

# ICICTE 2009



**International Conference  
on Information Communication  
Technologies in Education**

**Conference Abstracts**

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## Keynote Speech

### A LIFE BEYOND THE GOLDEN ARCHES

“Can you tell me what we’re waiting for, Señor?” – Bob Dylan

Societal expectations of higher education (HE) have changed significantly in the past quarter century without equivalent increases in funding. These changes leave a shortfall between the outcomes HE is expected to provide, the experiences it aspires to offer and those it can deliver. This shortfall has contributed to HEs McDonaldization (Ritzer, 1996). Although flexible delivery (FD) and technology-enhanced learning (TEL) are common strategies to narrow this shortfall, I argue that they can actually increase its breadth. I apply Simon’s model of levers of organizational design to show how HE can effect cultural changes to help to transform this shortfall into an entrepreneurial gap, thus offering HE a possible future beyond the golden arches.

## Session 1

### Teacher’s Professional Development

#### TECHNOLOGY-ENHANCED TEACHERS’ PROFESSIONAL DEVELOPMENT: STUDY OF FOUR CASES IN CHINA

Technology-Enhanced Teachers’ Professional Development (TETPD) is arousing increasing interest among practitioners and researchers both in China and other countries. Good practices of teachers’ education, supported by information and communication technologies, are in line with the needs of society. This paper proposes a framework for designing a multiple-case study to analyze technology enhanced teacher professional development in four typical Chinese cases. It describes the differences and similarities among the cases and argues that an understanding of TETPD could be built from them. The paper concludes that TETPD needs not only the joint planning of the central government, but also full support from local governments and schools, and especially teachers’ active participation.

#### TECHNOLOGY-ENHANCED TEACHERS’ PROFESSIONAL DEVELOPMENT: A LITERATURE REVIEW IN CHINA

In this paper, a review of the recent Chinese literature concerning background, policies, standards, evaluation, models as well as phases and processes of teacher professional development enhanced by technology is presented. The current situation in terms of status quo, issues and trends is described and considered in terms of technology- enhanced teachers’ professional development. Finally, the paper highlights ten conclusions drawn from Chinese research and practices.

#### TECHNOLOGY ENHANCED TEACHER PROFESSIONAL DEVELOPMENT — FOUR CASES IN SWEDEN FOR TEACHERS PROFESSIONAL DEVELOPMENT AND THE USE OF ICT

In this paper, the theoretical framework and design of the Swedish part of an international comparative study of Technology Enhanced Teacher Professional Development (TETPD) are presented. The aim of the paper is to provide a framework for a Swedish multiple-case study. Through the use of the framework, four different cases that are described as programs in which ICT is used in and for TPD are selected. The four cases are presented and compared on four characteristic features. The significance and prospect of the programs in terms of enhancing the use of ICT for teaching and learning are then discussed.

#### IMPLEMENTING ICT IN EDUCATION — MORE THAN BUILDING THE INFRASTRUCTURE?

Since 1994 Sweden has carried out a number of initiatives for integrating ICT into education that are funded by the Government and other actors. Huge amounts of money have been invested in developing infrastructure. However, it seems that there is still a gap between the claims for ICT use in education and the current practice of using ICT in classroom. The intention of this paper is to present and analyze potential “barriers” that have brought about the ineffective use of ICT in classroom and to provide some backgrounds for suggesting models of Technology Enhanced Teacher Professional Development.

## Session 2: Applications of ICT in Medicine

### UTILIZING A LEARNING MANAGEMENT SYSTEM IN A BLENDED LEARNING DESIGN TO ENHANCE SELF-REGULATED LEARNING STRATEGIES IN A BACCALAUREATE NURSING FUNDAMENTALS COURSE

Learning management systems which facilitate online learning have transformed higher education. Blended learning, the combination of traditional face-to-face and web-based delivery has proliferated across institutions of higher education at all levels (Newby et al., 2006). These technologies present new opportunities to extend traditional course evaluation to include the efficacy of technology integration as a dimension of instructional quality. Results using the LESSON questionnaire suggest discrepancy between actual capabilities and learners' perceptions of the capabilities of such systems to support self-regulated learning strategies. Recommendations for engaging learners in more self-regulatory behaviours are presented.

### PHEROMONE THERAPY: DESIGN FOR LEARNING ONLINE

Learning online presents challenges for tutors and students alike and retention is poor. The Pheromone Therapy online course was designed to include opportunities for induction, interaction and social communication. The social aspects of learning online are often seen as prime motivators in building effective learning experiences. Interviews with students, primarily mature workers in veterinary surgeries, while revealing support for induction and interactivity, suggested that learning experiences which were situated in practice, with opportunities for shared participation, created the greatest cohesion and sense of community.

### USING E-LEARNING TO IMPROVE PRESCRIBING PRACTICE IN EMERGING PRESCRIBERS

This paper reports on The National Prescribing Curriculum, a series of online, case-based modules designed to improve prescribing performance and confidence in emerging Australian prescribers. The modules mirror the decision-making process outlined in the WHO Guide to Good Prescribing (de Vries et al., 1994) and were developed as an initiative to combat emerging data that, increasingly, medical graduates demonstrate shortfalls in basic pharmacological knowledge and prescribing skills (Hilmer et al., 2009). The modules are situated in real life situations and include complex, authentic tasks. As most learners access the modules in a self-paced mode, sophisticated levels of expert and peer feedback have been integrated into the modules.

### INTEGRATING COMPUTER SIMULATION TRAINING INTO MEDICAL CURRICULUM — A QUICK AND BASIC APPROACH

This paper report on the integration of a radiological computer simulation into a clinical practice course for undergraduate nurse students and on the evaluation of this integration. The primary objective is to investigate whether a quick and basic approach to integration is sufficient in order to promote learning. We evaluate the integration as a product from a student perspective by inquiring, through interviews, into their experiences of learning with this simulation training and into their estimates of key integration design choices. Our overall conclusion is that a quick and basic approach to integration such as ours can be sufficient in promoting learning.

### EVALUATION OF MOBILE AUTHORING AND TUTORING IN MEDICAL ISSUES

Mobile computing facilities may provide many assets to the educational process. Mobile technology provides software access from anywhere and at any time, as well as computer equipment independence. The need for time and place independence is even greater for medical instructors and medical students. Medical instructors are usually doctors that have to treat patients on top of their tutoring duties. Mobile features are complementary to web-based features for desktop computers in a high extend in asynchronous e-learning environments. Time and place independence is also a considerable potential for medical students with overloaded educational duties. In this paper we examine the degree of usefulness of mobile facilities for medical instructors who wish to author and manage their courses using a mobile authoring tool. Furthermore, we investigate how acceptable



and useful the mobile features of an e-learning system have been to medical students that have used the system, in comparison with the use of the system through a desktop computer. In addition we investigate usability issues.

## **Session 3 New Technologies in Business Education**

### **QUALITY ASSURANCE OF TRANSNATIONAL VIRTUAL HIGHER EDUCATION: LESSONS LEARNED FROM A BUSINESS STUDIES PROGRAM DELIVERED IN SUB-SAHARAN AFRICA**

Increased competition, diversification and advances in educational technologies have been accompanied by the rapid expansion of online transnational higher education. Alongside these developments there has also been an increased focus on quality audit and assurance of transnational programs. In this context, Curtin University of Technology in Western Australia in partnership with the African Virtual University (AVU) in Nairobi, Kenya, delivered accredited business studies programs to students in four AVU partner institutions between 2004 and 2008. This paper describes the challenges involved in delivering ICT-based courses in developing countries and the quality assurance strategies employed in program design and delivery.

### **THE IMPLEMENTATION OF NEW TECHNOLOGIES IN EDUCATION: TEACHING ECONOMICS IN POST-SECONDARY LEVEL**

The aim of this paper is to challenge the hypothesis: "the use of computers and the internet in the teaching of economic modules does not affect student learning and retention." Research restrictions stipulated that the research was to be conducted at Institutes for Professional Training, during spring semester, 2007–2008. Seventy students, in total, participated in the research, comprising three classes of 25, 25 and 20 students respectively. "Money – Banks – Elements of Banking Techniques" was the course attended by these three classes. The lessons of the three classes took place in the computer laboratory where 25 computers were installed.

### **MAKING ROOM TO RECONCEPTUALISE LEARNING IN BUSINESS: EDUCATIONAL TECHNOLOGIES AND TEACHING SPACES**

This paper considers ICT usage in three Professional Development (PD) units of study at Victoria University (VU), Melbourne, Australia. The PD units were developed in response to an employer and graduate survey as part of a review of the Bachelor of Business at VU. The question of how well we have integrated the collaboration, communication and constructivist capabilities of available technologies into PD curriculum is considered in the light of preliminary responses of staff and students to the new units of study, the innovative learning spaces and the educational technologies available to facilitators. The 2006 survey of business practitioners, Business academics and VU Business alumni recommended the PD units be introduced into Business degrees after respondents emphasised the importance of developing undergraduates' employability skills including, most importantly, ICT skills. Acknowledging student preference for, and effectiveness of, learning by doing, the lecture/tutorial format at VU had to change to effectively develop these skills. Lectures and tutorials were replaced by a 3-hour seminar of 40 students in seven purpose-built rooms that boast a range of ICT. The 3-hour seminar in new learning spaces allows for ways of developing and assessing students' skills in ICT, communication, information literacy, team work and problem solving. This paper begins with a consideration of how, and even if, ICT in PD units is being exploited to its full educational potential.

### **CONNECT OR DISCONNECT: THE INFLUENCE OF TECHNOLOGY-ENABLED UNIVERSITY SUPPORT SERVICES ON ENTREPRENEURIAL INTENTIONS**

The purpose of this paper to describe the entrepreneurial intentions of South African university students and to determine the influence of university information technology-enabled support services (ITeS) on their entrepreneurial intentions. A cross-sectional web-based survey was conducted from August to November 2008 and 2203 university students participated. The results indicate that

more than half of students consider an entrepreneurial career more than five years after graduation and even though they regard ITeS as important, few make use of more than contacts, business plan and entrepreneurship seminars and lectures.

## THE USE OF SPREADSHEET MODELLING IN THE TEACHING OF CORPORATE FINANCE

The use of spreadsheets and computer simulations using programs such as Excel has become pervasive in practice. Although the use of spreadsheets and computer simulation are relevant in the teaching of corporate finance, research on the use of spreadsheets has tended to focus on the teaching of financial accounting and management accounting. Yet, the use of spreadsheets and financial modelling in the teaching of finance has grown due to the perceived educational benefits as well as the demand by business that students should develop skills to enable them to undertake corporate finance applications rather than simply understand corporate finance theory. The introduction of spreadsheet models will enhance the students' ability to apply corporate finance theory to real world applications.

### Session 4 ICT in Teaching Mathematics

#### OUR NEXT GENERATION OF ROBOTICS RESEARCHERS? TEACHING ROBOTICS AT PRIMARY SCHOOL LEVEL

In this paper, we present our experience in designing and teaching of our first robotics course for students at primary school level. The course was carried out over a comparatively short period of time, namely 6 weeks, 2 hours per week. In contrast to many other projects, we use robots that researchers used to conduct their research and discuss problems faced by these researchers. Thus, this is not a behavioural study but a hands-on learning experience for the students. The aim is to highlight the development of autonomous robots and artificial intelligence as well as to promote science and robotics in schools.

#### CLASSROOM INTERVENTION AFTER TEACHERS' PEDAGOGICAL AND CONTENT KNOWLEDGE OF STATISTICS THROUGH DISTANCE LEARNING

Recognizing teachers' ongoing professional development and learning as a linchpin of instructional innovation and success for their students, the paper presents an EU-funded project that exploits the affordances offered by ODL technologies to help improve the quality of statistics instruction offered in European schools. Twelve in-service teachers participated in the course, originating from three of the partner countries — Cyprus, Spain and Greece. Participating teachers developed and delivered teaching episodes integrating the use of the course tools and resources provided to them. In the paper, firstly, we describe the pedagogical and didactical approach underlying Early Statistics, and the course content and structure. Moreover, the feedback from the target user groups from all partner countries, as well as from the external experts regarding the project content, services, and didactical approaches was generally very positive. In this paper we present teacher's opinion of the program from the pilot delivery of the course and the follow-up classroom intervention.

#### A STUDY ON EFFECTIVENESS AND COGNITIVE LOAD OF SECONDARY MATH TEACHING USING DYNAMIC GEOMETRY SOFTWARE PG\_LAB

The experiment-based dynamic math teaching method is an instruction model which enables students to acquire knowledge through personal operation and reflection with the aid of information technology. This study aims at investigating the effectiveness of secondary math teaching using the experiment-based dynamic teaching method. A quasi-experiment was conducted to compare the students' achievements and cognitive load (CL) between traditional teaching and experiment-based dynamic teaching groups. Results indicated that though there was no significant difference in either the test scores or the CL between the experimental group and the control group, the experiment



group reported lower CL than the control group did. Combining the CL with the students' math achievements, it could be concluded that the traditional teaching was more suitable for the high performance students, while the experiment-based dynamic math teaching method was more suitable for the medium performance students.

## SMASH: ONLINE TRAINING IN MATHEMATICS AND SCIENCE EDUCATION FOR PARENTS

Acknowledging the central role of parents in children's learning, the EU-funded project SMASH aims to raise the educational standards of European youth in mathematics and science by cultivating underlying home cultures as springboards for learning. The project consortium has developed an innovative intercultural parent-trainer training course and related resources for professionals involved in parent education initiatives. The course provides these professionals with current knowledge, techniques, and implementation tools for the provision of high-quality, culturally differentiated training in mathematics and science education to parents of elementary and middle school children (ages 6–15) in their communities. Online multilingual resources support and promote the program's activities and objectives by offering open access to the parent-trainer training course content and tools.

## UNDERGRADUATE PRIMARY TEACHERS' LEARNING STYLES AND THEIR USE OF ICT & NATIONAL MATHEMATICS SOFTWARE

This research project was conducted at the Department of Primary Education at the University of Aegean. The 234 participants consisted of undergraduate primary school teachers. Their learning styles, their attitudes, as well as their self-efficacy in relation to ICT and the Mathematics Educational Software of the Pedagogical Institute were studied using four research instruments. The results show that students learning styles are mainly sensing, visual, sequential and active. Furthermore, it seems that students are well acquainted with the use of ICT and have, therefore, a positive attitude. Statistical significant differences were observed between the visual learning style and the use of ICT, and also between males and females.

## Session 5 Teacher Competence and Student Applications

### USING WEB BLOGS AS A TOOL TO ENCOURAGE PRE-CLASS READING, POST-CLASS REFLECTIONS AND COLLABORATION IN HIGHER EDUCATION

This paper reports on our students' experiments using blogs to encourage them to do pre-class reading assignment and reflections after class. The sample in the study included 5 EFL (English as Foreign Language) graduate students in a course of teaching methods and 90 Software Engineering students in an undergraduate Information Technology program. Results indicated that there was a positive attitude towards the use of blogs for pre-class preparation and post class reflections. However, for the experience to be successful it is important to consider the class size, students' educational level, and the type of reading assignment.

### WINNING STRATEGIES: TECHNOLOGY + TEACHERS = TRANSFORMATION

This paper discusses the experiences of Australia's most densely populated state, Victoria, in developing a holistic approach to the implementation of ICTs across the State's Government schools. It considers the national context in which these reforms are being undertaken and the progress made. It shares lessons learned in developing three interrelated areas of ICT provision in the Victorian education system, namely: professional capability; curriculum reform and resources; and infrastructure, access and school design. By implementing such a holistic approach the pedagogy of teaching is rapidly changing in Victorian schools enabling a more targeted and individual approach to learning.

## INTRODUCING PRESERVICE TEACHERS TO FREE AND OPEN SOURCE SOFTWARE: FINDINGS FROM A CASE STUDY

Research suggests that one of the barriers to Information and Communication Technology (ICT) use in classrooms is teachers' lack of ICT skills and competencies.

While for quite a long time ICT literacy meant familiarization with proprietary software, the growing importance of Free and Open Source Software (FOSS) has considerably changed the ICT landscape. The present paper examines undergraduate students' perspectives on FOSS after attending an introductory ICT course in which only such software was used. One hundred and one students from a preschool education department participated in the study. Two questionnaires were used for data collection. Data analysis indicated that (a) the students had no knowledge about FOSS concepts and applications and (b) GNU/Linux was considered more feature-rich and interesting compared to Microsoft Windows while Mozilla Firefox was also perceived as more feature-rich compared to Microsoft Internet Explorer. The paper is concluded with a discussion of the findings and implications for teacher training.

## KNOWING ABOUT ICT IN EDUCATION REDEFINING DIGITAL COMPETENCE FOR TEACHERS?

This paper concerns Teacher Professional Development (TPD) and ICT. It is sometimes assumed that teachers' use of ICT should promote a digital literacy, and that teachers' knowledge could be described as a digital competence. This assumption disregards that digital competence often refers to the policies of life-long learning (European Union, 2006). This paper aims to discuss digital competence in the context of ICT in Swedish schools as it appears in national and international surveys. It is argued that teachers' digital competence has to be framed differently in order to give a relevant picture of the situation in Swedish schools.

## RESEARCHING THE PAST TO RETOOL IN THE PRESENT FOR ACCESS TO THE FUTURE

Computers in Education, a course accredited by the National Council for Accreditation of Teacher Education (NCATE), USA, is the co-requisite of a field experience, Technology in Education. The courses exemplify the integration of technology to teach content, while preparing the next generation of educators. The challenges and opportunities associated with the design of age-appropriate, interdisciplinary curricula, teaching methodology, and advanced computer skills will be discussed during this paper session.

### Session 6

#### Constructivism in Web Cultures

## A STUDY ON DEVELOPMENT OF DIGITAL CONTENT OF HUMAN-RESOURCE-MANAGEMENT PROGRAMS AT TECHNICAL UNIVERSITIES AND COLLABORATIVE E-LEARNING PLATFORM UNDER THE PRINCIPLES OF CONSTRUCTIVISM

Constructivism, stressed and valued in the field of education, can enhance students' motivation in learning and their ability to cooperate. Students could also develop their own knowledge with constructive interaction. Because the Internet learning system has the huge function of connecting information and interacting, it can assist learners to approach the idea of learning constructively.

The purpose of study is to orient constructivism to the Internet Learning System for students of Human Resource Management of Business Administration in technical universities with the expectation of promoting students' practical abilities for human resource management and team cooperation. A constructivism-oriented e-learning platform is used, with the researchers' aspiration being that students could have higher level of practical working proficiency after learning.

A basic teamwork ability scale of students in technical universities, a learning achievement scale of human-resource-management programs, and a learning attitude scale of human-resource-management programs were made under the principles of constructivism, and the researchers

verified the reliability and validity of the scales in hope that future researchers could use less time and have a better understanding of disparities between correspondent abilities, learning achievement, and learning attitudes of students before and after the programs.

## DO STUDENTS' FORMER ICT EXPERIENCES INFLUENCE PATTERNS OF PARTICIPATION IN ONLINE HIGHER EDUCATION? A CASE STUDY ON A SWEDISH LEADERSHIP AND COACHING PROGRAMME

This paper investigates if and how students' former ICT experiences influence patterns of participation in online higher education. The empirical setting is an online Swedish leadership and coaching programme. Data was collected through questionnaires and log-files. In total, 17 students were followed up. Previous ICT experience from online education seems not influence on how often students use the Learning Management System. Patterns of participation seem not to be related to their previous ICT experiences. The result is discussed in relation to some theories of participation.

## THE IMPACT OF THE WEB CULTURE ON EDUCATION

With the progress of the web, many new solutions are also developed to allow every individual to be able to participate. The active ones see the need to create solutions that are free and accessible. Web 2.0 technologies and its contemporaries like Google and Youtube permit open collaboration and sharing, providing free and accessible solutions, the campaign of copying or retrieving, absorbing or reusing solution materials. This has now become part of the web culture. The web culture gives leverage to young people and students of enjoying more freedom, having so much resources and having a comfort zone. This leads to a more preferred reality compared to the imperfect physical reality. What are the implications of web culture now to education?

## ARE STUDENTS' ATTITUDES TOWARDS COLLABORATION MIRRORED IN ONLINE EDUCATION?

In this article, the aim is to explore the relation between students' attitudes towards collaboration and their actual online interaction. The article reports on a small case study based on a university course. Data was collected using a questionnaire and log file analysis. Seventeen students were studied. The students foremost use the LMS as a forum for information, for reading teachers' and other students' postings and for watching streamed online lectures. The results show that students who perceive themselves as cooperative and group work oriented did not participate in higher extent than students with lower estimations of their group work orientation.

## TOWARDS ACTIVE CITIZENSHIP USING ICT

The objective of this paper is to present the achieved results and the lessons learned from a Grundtvig II Learning Partnership entitled "Active Citizenship", that focus on the use of innovative application of ICT tools with the purpose to further active citizenship. We present the methodologies that we applied while teaching Informatics at the Second Chance School of Corfu, which evolved around three axes: active citizens are informed, open-minded, and act locally while thinking globally. Our overall aim was not merely to teach our adult learners ICT skills, but to motivate them to embrace ICT as means to alter their daily attitude.

## UFV Graduate Student Paper Presentations

### COMBINATION OF EDUCATION TECHNOLOGIES FOR THE ENHANCEMENT OF AN ASYNCHRONOUS SYSTEM

In this paper we will present an asynchronous educational system, with navel point an enhanced form of webcast. This enhanced webcast form is broadcasted through a web page, which has been appropriately modulated with hypertext, Java-applets and Internet services and application such as forum, portals, e-libraries, blogs, etc. This combination of technological tools will be implemented according to the modern learning theories and the didactical rules of each teaching material. So, we will have greater efficiency of the asynchronous system.

## PEDAGOGIES OF USING INTERACTIVE WHITEBOARDS (IWBS) IN EXEMPLARY TEACHING IN ONE HIGHER EDUCATION INSTITUTION

This paper reports findings from a case study in one UK University of innovative teaching practices using Interactive Whiteboards (IWBs). The study involved observations and interviews with teachers at the University who were using IWBs in particularly interesting or innovative ways. Findings report wide ranging pedagogies in practice. These are categorised against Haldane and Somekh's (2005) typology of IWB pedagogies. Findings suggest that the pedagogies demonstrated span the typology according to the learning need perceived by the teachers and contexts of use. Thick descriptive examples of pedagogies in practice are given. An adapted typology of pedagogy in Higher Education is proposed.

## RETHINKING THE CONCEPTUALISATION OF ONLINE EDUCATION

This paper deals with the question of how to conceptualise online education. To answer this question data from an online course were interpreted through a theoretical frame consisting of interactional and transactional approaches to human action. Consequences for understanding and conceptualise the environment, technology, and communication in online education were unfolded. Conceptualisations building on the concept of learning environment were found to be problematic.

### Session 7

#### Wikis and Weblogs for Learning

## WHOSE SPACE IS IT ANYWAY? AN EXPLORATORY STUDY OF STUDENTS' USE OF MYSPACE.COM FOR EDUCATIONAL PURPOSES

The immense popularity and voluminous usage of social networking tools and sites such as MySpace.com have not gone unnoticed by educators who wish to use such spaces for purposes of education. But it is not known if these networking sites are currently being used for educational purposes. Data for the study consisted of 505 comments posted in the public or unprotected areas of 50 college-age users of MySpace.com. The study found that students rarely used the comment space for educational interactions. Only 4.75% or 1 out of every 20 of the messages was related to education.

## ICT INTEGRATION IN LEARNING ORGANISATIONS: POTENTIALS OF THE 'INTERMEDIATE SPACE' FOR VIRTUAL LEARNING ENVIRONMENTS

This paper explores the concept of 'intermediate space' as a method of understanding the role of learning spaces in the development of technology-enhanced educational organisations. Sesink (2002) refers to the English psychoanalyst and paediatrician D.W. Winnicott (1971), and describes 'intermediate space' as a transitional object or phenomena: the potential space, the area of joint cultural experience for learners where personal knowledge, development and social interaction promote a learners' initiative and individual learning. To facilitate such constructivist processes requires an encouraging and protected space — one which promotes active, individual and reflective knowledge construction (Jonassen, 1991). An understanding of the role of 'intermediate space' in educational organisations in both virtual and 'real' architectures can encourage the development of process-related media competences, e.g. the ability for self-organised learning.

## THE WIKI FACTOR: HOW STUDENTS LEARN TO LOVE GROUP WORK

We explore the use of social software to enhance online collaboration of undergraduate students in higher education. This was implemented within Leapfrog Biology, an intensive 4-week online program developed for students who have not completed year 12 biology and who are entering first year medical studies. We used wikis to facilitate both the process and the product of collaboration. We consider the educational design of the online environment, the underlying pedagogy and student activity, and the ways in which the design influences student satisfaction, motivation and learning outcomes.

## IMPLEMENTING E-PORTFOLIOS: FIRST STEPS — LESSONS LEARNT

This paper reflects on the implementation of e-portfolio software for a year one undergraduate

course. The process of choosing the appropriate software, the essential training needs and the results of a student survey are analysed and discussed. Key findings indicate a greater need for training both staff and students than was initially predicted. The common assumption that all students have an adequate level of computer literacy is challenged. Staff moving into the area of new technologies for the first time may have misconceptions that are difficult to identify.

## **Session 8** **Simulations to Enhance Learner Outcome**

### **LEARNING ABOUT ECONOMIC VALUATION OF THE ENVIRONMENT USING ONLINE SIMULATIONS**

While e-learning has been widely adopted in the tertiary education throughout the world, its use has been limited mainly to content delivery. Many of the possibilities to use e-learning to promote a 'deep learning', student-centred approach have been left unexploited. This paper reports on the use of an online simulation designed to promote these learning approaches and to attain higher level learning outcomes. The context is within an environmental economics upper-level undergraduate class at The University of Sydney, Australia. The learning task is to do with the effects of alternative willingness-to-pay (WTP) question formats on the elicited responses and the mean WTP estimates from a non-market economic method for valuation of an environmental asset. Students were asked to fill online surveys that corresponded to four different formats of the WTP question. The results from the survey were fed back to students online. To control for attainment of learning outcomes, a quiz was administered both pre-, and post-survey. The results indicate that this online simulation enabled students to achieve higher level of thinking and comprehending and has somewhat improved measurable learning outcomes.

### **BLENDING THE 'VIRTUAL' AND THE 'REAL' — USING FREWARE 3-D SIMULATION TO ENHANCE REALISM IN AUDIO ENGINEERING**

Freeware graphics tools were used to create a 3-D simulation of a building and deliver it online to audio engineering students via a Virtual Learning Environment. A pilot group of students were required to design a sound reinforcement system for the virtual building, while another group of students were given a similar task based only on 2-D architectural plans. Questionnaires and interviews were used to assess the learning experience of the two groups. Results indicated that the use of the simulation increased realism of the learning experience, increased motivation and enabled more effective communication amongst the group compared to those using only the 2-D plans.

### **USING FICTIONAL CHARACTERS AS STUDENTS' ALTER EGOS IN PARTICIPATORY DESIGN SESSIONS**

The paper describes a novel approach to collaborative design of educational software, one that is based on the use of fictional characters (we introduce the idea of design alter egos) as a means towards eliciting and understanding students' requirements. Through the presentation of the design process, a case study application for the design of a course website and a quantitative and qualitative analysis of the results, the paper's aim is to suggest the use of design alter egos as an appropriate, effective and efficient means of co-designing educational software with students.

### **THE NEED FOR EFFICIENT AND FLEXIBLE EDUCATIONAL IMAGERY — WHEN AMBITIOUS VISUALIZATION PRODUCTS MEET THE CONTEXT OF ACTUAL LEARNING ENVIRONMENTS**

This paper reports findings from a project implementing the Virtual Labs site featuring Flash-based animations developed at Stanford University. The main conclusion in this paper stresses the need to design for flexibility and adaptability of interactive media to better suit the specific situation teachers encounter in their everyday work in order to allow them to build their own audiovisual presentation kits based on various available resources. Ambitious but rigid visualization products might otherwise end up not being used at all.

## INTEGRATING GAMEPLAY AND LEARNING IN VIDEOGAMES

Videogames are increasingly becoming the preferred entertainment activity for young people. Researchers claim that videogames have the ability to enrich and encourage learning by augmenting traditional learning methods.

Here we are investigating how videogames can support physics education by stimulating students and creating an environment for them to experiment through a series of game activities. We have developed a pilot platform game for students attending Year 2 of secondary school in Greece (13 years old) to cover the course "Forces and their Effects." The aim of this work is to explore whether integrating the learning process to the game play can enrich learning and investigate if videogames can offer an alternative tool to the teaching of concepts that students have difficulty in understanding.

### Session 9

#### Simulations to Enhance Learner Outcome

## THE IMPACT OF INTERACTIVE COMMUNICATION TOOLS IN ONLINE LEARNING COMMUNITIES

This paper discusses the use and importance of existing and emerging interactive communication tools used in online courses. The challenges and opportunities associated with the use of those tools are examined in light of student feedback. Our findings show that interactive communication tools in online courses have the potential to greatly contribute to a positive online learning experience, if used appropriately. The implications for faculty teaching online courses are also discussed.

## FACULTY EXCHANGE PERIODS — MAIN OBSTACLES AND POSSIBLE SOLUTIONS FROM FACULTY VIEWPOINT

Internationalization is an important part of higher education and faculty exchange periods are one typical way for it. This paper presents a case study of the barriers and challenges relating to faculty exchanges at the Turku University of Applied Sciences. Seven categories of barriers were identified: family and friends, language skills, work responsibilities at home university, lack of information, personal insecurity, too much work needed for an exchange period, and finance. Seven possible categories of challenges were identified as well: yearly working plan, language trainings, exchange implementation, share experiences, reasons to participate in an exchange, concrete support, and curriculum changes.

## USING SHORT MESSAGE SERVICE (SMS) TO ENHANCE TEACHING AND LEARNING

In October 2008, a pilot study using Short Message Service (SMS) to deliver quizzes to 14 students studying statistics at an Australian University was conducted. Data collected and analysed from the pilot included student responses to the quiz questions as well as their evaluation of the learning experience, measures of their approaches to learning, and attitudes to computers. The results from the pilot support the efficacy of using SMS to encourage students to engage with material outside of class and suggest that student learning is enhanced as a result.

## MODERN METHODS OF LEARNING TEXT PUBLICATION

Web-based learning is an important part of the e-learning ecosystem. Using the Internet as a medium for technical learning text publications can bring two major problems: the problem of the learning text re-usability and the problem of interpretation of a mathematical notation. Thanks to modern web technologies it is possible to solve both problems and suppress the difference with the paper-based learning text publications.

This paper provides an overview of possible solutions emphasizing one particular implementation of technical learning text publication implemented in the TUL University E-learning System environment.



## Session 10

### Authorship and Authority of Knowledge

#### STUDENTS' RESEARCH SELF-EFFICACY DURING ONLINE DOCTORAL RESEARCH COURSES

This study will explore student skill development and research self-efficacy as related to online doctoral students' first core research course experience. Collected data includes course grades, discussion content, instructor capstone assignment ratings, and scores on the Research Self-Efficacy Scale (RSES). Findings from this study will be used to inform instructors and university faculty in effective ways to support and guide doctoral students during their early research experiences. This support can help better ensure that online graduate students will develop well-crafted dissertations and, following graduation, continue to conduct research and inform their fields of practice.

#### COLLABORATIVE LEARNING AS PEER REVIEW IN ONLINE AND DISTANCE EDUCATION

This paper draws upon findings from an analysis of the written feedback produced by a group of Swedish University students acting as peer reviewers. The study aims to identify what type of feedback the students provided for each other, in order to gain some preliminary insights into if and how peer review preceded by collaborative criteria processing could contribute to learning. The two dominant feedback patterns were "reinforcing" and "suggestive" while "corrective" and "didactic" were less common.

#### THE EPISTEMOLOGY WAR: WIKIPEDIA, WEB 2.0, THE ACADEMY, AND THE BATTLE OVER THE NATURE AND AUTHORITY OF KNOWLEDGE


This paper reports on the preliminary findings of an empirical research project that investigates the attitude of academics (or faculty) towards Wikipedia and how their attitudes impact on their use of Web 2.0 for educational purposes. The research data has been obtained via an online survey of academics predominantly from the University of New South Wales campuses in Canberra (ADFA) and Sydney as well as from other universities in Australia and abroad. The findings to date indicate that some academics are well informed about, and embrace Wikipedia, and by extension Web 2.0 social networking applications and services for the purposes of learning. Yet Wikipedia tends to provoke strong opinions, primarily negative and proves to be a highly divisive and controversial issue. While quite a few respondents occupy the middle ground and display a cautious if not somewhat curious attitude towards Wikipedia, those with a negative opinion appear to hold them much more strongly than the few who indicate positive opinions. The paper provides empirical data highlighting a considerable degree of apprehension, if not hostility towards what is perceived to be Wikipedia's disruptive influence on traditional knowledge construction processes and the authority of academia. Despite, or perhaps because of, a long history of online learning, and notwithstanding the appropriateness of a critical approach, these results point to a problematic acculturation of academia into Web 2.0's worldview and practices.

#### THE EFFECTIVENESS OF AN INTERACTIVE COURSEWARE USING THREE DIFFERENT STRATEGIES

This paper examines the cognitive effects, in terms of the gain scores and time-on-task, of a computer courseware using collaborative and mastery learning strategies. A total of 262 Form Four students from four Malaysian schools interacted with two Matrices courseware: one with mastery learning elements (used in CML and CCML strategies) and another without mastery learning elements (used in CCL strategy). This study showed that CCML and CML were the effective learning tools. If the time allocated for the learning process is longer, CCML would be the most ideal strategy otherwise CML is generally preferred in the learning process.

#### ENHANCING LEARNING AND SOCIABILITY IN PROVINCIAL SCHOOLS USING VIRTUAL REALITY TECHNOLOGIES

Students in provincial, difficult-to-access schools often face the problems of disinterest in the educational process, limited learning challenges, even social marginalization. The work proposed in this paper focuses on the applicability of a secure virtual world platform to isolated schools on remote



Greek villages that allows the students among the schools to communicate and share knowledge. We aim to investigate whether the virtual platform manages to actually expand the schools' community, and to awaken the participants' social and learning interests. In this paper we evaluate various virtual worlds and technologies based on cost, security, customization and maintenance requirements. The open source OpenSimulator Virtual World server meets those criteria. We also propose a framework of simple activities, like a virtual photo gallery, that encourage students to capture, exhibit, exchange and discuss content pertaining to their local history and culture, and design the evaluation process to be performed as the next step of our research.

## Session 11

### **The Uses of Source Material, and The Uses of ICT in English as a Foreign Language (EFL) Courses**

#### ICT IMPLEMENTATION IN THE IRANIAN EDUCATIONAL SYSTEM AND ITS PERCEPTION BY THE EFL TEACHERS AS A BENEFICIAL TECHNOLOGY

This study investigated factors that may influence the attitudes towards information and communication technology (ICT) by Iranian teachers of English as a foreign language (EFL). The Diffusion of Innovations (Rogers, 1995) and the theoretical relationship between attitudes and behavior introduced by the Theory of Reasoned Action (Ajzen & Fishbein, 1980) established the theoretical framework.

A multisections survey in English language was administered to the EFL teachers in the cities of Qazvin, Takestan, Abhar, and Zanjan for the scholastic year 2007–2008. A sample of 120 was utilized. The study showed that Iranian EFL teachers had positive attitudes towards ICT. Iranian EFL teachers' perceptions of ICT attributes from highest to lowest in mean scores were: observability, relative advantage, complexity, and compatibility. Home was the place most EFL teachers had access. It was also found that age and teaching experience had a negative correlation with attitudes, whereas qualification had a positive correlation with attitudes. The total variance in Iranian EFL teachers' attitudes towards ICT (67%) was explained by the four main independent variables of the study: attributes, cultural perceptions, competence, and access.

#### DEVELOPING A PEDAGOGICAL FRAMEWORK FOR ICT USE IN LANGUAGES CLASSROOMS

This paper will examine the potential of classroom-based technologies from the perspective of foreign language teaching. Drawing on research conducted with final year teacher–education students and recent work in this area by Baumgartner (2004), Bartlett-Bragg (2004) and others, this paper will outline a theoretical framework for the use of ICT in language classrooms. This framework will take account of learner readiness, appropriate pedagogical frameworks and the linguistic resources that learners have at their disposal.

The use of available technologies in languages classrooms among a group of final year teacher education students and their supervising teachers is examined. The results of the research are used as a starting point for a discussion about the essential features of a pedagogical framework for languages teachers.

#### WHO STRUGGLES WITH ACADEMIC LITERACY? CHALLENGING COMMON ASSUMPTIONS OF WHICH STUDENTS ENGAGE IN PLAGIARISM

This paper reports unexpected findings arising from the evaluation of an online tutorial designed to assist students in preparing their assignments at the University of Western Sydney (UWS). The tutorial attempts to fill a gap that cannot be met in universities struggling in the current fiscal and aims to help students produce quality work free of plagiarism. Using a mixed methods approach, we found that students in general struggle to understand academic writing and referencing and that a freely available online resource is beneficial.



## KAIRION: TOWARDS A TECHNOLOGY-BASED PEDAGOGY OF SOURCE USE PRACTICE

Research literature artifacts are not autonomous constructs, but elements of rhetorical processes embedded in specific times and places (Bazerman, 1988; Geisler, 1994; Prior, 1998). Specifically for academic citation practices, Cronin (1984) and Cozzens (1989) argued for a rhetorical perspective of scientific attribution, focusing on the persuasive and performative nature of the practice. This paper reports on the results of textual analyses and discourse-based interviews with 16 researchers from four different disciplines, to argue that source use practices are deeply embedded in rhetorical purpose. Based on this research, the development of a computer-based visualization framework for source use, Kairion, aimed at supporting this understanding of academic practices will be presented.

## Session 12

### Participation in Learning Communities

#### SUPPORTING USER PARTICIPATION IN DEVELOPING MOBILE TECHNOLOGY TO HELP YOUNG PEOPLE WITH AUTISM: THE HANDS SMARTPHONE PROJECT

Located within the field of the development of mobile technology, the HANDS project aims to develop software to support the social and self-management skills of children with autism. As part of the HANDS project 10 young people were interviewed during the specification stage. This paper explores the methodological aspects of involving young people with autism spectrum disorders in research and argues that consulting children at the earlier stages of research can be a valid contribution to software development.

#### DESIGNING INTEGRATED ONLINE EXERCISES FOR ADVANCED SECOND-LANGUAGE USERS OF ENGLISH TO PRACTISE SUMMARISING TECHNICAL SUBJECT CONTENT

Effective summarising is not intuitive: it requires practising specifically-taught skills in an integrated process of reading, comprehending, note-taking, planning and writing (Johns 1988; Juan & Palmer 1998). For advanced EFL English students successfully to integrate these skills, detailed and nuanced online auto-feedback would be very useful, using a mixed collection of the auto-summarising technology that has been developed over the past decade (Endres-Niggemeyer 2000; Franzke & Streeter 2006; Sparck Jones 2007). Preliminary design thoughts are offered here, following diagnostic findings on difficulties faced by advanced EFL students in reading comprehension prior to summarising.

#### SUPPORTING ONLINE LEARNING TEAMS USING P2P TECHNOLOGIES

P2P systems have become popular for file sharing among Internet users. Due to improvement on network communications and the processing power of desktop machines, there is an increasing interest in exploring P2P technologies for developing groupware tools to support e-learning. Nowadays most online learning systems are centralized web-based, which show several limitations such as maintenance cost, scalability and having a single point of failure. P2P technologies are an important alternative to developing decentralized online learning systems in which students can be more than mere clients and can use their own computational resources for task accomplishment during online learning process. Unfortunately, current P2P systems cannot be used in a straightforward way for supporting real online teams since they cannot be customized for small group purposes and there are important security issues in such systems.

In this paper we will present the design and implementation of groupware tools using a JXTA-based P2P platform, called JXTA-Overlay. We build on previous work in which JXTA-Overlay was successfully used for developing a customized file sharing system. The current paper will present the design and implementation of new groupware tools for online teams of a virtual campus. The proposed groupware tools include communication tools such as messaging and rooms and tools for learning scenario. By using the system, the members of a small online team of students can create learning scenarios corresponding to common work projects arising in online learning; then they can use the learning scenario to define, assign and track a set of tasks within the learning scenario

assigned to the members of the group. All in all, this work is a step towards using 2P technologies in the design and implementation of decentralized online learning systems.

## IT'S ALL ABOUT VIDEO CONFERENCING — TOWARDS A SUSTAINABLE E-LEARNING APPROACH IN DEVELOPING REGIONS IN BOLIVIA

This paper reports on the current transformation of higher education in Bolivia. The involvement of ICT, e.g. e-learning, has many facets. One is that it offers promising solutions that can help to bridge distance and provide education in rural areas. Another is that e-learning also seems to provide promising opportunities for dealing with problems found on campus. Here, we approach the motivating and initial conditions from a practice-oriented perspective and discuss the possibilities, restraints and expectations of e-learning at a public university in Bolivia. We identify factors that need to be addressed in the coming work to advance e-learning practices.

## POSTERS SESSION

### FUSING ASTRONOMY AND ICT: ADVANCING PRIMARY SCIENCE EDUCATION IN AN EFL COUNTRY

Malaysia's Vision 2020 for enhancing its education system includes the development of scientific literacy commencing at the primary school level. This Vision focuses on using English as the Medium of Instruction (EMI) for teaching primary science, as Malaysia has English as a Foreign Language (EFL) in its curriculum. Teaching in Malaysia presents a dual challenge, namely, learning to teach science and learning to teach science using EMI. In addition, ICT must be incorporated in the process. Indeed, how can EFL pre-service teachers learn to teach primary science using ICT? This presentation investigates the education of Malaysian pre-service teachers for learning how to teach one strand in science education (i.e., space, primary astronomy) in an English-language context. Ninety-six second-year pre-service teachers from two Malaysian institutes were involved in a 16-week "Earth and Space" course, half the course involved education about primary astronomy. Seventy-five of these pre-service teachers provided written responses about the course and their development as potential teachers of primary astronomy using EMI. Pre-service teacher assessments and multimedia presentations provided further evidence on learning how to teach primary astronomy. Many of these pre-service teachers claimed that learning to teach primary astronomy needs to focus on teaching strategies, content knowledge with easy-to-understand concepts, computer simulations (e.g., Earth Centered Universe, Stellarium, Celestia), other ICT media, and field experiences that use naked-eye observations and telescopes to investigate celestial bodies. Although generally proficient in using ICT, they claimed there were EFL barriers for learning some new terminology. Nevertheless, PowerPoint, animations, videos, and simulations were identified as effective ICT tools for providing clear visual representations of abstract concepts and ways to "make learning more interesting." Curriculum designers need to update and incorporate current knowledge and understandings about astronomy that can be conducted at the primary school level.

### PRESERVICE TEACHERS' USAGE OF ICT TO PRESENT UNDERSTANDINGS ABOUT MIDDLE YEARS OF SCHOOLING

Middle schooling is a relatively new movement in Australia with pre-service teacher education in middle schooling offered as a degree, course, pathway and/or units embedded within courses. Adolescents can be disengaged from schooling and require highly relevant and motivating lessons that facilitate the learning process. Parental awareness of middle school issues may assist adolescents in their educational developments. Australian pre-service teachers from one regional university were instructed on how to use ICT for promoting student engagement in the middle school. This qualitative study focused on 45 pre-service teachers' usage of ICT to explain to parents about issues in the middle years of schooling. Data were coded for commonalities and included observations of ICT presentations, criterion-referenced assessment of such presentations, peer reactions to presentations, and the presentation material. Although nearly all ICT presentations consisted of PowerPoint with

multimedia embedded, concise and visually-appealing presentations appeared to have the highest impact. Comedic interludes and higher interactivity with sound and images elicited strong positive reactions from the audience. Pre-service teacher education on learning how to teach middle schooling requires a range of pedagogical strategies and tools. Ensuring effective usage of ICT to communicate issues in middle schooling may further advance community understanding of adolescents and their stages of development. It provides a higher impact tool on addressing key issues, particularly the aim of assisting adolescents to achieve successful educational outcomes.

## CONSTRUCTION AND DELIVERY OF AN EFFECTIVE INTEGRATED INFORMATION TECHNOLOGY COURSE

The concept of teaching computer technology within a framework of integration with other core subjects has long been considered a desirable method of creating a meaningful and motivational learning environment. This presentation discusses various aspects of constructing a practical and effective model for delivering an integrated information technology course suitable for students at the grade 10 or 11 level. These aspects include laying a foundation, project formulation in conjunction with subject teachers, control of technical curriculum, methods of instruction, construction of resources, and assessment techniques. Various administrative and pedagogical issues are addressed and several examples are illustrated.

## HIGHER EDUCATION, MOBILE LEARNING AND MODERN FOREIGN LANGUAGES THE IMPORTANCE OF THE HUMAN FACTOR

In a context of significant evolutions in Higher Education, such as the widening participation of students from non-traditional social and educational backgrounds, together with the necessity to operate within budgetary constraints, e-learning is commonly presented in educational circles as an effective answer to current requirements, both at students' level and at institutional level. In addition, numerous organisations such as the National Centre for Language Teaching (CILT), report on the precarious situation of Modern Foreign Languages in the United Kingdom, with issues such as the decreasing number of students on specialist language degree courses and the closure of university departments

In March 2005, the Department for Education and Science (DFES) launched a five-year e-learning strategy *Harnessing Technology: Transforming Learning and Children's services*, with implications in all areas of education, from primary schools to universities, where ICT was clearly presented as a participational and motivational tool. The following year, the Higher Education Funding Council for England (HEFCE) agreed to fund a programme to encourage the take-up of language courses in England. Routes into Languages was originally funded from HEFCE's Strategic Development Fund and will be running until 2009–2010.

Technologies are in constant evolution and have become increasingly smaller, which has led to a greater availability of handheld and mobile devices. These have benefitted from an ever-growing popularity among the population. The use of mobile technologies has been increasingly normalised and, as a consequence, has attracted a great deal of interest among practitioners and researchers. Taking into account the current educational context, initiatives taken at governmental and institutional level, the poster will seek to define the concept of mobile learning more closely, and will highlight the importance of the human factor, adopting a theoretical and practical approach based on cooperative learning. Reference will be made to various examples of CALL materials.

## INSTRUCTIONAL TECHNOLOGY —IPHONE IN BIOLOGY TEACHING

The objective of our study was to create a more efficient and innovative learning environment for our students: a mobile learning environment. To reach our objective we proposed to pilot the delivery of biomedical science instruction through smart mobile phone access to all instructional materials, as a supplemental experience for students who come to campus for their classes. The success of this project was to be evaluated by assessing student learning outcomes. Survey and student time logs

have been used to measure three basic three areas of the learning effectiveness process: the increase (or not) of student's connecting time (study time); the collaborating time between the students; and students' understanding of the material in depth.

Experimental group (class with iPhone) and control group (class without iPhone) has been compared with course related weekly time spending. Our preliminary result shows that: 1) the average weekly email time spending in experimental group is at least doubled; 2) the average weekly text message time in experimental group is at least tripled; 3) the average review time in experimental group is also at least doubled; and 4) among the experimental group, there is no significant different in average time spent on e-mail between PC and iPhone, but significant increased time was spent text messaging using iPhone. Students spent significantly more time using PCs or iPhones rather textbook or paper notes to review class material. This study suggested that mobile learning did increase our student's connecting time, and their collaborating time, therefore also improved our student's learning outcome.

## MONITORING KNOWLEDGE SHARING SOCIAL NETWORKS IN DISTRIBUTED COMMUNITIES

To increase communication and collaboration opportunities, members of a community must be aware of the social networks that exist within that community. This poster presents a social network monitoring system — the KIWI system — that enables users to register their interactions and visualize their social networks. The system was implemented in a distributed research community and the results have shown that KIWI facilitates collecting information about social interactions. Furthermore, the visualization of the social networks, given as feedback, appeared to have a positive impact on the group, augmenting their social network awareness.

## CLICKERS: CAN A SIMPLE TECHNOLOGY INCREASE STUDENT ENGAGEMENT IN THE CLASSROOM?

It has long been known that students learn best when they are actively engaged and can therefore deeply encode material. We hypothesized that clickers — a simple, easy-to-use technology — could engage students attending a large university lecture. Clickers are wireless response systems that students use to anonymously and instantaneously answer questions posed by the instructor during a lecture. Clickers allow rapid, reliable feedback that the instructor and the students can use to gauge learning and adapt accordingly.

In order to measure student engagement, we developed an objective, quantitative classroom observation protocol and applied it to a large, multi-instructor, first-year oceanography course that used both clickers and traditional lecture styles. Observation data show that student engagement is strongly correlated to teaching practices and is overwhelmingly higher during clicker questions than didactic lecturing. When analyzed further, student engagement immediately following a clicker question varied significantly with the qualities of the question: if the question was too easy then student engagement decreased during follow up. Conversely, clicker questions involving challenging ideas or multiple plausible answers kept students engaged longer. Overall, student engagement was highest when questions generated learner discussion or stimulated student questions. Moreover, student engagement was higher when the instructor stimulated and summarized student interaction than when the instructor didactically explained answers. Results showed good external validity as three instructors of varying teaching expertise showed similar trends in student engagement based on clicker-use practices. In summary, our study shows that the simple, easy-to-use technology of clickers can significantly improve student engagement and provide continual feedback to instructors and students in order to maximize the learning experience.

## WHOSE SLIDE IS IT, ANYWAY? VISUALLY SPARSE SLIDES HELP STUDENTS, BUT CHALLENGE LECTURERS

As information communication technologies become ever more ubiquitous, there is increasingly an expectation, even an assumption, that lecturers in higher education will use slides to accompany their lectures. Some have argued that slide presentation is an intrinsically poor way of communicating

complex information (e.g., Tufte, 2003), and concern has been expressed that the use of PowerPoint and similar slideware is substantially altering the way we teach (e.g., Craig & Amernic, 2006). Here, we argue that a key educational issue in the use of visual aids is the amount of information displayed at a given moment. Specifically, we propose that traditional bullet-pointed slides are too text-dense, and that simultaneously reading these slides and listening to a lecture results in conditions of high cognitive load for students, leading to poorer processing and retention of information. To support this position, we present empirical data showing that using lecture slides with sparser text-based content may actually lead to deeper processing and subsequent better recall of the information than when traditional, text-dense slides are used. We contrast these findings with data from a survey of university teaching staff of whom 57% said they would be likely to include extra material on slides to act as an aide memoire for themselves. This presents a fundamental conflict in the use of lecture slides: is the content for students, or for lecturers? By using slides as notes for ourselves, rather than for the audience, are we compromising students' learning experience? We address these questions in the context of cognitive load theory, and conclude by offering some suggestions as to how the needs of lecturers and students might be addressed by innovative use of visual aids and consideration of structural elements such as narrative development and slide repetition.

## CAN STUDENTS LEARN EFFECTIVELY THROUGH THE USE OF WEB 2.0 APPLICATIONS?

The manner in which students are taught in this changing technological environment has led to a change in the way we deliver content to students. The increased use of these technologies needs to be evaluated in order for students and teachers to gain the most advantage from them. Level one and level three undergraduate students studying a number of modules were asked their views about the assignments they completed which involved completing an exercise using a Web 2.0 application. Of the Web 2.0 applications used they were Blogger, Slideshare, Twitter, Debategraphs, Ning, Timelines, Doodle and bubbl.us. It can be concluded that students did learn from their Web 2.0 experiences. A majority of students were of the opinion that using Web 2.0 applications was useful for communicating with the world about a particular topic. Some students even thought that certain Web 2.0 applications forced them to complete IT tasks particularly useful for business. Using a Web 2.0 application for an assessment made students feel that by not completing another report was beneficial to their learning experience. Satisfaction levels did exist amongst students who used bubbl.us and Slideshare for their assessment. Of these students other Web 2.0 applications used were YouTube, bubbl.us, Blogger and Slideshare. Students found many advantages for using the various Web 2.0 applications, however not all applications were favoured for use in the future.

## USE OF COMMERCIAL VIDEO GAMES AS EDUCATIONAL TOOLS IN PRIMARY SCHOOLS: THE CASE OF NINTENDO'S ANIMAL CROSSING

The game Animal Crossing by Nintendo has been selling in its millions since its release in 2005 across three different Nintendo consoles: the GameCube, DS and Wii. The research described here is investigating Animal Crossing as a tool for teaching multiple aspects of Citizenship and Geography in primary schools in the UK. We have been able to establish strong mappings between many of the tasks and situations players experience in the game to aspects of the Key Stage 2 national curriculum for primary schools in the UK. Two examples of such mappings include:

- Recognising the role of voluntary and community groups which is seen in the game when donating items to the village museum and helping neighbours with jobs (citizenship).
- Understanding landscape and landmarks and forming mental maps of environments. This is seen in the game when the player is given instructions by a character to go to a certain place in the village; the player is given verbal directions of how to reach the destination in terms of which landmarks the destination is near to (geography).

Our research is now moving forward to implement appropriate classroom activities. These activities involve the use of Animal Crossing on the Nintendo DS and Wii to test whether the mapping of

the game to the national curriculum can be implemented successfully. This will be measured in terms of whether there is an increase in the engagement and achievement levels of Key Stage 2 children in the subjects of Citizenship and Geography when using Animal Crossing based activities. The research to date has been performed with participants from one pilot school; we are currently looking to continue the research on a larger scale with several hundred participants.

## **WORKSHOP 1**

### **WHAT CAN WE LEARN ABOUT THE ONLINE LEARNER FROM AFAR?**

Integration of web-based learning environments (WBLEs) into educational processes has been rapidly increasing during the last decade. The models of implementation are varied and include, among others, websites supporting face-to-face courses, asynchronous online instruction, and virtual learning communities. While learning in WBLE, data on the user's behavior constantly accumulate in the servers' web logs (when, where, and who clicked). Assessment of learners' cognitive, meta-cognitive and affective aspects in online environments has been a challenge for both researchers and instructors due to the fact that these are factors difficult to evaluate without direct contact with the learner. Log file analysis makes it possible to learn about the online learner by means of automatically and continuously collected digital traces. Log file analysis in education research is an emerging field and it's a part of the growing Educational Data Mining (EDM) community. In this workshop we will survey current research in this field, examine the potential of using EDM and discuss ethical issues that are being raised.

#### *Objectives*

The goals of this workshop are as follows:

- Introduction to the field of EDM and log analysis.
- What can we assess and evaluate using the log file? How?
- Examining "approaches and processes" using EDM techniques for evaluating cognitive, meta-cognitive and affective aspects of e-learning.
- Emphasizing the ethical issues of EDM research.

#### *Methods*

The workshop will consist of three parts.

1. Lecture presenting the field of EDM, current research, methods and processes.
2. Hands-on experience around a specific log file and how to "translate" the data to meaningful variables (cognitive, meta-cognitive and affective).
3. Group discussion around the ethical issues regarding EDM research.

## **WORKSHOP 2**

### **CLICKERS: HOW TO EFFECTIVELY USE A SIMPLE TECHNOLOGY TO INCREASE STUDENT ENGAGEMENT IN YOUR CLASS**

#### *Objectives:*

By the end of this workshop participants should be able to:

- Articulate the benefits and challenges of using clickers
- Confidently integrate clickers into their courses
- Write thought-provoking clicker questions
- Respond to student clicker responses in real time

#### *Methods:*

Participants will work in small groups and gain first-hand experience by actively using clickers as well as devising engaging clicker questions that can be used in their own classes.



## *Outline:*

Studies show that students learn best when they are actively engaged. One simple, easy-to-use technology that has been proven to increase active learning in the classroom is clickers. Clickers are wireless personal response systems that are used to ask students anonymous multiple-choice questions, thus allowing rapid reliable feedback to both the instructor and the students. Whether you have never heard of clickers or you want to learn how to use them more effectively in your classroom, this workshop is for you. You will have the opportunity to participate first hand in using clickers as well as creating appropriately challenging clicker questions. You will also learn how to encourage in-class discussion and have the chance to practice responding in real time to student clicker responses. We will also discuss logistical issues and effective planning. By the end of this workshop you will have the confidence to design and implement clicker questions to improve student engagement, on-topic student-student interaction and open dialog in your classroom.

## **Session 13**

### **Research Methods in Data Acquisition**

#### TEACHER-STUDENT INTERACTIONS AND LEARNING OUTCOMES: MOVING FROM DESCRIPTIVE TO PRESCRIPTIVE RESEARCH

We have been researching the process of integrating technological systems in education for the past three decades, using the “ongoing” research method. The schools are our laboratory and research field. The results of each research are taken into account in the planning and formulation of the next research. This process includes three phases: conceptualization (identifying concepts), validation of the concepts, and examination of the correlation between the different learning environments. These are the basis for formulating models that will comprise a basis for analysis and making decisions in the field.

#### INVARIANCE OF AN EXTENDED TECHNOLOGY ACCEPTANCE MODEL ACROSS GENDER AND AGE GROUP


In this study, we examined the likelihood of an extended technology acceptance model (TAME), in which the interrelationships among computer self-efficacy, perceived usefulness, intention to use, and self-reported use of computer-mediated technology were tested. In addition, the gender- and age-invariant of its causal structure were evaluated. The data were collected from a self-reported questionnaire administered to 477 administrative staff of a public university in Malaysia. The results of structural equation modeling supported the adequacy of TAME. Although the TAME’s causal structure was applicable to both male and female staff, age group appeared to moderate the structural relationships among the constructs of interest.

#### RESEARCH ON IMPROVING PROCESS ASSESSMENT SYSTEM OF DISTANCE EDUCATION BASED ON DATA MINING

In order to promote students’ interests in courses and enhance teaching design for management, the process assessment system is applied to the student’s whole learning process, such as attending lectures, assignments, discussions and examination. The parameters in assessments system are usually designated via experiences. According to the normal distribution of population, we utilize the k-means to cluster the parameters of assessment, and discuss the relationship between the parameters and the final score. It is concluded that the assessment system needs to be perfected further, and more help should be offered for the distant learners.

#### TUTORING THE ELDERLY ON THE USE OF RECOMMENDING SYSTEMS

Recommending systems are used by many researches to suggest to users all kinds of products. However, not all users of all ages can use these systems. This is particularly the case for the elderly who are not familiar with the computer technology. Moreover, the terminology of recommending systems



or user interfaces may prove many times to be a difficult challenge for elderly users. In view of the above, we have created an intelligent tutoring component for product recommending applications. This tutoring component has been created especially for the elderly and it was incorporated into an e-shop application for the interactive TV, called iTVMobi.

## ANYWHERE AND ANYTIME: EVALUATING STUDENTS' BEHAVIORS IN SCIENCE WEB-BASED LEARNING ENVIRONMENT USING LOG FILE ANALYSIS

The main purpose of this research is to examine the learning processes of elementary school students in science web-based learning environment — at school and at home. To this end, the log files of the learning environment and data mining tools and techniques were used. Results suggest that the school-home gap is starting to fade away (learning wise) and a school-home learning continuum can be established. Part of the learning can be transferred to after school hours and can be evaluated similarly by means of data mining tools. Results also suggest that there are differences between learning at home versus learning at school across ages (such as duration of the learning and pace). Our future work will focus on gathering the learning variables and employing data mining techniques in order to find learning patterns at home and at school across ages.

## WORKSHOP 3

### EXPLORING GLOBAL PORTALS

#### *Objectives:*

- Explore the advent of newly emerging global resource portals for research and inquiry.
- Examine the structure and functionality of specific sites such as:
- The multilingual multicultural World Digital Library (co-sponsored by the Library of Congress, UNESCO, and other partners) just launched in April, 2009
- The multifaceted Global Gateway of the Library of Congress
- A Portal to a World of Information: The Campus Internationalization Web Site
- Other sites idiosyncratic to specific fields (e.g. ALADIN: Adult Learning and Documentation Information).
- Invite contributions from participants regarding other sites and encourage sharing of experiences
- Catalyze discussion and dialogue on both strengths and areas of needed improvement and potential individual and collective efforts to effect improvement.

#### *Methods:*

information sharing (mini-lecture) by facilitator to lay a ground work for discussion and dialogue about the current generation of global portals;  
online demonstration of specific sites and inclusion of audience experience and input;  
small group work depending upon size of audience to assess strengths and areas for improvement and development of recommendations to be communicated to designers.

#### *Outline:*

Increasingly world portals are emerging from collaborative endeavors around the globe that offer powerful collections of resources and opportunities, often in multilingual format — the most recent (as of this writing) having launched in April, 2009, available free with unrestricted public access. Online examination and navigation of the structure and function of three specific sites and those added by participants will be complemented by analysis of strengths, weaknesses, and suggested areas for improvement for communication to designers.



## WORKSHOP 4

### FORMALISING INFORMALITY? CAN INCIDENTAL, INFORMAL LEARNING BE INTEGRATED WITHIN INSTRUCTIONAL DESIGN?

#### *Objectives:*

To enquire whether the large mass of informal learning that forms the willing knowledge-base of many young people, and the incidental, but persistent process that is used to acquire that learning, can be utilised within formal instruction.

#### *Methods:*

Introductory talk

Buzz Groups

Plenary Session/Discussion

#### *Outline:*

The spread of personal computing and mobile technologies has revolutionised the dissemination of information on demand. Informal, on-a-whim searches for information have redefined the concept of informal learning, with volume often (though never totally) compensating for a lack of learning organisation. Though there is no cumulative objective to the learning, nor is it built against an assessable framework, in most cases making accreditation impossible, there is no denying the massive infusion of informal learning that happens on a daily, purely personal basis. Motivation is the impulsive need-to-know about some aspect of a personally appreciated topic. In the case of young people this takes the form of searches related to music, gaming, films, etc., and is often a side task during social-software interaction. Because of the ephemeral nature of the information searching, and the questionable qualifications of many of the websites consulted (Wikipedia being forefront in this) it is contended that the process defies integration within a formalised academic setting, though attempts at self-paced project work that demands web searching have often been made at both secondary and tertiary levels of education. But in these, the all-important motivational elements that infuse the process are almost always missing.

#### *Some questions that this scenario instigates are:*

- Is one to ignore the massive amount of incidental learning and not induct the (often ill-defined, very personal) package in the process of instructional design?
- Is there some way of utilising informal pre-learning in designing instruction? Topic specificity will, of course, determine the extent and/or nature of doing this.
- Is there any way that the motivationally-induced informal learning process itself can be an integral part of instructional design without it losing its essential, whimsical nature?
- Should formal, accredited learning give way, in cases, to informal learning? This is already happening in some instances relating to the employability of persons in the IT field.
- Although attempts have been made to assess formally informal learning, the lack of initial, formalised pedagogical objectives daunts the process. Is there any effective way that informal learning can be gauged for assessment purposes?

## Session 14

### Research into ICT Applications

#### NEW CONCEPT IN REMOTE LABORATORY: HIGH-SPEED MULTITASK SYSTEM DEVELOPED AS ONLINE RECONFIGURABLE PLATFORM

A new architecture for an educational high-speed remote laboratory is described in this paper. In order to remove the users' waiting list, we used a multi-task type access on laboratory work platform, and a real-time reconfiguration of electric test circuits. Students are accessing from distance a system equipped with real instruments and perform online test workbenches. The errors detected in prescribing the commands towards the machine are not automatically corrected. Instead, the student

is warned, and the results of the tests are supplied to the user in the same way the real instrument does.

## RESEARCH ON THE EXPERIMENT ENVIRONMENT IN DISTANCE ENGINEERING EDUCATION

The engineering course experiment is the key point of distance engineering education. This paper introduces the research and implementation of experiment environment in ECUST (East China University of Science and Technology). As a typical case of remote control laboratory, a two-water-tanks experimental system using programmable automation controller was introduced. A virtual experiment based on interactive flash of physical chemistry was briefly introduced. The statistical data of the experiment courses and the feedback from the students were analyzed. It shows that some details should be improved.

## TEACHING 'LINUX AS A FORENSIC TOOL' (ONLINE) TO EUROPEAN LAW ENFORCEMENT

The purpose of this work is to discuss the implications of creating, delivering and maintaining an online MSc level course in forensic computing. There are unique issues associated with this endeavour as the development group for this particular module are comprised of experts from law enforcement and academia from across the European Union and the students are serving police officers from the member states. This paper discusses the reasons for running the course online, the issues associated with this change, and the challenges faced by the development team.

## TEACHING CONCEPTS IN MICROCONTROLLER EDUCATION: CISC VS RICS ASSEMBLY-LEVEL PROGRAMMING

This paper explores the teaching concepts in Reduced Instruction Set Computers (RISC) and Complex Instruction Set Computers (CISC) with reference to an assembly-level programming for small microcontroller units (MCUs). The objective of the proposed communication is to instill the confidence in the instructor regarding the selection of an effective MCU, appropriate for other than electrical/electronic engineering students.

### Session 15

#### Developing ICT Competence in Instructors

## RECONCEPTUALISING SCHOOLING FOR A WEB 2.0 GENERATION

This paper frames and theorises the nature of adolescents' informal experiences in Web 2.0 environments to articulate their fit or misfit with current conceptions of school education. Adolescents are increasingly active Web 2.0 users. However, the traditional research and education communities have been slow to respond to the rapid emergence of the digital generational culture. Adolescents' new ways of interacting and producing are likely to render current configurations of schooling obsolete and hence demand new conceptualisations of schooling. This paper discusses how these new visions might influence, disrupt and interact with future schooling scenarios.

## COMPUTER-ASSISTED EXAMPLE-BASED LEARNING: THE EFFECTS OF SELF-EXPLANATION AND INSTRUCTIONAL EXPLANATION ON TRANSFER PERFORMANCE

This research examined the effect of applying two different explanatory procedures (self-explanation and instructional explanation) on topic knowledge acquisition performance, near transfer performance, and far transfer performance. A total of 76 students were randomly assigned into three groups and pre- and post-tests were used to assess the learning outcomes. The analysis showed that the effect of self-explanation was more pronounced than instructional explanation especially in topic knowledge acquisition performance and near transfer performance. On the other hand, the positive effect of self-explanation was not noticeable in far transfer performance.



## THE SNAP! PLATFORM: SOCIAL NETWORKING FOR ACADEMIC PURPOSES, PEER LEARNING, AND COMMUNITIES OF PRACTICE

E-learning platforms are being reconceptualised. There is a move away from the repository-style LMS towards one of increased communicative and collaborative potential that empowers the learner and leverages the learning experience. At Victoria University, the SNAP! Platform is being designed to support peer exchange and collaboration in developing learning skills. This platform includes social networking communication and profiling, shared bookmarking, student mentor blogs and commentary, RSS feeds, tagging, and the creation of peer-generated learning resources. The SNAP! Platform hopes to establish self-generating academic learning communities of practice in which students learn to take an active and dominant role in their own and each other's learning.

## CONCEPTUALISING TEACHER PROFESSIONAL LEARNING WITH WEB 2.0 TECHNOLOGIES

This paper reflects on the affordances of Web 2.0 technologies to support teachers' professional learning. It argues that professional learning for teachers is a constructed process which combines elements of experience, reflection and knowledge building. It occurs in specific contexts, through collaboration with others and the mediating effect of cultural artefacts. The emerging features of Web 2.0 technologies are seen as largely harmonious with these principles which are mapped together in a framework for understanding and exploring opportunities to support and enhance teachers' professional learning and knowledge construction.

## TECHNOLOGICAL EVOLUTION AND PEDAGOGICAL RE-APPROACH TO EFFECTIVE LEARNING USING GAMES WITHIN THE HELLENIC AIR FORCE ACADEMY

The educational policy of the Hellenic Air Force Academy (HAFA) is designed to implement the standard of the Hellenic Air Force (HAF) officer. Our purpose is to specify and design a computer-based war game in order to use it as a tool for: a) applying our educational policy; b) advancing the professional training of the students of the HAFA; c) assessing the behaviour of future officers in relation to the intended standard; and d) understanding and resolving applied ethical questions. The game will also be used for professional informal continuing education in a distance learning environment, for promoting cooperative learning and the development of virtual communities of practice within HAF.

### **Session 16 Facilitating ICT Adoption**

## THE TELLING: TEACHING INFORMATION MANAGERS ABOUT MANAGING INDIGENOUS (ECOLOGICAL) KNOWLEDGE

Indigenous knowledge (IK) and Indigenous ecological knowledge (IEK) are subject areas that contribute to anthropology and multidisciplinary fields such as environmentalism. Here we identify key issues and barriers to teaching about IK/IEK in the context of developing a course for postgraduate information managers and pilots in two courses on Knowledge Management in Organizations.

## AN APPETITE FOR CREATIVE DESTRUCTION: SHOULD THE SENIOR ACADEMIC TECHNOLOGY OFFICER BE MODELLED ON THE CIO OR THE CTO?

We examine the emerging role of Senior Academic Technology Officer and the shift from having acknowledged expertise to acquiring legitimate organizational power. We are particularly interested in the match or mismatch between their own appetite for radical technological change, i.e. for creative destruction (Schumpeter, 1942) and that of the institution. We also consider two existing templates for such a role from mainstream information management and information technology: the Chief Information Officer and the Chief Technology Officer.

## URBAN CLASS COMPUTING IN HIGHER EDUCATION: PROMISING OR PERILOUS

Urban class computing is derived as a fabric of urban computing wherein “urban computing is the integration of computing, sensing and actuation technologies into everyday urban living and lifestyles” (Kindberg, Chalmers, & Paulos, 2007). This paper draws the information communications technology (ICT) profile of a group of tertiary students in an old, prestigious De La Salle University-Manila (DLSU-M) situated in an urban setting; get their premature perception of urban class computing and finally, determines how the idea constructs a new form of learning behavior.

## WHY, WHAT, WHO, HOW: BUILDING UP ONLINE COURSES. A REPORT FROM A SOUTHERN ITALY UNIVERSITY

This work is based upon an online experimentation realized by the didactical area of sociology at the University of Salerno (Italy). It seeks to identify its points of strength and of weakness and to establish guide lines for further planning. In particular, it systematically describes and compares two courses which have used different approaches, methodologies and platforms and their results. To conclude the authors underline the importance of the study of the context, of giving an active and significant role to the students as well as to the teachers and of building up a dialogue between traditional and ICT-based tools.

## FROM SMALL TO LARGE HITS: SPREADING THE ONLINE MESSAGE TO ACADEMIC AND ADMINISTRATIVE STAFF VIA STRATEGICALLY-TARGETED DEVELOPMENT ACTIVITIES

This paper reports on how a university is implementing a capacity-building academic staff development program using a three-pronged approach that draws on adult learning, social learning and capacity-building literature. This approach was designed to enable staff to provide engaging and pedagogically sound online experiences for the students at the University of Newcastle, Australia. Data have been gathered throughout the implementation of this program to evaluate its impact and to inform future refinements of the program. The paper concludes with reflections from staff facilitating the program about the challenges, successes and future of the program.





The background is a complex abstract composition of various shades of teal, blue, and green. It features overlapping geometric shapes, including triangles and rectangles, some of which are semi-transparent. A prominent white circle is positioned on the right side of the image, partially overlapping the teal and blue areas. A thin white horizontal line crosses the circle and extends across the width of the image.

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