelines and diplomas are identical. However, know-how and expertise associated with the new production technologies vary enormously throughout Europe when obtained on the job through the daily work. Formalized methodologies for the transfer of on the job knowledge have not been developed due to lack of semantic “interoperability” in the context of technical communication. This paper outlines a model solution for: i) the deployment and validation of new model(s) for transfer of competence and know-how in industry, by mixing learning design, collaborative online learning methods, and industrial video content delivery solutions, and ii) utilization of a new pedagogical framework for organising, delivering, and deploying effective production technology transfer processes that are closely connected to industrial production. Finally, a short review is given of the current situation for use of video in distance education in general, and in-company training of adult students in particular.

Keywords: Collaborative learning, in-company training, video technology, e-Learning, blended learning

High Quality Video as a Just-in-Time Teaching and Learning Tool

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Abstract: Recent advances in industrial streaming video solutions ensure that high quality video may be shared across Europe, offering joint access to learning resources from commercial hosting suppliers to thousands of simultaneous teachers and students. Typical examples of video based learning resources include instructional oriented video solutions, displacement of task solution processes, illustration of (central) concepts, documentation tools for educational activities and learning processes, as well as demonstration and application of tools, methods, and processes. Video act as a visual demonstration and dramatization tool that may be used on a just-in-time basis, presenting “vivid illustrations” and visual evidence that may make up an emotional appeal. This paper describes the experiences and results obtained by using such video material in a pedagogical framework that utilize blended learning methodologies, including i) on-site training, ii) e-learning solutions, iii) high quality video resources, and iv) the recently developed activity based training methods where theoretical and practical training follows each other closely according to an industrial production process flow approach. Adult students from mechanical industry (in Norway, Slovenia and Romania) have been model user groups. The following research results have been obtained: i) Theory become more interesting due to the close relation to practical tasks, ii) Students, which usually is not interested in theory, start asking for more theory when it helps them to understand practical problems and complex physical behaviour, iii) Activity based training is a convenient methodology, iv) Short, targeted streaming video improve the learning and motivation for the students, v) The teacher must spend more time on preparation before the lessons, e.g. to enhance two-way communication with the students, vi) The teacher must adopt his training methods, e.g. presentation techniques, to the live digital multimedia format, and vii) Train-the-trainer courses in combination with some coaching, are very useful for the teachers.

Keywords: Activity based training, in-company training, video streaming, e-learning, blended learning

E – Motional Learning in Primary Schools: FearNot! An Anti-bullying Intervention Based on Virtual Role-play with Intelligent Synthetic Characters

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Abstract: Addressing the problems of bullying in schools, this paper presents a novel and highly innovative pedagogical approach building on the immersive power of virtual role-play. Educational role-play is widely accepted as a powerful instrument to change attitudes and behaviour, but faces some difficulties and disadvantages when applied to sensitive social issues in the classroom. This paper shows how the FearNot! software application, developed within the scope of the EU-funded project eCIRCUS (Education through Characters with emotional-Intelligence and Role-playing Capabilities that Understand Social interaction) uses virtual role-play and autonomous agents to provide children aged 8 to 11 with the opportunity to visit a virtual school environment populated by 3D animated synthetic characters that engage in bullying episodes.

The characters' actions and the storyline are created as improvised dramas by use of emergent narrative, resulting in unscripted and highly believable interaction experiences for the learner. While the students are spectators to the bullying episodes that unfold among the FearNot! characters, the victimised character starts a conversation with the student in between the episodes, describing their experiences with bullying and how they feel as a result to it, and asking the student for advice. The aim of this approach and particularly of this interaction sequence in between the virtual bullying episodes is to sensitise primary school students for the potential problems that victims of persistent aggressive behaviour are facing: By triggering an empathic relationship between learners and characters, learners understand and vicariously feel into the plight of the victimised character. Empirical evidence from bullying research implies that bullies are regularly reinforced by bystanders that witness the bullying and turn their attention to it, but do not actively intervene to end it (Craig & Pepler 1996; Lean 1998; Salmivalli 1999; Hawkins Pepler & Craig 2001). Hence, this intervention strategy targets these bystanders to stand up to the bully and help the victim, as a consequence of the heightened awareness and sensitivity to the grave consequences victims face.

Preliminary evaluation results indicate that the children were willing to immerse themselves in the virtual drama and that they empathically engage with the characters, attributing a range of emotions to the characters depending on the events that happen within the respective scenario. A planned long-term intervention in school in the UK and Germany covering several interactions with the software over a 10 week period of time is planned for late 2007.

Keywords: Virtual environment, social and emotional learning, synthetic characters, bullying

GISELE: A System Supporting the On-Line Creation, Deployment and Learning of GIS Tools

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Abstract: Many distance education tools concerning the usage of advanced applications aim at bridging the gap between proposed solutions and domain expert users, not familiar with computer science technology. This goal may be achieved by providing environments where the user is focused on learning content, easily invoked by proper functionality, hiding the underlying framework.

This approach is particularly useful in the case of Geographic Information Systems (GIS). Here, the double nature of data requires advanced tools for handling geographic phenomena, whose implicit complexity notably affects their effectiveness. Indeed, learning GIS functionality and spatial data structures requires many efforts and many GIS applications fail in their expectations, due to the lack of a proper users training.

In this paper, we present a tool, named *GIS Enhanced Learning Environment (GISELE)*, which supports the on-line teaching of application for GIS, by allowing teachers to create examples of MapServer-based applications. Generated applications can expose functionalities which may range from simply navigating a map to querying descriptive components or locating data of interest. These applications are then embedded in lessons and can be used to explain the involved functionalities in a gradual way. *GISELE* enables both to show how GIS applications are typically invoked and to describe the expected results.

GISELE supports the creation of the distance lectures by means of facility to synchronize lectures and slides, video and the table of contents. In particular, we propose a lecture template in which the video shows the operations the teacher performs with the selected resized MapServer-based application. When established by the teacher, a portion of the screen shows an active version of the application explained during the lecture and students are invited to use it.

Thus, *GISELE* supports a “learning by doing” didactic methodology: theory is no longer separated from practical experiences, which are performed in a controlled environment.

GISELE has been implemented as a MOODLE plug-in. A streaming-server for deploying video lectures and a GIS application server for running MapServer have also been integrated.

Keywords: Geographic Information System, distance lecture, MOODLE, authoring

Using Learning Styles to Enhance an E-Learning System

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Abstract: Nowadays there are new educational scenarios emerging along with technological breakthroughs in Information Technologies (IT), which allow us to modify the traditional teaching methods. Due to this situation, we ought to think about satisfying the growing educational needs using new didactic resources, new tools which will make teaching-learning environments more flexible, adding electronic media provided by communication networks and by informatics.

Regarding learning, we find that not everyone learns the same way. Each person has a particular set of learning abilities, thus we can identify the preferences that constitute his or her learning style. Knowing our learning styles helps us both, teachers and researchers. Better teaching-learning strategies can be elaborated to assimilate in an effective and more efficient way new information and knowledge.

In the following research, the challenge is to use the vast resources offered by informatics to create a suitable environment for the development of individuals with different skills. For example, impelling intellectual growth and expansion of abilities, based on the correct use of electronic media and the teaching-learning methods when learning a new subject. In this work, a computer program is provided for instructional aid, in which two educational aspects that have been only partially integrated yet are incorporated in an educational environment: computer science and educational psychology (although both of them have been previously used in education).

Keywords: Learning styles, teaching style, electronic media and electronic learning

Clustering e-Students in a Marketing Context: A Two-Stage Clustering Approach

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Abstract: In today's information age, the attention for e-Learning systems is getting widespread in societies. Especially, with the rapid increasing popularity of the internet and its connection to learning management systems, it is possible to track and monitor students' behavior in order to meet their learning needs more effectively. However, when the number of students increases, responding their needs is getting longer and less efficient. In order to overcome this problem, clustering and/or classification of students are playing an important role in e-Learning environment.

In this article, a two-stage clustering approach (self organizing maps and fuzzy clustering will be used in a complementary form) is proposed in order to serve the right e-Learning contents to the right student clusters. For clustering bases, RFM (Recency, Frequency, Monetary) variables, a popular segmentation variable in marketing management that measures the loyalty of customers, are used. RFM values of each student are extracted from the weblogs. For numerical illustration, an e-Learning MBA students' databases of a higher education institution in Turkey were taken into consideration as study sample. The results of the study indicated that the proposed model performed better than the other two clustering methods. For validation purposes the clustering results of the proposed approach are compared with two different clustering methods. This study helps the executers of the system to improve existing e-Learning processes and give them some points of view about how weblogs are crucial for their strategic decisions.

Keywords: e-Learning, web mining, clustering, fuzzy clustering, SOM, RFM

Creating a Reusable Learning Object for Healthcare Students: 'Boxplots Explored'

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Abstract: Although our health and social care (HSC) students have some experience of simple charts, such as pie and bar, and some intuition of histograms, they do not appear to have much knowledge or understanding about box and whisker plots and their relation to the data they are describing or to other charts, eg histograms. The boxplot is a versatile charting tool, useful for presenting data from surveys and any other projects, where a reasonable quantity of data has been collected.

An opportunity arose with funding under the Centres for Excellence in Teaching and Learning (CETL) initiative, sponsored by the Higher Education Funding Council for England (HEFCE), to create a reusable learning object (RLO) to describe, explore, and interpret boxplots, especially in relation to their data and summary statistics, with links to interprofessional (IP) learning, as this was the main remit of the CETL established at this university. The RLO is aimed at both undergraduate and post-graduate HSC students, who would be able to use the resource flexibly, to augment their limited exposure to statistical techniques, and add to their appreciation of IP learning and working.

The RLO includes animation and opportunities for students to interact, for example to experiment with changing data values to see the resulting effect on the chart. Links are made to existing websites with historical detail for further exploration if wanted. Existing, available 'real' data, collected as part of research projects concerning (IP) learning, as well as generated data, is used as illustrative material.

This paper explores some of the issues raised during the creation of the RLO, and discusses limited feedback from users. Issues raised include the working of the project team, delivery platform, copyright and intellectual property rights and software incompatibilities. The completion of the project was delayed, which reduced the potential for evaluation. Interim feedback from colleagues and students has been very positive and encouraged further improvements.

In conclusion, the creation of this RLO has been a longer and more time-consuming experience than anticipated, and has highlighted the importance of a team approach, with constant reviewing. It has been an enjoyable, although at times, a frustrating experience. It will be interesting to see how the RLO will be used, and usage will be evaluated in the future.

Keywords: Reusable learning object, box and Whisker Plot, Boxplots, interprofessional learning

A Longitudinal Study of Student Satisfaction with Online Courses at an Urban University

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Abstract: Learning that occurs in the classroom, face-to-face or virtual, is assessed every semester by both the students and the faculty. The faculty's assessment is the grade given; the students' is in the form of the completed course evaluation/satisfaction surveys. This paper will analyze the surveys submitted by students completing online courses at St. John's University in NY. St. John's U. is a large, urban university with around 20,000 students, of whom about 1,000 are enrolled in online courses. Student satisfaction will be evaluated in light of two national standards. The first will be the Sloan Consortium's criteria developed to evaluate the quality of online education. Their recommendations are summarized in five categories, called "five pillars". The five pillars, or principles of quality, are: student satisfaction, learning effectiveness, access, faculty satisfaction, and cost effectiveness. This paper will analyze how the first three of these criteria, which directly impact student satisfaction, were met in a five year period at St. John's University. The paper will also investigate whether the benchmarks, "student support" and "course structure", developed by the Institute for Higher Education Policy can be used to evaluate student satisfaction with individual online courses.

Keywords: Student satisfaction, perceptions, student support benchmarks

Behind the Scenes with OpenLearn: The Challenges of Researching the Provision of Open Educational Resources

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Abstract: Web-enabled technology is now being applied on a large scale. In this paper we look at open access provision of teaching and learning leading to many users with varying patterns and motivations for use. This has provided us with a research challenge to find methods that help us understand and explain such initiatives. We describe ways to model the research and identify where pressures and contradictions can be found, drawing on a reflective view of our own practice in performing the research.

Open educational resources are defined as technology-enabled educational resources that are openly available for consultation, use and adaptation by users for non-commercial purposes (UNESCO 2002). OpenLearn is one of the largest of such initiatives and is committed to the provision of open educational resources for all. It is being developed by The Open University and is primarily sponsored by the William and Flora Hewlett Foundation.

It provides users with over 3 300 hours of higher educational material drawn from Open University courses. Other learning tools such as discussion forums, video conferencing, and knowledge mapping software are also available to the user.

In this paper we aim to introduce OpenLearn and outline some of the main research issues surrounding such an initiative. We seek to explore theoretical and practical approaches that can provide suitable tools for analysis. Activity theory is seen as a suitable approach for macro analysis and its use is illustrated in terms of the complexity of large scale research. Activity theory, besides informing research perspectives, can be turned in upon the research process itself allowing us to consider the challenges and context of the research. By using activity theory in this way and illustrating from a range of practical approaches we demonstrate and illustrate a useful research approach.

Keywords: e-Learning, open content, tools

Expanding the Impact of Learn-by-Doing Simulations in Corporate Training

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Abstract: While e-learning has become accepted in large companies as a standard option for training, most corporate e-learning has not produced the hoped-for performance improvement. Yet e-learning has a tremendous amount of unrealized potential to provide high-quality, educationally-sound, engaging training that improves employees' performance. Corporate e-learning's lack of success is likely due significantly to two primary factors: the dearth of proven, successful methods to teach skills needed by corporate employees, and the perceived technical difficulty (by corporate management and corporate trainers) in creating engaging, effective e-learning such as simulations. One way to address both of the above issues, and to facilitate the development of effective, engaging e-learning in the corporate world, is to develop methodologies that teach certain tasks and skills, test and refine them, and then build an e-learning authoring tool that is easy for trainers to use and has been specifically designed to create e-learning following the successful methodologies. In this paper I describe a learning methodology that has been developed and tested over a number of years, and an authoring tool built for corporate trainers to easily create training using this method. The skill set we focused on for the first release of the authoring tool is customer service training, which is a widespread need in many companies worldwide. We selected customer service training as the first model since it can make a significant impact on corporate performance in a large number of companies—there is a large need for customer service training in many companies, and therefore a large audience who can benefit from this new tool. Customer service is simply the first of many planned task-specific models to be developed for trainers in this way; other models are already in the works to address other common corporate skills such as coaching and sales. In this paper, I describe a learn-by-doing simulation methodology to teach customer service skills, and an e-learning authoring tool based on that methodology that is easy for trainers to use, along with future generalizations of the method and tools to other skill areas.

Keywords: Corporate, e-Learning, simulation, learn-by-doing, authoring

“Campus Numériques”, “Notebook-Universitäten” and the Like: A Cross-Cultural Comparison of French and German National e-Learning Strategies

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Abstract: When discussing the actual state of the integration of e-learning in Germany’s higher education system, German scholars and decision makers compare their own initiatives and achievements mostly to North American or North European standards. A closer analysis of the developments of e-learning measures at French universities and institutions of higher education seem to be hardly taken into consideration. Is this merely due to a linguistic barrier making it difficult to exchange expert knowledge or does the French approach simply fail the standards that might raise the interest of the German e-learning community? These questions represent the starting point for a comparative analysis of the present situation of e-learning implementation in the higher education systems of both countries, Germany and France. Neither on the top nor on the bottom of the European e-learning scale, both countries nevertheless are among those EU member states which have established a national e-learning strategy influencing the developments for the last couple of years. It is exactly this commitment of the respective countries that will be at the centre of this present paper. A comparison of the subsequent stages of these national interventions, closely examining the respective action plans and funding programmes will be presented as well as the political and academic reflection on their results. In this context, the central questions being raised are: To which extend do the main goals and visions of the political interventions in each country differ? Do the nations lay an emphasis on different aspects of the integration process (i.e. content production, establishing of supporting structures etc.) at different stages of the development or can striking parallels be made out? And, finally, do those strategies reveal different conceptions of learning and technology in both countries?

Keywords: National e-Learning strategies, higher education, education policy, cross-cultural comparison

The use of Modern Technology in the Delivery of Mathematics: A Case Study

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Abstract: Loughborough University's Mathematics Education Centre (MEC) in collaboration with Coventry University has recently been awarded Centre for Excellence in Teaching and Learning (CETL) status. At Loughborough, our particular expertise is in the delivery of mathematics at the school/university interface, the mathematical education of engineers and in the mathematical support of specialists and non-specialists alike. We have an excellent track record of innovation through our involvement with externally funded teaching and learning projects such as HELM and mathcentre. A key component of our work is to develop the use of emerging technology in the delivery of mathematics at all levels, whilst pursuing the relevant pedagogic research, as it is important to assess the extent to which such technology helps, or hinders, students develop their mathematical understanding.

In this paper, we describe the functionality of some of the modern technology now appearing in the lecture room and start to examine the potential benefits and the practicalities of the introduction of electronic voting systems (or classroom/student response systems), interactive whiteboards and the audio recording and web-delivery of lectures. Staff and student perspectives are unsurprisingly very different. Whilst student feedback to the use of a modern approach is very positive, there is still a good deal of staff resistance to the introduction of technology in teaching. Learning with technology requires a certain amount of technical understanding and most staff still have a steep learning curve to climb, if they are to adopt the use of modern technology on a day-to-day basis. Nevertheless, it is hoped the present work will encourage more staff to embed the use of technology within the curriculum and thus enhance the student learning experience. In conclusion, we comment briefly on some of the challenges to be faced by those seeking to develop the use of e-learning.

Keywords: e-Learning, technology, mathematics support, innovation

SCORM - From the Perspective of the Course Designer - A Critical Review

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Abstract: The introduction of e-Learning opens new possibilities and new ways of delivering courses. Learning objects can be used and reused in educational contexts to educate students, employees, administrative officers and citizens. In later years Sharable Content Object Reference Model (SCORM) developed by Advanced Distributed Learning (ADL) has more or less become a de-facto standard for creating learning materials that can be used in different learning management systems (LMS).

There are many scientific papers dealing with the benefits of e-Learning from a learner's perspective, or from a strictly economical point of view. In this paper we critically evaluate which benefits and disadvantages a course designer in a university setting can have from using the SCORM standard to deliver a course. By using scenarios we have tested the differences in setting up a course on an LMS with and without the use of the SCORM specification.

Our findings show that for a course designer, advantages with SCORM are; possibility of reuse, use of metadata and possibility to sequence the learning path for the learner. The most important drawback for a course designer is a lack of flexibility when using SCORM. Another major disadvantage is structure rigidity. To be able to fully use the potential of SCORM, the course design and content should not be changed after the course is started. This might have negative impact on the possibilities to design a university course if the field of study is volatile, like e.g. many ICT-related topics are. We claim that usability is an important factor to the course designers since the disadvantages of using SCORM to a large extent is due to complex and time consuming operations and knowledge of metadata necessary for the course designer to have in order to set up SCORM-compliant courses.

Drawbacks for university course designers to use SCORM are obvious. In order to benefit from the long run advantages, SCORM usability has to be improved.

Keywords: SCORM, e-Learning, course design, course designer perspective

News at First Sight: Weblogs for News Services in Higher Education

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Abstract: The integration of e-Learning is a strategic, yet challenging goal for German universities. It is crucial to accompany the implementation of digital media into traditional institutions of higher education with activities to foster transparency and – as a consequence – staff and student acceptance. At this point public relation issues become important. New features in the context of the Web 2.0, such as weblogs and RSS-Feed, provide new opportunities concerning the accessibility and diffusion of information.

Within institutions of higher education the discussion about weblogs is dominated by questions concerning didactics: What is the use of integrating weblogs in teaching scenarios? What are the potentials for learning? Up to now, the potential of weblog technology for news services and marketing has mostly been highlighted within business contexts. Keywords in this discussion are knowledge management and corporate blogs.

Based on an explorative data analysis we will show how news is presented on websites of e-Learning institutions within traditional universities in Germany. Nearly every university has a central service institution which is in charge of e-Learning. Like every central institution – such as a library or computer lab – an e-Learning centre has to develop a comprehensive communication strategy. If e-Learning is seen as a quality feature for institutions of higher education, it is necessary to find a way to communicate its activities to the public, i.e. to high-school graduates, students, alumni and business partners.

There are different ways to present news. We examined a sample of features that are regarded as quality indicators, including usability aspects, posting frequency and latest updates. We will show in a case study how it is possible to get an insight into the behaviour of weblog publishers and readers by generating statistics and information graphics based on logfile data.

Keywords: Weblogs, organizational development, information retrieval, public relations

DIAMOND: Didactical Approach for Media Competence Development in a Blended Learning Environment

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Abstract: This paper deals with a novel comprehensive teaching concept called DIAMOND (Didactical Approach for Media Competence Development) for a blended e-Learning environment that has been designed and implemented in the faculty of Information Science at the University of Applied Sciences in Chur.

The model has been developed regarding the background of new requirements academic education is confronted with in the context of teaching students graduating into an e-literate society.

Following several scientifically based recommendations on how to enable “good learning” and “good online learning” in particular, the DIAMOND framework has been set up considering different well-known pedagogical and didactical approaches. In the paper we discuss the main theories that build the basis for the DIAMOND concept. We then introduce the theory for “good learning” and factors that provide a good learning environment. Afterwards both the theoretical framework and the implementation of the DIAMOND concept, based on those insights, are presented and discussed in detail.

In the blended learning environment, the active development of key competencies like information literacy, media competence and social skills is being supported and enabled. Collaboration and teamwork are strongly supported by a comprehensive software environment both between students and professors and among the peer groups themselves. Furthermore, new forms of knowledge representation and novel Web2.0 and semantic web concepts like topic maps are being employed in the teaching framework in order to provide multiple access options to the teaching material.

A learner centered approach is hereby enabled using software like MediaWiki and e-Learning platforms.

The three years of experience we've been able to gather with this concept encourage our hypothesis that a framework that enables the active development of key competencies is a step towards good academic education. The students' feedback is quite positive and the results they achieve in this course show success, as well.

Keywords: e-Learning, blended learning, comprehensive learning environment, collaboration, academic education, key competencies, didactical course framework

Engaging With Blogs to Develop an 'Online Staff and Student Learning Community'

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Abstract: This paper describes an initiative on a BEd programme to encourage students and their tutors to form an 'online learning community' using a blog to record their own experiences of their learning journeys. All members of the university have the option for personal 'blogging space' through the managed learning environment, but many tutors had not previously taken up the opportunity to use personal blogs. To meet a need for training, the Director of the University's Blended Learning CETL provided managerial advice to encourage the process of change and a 'can-do' culture among the tutors in the School of Education. As a result of targeted technical training and support, many academics expressed surprise at the ease with which they were able to engage with blogs and the speed and quality of response to their own contributions as well as the students'.

The students typically had not engaged in using 'blogs' before starting at the university. As students became more confident in using blogs in their first weeks at university they also developed their relationships with their fellow students and generally engaged in their learning on-line to a greater extent than previous cohorts. Tutors found this engagement exciting, as the learning community developed rapidly 'before their eyes' through October 2006.

Student opinions about their familiarity with technology before starting their course and their use of the blogs as a support for the induction process and for building a learning community were surveyed and analysed using a structured questionnaire. Academic tutors were interviewed and the content of the publicly available blogs was reviewed. Results of student and staff engagement and their views on the use of blogs both as a means of encouraging reflection and for building a learning community will be presented.

Keywords: Learning community, blog, evaluation, online learning, support

e-Learning use in Higher Education: The Impact of Organisational Factors

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Abstract: This study recognizes the impact of organisational differences for e-learning use in education. We examined e-learning at Jönköping University in Sweden and conducted a comparative analysis of its four schools. Our interest has been to study how organisational differences influenced teachers' perceptions of driving factors, barriers and strategies related to e-learning. We distributed a questionnaire to all teaching staff and it was answered by 159 teachers. The driving factors of using e-learning were found to be primarily administrative gains, and not so much improvement of the pedagogical value of courses. However, it was clear that there were major differences between the four schools. Some schools were more focused on simplifying administrative processes and efficiency while others emphasized attracting distance learners. The two major barriers to e-learning were lack of time and lack of knowledge about technology. Some teachers felt these barriers were high while teachers who believe that strategies for e-learning are in place do not. Drawing on the findings, we introduced the concepts of *efficient e-learning management* and *learner-centred e-learning management* to describe two very different ways of organising for e-learning. The paper is concluded by the provision of tentative explanations of the differences in perceptions of driving factors, barriers and strategies between the four schools.

Keywords: e-Learning, higher education, driving factors, barriers, strategy

Exploring the e-Learning State of art

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Abstract: e-Learning implementation is a work in progress that continues to evolve with time and further research. Researchers in the field still argue that e-Learning is still in its infancy stage resulting into numerous implementation strategies across a wide e-Learning spectrum, a scope that requires identification and understanding. This paper explores e-Learning state of art in higher education. It provides a general overview of the learning process, evaluates the current e-Learning implementation trends eliciting a range of frameworks and strategies in the past decade. This is followed by an identification of current implementation challenges and emerging issues. According to our findings, applying social presence factors of communication, interactivity and feedback at all levels of the e-Learning the implementation process can create a successful e-Learning experience for diverse learners.

Keywords: e-Learning; e-Learning implementation; higher education; e-Learning evolution, ubiquitous learning

Sustainable Implementation of e-Learning Innovations into Large German Universities – An Organisational Approach

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Abstract: This paper addresses the issue of how to implement e-Learning innovations in a sustainable manner into large public universities. The implementation of innovations in such organisations leads to particular problems. They arise due to the fact, that there is no centralized structure of command and accountability in German universities. Instead, decision-making is essentially decentralized. Therefore, the faculties' autonomy bars the realisation of a central coordinated e-Learning strategy for the whole university. Since the encouragement of single projects failed to deliver overall success due to several reasons, an increasing focus on sustainability can be observed in the literature. Several dimensions determine the sustainability of innovations like e-Learning. From our point of view the organisational design plays the most important role. Within our analysis which is based on an organisational theory we expose the levers which can help to ensure sustainability regarding the implementation of e-Learning innovations into large universities.

Initially, we discuss several key success factors from the current literature for a sustainable e-Learning implementation. To visualize and conceptualize the organisational structure of a German university, we will apply the Viable System Model (VSM). Based on cybernetics, the VSM describes the necessary organisational structure that is needed for a system to survive in a constantly changing environment. By applying the VSM we expose the communication channels and the decentralized structure within this organisation. As a result we argue that the existence of a coordination centre on each level of recursion is indispensable when implementing e-Learning innovations at large decentralized organisations. In this context we show the university's e-Learning strategy as best practice and we demonstrate that the existence of a central e-Learning coordination centre can help to reduce the variety which arises from the decentralization of the organisation. Finally, we propose a so-called Fourth Party e-Learning Provider who manages the required functions. The Fourth Party e-Learning Provider acts as an intermediary between the service provider like content provider, hardware manufacturer or software producer and service consumer like the lecturers and offers additional support and consulting services.

Keywords: e-Learning strategy, viable system model, fourth party e-Learning provider, e-Learning business model

Creativity Through e-Learning: Engendering Collaborative Creativity Through Folksonomy

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Abstract: In recent years Web 2.0 has been hailed as a *new improved* version of the World Wide Web (WWW) where the web reverts to its originally conceived purpose as sources of content, functionality and shared experience. Many educators have embraced Web 2.0 as a key element of e-Learning and the use of Web 2.0 applications and technologies is developing a considerable role in UK higher education. This paper sets out to demonstrate that creativity can be fostered in learners through the use of such Web 2.0 technologies and, in particular, through tagging and its social form, folksonomy.

The paper consists of a review of literature and a number of practical ideas for use *in the field*. The review of literature first clears the ground by defining and describing key concepts such as creativity, the social web, tagging and folksonomy. A cognitive analysis of tagging is presented. The review moves on to discuss social learning and considers related theories of learning spaces. Finally, the elements of the review are brought together to argue the case for learners developing creativity in this manner.

The practical ideas are based on the use of Flickr, a photoblogging social platform and del.icio.us, a social bookmarking platform. The functions and organisation of both platforms are described in some detail. The ideas presented focus on an Art & Design setting at higher education level, although the potential for extrapolating the ideas across a range of curriculum areas is also briefly discussed. The practical ideas presented in this paper have yet to be tried in the learning environment. They are presented here as plans to be used in the future and to encourage discussion on their potential.

The paper concludes by outlining the next stages of this work including plans to develop an online creativity tool for learners.

Keywords: Web 2.0, creativity, Flickr, del.icio.us, folksonomy, tagging

The Use of e-Learning in Training in the UK Hospitality Industry: An Exploratory Study

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Abstract: e-Learning is increasingly used by corporations as a training solution. However, knowledge is limited on how UK hospitality organisations adopt e-Learning. To contribute to this body of knowledge, a study has been undertaken to explore current e-Learning utilisation in the UK hospitality industry and industry employers' perceptions of e-Learning, and to identify drivers and barriers for the use of e-Learning in training.

Interviews with Human Resources Directors and Training Managers of leading industry employers were carried out between April and June 2005. The interviewees provided in-depth information on how their businesses were using learning technology to facilitate their training provision, and their anticipation of e-Learning usage for training purposes in the future. The paper reports on their views and identifies the accelerators and inhibitors of e-Learning development in training at both business unit and corporate levels.

The key findings include:

- While the interviewed companies are all aware of e-Learning, the majority of them also have positive experiences with using e-Learning in training;
- The level of e-Learning utilisation in these companies varies;
- It is acknowledged that e-Learning should not be treated as a sole solution to training and should not be set up in isolation;
- Influential factors on e-Learning adoption include the culture for e-Learning, access to technology, costs, language, Internet / broadband connectivity and shift working;
- The most frequently mentioned barriers are limited access to computers and limited/lack of Internet /broadband connectivity;
- It is believed that e-Learning will be increasingly used in training in the future.

The study revealed that corporate readiness for e-Learning was essential to the successful adoption of e-Learning as a training solution. It concludes with recommendations on how UK hospitality organisations can best take advantage of the benefits sought by e-Learning.

Keywords: e-Learning, training, hospitality, innovation diffusion theory

Web-Based Learning in Practice Settings: Nurses' Experiences and Perceptions of Impact on Patient Care

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Abstract: This paper presents qualitative research completed in two groups of hospitals in the United Kingdom, as part of a larger mixed methods study. It involved eight qualified nurses caring for patients with gastrointestinal cancer in general surgical wards. It explored the nurses' experiences of using an online programme and their perceptions of the impact of learning on patient care delivery. The nurses volunteered to complete an online open source package www.cancernursing.org and meet for focus group discussions and interviews following a lapse of six weeks. Two of the participants experienced difficulties completing the package and following changes to the previously attained ethical approval, a focus group was conducted with these staff.

Analysis of the transcripts identified a number of issues for those considering the adoption of such modes of delivery within healthcare. Nurses referred to a lack of IT skills and competence in computer use, access issues, organizational barriers and lack of protected study time. In spite of difficulties they gave examples of how their learning had impacted on patient care.

Keywords: Online learning, cancer care, nursing education, workplace learning, qualitative research

Net gen or not gen? Student and Staff Evaluations of the use of Podcasts/Audio Files and an Electronic Voting System (EVS) in a Blended Learning Module

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Abstract: At the authors' institution, blended learning is defined as "educational provision where high quality e-learning opportunities and excellent campus-based learning are combined or *blended* in coherent, reflective and innovative ways so that learning is enhanced and choice is increased. Students are at the centre of this vision".

This paper outlines work undertaken to investigate the impact of integrating podcasts/audio file downloads and use of an electronic voting system (EVS) to transform module delivery from a traditional mode to a blended delivery. The purpose being to introduce a measure of flexibility in how, when and where students study; to increase interactivity and engagement in classroom sessions, and to enhance students' learning.

The student cohort is diverse in respect of age – the majority of students are direct entry students of the so-called net generation, whilst a significant number of students (35%) are mature students. Would age be an influencing factor on the students' preference for the learning methods employed, or their willingness or ability to engage with the technologies?

An interim student evaluation was undertaken at the midpoint of the taught module, to provide formative, illustrative data to the module leader and teaching team about student opinion of the teaching methods and learning technologies. Given the option of returning to the traditional delivery method, 77.5% of students either "agreed" or "strongly agreed" that the module should continue to run in its blended format.

The final evaluation discovered no discernable differences in the behaviour of the direct entry students compared to the mature students. Both groups accessed the podcasts easily, generally at home, and spent longer than if blended learning technologies had not been used. It was discovered that 16% of the mature and 24% of the direct entry students would have preferred lectures to podcasts, although the students were positive about the flexibility offered. Both groups of students were virtually unanimous on the benefits of the EVS to support learning. The teaching team concluded that the blended learning technologies increased the students' engagement with their learning.

Keywords: Blended learning; course design; evaluation of e-learning

Visual Learning Through Guided Iconagraphy in Wireless Scenarios

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Abstract: Visual learning is defined as the didactic methodology which employs graphic elements as organizers in a determinate format. This kind of learning enables users to represent information through graphic ideas, visual concepts...etc. With regard to wireless environments (PDAs, cellular phones, GPSs...etc), the use of iconic graphics allows organization reinforcement and the process of previous and new information. Visual learning applied to this kind of devices offer a wide variety of visual organizers such us conceptual maps, ideas maps, timelines, schedules, flowcharts, cause-effect diagrams...etc. Iconicity turns out to be the link which favours and complements the cognitive interpretation of knowledge and its learning. This paper will show the need to apply visual and aesthetic criteria in the conceptualization and creation of an application inside this kind of devices, whose most remarkable characteristic is the set of conditionings of the screen size.

Keywords: visual learning, human interface, m-learning, graphic representation

Web-Assisted Learning: A Case Study in Academic Staff Engagement

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Abstract: In the UK, Higher Education (HE) is moving from teaching towards learning and facilitating knowledge by means of a blended learning approach. To this end, HE institutions recognise that such change requires instigation and guidance from the top down. Increasingly, they are adopting web-based, virtual learning environments (VLE) such as WebCT/Blackboard to support and engage students in their learning.

However, within the institutional environment, learning objectives are achieved through the engagement and interaction of students and academic staff. In seeking a shift to a web-assisted/blended learning, the institution is reliant upon both students and academic staff embracing the new technology, by engaging and interacting within the new learning environment.

Increasingly, students are entering higher education with the expectation that IT resources and computer-based information will be provided as standard. Feedback from students suggests good on-campus computing provision and particular aspects of VLEs to be amongst the best features of the learning experience. In contrast, academic staff show a certain resistance to this technological change which, coupled with a fragmented development of Managed Learning Environments (MLEs), suggests that there is a mismatch of demand and supply.

This paper further develops an ongoing study of change implementation at Napier University, Edinburgh. It explores the attitudes of both academic staff and students to the new learning environment first introduced by the University in session 2003/04, and whether there is a mismatch between the engagement of staff and students. The paper builds upon technology-acceptance models and the 4-E model applied to education, attempting to clarify the key stimuli and inhibitors to engagement of academic staff in a mandatory web-assisted learning environment.

Keywords: Blended learning; web-assisted learning; virtual learning environment; managed learning environment; Technology Acceptance Model (TAM); 4-E model

The Impact of Phased On-Line Summative Assessment on Students' Learning on a First Year Undergraduate Accounting Module – A Case Study

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Abstract: In higher education terms, assessment describes any processes that appraise an individual's knowledge, understanding, abilities or skills and is inextricably linked to a module or programme's intended learning outcomes. Assessment also has a fundamental affect on students' learning where it serves a variety of purposes including evaluation, feedback and motivation. The importance of assessment on students' learning is significant as students can be influenced more by assessments than by teaching and it can. Assessment can be seen as driving learning through motivation and can be used as an instrument of coercion, encouragement and engagement.

Computer aided assessment offers opportunities for "sustainable assessment", which encompasses the knowledge, skills and predispositions required to support lifelong learning activities, by facilitating the creation of innovative assessment practices which help engage the students and increase their motivation for learning.

This paper reports the findings of a case study of fresher undergraduate accounting majors where a series of on-line summative assessments, using Question Mark Perception®, were introduced to the assessment regime on one of their modules. The study offers a contribution to the under-researched literature in this area and provides evidence of how technology can be used successfully for assessment purposes.

The results suggest that assessment plays a significant role in the teaching/learning process. The *prima facie* evidence of an improvement in student performance compared with previous years, and the positive comments received from students relating to their recognition of the benefits of engagement, self-assessment and reflection, feedback, motivation and time management afforded by the continuous / phased nature of the assessment, suggest that a change in assessment practice has been effective.

The case study has provided an insight into the students' preferred methods of learning and assessment and how phased on-line assessment can have a positive impact on student engagement in the teaching and learning process. The principles and practices identified in this empirical study for developing on-line phased assessment could be used by faculty when moving towards adopting e-assessment strategies.

Keywords: On-line summative assessment, computer aided assessment, motivation, feedback, reflection

SISINE: Teaching Negotiation Through a Multiplayer Online Role Playing Game

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Abstract. Trainers have used role-playing games to teach negotiation skills for a long time. In traditional practice, learners in a small group “act out” the roles assigned by the trainer. The SISINE Project (www.SISINE.net) – funded by the EU Leonardo Program - has developed a teaching methodology making it possible to conduct this kind of role playing game at a distance. The teaching methodology exploits a specially-developed technology platform allowing a small community of players to communicate, interact and play online. The current beta version supports up to twenty simultaneous players, represented by avatars. Communication among players is based on short text messages displayed in bubble cartoons above the avatars’ heads. Special controls allow players to control the avatars’ movements, gestures and facial expressions. This way, the community can communicate, interact and play online. The platform provides the normal functionality expected by players of Multiplayer On-line Role-Playing Games (MORPG) as well as special functions allowing a trainer to set up games, intervene during game play, record specific phases of a game, annotate recordings and discuss them with the players. Since January 2007, the SISINE project has been testing its platform and methodology in Poland, Slovakia and Italy. In Poland the experimental group consists of company sales representatives; in Slovakia of managers in NGOs; In Italy of teachers. The testing is still in progress. In each case, the group uses a custom-designed virtual environment to practice specific forms of negotiation: commercial negotiation (in Poland), negotiation in human resources management (Slovakia) and intercultural negotiation (Italy). In all cases, SISINE helps learners to acquire basic notions and rules about negotiation and, more importantly, practical know-how on how to apply this knowledge.

Keywords: Role games, negotiation, vocational training, MORPG

Application of an Open Source e-Learning Platform – Experiences and Suggestions

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Abstract: This paper presents the results of a project to support lecturers in innovating their training process by the use of e-Learning platform. The aim of the study is to examine the special challenges of application of an open-source e-Learning platform. The start of the project was urged from the high and growing prices for license and service agreements, and the increasing availability of promising open source e-Learning platforms. Mainly, the applied platform has to be flexible, to be easily adjusted to suit changing situations and to be used successfully both in online courses as well as together with traditional teaching.

An e-Learning platform is the perfect medium to support the face-to face education and blended learning as a whole. The project started with a formulation made by the teachers of the hypotheses concerning the possible added value of an e-Learning platform. This arose from their personal needs to innovate their education. Basically, the hypothesis centered on the role of the teachers, the role of the students and motivational, course concerned or learning skills.

Action research has a direct impact on the education practice and the process of educational improvement, which continues after the initial project. Implementation of e-Learning requires consistent organization of the managing the group of educational activities and qualitative support by computer systems for increasing competitiveness on the educational field.

An open source e-Learning platform is an appropriate environment for realizing bionational courses and joint education. Planning a common module for students in both institutions proved to be an extremely challenging task, compared to a course that is carried out by an institution from one country. The pilot courses provided the project team with some lessons and suggestions in this context.

Using free open source software tools together with good communication can lead to a more positive university community. The expansion of information and communication technologies enables solving a lot of educational needs by the optimum way.

Keywords: e-Learning platforms, virtual learning environments, open source, blended learning

An AI Planning-based Approach for Automated Design of Learning Routes

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Abstract: This paper presents an approach for the automated design of learning routes, based on the application of AI techniques. Our educational planning system is composed of two main modules: an instructor-oriented *graphical authoring tool* to model the key elements of a course and an *automated planner* to compute a learning route for a specific student profile or a customised learning route for a group of students. More specifically, the proposed architecture works in three stages: (1) the instructor defines the elements of a course such as learning concepts, tasks, teaching materials, required resources, etc. Our authoring tool helps guide the instructor during the course design; (2) an AI planning process is applied over the course structure defined in the above stage to obtain a generic learning route for a given student profile. This learning route is composed of a set of partially-ordered activities which contemplates teaching goals at different levels of competence. The purpose of this generic learning route is to validate the course design described by the instructor in the authoring tool and check the existence of a feasible implementation for the course; (3) a second AI planning process permits to obtain a customised learning route for a specific group of students. This learning route is a course of actions allocated in time which accounts for the available resources and temporal constraints of the particular teaching context where the course will be taught.

Our educational planning system offers two novelties with respect to other tools for course generation: a user-friendly graphical tool aimed at providing instructors support during the specification of a course/subject and an automated planner to compute customised plans totally adapted to the particular learning context, considering time constraints, resource usage and all issues necessary to make a learning route realizable (executable plan). Additionally, our approach allows us to dynamically adapt the learning route during its execution according to the course evolution.

Keywords: Course design; Learning content management systems; e-learning strategies

Assessing the e-Learner: Normal Practice or Rare Occurrence

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Abstract: e-Learning is now firmly established as a successful education medium and is being extensively utilised in the Irish educational sector, especially in third level institutions. However within the Irish business context there has been a relatively slow uptake on e-Learning and reservations still exist about its true potential. This is supported by a European Union report, which states that there is a limited uptake in e-Learning in an Irish business context both in terms of the number of people using it and the material covered.

When the components of an e-Learning system are examined the areas of assessment and feedback to the e-Learner have been found to be often omitted or inadequately designed and implemented in the majority of e-Learning systems. This may lead to potential problems for both the organisation and the e-Learner as assessment and feedback have been found to improve e-Learner satisfaction and further strengthen their belief in e-Learning. On the organisation side it provides a potential monetary gauge of return on Investment, which is vital for organisational acceptance of e-Learning.

This research focuses on the role of feedback and assessment within e-Learning and is based on a quantitative survey which was sent to over fifty randomly selected Irish organisations that operate in both the manufacturing and services sectors. Subsequently a series of interviews with selected exemplars were carried out to provide the researchers with a greater insight into the research issue. Indigenous Irish industries and multinationals based in Ireland were selected for the research. The rationale behind this decision was to try to establish if there was any difference between the multinationals and the indigenous organisations in their views on e-Learning and on e-Learner assessment and feedback.

It is envisaged that the paper will provide an insight into the critical role that assessment and feedback plays for both the e-Learner and the organisation in terms of measuring e-Learning success.

Keywords: e-Learning, assessment and feedback, organisations, e-Learner

Insights from a Pilot Project on Developing and Piloting an e-Learning Module

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Abstract: E-commerce is becoming increasingly important for small and medium enterprises (SMEs) in Europe due to communication and marketing channel cost-effectiveness. By engaging in e-commerce, SMEs can potentially extend their business to a global scale. However, SMEs often do not have adequate knowledge and expertise in targeting European or global customers to exploit the marketing potential of the Internet. This is especially true when it comes to addressing the linguistic and cross-cultural issues of creating, translating and localising an e-commerce web site. The Languages For E-Commerce (LFEC) project funded by the European Commission aims to provide an online educational resource, which integrates cross-cultural communications and e-commerce web site design to aid higher education learners and SME employees in the creation, translation and localization of e-commerce web site. The outcome of this project includes three e-Learning modules and an ontology dictionary tool for e-commerce. The e-Learning modules are Languages for E-commerce, E-marketing for International E-commerce and E-commerce Application Design. The ontology tool is a multilingual dictionary of e-commerce terminology that is easily searched and cross-referenced. This paper reports the design, development and piloting of the e-learning module on E-marketing for International e-commerce module. The pedagogical considerations in e-Learning design and development are discussed. Eleven higher education learners from different countries have participated in this pilot study. This evaluation employed an online questionnaire that incorporated both qualitative and quantitative data based on Salmon's (2000, 2004) Model of e-Learning. The feedback shows that the e-Learning module is appropriate for the subject area. The findings also indicate a linear staged progression of pedagogical development in e-Learning.

Keywords: e-Commerce, e-Marketing, e-Learning, SMEs

Acting Against All Odds

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Abstract: During the last 10 years when e-learning has gradually become widespread as an educational offer at levels from high school to higher education, a large part of the research into e-learning has focused on improving quality of learning and teaching. Irrespective of e-learning as asynchronous or synchronous, teacher-to-student communication or collaborative peer-to-peer activities, we see four dominant perspectives in the literature. Two are oriented towards the people involved: teachers and students; the other two are geared towards pedagogy and technological issues. Most of the research based e-learning methodologies share the common feature of offering recommended actions. However, the general perspective is on how and what to do to obtain “effective e-learning.” Literature and methodologies rarely deal with abnormal situations or cases that did not go well. Consequently, teachers and educational planners are confronted with methodological *blind spots* when trying to deal with a reality far from the ideal situation depicted in these models. In order to identify and describe these blind spots, we draw on a self experienced case where we as educational planners and teachers were left without methodological tools. The case represents a learning context where a misplaced decision of introducing blended learning to a group of students caused the collaborative online sessions to collapse.

The paper argues that existing e-learning methodology may come short in contexts that are not ideal. Through identification of blind spots, we point to the need for more research into abnormal situations, in order to construct proactive teacher tools that help teachers to deal with floating and unpredictable contexts that we believe are often dominant although not reported, as apposed to the ideal situations of existing best practice methodologies.

Keywords: Blended learning, elearning methodologies and practices, teacher tools, case study

On the Road to Virtual Europe

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Abstract: Virtual Europe is a web-based European community from which health education scenarios may be accessed for learning and teaching purposes. Featuring a map giving access to country specific resources, it is populated with different cultural case studies allowing contrasts between cultures to be examined. For example, a student could evaluate the differences between UK, Belgium and Dutch approaches to the care of a patient in a particular situation. The project is initially funded by the Consortium of Institutes of Higher Education in Health and Rehabilitation In Europe (Cohehre).

This paper offers a unique view on the benefits and limitations surrounding the development and implementation of a European health based virtual community. How will it facilitate the elimination of barriers for international mobility of students and staff? How easy is it to integrate into differing European health curricula? How does it compare to the experiences offered by new virtual environments?

During the first year, the pilot version of Virtual Europe was created incorporating cardiac and burns case studies. During the second year of the project, the aim is to refine the pilot and incorporate further case studies. During the third year of the project, Virtual Europe will be utilised within partner institutions as a learning and teaching tool. The project team are working to evaluate the user-friendliness of the system on an on-going basis encouraging feedback from the students and academics that will use it. Tutorials will be used to evaluate how successfully lecturers could use it and are able to integrate it with other curricular elements. Evaluation will be iterative and formative, with feedback used to identify potential changes that will be incorporated into subsequent pilots, group sessions and system enhancements.

The paper presents a cogent and stimulating analysis of an e-Learning virtual health education project which is interprofessional in its outlook; interdisciplinary in its approach; intercultural in its background; interactive in its design and international in its scope.

Keywords: Interprofessional, simulated community, health education, Virtual Europe, intercultural, international

A Framework to Support Teaching and Learning Online

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Abstract: Frameworks that attempt to guide teachers and learners in online education must balance a number of sometimes competing factors. These may be pedagogical, for example balancing the use of dialogues and collaborative work with the flexibility that online learning can provide. They may also be practical for example, providing learning support for students who do not engage with the teacher or other learners, or reusing learning materials in different contexts without creating incoherent learning experiences.

This paper outlines a framework that attempts to achieve this balance. The framework has been devised to support teachers and learners in creating and participating in online courses. It is based on and inspired by work conducted by Weller et al (2003) and Oliver et al's work (Oliver 1999, Oliver and Herrington 2001a, Oliver et al 2002).

The framework operates at a relatively abstract level and is comprised of narratives, tasks and resources. Narratives are an informal account of a given topic prepared by the teacher. They guide students through the learning materials and provide the students with a rationale and context for the work they are engaged in. It is intended that they should be informal and be a medium through which the lecturer can engage with the learners.

Resources and tasks are more formal than the narratives. They represent what learners need to use in their studies and also how to use them. These are often substantial pieces of work and relate closely to the aims and learning outcomes associated with a given course and would be expected to be capable of reuse. In this way, the framework supports a clear mapping of the course design to its content. Moreover, it supports the reuse of learning resources and, through the use of the narratives, enables this to be done in a coherent and engaging way.

Keywords: online, framework, resources, narratives, tasks

e-Learning Platform Implementation - Learning Object and Learning Design Management Through Metadata Standards

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Abstract: AHKME (Adaptive Hypermedia Knowledge Management E-learning) system main aim is to provide a modular and extensible system with adaptive and knowledge management abilities for students and teachers. This system is based on the IMS specifications, developed by the IMS consortium since 2001, that allow the representation of information through metadata, granting semantics to all contents in the system, giving them meaning. Metadata is used to satisfy requirements like reusability, interoperability and multipurpose. The system provides authoring tools to define learning methods with adaptive characteristics, and tools to create courses allowing users with different roles, student or staff, promoting several types of collaborative and group learning. The system is also endowed with tools to retrieve, import and evaluate learning objects based on metadata, where students can use and learn through quality educational contents taking into account their characteristics. Also teachers have the possibility of using quality educational contents to structure their courses and activities. In our system, metadata management and metadata evaluation play an important role in order to get the best results in the teaching/learning process. Regarding the mechanics of the system, we have divided it in four different subsystems. These subsystems are in constant communication receiving feedback between them in order to adapt to students, teachers and different kinds of learning contexts. In order to develop our system we have started to analyse several current existing e-learning platforms and systems to identify strong points and weaknesses, so we could try to overcome these weaknesses with our system. We have also analysed several standards and specifications to find the one that best fitted our needs in order to help us reach our objectives. In this paper we will focus on the two subsystems that make possible the management and evaluation of learning objects through metadata described by the IMS specifications.

Keywords: e-Learning, educational standards, IMS specifications, learning object, knowledge management, metadata

Using Podcasting in a Hybrid Course: A Case Study

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Abstract: Students of the Net Generation, born in or after the 1980s, have been called "Digital Natives" because they have grown up with computers and the internet, and are accustomed to using a variety of technological devices for educational use as well as entertainment. In contrast, previous generations who have learned to use technology as it has emerged have been given the name "Digital Immigrants." They can remember a time when these devices did not exist and have made a conscious effort to keep up with technology.

One of the newest forms of technology is podcasting, in which audio files are regularly and automatically distributed to listeners via the internet, and then listened to on a computer or mp3 player such as an iPod. For educational purposes, podcasting provides the opportunity for instructors to create podcasts of lectures or supplemental material. Students can then access these files repeatedly at their convenience, listening to them anywhere they can take their mp3 players. Podcasts are surprisingly easy to create with little equipment required and freely available software.

This paper will present an exploratory case study of a course in which podcasts were created to provide audio material for students. One section of the course followed a traditional format, while the other was a hybrid section in which online notes were provided, but lectures were not held and class time was devoted to activities, discussions, quizzes and tests. Most of the students in the hybrid section were older (Digital Immigrants), whereas students in the traditional section were typical university age (Digital Natives). Identical materials were provided to all students for download. Overall, even younger students were less technologically savvy than had been expected, but those who used the podcasts found them valuable because they could be listened to repeatedly. Digital Immigrants were equally or even more willing to use podcasts than the Digital Natives.

Keywords: Hybrid course, blended learning, podcast, digital immigrant, digital native

Blended Methods to Enhance Learning: An Empirical Study of Factors Affecting Student Participation in the use of e-Tools to Complement F2F Teaching of Algorithms

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Abstract: Our research aims to improve the quality of academic studies in Universities. Specifically, we aim at the adaptation of blended learning strategies, use of digital media (computer, internet) and e-learning methods. In this paper we investigate the factors affecting first year students, in using e-learning methods in conventional Higher Education. Nowadays, an interesting research question, which has been raised, is related to the effective use of blended learning techniques complementary to f2f teaching in conventional Higher Education. The scientific contribution of the proposed paper is the presentation of some new results on the students' perceptions regarding the above question. We believe that our findings constitute a first step towards to this direction. Our empirical study is based on questionnaires and interviews, which include quantitative and qualitative topics. The research took place during the first semester compulsory course "Algorithms with C", in the department of Applied Informatics, University of Macedonia, Thessaloniki, Greece. The students' use of e-tools was investigated and the results are thoroughly described. In this research, special concentration was given on learning difficulties in fundamental algorithmic concepts. Moreover, the level of students' adaptation of web-based and distance education methods, as a complementary tool in face-to-face (*f2f*) teaching of algorithms, was studied. Particularly, we focus on the factors which affected in discouraging students from the use of multiple web-based tools. Additionally, we investigate the students' expectations and attitudes, based on their experience, in using synchronous and asynchronous state-of-the-art e-tools such as LMS-CoMPUs, virtual classrooms, webcasts and educational games.

Keywords: Blended learning, algorithms, e-Learning, Higher education

e-Learning and the Training Needs Analysis: What About the SMEs?

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Abstract: The purpose of this study is to make a census of the written material on what e-learning consists of, its characteristics and the various benefits of it and to verify, through a multiple case study, the extent to which Atlantic Canadian SMEs know and use e-learning. The purpose of the study is also to determine to what degree they actually use e-learning to analyze and meet their training needs

Keywords: e-Learning, training, SME, needs analysis

The Rise of the European Information Society: Can the e-Learning Programme(s) Help?

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Abstract: This study investigates the information society discourse in the European Union, in relation to the European Commission's *e-Learning* programmes, based on selected academics' conceptualization of the term. The main goal of the study, in this respect, was to develop an understanding of the values and functions placed by academics on the notion of information society through the use of this concept in the official *e-Learning* documentation of the European Commission. Interviews with academics from selected Member States of the EU were conducted in three principal countries (Germany, Portugal and Sweden) and six secondary countries (Belgium, France, Italy, the Netherlands, Spain, and the United Kingdom). Through in-depth interviews, the academics were questioned on various aspects of the contribution of *e-Learning* policies to the presumed emergence of a European Information Society. In this context, in the opinion of the academics interviewed, how do universities view the concept and why should universities be concerned about the Commission's drive to bring about the Information Society? What does Information Society entail in the opinion of academics and practitioners at universities in the Member States? In what ways do universities contribute to the emergence and propagation of the Information Society? How do the universities' application of *e-Learning* initiatives, whether EU or national, concretely shape the notion of Information Society? Is this process influenced by EU, national policies or a combination of both? The study reveals a mixed picture of the perceptions that the academics have of the information society in their respective countries. The findings indicate a convergence of these perceptions with the indicators of a presumed information society in various quantitative studies. This study considers that an integrated European information society, promoted by the European Commission, partly through its *e-Learning* programmes, is a concept destined to remain a motivational instrument for driving ICT policies throughout Europe.

Keywords: Information Society, e-Learning in Europe, educational technology, European Union higher education, European Union

A Virtual Learning Environment for Pregraduate Mathematical Students

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Abstract: Teachers of the course *Introduction to Mathematics for Engineers* at the UOC, an online distance-Learning university, have designed and produced online study material which includes basic pre-university mathematics, instructions for correct follow-up of this content and recommendations for finding appropriate support and complementary materials.

The conceptual principles that fostered the definition of the characteristics of the main study material were the following:

All resources should be integrated within a single learning environment

- The material should cover the needs of all students on the course, some of whom have a very low level of mathematics while others are more prepared
- The materials should meet a twofold objective: specific material for a course and, at the same time, reference material which can be used at any time
- Use more adequate formats taking into account the characteristics of the content (characteristics)
- In addition to the previous point, we should say that all components of the material should comprise a unit that is clearly recognised by the student, both in terms of content and the study sequence proposed

This material has been written following the MathML 2.0 standard (<http://www.w3.org/Math/>) in xml documents. This allowed us to comply with the universality principle; all materials can be viewed from any of the most common browsers. The characteristics of the course favour an atomized organization of contents; so, explanations are not long and are clear and concrete. Many different resources are used, depending on the characteristics of the area in mind: Flash sequences, interactive applets, WIRIS calculators and PDF files.

The study material has been piloted with 119 students in the first semester (autumn 2007) and 85 in the second one (spring 2007). The academic results and student perception have been rather good; this has allowed us to outline and initiate some lines of action: implementation of a new web interface, development of a new collection of exercises and a preliminary study of application of web annotations on this material.

Keywords: virtual learning environment; learning mathematics; interactive resources; latexmathml; web annotations

Learning Chinese Language and Culture: A Program Evaluation of “Applied Language Instruction” Using Blended Learning

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Abstract: The advantages of blended learning instruction incorporating both online and onsite phases of instruction and learning can be used to effectively prepare for engagement and interaction with foreign cultures. The inclusion of both language instruction and cultural training increases learner satisfaction and performance, relevance of instruction, and reason/purpose for learning. Semi-virtual course formats allow for the combination of both elements into one course in a complimentary manner, enhancing the acquisition of knowledge in both areas. This paper presents the concept and evaluation of an innovative blended learning program incorporating both language and cultural training components, termed “Applied Language Instruction”. Using the Moodle learning management system, online methods of instruction and learning featured in the program include podcasts (video/audio), group forums, “wikis”, learning journals/blogs, among others. The target language and culture is Chinese, and participants are German students and executives who are planning future interactions for business and pleasure in China. Evaluation of the program examines aspects of course design and structure, as well as participant outcomes.

Keywords: Blended learning, language instruction, cultural training, e-learning, learning Chinese

Acceptance, Usage, and Communication Patters of a Blogging Exercise for Students

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Abstract: In Germany openly accessible blogs for student education on the undergraduate level are still not very common. After explaining the ideas behind using a blog, students were given the assignment to post at least two own entries and to comment at least five times on an openly accessible blog during the semester. The blog was centred on a common topic and all students were invited to the blog. At first students where a little apprehensive about their entries being visible by fellow students and also on a worldwide scale, but at the same time they liked the idea of writing for a larger audience than just their professor. While most of them choose to use a different author name to post, some of them still used their real name or an identifying abbreviation. In general the style of writing seemed to have improved. Although the blog was available for about 5 months more than half of the students did use a timeframe of on month or less to fulfil their assignment and did not use the blog as a means for ongoing communication. Problems in using the blog were partly caused by students first writing their post using a word processor and using elaborate formatting which did not survive the cut and paste operations. Since students were commenting the work of their fellow students the resulting communications patterns where analyzed. Some group building did appear in the pattern. The hypothesis that the group building was caused by a common topic could not be held. Rather clustering was seen by students posting at about the same time. This can be interpreted as a means to reduce workload. In looking for a suitable entry to comment on they started at the most recent one and worked their way back. The goal to engage the students for a prolonged time could not be met for most of the students. Still they considered the exercise a very interesting and engaging one. They particularly did like the idea of using up-to-date technology.

Keywords: Weblog, blog, usage, acceptance, web 2.0

A Novel 360-Degree Evaluation

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Abstract: This paper describes multiple evaluation methods applied on a single product to provide it that edge over its competitors in the marketplace. The product, TechPoint PD, is a blended-learning professional development program for teachers. The evaluation methods are all existing ones but from different worlds of practice, cohesively leading the product towards excellence through evaluation and iteration. It is a qualitative paper based on real-world practice.

TechPoint PD, has been developed by Learning Point Associates (LPA) for the professional development of K-12 teachers in the realm of technology, in conformance to the No Child Left Behind (NCLB) Act. The primary goal of TechPoint PD is to facilitate the integration of technology in the school classroom and to support, enhance, and improve teachers' pedagogical and instructional practices. It provides teachers with the technology experience and exposure necessary to empower them to create their own technology integration plan that is in alignment with their curriculum, their student needs, their professional goals, and their personal teaching style. TechPoint PD uses a hybrid model that includes face-to-face instruction and a web-based supplement.

In trying to make TechPoint PD come ahead of its competitors, it was evaluated from many different angles. The uniqueness of the approach is not in the individual evaluation methods themselves but in the fact that they are all used during the product's evolution and that is an unusual practice. The product was put through seven types of evaluations: adherence to sound instructional design, usability of the interface, quality of the content via heuristic evaluations, quality of interface and content via field testing, focus groups and interviews, and finally, an analysis of online document design. Where applicable, learner feedback was solicited for reactions, as in Kirkpatrick's level 1 evaluation. The recommendations generated by the findings in each of these seven areas were then applied towards the iterative design of the product. The benefits of such an all-round evaluation have far reaching consequences that go much beyond its point of sale. It includes giving the user confidence in using the product because of its ease of use and being fully engaged with the content. While in this case, resources were not much of a constraint, even using the minimum of resources for such tests, the product's effectiveness can go a long way. The paper is of relevance and interest since it has been applied in an actual work environment. It can be viewed as a best practice that leads to improved product quality through evaluation and iteration from different worlds of practice.

Keywords: Evaluation, blended, usability, heuristic, instructional design, Kirkpatrick

Teachers' Conceptions of and Approaches to Online Teaching

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Abstract: Building upon a previous exploratory pilot, this paper reports on an ongoing phenomenographic research study that has been conducted within one school at a Scottish University. The focus of the investigation is nursing lecturers' conceptions of and approaches to online teaching. The extensive body of previous phenomenographic research that exists has clearly established that lecturers' preferred approaches to teaching are informed by their conceptions of teaching and learning, but this work has largely related to 'traditional', face-to-face course delivery.

Higher education is increasingly coming under pressure, however, to harness online technologies for meeting the demands of a diverse student body with a wide range of IT and online learning skills. Met by academic staff who are still largely new to blended and online learning, and who may be inexperienced in adapting traditional course development and teaching practices for online delivery, the challenge to make effective use of technology in teaching presents something of a dichotomy.

Phenomenographic studies such as this one are regarded as providing valuable insight into the variation in understanding and experiencing phenomena. The focus of this study is on capturing the qualitatively different ways in which lecturers understand and approach online teaching, with a view towards providing better insight into their developmental needs. For the investigation, semi-structured interviews were carried out with nursing lecturers (n=20) with a wide range of blended and online teaching experience. An initial set of 'categories of description' has emerged from the first stages of analysis, and this is presented with a preliminary emphasis on conceptions concerning good online teaching practice and challenges for students, as well as on approaches to online teaching related to how the lecturers prepared for and undertook their most recent online course. At this stage of the analysis, findings indicate that the group shows a range of ways in which online teaching is conceptualised and approached. These findings are articulated, before their wider implications for the quality of the online learning experience for students and for staff developmental purposes is discussed. The presentation that accompanies this paper will focus on the outcomes of this initial analysis, as well as on other key findings that emerged from the conclusion of the work.

Keywords: Online teaching, conceptions, approaches, phenomenographic research

From Pen and Paper to IT Based Business - Tracing Employees Learning Progress in an e-Learning Program

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Abstract: This paper is part of a larger empirical research project "Flexible e-learning environments and learning style" ¹ which is carried out together with a large Danish company. The company involved is named Large Danish Company (LDC). LDC has bought "Company 1" and "Company 2" in another European country. These two companies have had to move from traditional pen and paper business to IT based business and an e-learning program has been implemented by LDC. This paper is based on 2753 employees participating in the obligatory e-learning program. The objective of the program is to teach the employees their new job functions and task in an IT based office environment.

The courses in the program focus on the employee's future job function and the course materials are development to be flexible. Initially the LDC considered applying a FlexLearn approach developed at Odense Tekniske Skole (OTS). However a different solution was developed in which the flexibility build into the course program means that the program is divided into steps. With each step the level of difficulty increases. The employees were categorised in three groups according to the time they spend to pass a course in general banking business and e-learning. : Low User Group, Middle User Group and High User Group. An employee assigned to the High User Group start at step 3 in the first course, whereas an employee from the Low User Group start at step 1 in the same course.

The objective of the paper is to describe this learning approach and to investigate the learning progress of the three groups. The results show an interesting migration patterns between the three groups, but also revealed surprising results in relation to time spent by the different groups on the courses. We discuss this in relation to the FlexLearn approach and draw up perspectives for further work.

Keywords: e-Learning, learning style, flexible learning

A Case Study of the European SME Audio-Video Information Base Solution

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Abstract: The European SME audio-video information base solution, to be completed in the fall of 2007, offers the educational society model recommendations for pedagogical use, adaptation and effective integration of state of the art visual communication and collaboration solutions into training processes in Small and Medium sized Enterprises (SME). This includes technical advices, good practices, train-the-trainer program, and examples demonstrating improved learning experiences obtained by using high quality video solutions. The services aim at the creation and fostering of a community for the sharing of information related to the integration of video technology into skills upgrading processes. The information base explores the pedagogical potential of using video services for improving the learning process. Special attention is given to inclusion of blended learning training principles that exploit integrated technical solutions, and forward training to groups of students by mixing: (i) Face-to-face training (ii) Inclusion of industrial video streaming solutions and/or videoconferencing (iii) Self paced learning through Learning Management Systems. The information base offers SME and the educational community: (i) Basic features of visual communication, (ii) Change of teaching practices for better accommodation of video into (distance) training, (iii) How to extend existing e-Learning methods, and (iv) Deployment of new pedagogical methods, e.g. activity based training, in combination with high quality industrial video streaming solutions.

Special focus is given towards inclusion of interactive learning and training styles. This includes didactical recommendations for applying state of the art video services in teaching and learning, and delivery of online services for the effective integration of modern video technologies in skills upgrading processes. The information base solution supports instructors with information and training methods promoting pedagogical use of video technology into instructional processes, something that has not been successfully achieved despite the relative maturity of the required technology.

Keywords: Video streaming, videoconferencing, blended learning, AV-communication, skills upgrading

Training Methods Utilizing Web-based Generation of Learning Objects in Sciences

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Abstract: Interactive generation of learning objects within mathematics utilize XML and MathML to offer homogeneous mechanisms for heterogeneous technology transparent on demand creation and recreation of static, dynamical and interactive learning objects. The services use advanced server based Computer Algebra Systems through Web, and might be used synchronously by teachers and students during a lesson. The services may also be used asynchronously for distance training purposes. Numerous learning objects are easily created, recreated, explored, used and terminated when needed on a just in time basis, whereby the repositories store services and intelligent engines instead of predefined learning objects containing proper metadata descriptions. The issue addressed is not which particular technology to use, nor is it how to integrate, use and reuse learning objects and metadata in teaching and learning. Interactive generation of learning object services offer new teaching features and learning activities that are well adapted for presentations made on digital blackboards. They offer easy inclusion into learning management systems, and easy mediation through all types of high quality H.264 based visual communication and collaboration services to be used for distance learning purposes. This paper describes the experiences obtained by teachers in within engineering education in Norway, by utilizing web-based interactive services like i) Various plotting tool devices like 2D and 3D plots, multiple graphs in one, Riemann plots, 3D interactive vector plots, ii) Taylor- and Maclaurin series expansion of functions, iii) Definite and indefinite integrals, calculations of limits, differentiation of functions, the scalar product, the vector product, various online standard calculation procedures, iv) Online script based calculations in the web browser, v) Interactive textbook examples, and vi) Interactive physics and statistics examples. Particular focus is given to the results obtained by utilizing the dynamical interplay with the learning objects on digital blackboards.

Keywords: MathML, XML, dynamical learning objects, e-Learning, blended learning

The Effectiveness of a Discussion Forum as a Learning Tool in Initial Teacher Training in Post-compulsory Education and Training

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Abstract: The Qualified Teacher, Learning and Skills standards that will be endorsed by Lifelong Learning UK for delivery in September 2007 have an increased level of Information Communications Technology skills required by all Trainee Teachers in the Learning and Skills sector. Higher Education Institutions delivering the QTLS standards have to respond. One method of developing ICT skills in the trainees is the use of an online discussion forum. This will address both the ICT skills and the HEI's agenda of web-based and blended learning. However, simply making a discussion forum available does not mean that it will be used effectively to enhance learning.

Can a discussion forum provide the right setting for effective learning to take place? If so, what are the required conditions for that to occur? Is there a prescriptive ICT skills profile required for the discussion forum to be effective in increasing learning? Do learners that do not engage with the discussion forum achieve the same learning? Given that a discussion forum is often 'overseen' by its creator (usually a tutor or other authoritative body) do learners see the discussion forum as something of a 'big brother?'

This will be an empirical study using a mixed methods grounded theory approach using Glaser and Strauss' constant comparative method of discourse analysis. It has been chosen as the theoretical approach because the sampling will direct the evolving theory. Primary data from discussion forum postings will be collected, supported by a quantitative analysis of the online threaded discussions. The outcome of the study will inform the creation of a professional framework harnessing ICT in the new endorsement process and upskilling the trainee teacher to work in a technology-driven environment such that the discussion forum becomes nothing more than another communication learning channel for the trainee teacher to engage with.

Keywords: Initial teacher training, discussion forum, learning tool, grounded theory

A Strategic Approach to Distance Learning Course Design

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Abstract: This paper presents the design and development model in place at UEL and evaluates its strengths, weaknesses, opportunities and threats of from a strategic perspective. We present an analysis of key design models drawing on the fields of education and systems design. These are then synthesised into a self-assessment tool which can be used to focus discussions relating to planning for the achievement of strategic objectives and for the successful design and implementation of distance and e-learning courses. The tool can be adapted to local contexts, depending on an institution's academic framework, its organisational structure and its objectives.

We apply the tool to our design and development model and identify areas for improvement. We then prioritise the areas to allow us to improve our model and identify future directions for evaluation, practice and research. We conclude that the application of the self-assessment tool is an effective exercise with potential uses beyond our local context, and that it can be used successfully to promote a strategic approach to course design and support structures.

Keywords: Strategic approach, course design, distance learning, e-learning, self-assessment tool

Computer-Assisted Language Teaching for Students with Learning Disabilities

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Abstract: The present paper discusses several academic projects implemented in institutions of higher education in Israel: Holon Institute of Technology, Ashkelon Academic College, Netanya Academic College and Levinski Teacher Training College. All the projects targeted a particular student population, specifically learning-disabled (LD) students, and employed innovative technological solutions to overcome their problems. The paper aims to raise the awareness of the English teacher community of the existing assistive technology, specifically text-to-speech software that reads texts onscreen. It will illuminate multiple advantages of such reading software over traditional methods of overcoming reading difficulties of LD students, i.e. audio cassettes or CDs. We will discuss logistical and financial considerations involved in setting up such programs and provide some suggestions on the choice and use of particular software.

Keywords: Dyslexia, learning-disabled (LD) students, assistive technology, presentation accommodations, text-to-speech engines, reading software

The IT-folder - IT Supported Inclusion of Children with Reading Disabilities in Normal Classes

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Abstract: This paper presents the philosophy and project design of a three year action research project, taking off in September 2007. As a consequence of the consent to the Salamanca Statement on special needs education from 1994, the Danish parliament has recommended that all children with learning disabilities should be transferred from special classes to the ordinary classes in primary schools. This vision is called *The Spacious School* and the idea of the vision is that these children should be integrated and thus included in the social and learning activities like any other child in the class. The government's vision is to provide the children with an IT-backpack containing a laptop pc. However the IT-backpack is eye-catching and also heavy especially for the younger children.

In Rødovre Municipality, - a suburb to the Danish capital Copenhagen - the pedagogic development centre (PUC) believes that successful inclusion must integrate the political vision with focus on the benefit for the individual subject. Therefore it is necessary to think of IT-support as an everyday, natural substitution at the same level as paper and pencils, rather than a compensational disability aid or a technological fix. Consequently, the PUC invited the *Danish School of Education – Århus University (DPU)* into a collaborative action research-based development project, where the IT-backpack is substituted by a touch screen tablet pc for children from first to third grade, as they are not part of the IT backpack project. The basic understanding in the project is that IT as a substitution and used as a lever or change agent for the inclusion of children with reading disabilities, affects the full context around the child: the other children, the teachers, the parents, the pedagogy and the activities in class. The tablet it self will contain supporting software and e-learning material, all of which have not yet been decided upon, as we expect that specific user needs and requirements for software will emerge during the project. Consequently, apart from being understood as hardware and software, the tablet must be understood as 1) an artefact that must be included along with other artefacts; 2) an individual attribute that must be including, not stigmatizing; and 3) a social actor in its own right, as the tablet affects the collaborative activities and social interaction.

The paper unfolds the philosophy of the project and presents the corresponding project design.

Keywords: ICT, e-learning, action research, inclusion, integration, reading disabilities, Salamanca statement

Online Learning and its Cultural Issues

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Abstract: Differences in learning behaviour can be attributed in part to the different cultural and linguistic backgrounds of the learners. In an online learning environment, there are issues surrounding cultural disconnection between the intended and the actual experiences of the learners. This interpretive study explores the characteristics of this disconnection and investigates the differences in learning and communication exhibited by students in an intercultural learning group following an MSc course in educational research supported by an asynchronous online discussion forum.

Participant observation, questionnaire and semi-structured interview were used to collect data. The study provided rich information that could be used to help online educators understand more clearly the learning behaviours of learners with diverse backgrounds. The findings of the study challenge some of the existing and most well-established cultural frameworks and a model is presented to explain this complex phenomenon. On the basis of this understanding, the design of online learning environments and the material incorporated within them can be reconsidered. It is suggested that an online learning programme should be designed to take account of the mutual transformation of both learner and environment in educational processes. The study suggests some practical recommendations that may lead to online learning becoming mutually adaptive. However, it is emphasised that inclusively will depend upon an adaptive dynamic that is essentially social.

Keywords: Online learning environment; cultural issues; intercultural communication; asynchronous online discussion forum; mutual adaptation

Making it Stick: the use of Online Discussion Fora to Support Continuing Professional Development in Higher Education Communities of Practice

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Abstract: Continuing Professional Development (CPD) remains high on policy agendas for organizations, government agencies and professional bodies. The importance of enabling individuals to further their CPD through engaging with others in the same professional sphere is shown by the plethora of postgraduate programmes with this as their aim. Such programmes increasingly employ blended learning approaches to allow participants to maintain their own professional practice whilst collaborating both face-to-face and online for CPD purposes. This paper evaluates the use of online discussion fora in programmes at two U.K. universities over a three-year period. The discussions were computer-mediated communications within the context of two different Virtual Learning Environments that provided the main online support alongside regular face-to-face workshops and other curriculum activities. Both programmes used online discussion as part of a structured approach to building a community of practice by fostering participants' mutual engagement and collaborative learning. It is argued that by analyzing in each instance the extent to which online discussion gave evidence of a community of practice being established, this concept, as developed by Wenger and others, enables an outcomes-based evaluation of the effectiveness of that discussion in supporting CPD to be conducted. The paper presents the results of a qualitative discourse analysis of online discussion activity over three participant cohorts, as a means of characterizing the evidence. There was variation across programmes in the degree to which the discussions were related to formal assessment of participants' learning. The findings support the view that the use of explicit assessment criteria and the size of the discussion group are the two most important factors in online fora contributing effectively to the establishment of a community of practice. The paper concludes by considering whether participation in online discussion can be assessed reliably as an indication of individual CPD.

Keywords: Virtual learning communities, continuing professional development, online discussion fora, communities of practice, assessment of discussion fora, computer mediated conferencing

The Web-Based Learning Process: Facilitators for Developing Strategies for Self-Directed Web-Learning

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Abstract: My research aim is to decipher the learning process of self-paced web-learners. I look at levels of learner needs and different levels of strategic behaviour. My research questions are: What does the web-based learning process look like with regard to strategic behaviour of a self-paced web-learner? How do varying feedback levels of instructional design alter the possible development of strategic behaviour? Two versions of the same web-based course were compared with regard to how the users developed strategies to manage within the web-based learning environment. The level of feedback to the learners was the key difference between the two course versions. The web-course under investigation was a corporate training course for a multi-national company. My attempt with this paper is to define levels of web-learner needs, and to argue for the importance of feedback for developing strategies for self-directed web-learning.

Keywords: Feedback, web-learning, self-direction, learning needs, strategic behaviour, learning strategies

A Methodology for e-Learning Scenario Development: The UNITE Approach

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Abstract: In the framework of the FP6 project UNITE a number of e-Learning scenarios have been developed, covering different educational contexts, pedagogical concepts and subjects (environmental education, ICT, language learning, etc.), bridging thus the gap between formal and informal learning settings. All e-Learning scenarios have taken into consideration the diverse cultural and educational backgrounds of the school environments they would be implemented in.

The scenarios follow a constructivist approach and promote the inductive and deductive way of learning, as pupils are encouraged to categorize, test structures and apply the knowledge obtained to new situations. These scenarios promote and support problem-based learning, where pupils can be creative, learn how to combine knowledge from different thematic areas, can think critically, analytically, and learn how to solve real problems. Besides pedagogy, scenarios highlight the strengths of UNITE platform itself enabling both in-school and out-of-school activities (also through m-learning).

The scenario development process followed in UNITE has included a number of stages that are discussed in this paper. Namely the design of a scenario map based on which e-Learning scenarios emerge, an e-Learning scenario template to structure scenarios in a consistent manner, a number of scenario examples to serve as guides, two handbooks (namely Teacher's and Content Development) to aid teachers, as well as formative and summative evaluation. Teachers were actively involved from the early stages, by being consulted, providing feedback and input in many topics. The UNITE approach for scenario development is in fact a user centered approach; the teacher sets the learning objectives of his/her lesson, designs the learning activities, prepares the content that he/she needs, chooses the tools he/ she will use, defines the assessment strategy he/ she will follow, and designs the e-Learning scenario taking into consideration the needs of his/her class.

Keywords: e-Learning scenario, methodology, development, e-Learning scenario template

Enhancing the Attainment of Higher Order Cognitive Skills Through Multi-Media e-Learning

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Abstract: The introduction of e-Learning in many institutions of learning has led to a paradigm shift in how learners grasp and apply what they learnt. Studies have shown that it is difficult for people to deal with decision-making situations that require Higher Order Cognitive Skills (HOCS) (Mbarika *et al.*, 2003). Undergraduate learning by the traditional learning approach has been repeatedly criticized for failing to develop HOCS for problem solving. In many situations learners are faced with challenges on how they can identify, integrate, evaluate, interrelate concepts and problem solve. To achieve such HOCS, e-Learning content needs to be instructionally designed to enhance their acquisition.

Many instructional designers have concentrated on designing content to suit the learning object concept but have ignored the acquisition of cognitive skills. This results in no marked difference between the traditional in-class lecture approach and e-Learning specifically aimed at improving HOCS. Problem solving learning has tried to take care of this deficiency by encouraging learning that focuses on attempting the problem. However this type of learning can hardly allow learners acquire skills for integrating, interrelating and evaluating concepts.

The Multi-media (MM) case study content is one form of instructional material that has been developed to enhance attainment of HOCS. However many of the researchers who have indicated its significant contribution in improving problem solving have not endeavored to personalize it to individual students. This paper proposes a model that can be used in the attainment of HOCS based on personalized MM case study content. The personalized MM content is thought to favor attainment of HOCS. The model also illustrates how both perceived and actual learning of HOCS can be tested.

Keywords: e-Learning, multi-media, higher order cognitive skills, lower order cognitive skills, personalization, problem based learning