

# **4th International Conference on e-Learning**

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Edited by

Florin Salajan  
University of Toronto, Canada

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# ICEL 2009

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## Preface

This book represents the Proceedings of the 4th International Conference on e-Learning.

We are delighted to be bringing the conference to the campus of The University of Toronto and it is my pleasure to have the role of Programme Chair, with colleague Avi Hyman as Conference Chair.

The opening keynote address is given by Robbie McClintock from Teachers College, Columbia University on the topic of "*Disclosing the Commons: On Breaking the Structural Limits of Education.*" The second day will be opened by Gage Averill, from the University of Toronto, Canada.

This Conference is now a well-established platform for bringing together a wide range of stakeholders involved with the challenges of e-Learning in a rapidly changing global society, including academics, innovators and practitioners interested in benefitting from, using and contributing to current research as well as professionals working in the private and public sector.

ICEL provides a space for the rigorous and stimulating sharing of ideas about e-Learning today. It is an opportunity for the broader e-Learning community to meet, and for overlapping communities of practitioners to join the lively e-Learning conversations. The range of papers will ensure an interesting two days.

With an initial submission of 185 abstracts, after the double blind, peer review process there are 66 papers published in these Conference Proceedings. These papers represent research from Australia, Austria, Belgium, Canada, China, Colombia, France, Hong Kong, India, Iran, Japan, Mexico, New Zealand, Saudi Arabia, South Africa, Spain, The Netherlands, Taiwan, United Kingdom, United States of America and Vietnam.

I hope that you have a stimulating and enjoyable conference.

Florin Salajan  
Programme Chair  
July 2009

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Minoru Nakayama, Tokoyo Institute of Technology, Japan)  
Dick Ngambi (University of Cape Town, South Africa)  
Grace O'Malley, (National College of Ireland, Ireland)  
Maria Osuna Alarcón, (Salamanca University, Spain)  
Mourad Ouziri, University of Paris 5, France

Ecaterina Pacurar Giacomini, (Louis Pasteur University, France)  
William Painter, (NCC Education Ltd, UK)

Pascal Pecket, (University of Montpellier, France)

Arna Peretz, (Ben Gurion University of the Negev, Omer, Israel)  
Mari Pete, (Durban University of Technology, RSA)  
Selwyn Piramuthu, (University of Florida, Gainesville, USA)  
Michel Plaisant, (University of Quebec in Montreal, Canada)

[Ronald Robberecht](#), (University of Idaho, Moscow, USA)  
Melissa Saadoun, (INEDIT Institute, Paris, France)  
Florin Salajan, (University of Toronto, Canada)  
Christopher Schultz (University of Maryland, USA)  
Ranjit, Sidhu, (Institut Bahasa Melayu Malaysia (IBMM), Malaysia)  
Sharon Slade (Open University, UK)

Yeong-Tae Song, (Towson University, Maryland, USA)  
Elsebeth Sorensen, (AInstitute of Information and Media Studies, Aarhus, Denmark)  
Mark Stansfield, (University of Paisley, UK)  
Juliet Stoltenkamp, (University of the Western Cape, RSA)  
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Cathy Horrocks, (University of Waikato, Hamilton, New Zealand)  
Rozhan Idrus, (Universiti Sains Malaysia, Penang, Malaysia)

Michael levers, (Stranmillis University College, N. Ireland)  
Sheila Jagannathan, (World Bank Institute, Washington, USA)  
Kanthi Jayasundera, (Centre for Online Distance Education,  
Canada)

[Amanda Jefferies](#), (University of Hertfordshire, UK)  
Runa Jesmin, (Kings College London, UK)  
Phillip Jones, (Hong Kong Institute of Education, Hong Kong)

Michail Kalogiannakis, (ASPETE, Heraklion, Greece)  
Michail Kalogiannakis, (University Paris 5 - Rene Descartes,  
France)  
Pankaj Kamthan, (Concordia University, Canada)

Yana Tainsh (University of Greenwich, UK)  
Harry Temmink, (University of Westminster, UK)  
John Thompson, (Buffalo State College, USA)  
Shruti Trivedi, (Center for Innovation in Learning Technology, Ohio  
State University, USA)  
Christopher Turner, University of Winchester, UK

Peter Valbonesi, Simon Fraser University, BC, Canada  
Duan Van der Westhuizen, (University of Johannesburg, RSA)  
[Steven Verjans](#), (Katholieke Universiteit Leuven, Belgium)  
Minhong Wang, (The University of Hong Kong, HK)  
[Robert Wierzbicki](#), (University of Applied Sciences Mittweida,  
Germany)

Roy Williams, (University of Portsmouth, UK)  
Shirley Williams, (University of Reading, UK)

# Biographies of Conference Chairs, Programme Chair and Keynote Speaker

## Conference Chair



**Avi Hyman's** time is divided among three significant positions. As Director of Academic Computing in the Faculty of Medicine, he manages a team of educators and technical specialists who work with Health Sciences instructors, researchers, and students on achieving their academic goals through technology. The team supports research initiatives and classroom and online teaching. Avi's own experience includes BlackBoard, WebKF, FirstClass, WebCT, all aspects of computing services, (e.g., support to student computing lab environments and the deployment of educational software), and he has run several large listserv communities. At the Bell University Laboratory (BUL) in Health Communications, he manages the development and implementation of innovative research projects in health informatics and electronic health communication and learning. With respect to his third position as an Associate Faculty Member in the Department of Theory and Policy Studies in Education (OISE/UT), Dr. Hyman is involved in both the graduate program and the initial teacher education program, teaching courses in organizational administration and policy analysis for educational technology and classroom technologies. With whatever spare time remains, Avi is active on the U of T's Academic Computing Advisory Committee (ACAC), the Webservices Reference Group, and the Resource Centre for Academic Technology (RCAT) Advisory Committee. From 2000-2002, he was Vice-Chair of OISE/UT's Faculty Council.

## Programme Chair

**Florin Salajan** received his doctoral degree from Teachers College, Columbia University in the broad field of International Education, with an emphasis on Communication and Computing in Education. Currently, he is pursuing research in educational technology and European studies. His primary research interests include applied educational technologies, European Union policies in education, technology and society in the context of globalization and information society theories.



## Keynote Speakers



**Robbie McClintock** holds the Weinberg Chair in the Historical and Philosophical Foundations of Education at Teachers College, Columbia University. He has published primarily on the history of political and educational theory and on the cultural significance of information and communications technologies. McClintock founded the Institute for Learning Technologies in 1985 and directed it to 2002, prototyping advanced curricular resources over the Internet. Currently, McClintock collaborates on [www.studyplace.org](http://www.studyplace.org) to construct a digital

commons for explorations in education, communications, and culture, responding to the basic question, What educates?

**Gage Averill** (Ph.D. 1989, University of Washington) is an ethnomusicologist specializing in the popular music of the Caribbean. Formerly Chair of the Music Department at NYU, Professor Averill has also taught at Columbia University, Wesleyan University and as a visiting professor at Princeton. His book *A Day for the Hunter, A Day for the Prey: Popular Music and Power in Haiti* (University of Chicago Press, 1997) won the Association of Recorded Sound Collections Award for Best Research in the Field of Recorded Folk and Ethnic Music, 1998, and his second monograph, *Four Parts, No Waiting: A Social History of American Barbershop Harmony*, was named an "Outstanding Academic Title for 2004" by Choice, the review magazine of the American Library Association and was awarded the 2004 Alan P. Merriam Prize recognizing the most distinguished, published English-language monograph in the field of ethnomusicology and the Irving Lowens Award for Best Book from the Society for American Music. He is also an editor of *Making and Selling Culture* (with Richard Ohmann et al, Wesleyan University Press, 1996). His shorter publications have appeared in edited volumes, journals, textbooks, and encyclopedias.



## **Biographies of contributing authors (in alphabetical order)**

**Peter Aborisade** lectures EAP at the Federal University of Technology, Nigeria. He holds a PhD in Literature and the certificate in Teaching English for Special Purposes (TESP). He has taught EAP for over twenty-four years. He recently held the Commonwealth Fellowship to research integration of technology into the language teaching curriculum, his current area of research interest.

**Aysha Alshangeeti**, Master of Education, Griffith University, Australia. Research in Education filed, interesting in online learning adoption in developing countries

**Monika Andergassen** has been working as a web designer and lecturer in Higher Education since 2002, with special interest in web 2.0 technologies, design principles and learning. Currently she is working on her PhD in information management at Leeds Metropolitan University, where she focusses on social software, in particular blogs, social networks and informal learning.

**Isabel Álvarez** is a Professor at the Autonomous University of Barcelona. She is the author of *Perspectives, Topics and Root Metaphors of the Information Society* (2000, unpublished doctoral thesis). Her interests include the educational implications of the Information Society, the integration of technology into teaching and learning situations, and the curriculum of educational technology in teacher education programs. She is currently the MA and PhD program coordinator.

**Philip Balcaen** teaches in the Faculty of Education at The University of British Columbia, Kelowna, Canada. His research interests include science and mathematics teacher learning, embedding critical thinking into practice, e-learning, professional collaboration, and developing communities of practice. He has extensive experience working with teachers across Canada and in India.

**Jonathan Barkand** has a B.S. in Technology Education and an M.S. in Multimedia Technology from California University of Pennsylvania. He is currently pursuing his Instructional Technology education doctorate and serving as a research assistant at

Duquesne University. Professionally he is the Manager of Instructional Technology and online teacher for the National Network of Digital Schools.

**Amy Barlow**, University of Portsmouth. Amy joined the University of Portsmouth in 2007 as an Educational developer; she is based in the Centre for Excellence in Teaching and Learning, which supports work-based learning. Her main academic interests include reflective practice, e-learning and innovative ways to enhance academic writing practice with non-traditional students.

**Miren Bermejo** is lecturer at the Computer Engineering Faculty of the University of Basque Country, Spain, where she teaches Computer Systems Project Management. In the past ten years she has worked with student teams focusing in team composition.

**Grace Bradley**. Associate Professor, Oral Pathology and Oral Medicine. Associate Dean, Biological and Diagnostic Sciences. Faculty of Dentistry, University of Toronto. University of Toronto, Faculty of Dentistry, DDS, 1979. University of Toronto, M.Sc., 1984, Oral Pathology. Fellow of the Royal College of Dentists of Canada in Oral Pathology and Oral Medicine

**Robert Campbell** has been a software developer in the private sector and has also taught school at middle and high school levels. Robert's doctoral studies were completed at OISE/ University of Toronto. His doctoral dissertation examined the ways educators can negotiate the path between the arts and technology. His research focuses upon technology innovation and integration. He is currently the Dean of the Faculty of Education at UBC Okanagan.

**Tim Cappelli** is based at the University of Manchester Medical School in the UK and works as a project manager in a research and development unit called TEWPL (Technology Enhanced WorkPlace Learning). Tim has worked in the field of e-learning and technology enhanced learning for over ten years.

**David Carbonara** Ed.D is the Director of Instructional Technology Program at Duquesne University. He is building a model of integrating technology into the middle and elementary curriculum that will be shaped by the IT disposition of students and teachers and measured by the reflective practice of pre-service and in-service teachers.

**Paula Charbonneau-Gowdy**, PhD . Senior Advisor, Learning Development and Technologies | Conseillère principale, Développement en apprentissage et technologies. Language Learning | Apprentissage linguistique. Registrar | Registraire. Canada School of Public Service | École de la fonction publique du Canada

**Kai Wing Chu** is a principal of CCC Hoh Fuk Tong College, a secondary school in Hong Kong. The school was established in 1963, with about 1100 students. He is currently pursuing the degree of Doctor of Education (EdD) in The University of Hong Kong with the research interests in implementing Knowledge Management in Hong Kong schools for teachers' professional development.

**Douglas Cross** has traveled to both sides of the brain. With a MS in Counseling, he was a mental health counselor for 16 years working with the chemically dependent. A MS in Education guided the next 16 years as an instructor of computer science. Recently, he completed a PhD in Psychology specializing in online education.

**Laura Czerniewicz** is the Director of the Centre for Educational Technology (CET) at the University of Cape Town. Her research interests are policy and practice, elearning organisational issues, the digital divide, conceptualisation of new digitally mediated practices, the nature of the emergent field of educational technology.

**Marie Devlin** is a teaching fellow for the Centre of Excellence in Teaching and Learning project – Active Learning in Computing. She joined the School of Computing Science, Newcastle University, UK, in 2005. She currently teaches Software Engineering. Her pedagogical research interests include assessment and curriculum design in higher education.

**Martin Dyke** is a Senior Lecturer in Post-Compulsory Education and Training in the School of Education, University of Southampton, SO17 1BJ, UK. Research interests include innovations in learning and teaching, the sociology of education, lifelong learning, widening participation and the use of digital technologies to support learning. He has taught in schools and colleges across a range of levels and subjects in Post-Compulsory Education in the UK.

**Gloria Milena Fernández Nieto** is a System technologist; she studies in “Universidad Distrital Francisco Jose de Caldas, Bogota, Colombia” and now is making her Engineering studies focus on Telematics in the same University. Currently, she is part of a research group in Colombia know as Metis, that develop different topics such as e-Learning, Intelligent Agents, Virtual Reality and much more. She works different topics like e-Learning and Knowledge Management. However, she works on it as a software developer but now is trying to support the software with a model of Knowledge Management.

**Vincent Filak** (Ph.D., University of Missouri) is an assistant professor of journalism at the University of Wisconsin-Oshkosh. He has published in more than a dozen academic journals and presented more than 40 papers at national and international media conferences. Prior to his job at UWO, he taught at Ball State University, the University of Missouri and the University of Wisconsin-Madison.

**Margaret Fisher** is a Senior Lecturer in Midwifery at the University of Plymouth, United Kingdom. She also leads the Centre for Excellence in Professional Placement Learning (Ceppi) “Assessment of Practice” research group as well as heading up a team supporting learners and mentors/ assessors of all health professions in a local hospital. Her main professional interests are practice skills and assessment, mentor support and reduced fetal movements.

**Lisa Fleet**, Manager of Research Programs, Professional Development & Conferencing Services (PDCS), Faculty of Medicine, Memorial University. Lisa has twelve years' experience in educational and research environments, including research and development activities at both provincial and national levels related to continuing medical education and continuing professional development

**Víctor Manuel García Izaguirre** Doctor in Education by the University of Seville, Spain. Head of the Division Studies of Post grade and Continuous Education from the FADU, Professor with PROMEP profile. Member of the Academic Body of Design. Technical person in charge in projects of investigation about sustainable Design.

**Cathy Gibbons** is a Researcher Development Manager for the Graduate School, University of Nottingham, UK. Her PhD was in Human Relations and Cathy primarily considers herself an educationalist and practitioner. Formerly a researcher, instructor, teacher, and youth worker, her varied employment path has also seen her work in fields,

war-ships, laboratories, beaches, factories and shops. Her interests are in qualitative research methodology. She has an enduring, if rocky, relationship with technology in education.

**Susan Glover Takahashi**, MA (Ed), PhD. is the Director of Education & Research in the Postgraduate Medical Education office at the University of Toronto. She is an Assistant Professor in the Department of Family and Community Medicine and is cross appointed in the Dalla Lana School of Public Health and the Department of Physical Therapy.

**Robert Glynn** is the Manager of Information Systems with Professional Development & Conferencing Services, Faculty of Medicine, Memorial University of Newfoundland. Since 2002, Robert has been part of the management team leading the MDcme.ca consortium – a group of 17 Canadian medical schools collaborating to produce accredited online e-learning opportunities for the Canadian health professional audience.

**Andrea Gorra** holds a Ph.D. from Leeds Metropolitan University (UK) in the area of mobile communications and privacy. She currently works for the Centre for Excellence in Teaching and Learning - Active Learning in Computing at Leeds Metropolitan University, for which she investigates the possibilities that technologies can offer to support faculty and enhance student learning. Andrea is particularly interested in the use of podcasting, mobile learning devices and multimedia files for assessment, learning and teaching.

**Sue Greener** BA MBA EdD Chartered FCIPD FHEA Senior Lecturer in Brighton Business School, University of Brighton, UK. Her teaching is currently focussed on undergraduate Business courses and postgraduate study and research into Human Resource Management and Development. Sue achieved a professional doctorate in Education in 2008 focussing on readiness for online learning in Higher Education. She is now developing academic research for publication based largely on online and blended learning issues of pedagogy and technology affordances, but is also researching in areas of workplace learning and development, managerial reflection and student employability.

**Călin Gurău** is Associate Professor of Marketing at GSCM - Montpellier Business School, France, since September 2004. His present research interests are focused on Marketing Strategies for High-Technology Firms and Internet Marketing. He published more than 45 papers in internationally refereed journals, such as International Marketing Review, Journal of Consumer Marketing, Journal of Marketing Communications, etc.

**Bob Hallawell** is currently the Academic Lead for Learning Disabilities in the School of Nursing, Midwifery and Physiotherapy at the University of Nottingham, UK. He has been involved in the authoring and development of a number of reusable learning objects and works as an e learning mentor within the School.

**Stephen Harris**, is Principal of Northern Beaches Christian School (NBCS), in Sydney, Australia. NBCS has 1100 day students and a further 300 online students. Stephen Harris is also founder and Director of the Sydney Centre for Innovation in Learning (SCIL), a research and development unit within NBCS. Stephen Harris has worked continuously in schools for 30 years and has been the Principal of NBCS for the last ten years. Stephen has presented papers at a number of national and international conferences on topics relating to the effective integration of technologies into the classroom, as well as strategies for transforming the pedagogic practice of teachers so that they are better equipped to deliver contemporary and relevant courses within a school environment and adept at integrating new technologies into all practice. Stephen Harris is also a part time PhD

student at the University of Technology, Sydney, with a focus on enabling teacher-led innovation and pedagogic transformation.

**Laurie Harrison** currently holds the position of Director, Academic Technology at the Ontario Institute for Studies in Education, University of Toronto where she is responsible for delivery of teaching, learning and research technologies. Her current interests include development of new strategies for scholarly publishing and she is an active participant in the Open Access movement.

**Misook Heo** is an assistant professor of instructional Technology at Duquesne University. She earned her terminal degree in Information Science from University of Pittsburgh. Her research interests include interactive learning, information visualization systems, and social awareness visualization. Her teaching interests include multimedia supported learning environment and interactive instructional tools.

**Flor Marina Hernandez:** Holds a doctorate in pedagogical science from ISPEJV Havana Cuba and M.A in Applied Linguistics to Teaching English as a Foreign Language from Universidad Distrital. She is a full time teacher at Universidad Distrital. She is the director and researcher of the group “Didactica del Inglés y Tecnologia”. She is the author of several articles and books. She has taught in different universities in Colombia. She is currently teaching at the Master Program of Universidad Libre

**Nasir Jaffer** an Associate Professor & Co-Director for Undergraduate Radiology at University of Toronto. He received his MD at UBC, Radiology training at McGill University. An Abdominal Radiologist at MSH, UHN & Women's College, he is a recipient of teaching awards at U of T and PAIRO Excellence in Teaching Award. His main interest is undergraduate teaching of medical imaging using web based tools.

**Jodie Jenkinson** is an Assistant Professor of Biomedical Communications at the University of Toronto, where she teaches Community-Centred Design Research, Information Visualization, and Web-based Health & Science Design. Jodie has extensive experience in the development and evaluation of educational tools for both the professional and lay audience.

**Kim Johnson Hyatt** is the Director of the Graduate Elementary Leading Teacher Program at Duquesne University. Prior to her work at Duquesne, Kim served more than twelve years in K-12 schools working in diverse capacities as an instructional leader and teacher. During her tenure in the school system, Kim served on many committees for curriculum development, community service projects, and strategic planning. As an educational consultant for school districts and universities, Kim specializes in teacher leadership, gifted education, literacy education, middle level practices, differentiated classrooms, technology integration, and assessment.

**Christèle Joly** has been working at the Chinese University of Hong Kong since 2001 as a French Instructor. Her research interests include second language acquisition and pedagogy, e-learning technologies and building of virtual class room communities as well as development of tailor-made teaching materials for Chinese learners.

**Steve Joordens** is a professor at UTSC, and instructor for Introductory Psychology. He is currently the Dean's Designate for the webOption, overseeing the capturing and posting of lectures online. Steve is a regular member of Television Ontario's list of “Best Lecturers”, has won the Premier's Research Excellence Award for research, and a Leadership in

Faculty Teaching Award in recognition of peerScholar ([www.peerScholar.com](http://www.peerScholar.com)) an internet-based innovation supporting thinking and writing skills in any size lecture setting.

**Nathalie Iseli** joined the Chinese University of Hong Kong in September 2007 as a French instructor. She is currently involved in research activities related to language pedagogy, the application of new technologies to learning and teaching French and its influence on second language learners' behavior both in and outside the classroom.

**Anne Koch** M.Ed is a doctoral student in the Department of Instruction and Leadership in Education at Duquesne University. Her dissertation research examines pre-service teacher experiences with integrating technology into K-12 curriculum based on the 2008 ISTE/NETS\*T standards. She is a teacher in the Seneca Valley School District and specializes in Mathematics Curriculum-Content Deepening and Technology Integration.

**Klodiana Kolomitro** is in the first year of the PhD program at the Ontario Institute for Studies in Education of the University of Toronto. She completed an innovative M. Sc. program at Queen's University in Anatomy and Cell Biology with an emphasis on teaching Anatomical Sciences. Her current interests are professional development, transfer of learning, and training methods.

**Joseph Kush** is an Associate Professor of Education, in the Instructional Technology Program, at Duquesne University. His research interests include issues related to test bias and test fairness, computerized assessment, E-learning, the digital divide and social justice. He uses Apple Macintosh computers exclusively.

**Blair Kuntz** has been the Near and Middle Eastern Studies librarian at the Robarts Library, University of Toronto since 2003. He obtained a Master of Library Science degree from the University of Western Ontario and upon graduation worked as a librarian for the Canadian federal government for Environment Canada and the Department of Canadian Heritage. After living and studying Arabic in the Middle East, he began working at the University of Toronto. He has presented papers on a variety of subjects at several international conferences held in such varied places as Abu Dhabi, Istanbul, Sarajevo, Ramallah, Palestine, and Leipzig, Germany.

**Jean Hokyin Lai** is currently a PhD candidate in the Department of Information Systems at the City University of Hong Kong. She received her Master degrees in Business Economics and Electronic Commerce from the Chinese University of Hong Kong and the Hong Kong Polytechnic University respectively. Her research interests include e-Learning, and decision support systems for finance.

**Leslie Laing Gibbard** graduated from Queen's University, Kingston with her M.Sc. and Ph.D. in Microbiology and Immunology and from the University of Toronto (U of T) with my B.Sc., B.Ed., D.D.S., and M.Sc. (Prosthodontics) . She is a Assistant Professor in the Discipline of Prosthodontics at the U of T with research interests in Sjögren's Syndrome, oral neuropathies, quality of life, and e-learning innovations in dental education. Her private practice is restricted to Prosthodontics and Implant Dentistry.

**Simone Laughton.** Instructional Technology Liaison Librarian, University of Toronto Mississauga Library Since September 2005, Simone Laughton has been a volunteer with the Canadian Advisory Committee of the JTC1 SC36. She is Project Co-Editor for ISO/IEC 24763 Conceptual Reference Model for Competencies and Related Objects, and participates in several SC36 Working Groups. Currently, some of the main issues she focuses on include: competencies, eAssessment, and quality.

**Leila Lax**, Assistant Professor, teaches graduate/undergraduate courses, in Biomedical Communications, Institute of Medical Sciences, Faculty of Medicine, University of Toronto and in the Institute of Communication and Culture, UT Mississauga. She conducts design research in e-based health sciences education, specializing in collaborative knowledge building and visual knowledge translation.

**Duc-Long Le** works as senior lecturer at the HCMc University of Pedagogy (Vietnam). Since 2006, he has been a PhD student in Computer Science at the HCMc University of Natural Sciences (Vietnam) and University of Duisburg-Essen (Germany). The areas of current research are Teaching Methodology of IT, Educational Technology, Knowledge Management, and Adaptive System, especially Adaptive e-Learning System.

**Anthony Levinson**, 39, is the inaugural holder of the John R. Evans Chair in Health Sciences Educational Research and Instructional Development at McMaster University, and an assistant professor in the Department of Psychiatry and Behavioural Neurosciences at the Michael G. DeGroote School of Medicine in the Faculty of Health Sciences at McMaster.

**Shin-jeng Lin** is an associate professor of information systems at Le Moyne College. He obtained his doctoral degree from Rutgers University. His research interests include human computer interaction and information seeking behaviour. He has published his works in “Journal of the American Society for Information Science and Technology” and “Information Processing and Management.”

**Lori Lockyer** is Associate Dean (Research & Graduate) and Associate Professor in ICTs in Learning in the Faculty of Education at the University of Wollongong. Lori's research interests focus on the use of information and communication technologies to support learning in K-12 education, professional education, and health education and health service initiatives.

**Pamela Lowry** is an associate professor of Mathematics/Computer Science. Pam holds a Ph.D. in Instructional Technology from Wayne State University and has been teaching full-time at the university level since 1980. She also holds a M.A. and B.S. degree in Mathematics from Eastern Michigan University along with a secondary teaching certificate.

**Sridhar Iyer** is an Associate Professor in the Department of Computer Science & Engineering at Indian Institute of Technology Bombay. His research interests include: e-Learning technologies, networking protocols and multimedia tools for distance education, wireless networking and applications, and some areas in program/protocol verification.

**Kim MacKinnon** is a recent graduate of the Ontario Institute for Studies in Education of the University of Toronto. Her research interests include human factors supported design of educational technology, and examining the implications of technology for supporting learning, both online and face-to-face, across schooled contexts such as K to 12 and teacher education.

**Phebe Mann** CEng MICE MRICS MCIQB MCIARB MIET, a Cambridge graduate, is the first woman who holds manifold professional qualifications concurrently in the UK. Phebe was conferred with an outstanding doctoral dissertation award for her research in educational technology at the Open University, UK. She is currently lecturing at University of Reading.

**Mourad Mansour** Obtained his PhD in Management from the University of Tsukuba, Japan in 2003. He is an Assistant Professor of Management at KFUPM, Saudi Arabia, since 2004. His research interests include job satisfaction, job turnover, employment of disabled people, and e-learning in the workplace. Mourad had presented and reviews several papers in international conferences. He is a member of several organizations like the Academy of Management, Academy of International Business, Family Firm Institute, and Strategic Management Society.

**Dawn Martin** has a Masters Degree and Doctoral Degree in education with a focus on curriculum, teaching and learning from OISE/ University of Toronto. Currently she is the Communication Specialist and Curriculum Consultant with the Office of Postgraduate Medical Education where she works with residents and faculty across the Specialties in issues related to Communication and Knowledge Integration.

**Tim Mickleborough** BSP, RPh. is the acting program manager of the International Pharmacy Graduate Program (IPG) at the Leslie Dan Faculty of Pharmacy at the University of Toronto and is currently studying for his Masters in Education at the Ontario Institute for Studies in Education.

**Minoru Nakayama** graduated from Tokyo Gakugei University in 1983 and completed the M.E. program in 1985. He received a Dr. of Engineering degree from Tokyo Institute of Technology in 1989, and has been an associate professor at the Center for Research and Development of Educational Technology (CRADLE), Tokyo Institute of Technology since 1993. His research concerns educational technology.

**Melody Neumann** is a Lecturer in the Department of Cell and Systems Biology and develops laboratories and tutorials for large introductory and advanced cell and molecular biology courses. Her interests include: development of investigative laboratory experiments; integrating course material with complex, contiguous experiments; innovative teaching technologies; and teaching scientific writing to undergraduates.

**Omid Noroozi** from Iran. In 2008 he started his PhD project in ECS department, social sciences group, Wageningen University. His research proposal entitled "Fostering quality of argumentative computer-supported collaborative learning within academic education in the Agri-Food sciences. He has published more than 20 articles in scientific journals in Iran as well as an article in one of the peer-reviewed ISI journals. He has been attending and presenting more than 10 papers in International conferences, seminars and congresses.

**Egunjobi, Abel Olusegun** (Ph.D.) is a lecturer in the Department of Educational Foundations and Instructional Technology, Tai Solarin University of Education, Ijebu-Ode, Ogun State, Nigeria. His research interest areas include Computer-Assisted Instruction (CAI) vis-à-vis the teaching and learning of Geography, e-learning, m-learning and the ICT adoption and utilization in the pedagogical practices.

**Jennifer Palilonis** (M.A., Ball State University) is an Assistant Professor of Journalism at Ball State University. Her research interests include interactive news and advertising, research-informed development, multimedia storytelling, multimedia as teaching and learning tools, print and online design, and blended learning. She is the author of "A Practical Guide to Graphics Reporting" and a media design consultant.

**Dwayne Pare** is currently completing his Ph.D. under the supervision of Professor Steve Joordens. Dwayne was co-creator (and full partner) of the online peer-assessment tool

peerScholar. His Master's research established the fairness of the grades within peerScholar, and his Ph.D. work continues to research the tool along with other modes of assessment. He has also won two psychology graduate awards recognizing his research contributions as well as the 2009 National Technology Innovation Award for peerScholar with Dr. Joordens.

**Lena Paulo Kushnir**, *Ph.D.*, taught in the Department of Psychology, University of Toronto for 16 years and was appointed recently to the Office of the Dean, Faculty of Arts and Science, in Instructional Design and Learning Technology Development. Her areas of research include instructional design, online assessment, and the use of instructional technologies in university contexts.

**Chris Perumalla**, has been teaching physiology for the past two decades. Chris is also Director of the Division of Teaching Labs, which administers over 25 laboratory courses. He is committed to exposing students to recent advances in research and technology by incorporating cutting edge technology into the labs. Dr. Perumalla codesigned and delivers the online physiology course. He is a passionate educator and has received several teaching awards, including the Faculty of Medicine's most prestigious W.T. Aikins Award, Excellence in Arts & Science Award, and is the three-time recipient of the Department of Physiology's Excellence of Teaching Award.

**Nancy Posel** is a nurse and doctoral student at the McGill University Faculty of Education. She is a professional associate at the Faculty of Medicine and Assistant Director of the McGill Molson Medical Informatics Project. Her primary focus is the use of educational informatics in healthcare.

**Blaine Price** is a Senior Lecturer in Computing at the Open University, UK. He was instrumental in the OU's use of the Internet to support teaching in the mid 1990s including the implementation of the first large scale fully automatic electronic assignment handling system. His current research includes IT Law, Computer Security and Forensics.

**Linda Price** is a Senior Lecturer in the Institute of Educational Technology at the Open University, UK. Her research concentrates on the use of technology and its impact on teachers' teaching and students' learning. She coordinates evidence-based professional development programmes that promote student-centred learning and advance the synergy between research and practice.

**Madan Singh Rawat**, presently the Principal, enjoys 38 years teaching/research and administrative experience. He was on foreign assignment service to teach in the Department of Business Studies, Nigeria. Dr. Rawat is an expert member at Faculty of Business Management at various universities and also University Grants Commission, Government of India. He has published more than 35 articles in reputed journals. He is also a member of Indian Council of Arbitration, FICCI, India. His main areas of interests are education, knowledge management and International Commercial Arbitration.

**Marie Rocchi** is a Senior Lecturer at the Leslie Dan Faculty of Pharmacy, and teaches Health Systems and Pharmacy Practice undergraduate courses, as well as being involved in the instructional design of online learning environments. Her distance education research interests include interprofessional education and serious games.

**Sameer Sahasrabudhe** is a Project Manager in the Department of CSE, IIT Bombay. He is a graduate of Fine arts and a Animation film maker. He has been associated as Studio

Manager with the Distance Education Program of IIT Bombay, and as Academic Council member with YCM Open University Nashik, India.

**Florin Salajan** received his doctoral degree from Teachers College, Columbia University in the broad field of International Education, with an emphasis on Communication and Computing in Education. Currently, he is pursuing research in educational technology and European studies. His primary research interests include applied educational technologies, European Union policies in education, technology and society in the context of globalization and information society theories.

**Ken Takeuchi**, Ph.D. Tokyo University of Science. He has a Major in Electrochemistry. 1997 Graduate Department of Pure and Applied Chemistry, Graduate School of Science and Technology, Tokyo University of Science. 1997-2001 Post Doctoral Fellow of Intense Pulsed Neutron Source Division at Argonne National Laboratory, USA. 2001-2006 Assistant Professor of Faculty of Industrial Science and Technology, Tokyo University of Science. 2007- Associate Professor of Faculty of Industrial Science and Technology, Tokyo University of Science.

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# Investigating a Nigerian XXL-Cohort Wiki-Learning Experience: Observation, Feedback and Reflection

**Peter Aborisade**

**Federal University of Technology, Nigeria**

**Abstract:** A regular feature of the Nigerian tertiary education context is large numbers of students crammed into small classrooms or lecture theatres. This context had long begged for the creation of innovative learning spaces and adoption of engaging pedagogies. Recourse to technology support and experimenting with the WIKI as a learning tool at the Federal University of Technology, Akure, Nigeria gave us an insight into the benefits and challenges of the set-up and use of new knowledge technologies in our technology-poor context. This paper reports an experiment in an extra-large (XXL) class of freshmen (2000+) on a module of second language project writing using the WIKI. The paper emphasises the unique advantages of the WIKI in a large blended learning class and the affordances for socio-cultural and collaborative learning experience. In creating new learning teams and forging collaboration among learners leveraging one another's abilities, the wiki experience extended the 'classroom' beyond the physical space, engaged students in interactional communication in the second language, encouraged negotiation of meaning, and challenged learners in finding their 'solutions' to real life problems around them, aside from acquisition of hands-on digital literacy. The paper reports on how learners experience and participate in learning on a technology supported module. Data for the investigation and evaluation of students' learning experiences were collected using teacher observation of team formation and collaboration on activities offline and tracked students' logs, footprints and activities on group pages online; students' feedback on the end-of-course learners evaluation forms; and their reflections as gleaned from their comments, encouraged and freely made continually by many from inception through to the end of the course, on the front page of our wiki. The report employs both qualitative and quantitative parameters. Results indicated a large number of students would like more of their courses supported by technology and thought the medium offered hope for the future, as it opened up new vistas in their learning.

**Keywords:** Large classes, wiki, e-learning, learning experience, interaction

# **Faculty Perceptions of Attributes Affecting the Diffusion of Online Learning in Saudi Arabia: a Quantitative Study \*\***

**Aysha Alshangeeti, Hisham Alsaghier and Anne Nguyen  
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**Abstract:** The application of Information and Communication Technologies (ITCs) in education can result in an enhancement of the delivery of educational services provided by universities. However, the success of such online education initiatives depends critically on a core resource, namely the cooperation and full participation of faculty members who deliver quality instruction. In 2000, King Saud University (KSU) in Saudi Arabia launched its online education initiative. This study uses the theory of innovation diffusion and standard survey designs to investigate KSU faculty members' perceptions about key attributes of online teaching, and their overall attitude toward this innovative form of teaching. The study also analyzes the relationship between, on one hand, a faculty member's background and personal characteristics and, on the other, their perceptions regarding the above attributes of online teaching. Finally, the study examines the link between such faculty perceptions and their overall attitude toward online teaching. A sample of 20 KSU faculty members participated in our quantitative survey. Analyses of variance (ANOVA) conducted with the collected data suggest that a given faculty member's professional area (or discipline), gender, and prior experience with online teaching have some influence over his or her ratings of this form of teaching, in terms of several key attributes. Correlation coefficients indicate significant and positive association between such faculty ratings and their attitude toward adopting online education. The paper explores some implications of the main findings.

**Keywords:** Online learning, e-learning, diffusion, DoI, Saudi Arabia

# International e-Learning for Cultural Awareness in Teacher Education

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**Abstract:** This project used an asynchronous electronic group workspace to enable pre-service teachers in Barcelona, Spain, to communicate with their peers in Chicago, USA, about issues of teaching and culture. This qualitative paper reports on the nature of the experience from the views of the participants and professors. Surmounting language differences and difficulties, participants learned about another culture, learned about alternative ways of teaching, and learned about themselves. The collaborative learning environment helped them transcend their immediate context and opened a door to a deeper understanding of another culture.

**Keywords:** Pedagogical issues; post-secondary education; teacher education; collaborative learning

# Learning From Experience: Can e-Learning Technology be Used as a Vehicle?

**Thien Wan Au, Shazia Sadiq and Xue Li**  
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**Abstract:** In the academic, corporate and consumer fields the adoption of eLearning is on the rise. Despite the popularity and huge investment on it, the result from eLearning is still regarded as not quite living up to its expectations and some major concerns in its effectiveness and appropriateness have been revealed in various studies. Many of the eLearning systems developed today were merely the automation of the process and management of teaching and delivering of courses with the advantages of eliminating the time and space barrier. The value towards better learning outcomes is still an area of study, although some researchers have recognized the issues and provided innovative solutions to solve some related problems. In eLearning especially with the absence of face-to-face contact with educators, lecturers, facilitators and tutors, capturing and utilizing experiences of learners as knowledge available or sharable to peers would be a critical catalyst in making learning more efficient and producing better outcomes. Sharing experience in organization has been a research topic in the 90's and used extensively in organization. Hence many organizations since the 90's benefited epistemologically and financially from sharing experience and knowledge. On the other hand sharing of learning experience (LE) in academic eLearning is not so common but has recently been catching attention and seen as an important asset in eLearning. The evaluation of results in eLearning with respect to the increase of learning effectiveness by knowledge sharing indicated improved learning effectiveness. Accordingly an eLearning system comprises three essential components: Human, knowledge and technology (HKT). The nature of learning process is a transfer process between tacit and explicit knowledge. The purpose of the paper is to redefine LE in the context of eLearning within the HKT-paradigm and to propose a structure of LE and a conceptual architecture of an LE Recommender System (LERS). The LERS architecture utilizes learners' profiles, outcomes and behavior in order to capture and store learners' experience. Essentially LE is conceptualized as events as a result of interactions, satisfying personalized needs and promoting use and reuse of sharing of personal or common knowledge. LE reuse in the form of knowledge implies the transformation of knowledge to action typically represented as the ability to solve problem and accelerate learning efficiency. Data mining technique will form part of the LERS in helping to optimize peers learning by recommending appropriate LEs to learners based on their behavior and profiles. The originality of the concept is the use of data mining to recommend LEs dynamically to targeted learners based on user profiles and user behavior to optimize the learning process, improve effectiveness and producing better outcomes.

**Keywords:** e-Learning, experience, knowledge, recommender, data mining

# Advancing Type II Design: Developing Learning Objects as “Tools for Thought”

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**Abstract:** In this article, we describe our project involving development of learning objects designed specifically to teach critical thinking in a variety of digital learning environments. The project is part of our on-going efforts to address MacKnight's (2000), Garrison & Anderson's (2003), Finkelstein *et. al.*'s (2006) and Wieman's (2006) arguments that such embedded critical thinking (CT) should play a central role within the ecology of 21st Century e-learning environments. The proposed design takes account of the Type II (Maddux, Johnson, & Willis, 2001) characterization of more advanced learning objects that support active learning, better involve students in how things happen, provide an extensive range of acceptable responses, involve creative tasks and require extended periods of time to complete. The project described here involves developing 8 modular learning objects that address these worthwhile design characteristics and in addition embeds the tc2-developed pedagogy of critical thinking. This is accomplished by providing opportunities to engage in critical inquiry about content knowledge, involve students in critical dialogue, and encouraging critical reflection. In addition, the strategies provide the means for teaching other “tools for thought” such as the use of criteria for judgment, habits of mind, and thinking concepts such as attributing causal connections, drawing warranted inferences from statistical data, and interpreting images. We use the first of 8 proposed learning objects, *The U-Shape Discussion*, as an exemplar when we outline the pedagogical model and to illustrate our use of Moodle to manage and deliver the objects. We provide a characterization that advances thinking about Type II object design as it applies to teaching critical Thinking.

**Keywords:** Critical thinking, Type II learning objects, embedded pedagogy

# GEARS a 3D Virtual Learning Environment Used in Online Secondary Schools

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**Abstract:** Virtual Learning Environments (VLEs) are becoming increasingly popular in online education environments and have multiple pedagogical advantages over more traditional approaches to education. VLEs include 3D worlds where students can engage in simulated learning activities such as Second Life. According to Claudia L'Amoreaux at Linden Lab, at least 300 universities around the world teach courses and conduct research in Second Life. However, to date, VLEs have been very limited in use for K-12 education. One option for secondary schools was developed by Game Environment Applying Real Skills (GEARS) and can be used in online or traditional schools. The 3D VLE is named *ARC: The Impending Gale*. This program has been used successfully for over a year as part of the Lincoln Interactive online curriculum. ARC allows the student to create their own custom avatar and enter the educational environment. The actual content of the game differs depending on the subject the student is taking. Current courses include Earth Science, Geography, Pre-Algebra, and Spanish. The VLE experience is designed to serve as a reinforcement of the concepts learned in the traditional lessons. The game environment itself has been very well received by students primarily because many of the continued development features were derived from student suggestions. One unique feature that was most requested was the inclusion of voice chat. This had several problems from an educational standpoint. Initially, voice chat was only added to the ARC headquarters and is disabled while going through learning experiences in the game world. Subsequently ARC was released to a wider audience in 2008 and added an expansion zone that included new content. Currently there is an ARC sequel being produced that makes use of new 3D technology and creates a more realistic experience. The use of VLE designed courses has increased enrollment over standard asynchronous courses. This eventually led to an enrollment cap for courses with a GEARS element. The students are also highly motivated to progress through the content. ARC has been a great success for Lincoln Interactive and its parent company the National Network of Digital Schools. National Network of Digital Schools: <http://nndsonline.org/> Game Environment Applying Real Skills: <http://gears.nndsonline.org/>

**Keywords:** VLE, game environment, virtual learning environment, simulated learning, GEARS

# Improving Learning Experience: Detection of Team Roles in a Discussion Forum

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**Abstract:** In recent years learning how to work in teams has become a common subject in higher education. Putting into practice communication skills and trying to reach agreements with team members are needed to acquire teamwork-related competences. However, in addition to individual skills, group characteristics are also important. In this regard, when people work together in a team, roles are developed. Each person, taking into account his/her personal characteristics and the requirements of the group, negotiates his/her role with the other members. These roles are called *team roles*. Furthermore, he sets out that teams with a balanced role distribution will deliver better results. Conversely, teams with an unbalanced role distribution will work worse and will have worse results. Communication between team members can be monitored using a bulletin board system, and hence, analyse individual and group role development, as well as the relationship between members, or conflicts and their resolution. We propose a Computer Supported Collaborative Learning content analysis model based on previous models. Content analysis has been used to study messages posted to a discussion forum for different reasons. We suggest that the content of a forum reveals how a team works, and hence, an approximation to the roles can be deduced. Messages are classified in six dimensions related with team work: progress of individual tasks, team work organisation, the social dimension of the communication, providing new ideas, and critical evaluation of other people's work. The composition and distribution of roles in a team are relevant characteristics that will considerably improve the learning experience for students. By analysing the contents of a bulletin board system, students would know about the roles each one has developed and their influence on the team's effectiveness. Therefore, they would acquire better knowledge of their own work and efficiency. In this paper we present an experience involving six groups of university-level Computer Engineering students (35 people) who had to design and implement a project. They worked for 15 weeks and used a bulletin board system as a communication tool. The contents were analysed applying our model. All of the possible roles were present in each team, providing for a relatively balanced distribution and, accordingly, successful project results.

**Keywords:** Virtual teams, collaborative learning, e-learning to support communities, communities of practice, asynchronous interaction, content analysis

# **Making Sense of Gender and Ict's in Education: Theoretical Explanations for Complex Findings**

**Cheryl Brown and Laura Czerniewicz  
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**Abstract:** This paper examines findings from two surveys of 10110 university students conducted in South Africa in 2004 and 2007, and explores a theoretical lens for taking the work further. We report on the differences between male and females students' access to and use of ICTs for learning. In particular we note that whilst equal opportunities do largely exist for both genders, there are subtle differences in terms of female students' practical access and sense of personal agency. Findings about use are complicated with male students using ICTs more frequently particularly in the sciences disciplines and for activities such as information seeking and communication (in contrast to research elsewhere). In order to try and better understand our findings and to better focus the qualitative phase of the research currently being undertaken as a result of the findings reported on in this paper, we explore four different theoretical perspectives: Bourdieu's notion of habitus; Feminist Standpoint Theory; Critical Information Systems Theory; and Expectations States Theory. We then suggest using Bourdieu's notion of habitus as our theoretical focus as we believe it offers us the most flexibility whilst enabling a gender focus to be maintained.

**Keywords:** Gender differentiation, ICT access and use, theoretical perspectives

# Online Communities of Practice as Agents of Change in Curriculum Development

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**Abstract:** This paper examines how an online community of practice of tutors can be used to drive and engender change in the complex environment of undergraduate medical curriculum development. Parallels are drawn between the theories that underpin communities of practice and change management and comparison made of the role of the community with that of individuals as drivers and agents of change in curriculum practice. The paper is based on a case study within the University of Manchester Medical School, which aimed to create an online system for hospital based tutors. A major issue with such a geographically disparate group of practitioners is the ability of the University to manage and gain feedback from the group, as well as engage them in any meaningful collaborative task, such as curriculum review. To resolve these issues, the project team created a social-network based application that allowed tutors to collaboratively work together to review and update the medical curriculum. Through the use of these technologies, the community of tutors can share and adapt practices in medical education and improve good practice within the emergent Community of Practice. Through a cyclic process of intervention and evaluation, the project team have captured the behaviour, activity and impact of the community as it emerges and develops online, improving the practices of those involved. However, in order for any changes to the curriculum and to practice to be adopted across the wider community, the group needs to act as an agent of change, catalysing and driving change throughout the whole community. The research question addressed by this paper is to what extent an online community of practice can act as an agent of change? In analysing the data from the community of practice, this paper draws parallels between these theories and the change process catalysed by the community.

**Keywords:** Curriculum development, communities of practice, change management, change agents

# Moving From Analogue to High Definition e-Tools to Support Empowering Social Learning Approaches

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**Abstract:** Traditional educational and training settings have dictated that the act of learning is an activity that is motivated by learners, directed by a teacher expert and based on information transfer and data manipulation. In this scenario, it has been assumed that learners more or less acquire knowledge or develop sets of skills as a result of such activity. In this model, learning ends when the training activities cease - and implies repeat doses of the same training is required over time. Computer technology, as it has been generally integrated into educational settings, has taken the role as tools to support such a model and in some cases to replace the teacher in these contexts – although not without serious implications for learners and their learning. In the last three decades, a growing movement in educational research, based on the theoretical support of Leon Vygotsky and Mikhail Bakhtin, is advocating that the traditional conceptualization of the learning process is misconceived. From the perspective of this movement, learning is understood as a life-long, social act of constructing knowledge in a dialogic activity with others. Within this model, social interaction is the precursor to higher order thinking rather than the reverse. The challenging question emerging for many educators is how new technologies can support knowledge and skill building in social constructivist-based learning settings. And a corollary to this question arises: Depending on the particular technology chosen what are the implications for learning and identity construction? In this paper, we describe the Language Learning Through Conferencing project (LLTC) in which a low-cost video-based web conferencing technology and desktop computers were used to conduct language learning sessions via the Internet. The project description, project content, and the experiences that took place over a sustained period as well as the potential future for this approach to distance learning are presented here. The aim of the Language Learning Through Conferencing project (LLTC) has been to exploit a particular Web 2.0 technology to connect language learners internationally between Canada and new democracies in Central and Eastern Europe and more recently in the public sector in Canada. More specifically, the project was a means to respond to learners who faced challenges in finding opportunities for language learning both in Europe and in Canada. Outcomes from ongoing qualitative and quantitative findings gathered by the respective authors are indicating that these dialogic opportunities are also having a powerful influence on learners' professional, linguistic and personal identities as well as their views of technology and learning.

**Keywords:** Video-based web conferencing, guided social learning, learner agency, identity and knowledge construction

# **Pre-entry Characteristics: A Study in the use of an Internet-Based Self-Assessment Survey for Predicting Persistence in Adult Online Education**

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**Abstract:** The use of Internet-based surveys to assess potential online students provides advice to appropriateness of the online modality. This study evaluated pre-entry characteristics of potential online students through the use of a readiness survey to determine if a self-assessed profile can be a statistically significant predictor of course persistence. A pool of 100 questions gathered from existing readiness surveys was evaluated to determine 40 questions to assess (a) technical knowledge, (b) reading as a preferred modality, (c) social needs, and (d) self-discipline. 242 students from three community colleges participated in the study by replying to an Internet-based survey which provided a total assessment score and scores for each of the four scales. Students' persistence was assessed at weeks 4, 7, and 10. A single-tailed *t* test determined if a significant difference occurred between the scores of the students who persisted and those who withdrew.

**Keywords:** Retention, online education, Pre-entry characteristics, persistence, attrition

# **Web 2.0, Technology Ownership and e-Learning in Computing Science**

**Marie Devlin, Chris Phillips and Lindsay Marshall  
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**Abstract:** Today's prospective entrants to Computing Science degrees have grown up surrounded by technology. They watch digital TV, play computer games, listen to music on their iPods/Mp3 players, chat to their families on MSN and their mobile phones, share pictures, author their own blogs and websites and post stories and meet new people on social networking sites. As Computing Science academics we are in a unique position because we have access to all of these technologies for teaching our students. We feel it is safe, to an extent, to assume that new entrants to our programs are comfortable with learning new technologies and are also expecting us to use a variety of technologies to teach them effectively. It is also perhaps reasonable to assume that the technologies we provide will be perceived by our students as an enhancement to their learning and that their expectations of ways to communicate and learn are being met. If this is not the case, then differences in expectations and experience could have wide implications for our approach to technology and eLearning provision in Computing Science at tertiary level. In this paper, we describe our 'blended' approach to eLearning and explore the pedagogical implications of student technology ownership, usage and experience for that approach based on the results of a study conducted amongst new entrants to the School of Computing Science at Newcastle University in the academic year 2007-08. We also present a case study of our usage of Web 2.0 at level 2 and discuss student feedback and experiences. We then discuss the implications of these findings for future development of our eLearning strategy and make some proposals for the adoption and inclusion of web 2.0 technologies in the wider Computing Science curriculum.

**Keywords:** e-Learning, technology ownership, blended learning, computing science, Web 2.0

# **Efficacy of Three Computer-Assisted Instructional Modes on Students' Academic Performance in Secondary School Practical Geography in Nigeria**

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**Abstract:** This study investigated the efficacy of three computer-assisted instructional modes (tutorial, games and drill and practice) on students' academic performance in practical geography in Nigeria. The study adopted pre-test, post-test, control group quasi-experimental design. One main hypothesis was tested. One hundred and twenty (120) randomly selected Senior Secondary School II (SSS II) geography students from three privately owned secondary schools in Ibadan metropolis, Nigeria, participated in the study. Four research instruments were developed, validated and used for collecting data. These are Geography Computer Tutorial Mode (GCTM), Geography Computer Games Mode (GCGM), Geography Computer Drill and Practice Mode (GCDPM) and Practical Geography Achievement Test [PGAT  $r = 0.82$ ]. The first three instruments are self-learning computer programmed packages based on the selected topics in mapwork, while the fourth instrument (PGAT) is an objective test of four options A-D. Appropriate statistical tools such as ANCOVA and Duncan were employed to test the hypothesis at 0.05 level of significance. There was significant main effect of treatment on learners [ $F_{2,119}=66.524$ ;  $p<0.05$ ]. The Multiple Classification Analysis indicated the following mean scores (55.75, 45.18 and 41.40) for the tutorial, games and drill and practice groups respectively. However, the pair wise comparison using Duncan revealed significant differences between group 1 (tutorial) and group 2 (games); between group 1 and group 3 (drill and practice) and between group 2 and group 3. Findings revealed that the students exposed to tutorial mode of Computer-Assisted Instruction (CAI) performed significantly better than those exposed to games and drill and practice modes while those exposed to games mode also performed significantly better than those exposed to drill and practice modes as indicated in the above results. The implication of these findings is that, the tutorial mode of CAI had been found superior over the other modes used in the study. Hence, tutorial, games and drill and practice modes of CAI are recommended for geography teachers in order to improve learners' performance in the subject. Also, instruction should be ICT compliant at any level of education in Nigeria.

**Keywords:** Efficacy, computer-assisted instruction, academic performance, practical geography, Nigeria

# **Knowledge Portal That Promotes the Organizational Learning in the University and the Company**

**Gloria Milena Fernández Nieto**

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**Abstract:** With the different economic variations that is being presented throughout these years worldwide and with the economic recession, the picture is a bit discouraging. Besides the different problematic found inside the University “Distrital Francisco Jose of Caldas”, such as; the abundance of interesting projects of research, which are not tested, because the companies or institutions do not know about its existence and with the time they become obsolete; the shortage job opportunities for the students, is other detected problems as well as the lack of project financing of investigation specially in the Public University. All these problems are a result of the lack of communication between the University and the Company. This project was created by the need to establish this communication, to achieve that the organizations have the opportunity to adapt with facility to the external and internal nowadays changes and that the investigation process inside the university will be more dynamic for the creation of innovative products that improve the quality of life of the society. Was raises the realization of a Knowledge Portal, which promotes the interaction between the University and the Company, in order to establish an exchange of present knowledge both in the University and in the Company, in different ways tacit or explicit, which is looked by the implementation of the portal is to do that the necessary information for the different members of this one could access easily and with this promote the creation of knowledge and new innovative organizational processes, as well as the creation of new strategies and products to be competitive on the market. When we start this research we do a theoretical study of; knowledge management, as a tool to do that the organizations were learning to learn for benefit of themselves; knowledge portals, as facilitators of knowledge exchange among the users of the portal, with the implementation of different tools of communication like Web2; and finally a recognition of the technological platform in which it would be developed. The most important thing before beginning the development of the platform was, the knowledge of the organizations it means the accomplishment of an organizational analysis and with this one the elaboration of a model of knowledge management which allows to identify the sources of knowledge inside the same organizations. Once finished the theoretical study, was implement the knowledge portal with tools that allow, the permanent contact of the portal users, thanks to the implementation of the Web 2, in addition, it has a manager of contents, communities of interest, manager of companies and groups of research, links of interest, manager of employment, manager of users and help.

**Keywords:** Knowledge management, knowledge portals, TICs, factory-university, organizations, organizational learning

# **A Blended Approach to Evidence Learning in Professional Practice**

**Margaret Fisher, Alison Thoburn, Trudy Arkinstall and Tracey Proctor-Childs**

**University of Plymouth, UK**

**Abstract:** Research and e-learning both need to have real-life usability in order to be of benefit. This paper analyses the journey followed as an electronic portfolio was introduced into the midwifery programme at a University in the United Kingdom. Underpinning this innovation were key findings from the literature and an ongoing study exploring “Assessment of Practice”. Due to a number of curricular changes required by the authors’ institution and the professional body, the decision was made to incorporate these – together with current evidence – into a blended portfolio for use by undergraduate midwifery students. The part-electronic, part-paper portfolio enables students to demonstrate the individual range of their practice learning activities and professional development, resulting in them being able to provide evidence of their competence prior to professional registration. The flexibility offered by the e-portfolio system empowers the learner and promotes autonomy in the gathering of their evidence, which they demonstrate through a system of hyperlinks. Clarity and consistency of multimedia guidance and facilities for regular feedback on progress are key features of the new electronic portfolio. The results of a set of longitudinal case-studies which are currently nearing an end at the Centre for Excellence in Professional Placement Learning had a major influence on the development of the blended portfolio. Student perceptions of the validity and reliability of the various practice assessment methods used in Midwifery, Social Work and Post-registration Health Studies in the University as well as the impact of the practice assessment process on their learning have been explored. Significant findings have emerged from this research with regard to the strengths and weaknesses of portfolios. The importance of students understanding the purpose of practice assessment as well as recognising its contribution to their learning and development has also been highlighted. In line with the authors’ focus on producing an evidence-based innovation, a pilot was undertaken of the blended portfolio, in which students with a range of IT (information technology) and learning styles were invited to experiment with the new format. Following the successful outcome of the pilot, the portfolio has recently been rolled out to midwifery students and the mentors who support them in their practice placements. The e-portfolio has been show-cased in the wider University, and a number of health and social work colleagues are keen to incorporate a similar assessment method into their programmes. It is considered that the principles of the blended portfolio and other findings from the research will be of interest to a range of other professions which have a practice component, and would be transferable across international boundaries.

**Keywords:** Portfolio, blended learning, professional, practice, assessment

# **GRAPHIC DESIGN: a Sustainable Solution to Manage the Contents of Teaching Materials**

**Víctor García Izaguirre, María Luisa Pier Castelló, Gabriela Clemente Martínez and Eduardo Arvizu Sánchez**  
**Universidad Autónoma de Tamaulipas, Tampico, México**

**Abstract:** There is a concern that the teaching of subjects is applied not only supported by a set of technological devices, but large in the proper use of teaching and new technologies. Taking this idea we develop a research and sustainable design that result in educational materials in solid content and technological innovation, also to have the benefit of learning process of a particular subject. The project is in its stage of development of educational materials, which indicates that only the experiment is missing.

**Keywords:** Education, design, sustainability, ICT, teaching materials

# **Efficacy of Teaching Clinical Clerks and Residents how to Fill Out the Form 1 of the Mental Health Act Using an e-Learning Module**

**Sarah Garside, Anthony Levinson, Sophie Kuziora, Michael Bay and Geoffrey Norman  
McMaster University, Hamilton, Ontario, Canada**

**Abstract: Background:** Every physician in Ontario needs to know how to fill out a Form 1 in order to legally hold a person against their will for a psychiatric assessment. These forms are frequently inaccurately filled out, which constitutes wrongful confinement and could lead to fines as large as \$25,000. Training people to fill out a Form 1 accurately is a large task, and e-learning (Internet-based training) provides a potentially efficient model for health human resources training on the Form 1. **Objective:** In this study, we looked at the efficacy of an e-learning module on the Form 1 by comparing baseline knowledge and skills with post-test performance. **Methods:** 7 medical students and 15 resident physicians were recruited for this study from within an academic health sciences setting in Hamilton, Ontario, Canada (McMaster University). The intervention took place over 1 hour in an educational computing lab and included a pretest (with tests of factual knowledge, clinical reasoning, and demonstration of skill filling out a Form 1), the e-learning module intervention, and a post-test. The primary outcome was the change between pre- and post-test performance. A scoring system for grading the accuracy of the Form 1 was developed and two blinded raters marked forms independently. Participants were randomly assigned to one of two sequences of assessments (A then B vs B then A), with a balanced design determining which test the participants received as either the pretest or post-test. Inter-rater reliability was determined using the Intraclass Correlation. Repeated measures analysis of variance was conducted. **Results:** The Intraclass Correlation (ICC) as the measure for inter-rater reliability was 0.98. For all outcome measures of knowledge, clinical reasoning, and skill at filling out the Form 1 there was a statistically significant improvement between pretest and post-test performance (knowledge,  $F(1,21) 54.5$ ,  $p < 0.001$ ; clinical reasoning,  $F(1,21) 9.39$ ,  $p = 0.006$ ; Form 1 skill,  $F(1,21) 15.7$ ,  $p = 0.001$ ). Further analysis showed no significant differences or interactions with other variables such as between raters, the order of assessment, or trainee type. **Conclusions:** Under laboratory conditions, this e-learning module demonstrated substantial efficacy for training medical students and residents on the theory and practice of filling out the Form 1 of the Mental Health Act. E-learning may prove to be an efficient and cost-effective medium for training physicians on this important medico-legal aspect of care. Further research is required to look at the longer-term impact of training and broader implementation strategies across the province for medical trainees and practicing physicians.

**Keywords:** Medicine, skills, training, healthcare, education, psychiatry

# **Blended Learning in the Visual Communications Classroom: Student Reflections on a Multimedia Course**

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**<sup>2</sup>University of Wisconsin-Oshkosh, USA**

**Abstract:** Advances in digital technology and a rapidly evolving media landscape dramatically change teaching and learning. Among these changes is the emergence of multimedia teaching and learning tools, online degree programs, and hybrid classes that blend traditional and digital content delivery. At the same time, visual communications programs, traditionally print-centric have had to make room for Web design and multimedia storytelling courses, as well as technical skills development. To add parsimony to these two areas of study, we chronicle how a blended model has been introduced in a required, 100-level visual communications course through a longitudinal study that followed 174 students through two versions of the same course, one that used blended learning strategies and one that participated in a more traditional method of course delivery. In combining an analysis of statements made by the participants in weekly journals (n=13,552) and the data gathered through a survey (n=174), we compared reactions between the two groups. Additionally, qualitative data from the journals was used to fully explicate the reactions students had to the course. This study sheds light on the effectiveness of a blended model in the context of students' enjoyment, engagement, and perceived learning outcomes. The results revealed that the blended model was in no way different from the traditional course in terms of engagement and attachment. Journal data revealed students in the blended sections were significantly less negative about the course material, personal achievement, technology, and their emotional reactions than their traditional counterparts. Additionally, statements made by students regarding the issue of fear of the course and problems regarding technology substantially faded over the 15-week semester. Our overall findings indicate that students are able to adapt well to the technology and processes that make blended learning different from traditional classroom learning. Implications for pedagogy and future research are discussed.

**Keywords:** Blended learning, visual communication, multimedia teaching and learning

# How Does Having a Pocket PC Affect Doctoral Students' Experience of Learning? A Case-Study and its Implications for Postgraduate Research Training

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**Abstract:** The University of Nottingham Graduate School was expanded in 2006 to provide a range of facilities, training opportunities and support to develop a range of transferable generic research skills and techniques for more than six thousand postgraduate students across the full range of academic fields. With three campuses in the UK and satellite campuses in Malaysia and China, the University of Nottingham has a diverse and dispersed population, with one in five postgraduate research students studying part-time. A capital grant from the Visual Learning Lab was used by the Graduate School to fund ten Pocket PCs for use by part-time students. In collaboration with the School of Nursing, which has the largest number of part-time research students, a small scale project was developed. The aim of this Pocket PC project was to give immediate access to mobile technologies for part-time doctoral students and to explore the anticipated benefits of mobile learning. The project also sought to lay the foundation for the success of future teaching and learning initiatives using complex interactive technologies by introducing mobile technology. This was a recently established Graduate School staff team that was in the process of developing a common culture of practice around teaching and learning. This paper will present the Pocket PC project as a case-study outlining the presumed and perceived benefits of having access to mobile learning technology. The mechanisms for providing support online and the limitations of the device will also be detailed. The main findings of the project, which centre upon the perception of the device as a *personal information management tool* rather as a *learning tool* will also be discussed. The paper will then turn to the role of the project in the development of both (what is by now) fairly standard use, and, innovative use of technology in the development of research training provision by the Graduate School. The paper will conclude with a discussion of the needs and capacity of teachers, trainers and facilitators when incorporating new technologies into cultures of practice in teaching and learning.

**Keywords:** Mobile learning; pocket PC; supporting research students; practical application of technology in learning

# Podcasting to Support Students Using a Business Simulation

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**Abstract:** Audio or video podcasts can be a useful tool to supplement practical exercises such as business simulations. In this paper, we discuss a case study in which different types of podcast were utilised to support the delivery of a course in international business. The students work in groups and run a fictional company using business simulation software, which gives them the opportunity to evaluate their decision making skills. A number of podcasts were used as reusable learning objects for different student cohorts. Faculty members produced visually enhanced audio podcasts offered tutor discussions of key elements of the computer-assisted business simulation used by the students. The podcasts were made available via the virtual learning environment (Blackboard Vista), as well as for subscription by web browser-based RSS readers, such as Google and downloadable RSS readers, such as iTunes. Our evaluation of this approach to using podcasts takes into account pedagogic and technical issues. Firstly, faculty members involved in this case study were interviewed to obtain their views and experiences on the process of producing podcasts as well as the suitability of podcasts to support their teaching. Secondly, students were surveyed and interviewed about the value of the podcasts and the way in which they were used. This work is on-going and initial informal student feedback indicates that the podcasts engaged the students and supported their understanding of the international business module. This paper presents a snapshot of the current findings which generally support the value of this innovative way of using podcasting for learning and teaching.

**Keywords:** Podcasting, reusable learning resources, e-learning, web 2.0, business simulation

# **e-Modelling – Helping Learners to Develop Sound e-Learning Behaviours**

**Susan Greener**

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**Abstract:** The learning and teaching relationship, whether online or in the classroom, is changing. Mentis (2008) offers a typology of teacher roles gathered from current literature on e-learning including instructor, designer, guide, mediator, curator and mentor, which offer the university teacher a striking range of ways in which to develop relationships with students in the mutual development of knowledge and understanding. A study of Higher Education teachers in the UK proposed a shift in their role and behaviour concomitant with the explosion of VLE usage in universities (Greener 2008). As online and blended learning become familiar features in the university landscape, pedagogical discussions are being given more priority and ideas about how students can be enabled to learn appropriate skills for employability and lifelong learning, as well as higher order thinking, claim attention. Online, the teacher's status can easily be eroded, as learners can compare teacher-designed resources with video lectures from across the world on similar topics and chat directly with experts in the field through their blogs. Teachers who are open to new ways of thinking about their subject, and welcome such self-directed behaviour from learners, are most likely to integrate new technology into their teaching (Baylor and Ritchie 2002), and their own competence with technology will be a factor in how such integration works. But it is vital in these discussions not to lose sight of classroom behaviour in the rush to develop e-moderating and blogging skills for teachers. What teachers say and do in their face-to-face classes has always had a major impact on not only what is learned but also how it is learned. Bandura suggests that most human learning is done by observing and imitating others' behaviour (1977) provided the potential learner attends, can retain, reproduce and wants to do these things. So if we aim to integrate at least the affordances of VLEs into teaching design for blended learning, one of our considerations must be how the teacher uses the VLE in front of the learner. There is no doubt that teachers are increasingly uploading materials and weblinks etc into VLEs to support learners (or are made to by institutional policy). However there is less evidence that teachers are role-modelling effective e-learning to their learners. Some of this is about competence, but it is rare for a teacher to lack the ability to learn basic technology use. More of this reluctance is about fear and anxiety, to be shown up as incompetent in class to what are considered the net generation. This paper will explore the concepts and behaviours implied in the role-modelling of effective e-learning in the classroom, drawing on data from teachers and learners involved in using VLEs and other Web resources in face-to-face sessions.

**Keywords:** Role modelling, social learning theory, teaching methods, conceptions of teaching

# **Evaluation, Validation and Optimization of Virtual Platforms and Courses to Develop the Teaching Skills of English**

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**Abstract:** The project is being developed by research groups DIT and METIS of the Distrital University -UDFJC- for the professorship and the student community, the research pretends the improvement of the didactic competence through the implementation of an Online English Course ELT supported by the Virtual Platform DIT Online that offers additional services like management of information about users, account in the Virtual Platform, forum and blogs. The project is composed by three phases: the evaluation, validation and optimization phases of the ELT course and the Dit on line Platform. However, this paper is devoted to the evaluation process due to the fact that the onther 2 stages have not done yet. For the evaluation phase, the Systemic Model of Quality - MOSCA- has implemented as methodology of evaluation of the platform fixing a matrix orientated to the product and to the process with internal and contextual aspects which intervene in the users. Aspects like functionality, usability, reliability, efficiency and portability have been considered to bear in mind from the already established levels conventional corresponding to dimensions, categories, characteristics, sub typical and metric that might obey to name in the ISO 27004. The evaluation of the virtual course consists of the evaluation of the general quality of the environment, didactic and methodological quality and technical quality setting up weighting of variables as navigability, didactic contents, interactivity, and versatility among others. During this stage one expects to obtain specific information about the characteristics that a course and a virtual platform must have, the obstacles that could appear with the interaction between the teachers and students with the technological resources and to find possible solutions to the problem.

**Keywords:** Systemic model of quality, virtual courses, virtual platforms, evaluation methodology, teaching skills

# **Evaluating the Effectiveness of an International e-Learning System: The Case of Montpellier Business School**

**Călin Gurău and Dominic Drillon**  
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**Abstract:** The efficiency of an e-learning system is determined by a good interaction between the IT systems, teaching materials, professors, and students. Analysing the users' perceptions regarding the e-learning system can provide valuable data to evaluate and improve its functioning and performance. Based on the analysis of primary data collected from students that used the e-learning system during their exchange period in foreign universities, the paper presents in the specific context of Montpellier Business School, the perception of respondents concerning the impact of the e-learning on learning behaviour and effectiveness. A series of recommendations regarding the practical aspects of e-learning system implementation are proposed, taking into account the context, strategy and organisation of the teaching organisation.

**Keywords:** e-Learning system, students' perceptions, importance, role, effectiveness

# Lessons From e-Learning: Transforming Teaching

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**Abstract:** This paper focuses on a framework for successful online course delivery, suitable for the senior secondary school environment, developed as a result of an experience-based study of eight institutions from Iceland and Finland. It outlines developed 'best practice' in a range of areas, including strategies for the creation and maintenance of online course material. It highlights the importance of nurturing effective virtual learning communities surrounding an online course. The paper also focuses on the challenges in establishing a sustainable program, as well as examining aspects of the program's success. The framework was developed as a means to guide a new distance e-learning program, commenced by Northern Beaches Christian School (NBCS), Sydney, Australia, through its research division, the Sydney Centre for Innovation in Learning (SCIL), in 2006. The initial implementation of the online course program at NBCS has produced some interesting and varied outcomes. A number of courses offered in online modes solely have produced higher than state average results in external examinations. Additionally, a number of students undertaking courses in distance e-learning mode, have quickly attained external examination results at the high of end of NSW achievement. Another observable and positive outcome of the e-learning program is connected to general teacher effectiveness. The process of developing courses suited to an online environment has facilitated broader teacher awareness of relevant and appropriate pedagogy in all course delivery, whether face to face or online. This would appear to be linked to a range of factors: Teachers adopting a more considered professional approach, drawing more overtly from their understanding of the most effective pedagogy as may be relevant to the delivery of the specific content of a course. Teachers better able to integrate new technologies into all of their course delivery, whether in face to face, blended or fully online modes. and in so doing raising the quality, variety and effectiveness of their instruction. Students with a predisposition to learning styles linked to engaging with technology, appreciating the widespread integration of online modes of learning into all courses.

**Keywords:** Secondary school, online courses, e-learning, best practice, success, pedagogy

## **Open Access / Open Grad Students**

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**University of Toronto, Canada**

**Abstract;** Support for Open Access (OA) as an accepted model for scholarly publishing is changing the academic landscape for today's graduate students. The Open Access movement has the potential to impact many facets of the graduate experience. This may include participation in peer-reviewed publishing initiatives, learning to become members of the community of researchers and producers of scholarly works, and finally, involvement in the Open Education Resource (OER) movement. Graduate student participation in student peer-reviewed journals is increasing as tomorrow's scholars seek both the experience of the publishing process first hand, as well as the opportunity to get a professional "foot in the door". Current OA journals using efficient Open Journal System (OJS) tools and work flows provide a low-cost, inclusive point of access and play an important role in introducing the critical peer review process to future faculty and researchers. When we are educating graduate students, acquiring confidence in the practice of scholarly research, writing and review is as important as the discipline-specific expertise. Many of our students may find OA publishing of their thesis to be an important step in their induction into the academy. At the University of Toronto the eThesis initiative requires that all graduate students contribute their thesis or dissertation to the institutional repository where it may be immediately accessed to scholars in their field and prioritized by primary scholarly search engines. The policy and practice related to OA publishing observed within the university environment will inform their understanding of cultural norms. This eThesis program provides an early exposure to Open Access publishing practice. Finally, as global citizens, our students value the opportunity to share their work beyond the borders of the relatively wealthy western world institutions of higher education, and also to access resources beyond the subscription limitations of their own place of study. New patterns of practice rooted in a new culture of social networking are emerging for the graduate student community.

**Keywords:** Open access, online theses, scholarly communication

# Web-Based Expert Learning System for Student Industrial Internship

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**Abstract:** Student Industrial Internship Programs (SIIP) for industry as well as for government sector have been integrated to the curriculum of most of universities worldwide. The main purpose of this internship training is to expose the students to real working environments, where the practical applications are related to the theories they have learned in the classroom. However, the apparent knowledge gap between academic supply and industrial demand impedes the successful absorption of expert skills. In this paper, we present our experience in design, implementation, and deployment of a *Web-based Expert Learning System (webELS)* that supports SIIP. The designed system incorporates many novel features: first, webELS provides a feedback mechanism for developing didactic materials collaboratively, which is an essential requirement to bridge the gap between academic supply and industrial demand. Second, through a simple web based metaphor, the system allows the mentors in the industry to effortlessly develop contents by using document attachments and few metadata inputs. Third, webELS enables SIIP students to use this system as an expert learning system and facilitates other parties to use webELS as an information portal. Finally, the modular design of the system ensures its flexibility in future enhancements. We have practically deployed the system to support SIIP in DNP (Dai Nippon Printing) LSI Design Co. Ltd. in Japan. Using webELS system, didactic materials are constructed and managed by both university teachers and mentors of industry to bridge the knowledge gap. With three-years (from 2006 to 2008) experimental usage of the preliminary web-based expert learning system we developed, it is shown that with a two-week preliminary student-internship program, the students are progressing their internship course smoothly overcoming the gap between academic knowledge and preliminary expert practical knowledge needed for SIIP.

**Keywords:** Web-based learning, shared content object, sco, student industrial internship, preliminary studying, practical expert knowledge, lsi design

# Using Technology to Facilitate Reflective Practice in a Teacher Education Program: Two Examples

**Kim Hyatt, Ed Rose Mary Mautino and William Barone**  
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**Abstract:** Discovering the ways technology can be facilitative of developing reflective practice in teacher education is at an exciting and innovative stage. Technology facilitated learning is finding many applications in various aspects of both initial certification and advanced specialists programs. Strampel and Oliver (2007) maintain that technology mediated learning can promote reflection, increase understanding, induce a conceptual shift and promote critical evaluation; thus facilitating professional growth or program evaluation. Since the publication of Schon's (1983) original work, *The Reflective Practitioner*, the concept of reflective practice has been viewed a powerful tool for professionals to use in fostering continued professional growth. Technology offers both teacher educators and teacher candidates additional resources and more powerful tools and opportunities to engage in reflective practice. Reflective practice is particularly useful in fostering continued growth in professions that are as much art as they are science. Professions in which the activity often deviates from the intended script and require continuous monitoring and adjustment in order to deal with unforeseen circumstances. Technology offers the teacher candidate or advanced specialist the opportunity to collect, analyze and reflect on vast amounts of real-time data. It also provides them with powerful tools to help them make sense of and grow from reflecting on their experience. Teacher candidates can also share this experience with a vast audience of colleagues and professionals to help facilitate reflection and insight. Combining the power of technology with the power of experience offers unique opportunities for both teacher candidates and teacher educators to engage in reflective practice as they seek to grow and develop in the practice of their professions. The two examples discussed in this paper illustrate that technology facilitated learning is quickly becoming commonplace in many programs in teacher preparation.

**Keywords:** Technology, teacher reflection, teacher preparation

# **Use of Language Beyond the Classroom: the Outcomes, Challenges and Success of an e-Based Cross-Cultural Project in French Class**

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**Abstract:** In October 2008 the French Program of Linguistics and Modern Languages Department of the Chinese University of Hong Kong (CUHK) launched an e-based group discussion project between their Advanced level French classes and French classes of a high school in Vienna, Austria. The project made use of the French Program e-learning platform built on Moodle. The platform was a student's reserved area and teachers in both regions agreed not to intervene in any of their students' online interactions. Common discussion topics were given one after another according to a common time table: each student first had to post a 200-250 words essay followed by one to three interactions. On students' side, the results of the first discussion topic showed very conventional writing with emphasis on grammar and syntax accuracy. However the results of the second and third discussion topics showed a clear evolution in both writing style and behavior: moving from very school-like, individualistic and dry style, essays and interactions to linguistically less prepared, more spontaneous, and group oriented communications. Such altruistic behavior moved from online to offline and became obvious in the relationship between students during and after class. On teachers' side, change in behavior was noticeable as well. They evolved from over-tutoring to under-tutoring in discussions 1 and 2 to finally finding the appropriate pace to meet their students' needs. Apart from illustrating with evidence the benefits in-class and beyond the classroom of an online cross cultural project, the authors would also like to report some of the challenges in administering the asynchronous interaction project.

**Keywords:** Social and pedagogical benefits of e-learning, e-based cross-cultural project, evolution in students' and teachers' behavior, enhancement of student motivation, online community

# Measuring the Effectiveness of Educational Technology

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**Abstract:** In many academic areas, students' success depends upon their ability to envision and manipulate complex multidimensional information spaces. Fields in which students struggle with mastering these types of representations include (but are by no means limited to) mathematics, science, medicine, and engineering. There has been some educational research examining the impact of incorporating multiple media modalities into curriculum specific to these disciplines. For example, both Richard Mayer (multimedia learning) and John Sweller (cognitive load) have contributed greatly to establishing theories describing the basic mechanisms of learning in a multimedia environment. However when we attempt to apply these theories to the evaluation of e-learning in a more dynamic "real world" context the information processing model that forms the basis of this research fails to capture the complex interactions that occur between the learner and the knowledge object. It is not surprising that studies examining the effectiveness of e-learning technology, particularly in the area of basic science, have reported mixed results. In part this may be due to the quality of the stimuli being assessed. This may also be explained by the context in which interactivity is being utilized and the model that is used to evaluate its effectiveness. Educational researchers have begun to identify a need for more fine-grained research studies that capture the subtleties of learners' interactions with dynamic and interactive learning objects. In undergraduate medical and life science education, interactive technology has been integrated into the curriculum at many levels. This paper reviews experimental studies drawn from personal experience where an attempt has been made to measure the efficacy of educational technology. In examining the shortcomings of these more traditional experiments, we can then apply this understanding to characterizing a more flexible approach to evaluation and its potential in measuring the effectiveness of educational technology. Understanding the nature of technology-mediated learning interactions and the way in which they foster depth of understanding is a great challenge for both educational researchers and developers of e-learning technologies. By adopting an evaluative framework that takes a more flexible approach to measuring the emergent nature of understanding, we can examine the capacity of educational technology to support more complex understanding of curricular subject matter.

**Keywords:** Anatomy, e-learning technology, evaluation, rich media

# **Developing Intercultural Awareness of Chinese Students in Online Asynchronous Discussions and Blogs Within a French Culture Course**

**Christèle Joly, Nathalie Iseli and Paul Lam**  
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**Abstract:** This study based on the teaching and learning innovations implemented from January to April 2008 at The Chinese University of Hong Kong. Intercultural awareness is one of the expected learning outcomes in the University. The Web 2.0 technology is a golden opportunity for students to reflect upon cultural issues. In this project, a group of 26 Chinese students from different disciplines who studied French as a third foreign language at different levels joined this course taught in English with the intention of learning more about the French culture. The objectives of the course were as follows: 1) make students reflect about their own cultural values which condition their mindset, 2) make students aware of cultural differences and difficulty to apprehend them, and 3) stimulate their analytical thinking and moderate their judgment. Interactive online strategies, such as discussion forums and blogs, were used to assist the course to achieve the above objectives. The technology facilitated discussions and the building of online communities. Students' online discussions with their peers engaged students in productive learning, provided the teachers with helpful feedback about students' grasp on the course content, and assisted the teachers in evaluating students' performance in learning. A framework with detailed instructions was given to students at the beginning of the course. This formative exercise was integrated into the course syllabus. Assessment methods were rethought; the role of teacher and students' learning habits definitely changed. Excerpts of students' contributions in forums and blogs could illustrate students' learning process in the acquisition of intercultural awareness and serve as evidence for community building as well as for pool of feedbacks for teachers. Lastly, students' final written evaluation feedbacks were compared with their online comments and change of behavior. Conclusions about effectiveness and efficiency of the practice were drawn and suggestions for improvement were made.

**Keywords:** Social benefits of e-learning, widening student participation, asynchronous interaction, e-learning to support communities and individuals, blended learning approaches

# **Eating Your Lectures and Having Them Too: Is Online Lecture Availability Especially Helpful in “Skills-Based” Courses?**

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**Abstract;** At the University of Toronto at Scarborough, we provide enhanced flexibility to our students using a blended learning approach (i.e., the webOption) whereby classes are videotaped as they are offered in a traditional manner, then posted online for subsequent student access. Students can attend lectures live, watch them online at their convenience, or both. Previous research examining student’s use and satisfaction with the webOption in the context of Introductory Psychology revealed that (a) students used and appreciated the pause and seek features afforded by the webOption interface, (b) students were satisfied with the webOption in general, and (c) those who used the pause and seek features performed slightly better on exams (Bassili & Joordens, 2008). The current research examines similar issues in the context of two mathematics courses. These courses differ from the lecture-based Introductory Psychology class in their emphasis on the teaching of mathematic proofs; cognitive skills that, like any other skill, are enhanced with practice (Schneider & Shiffrin, 1977). Access to online lectures allows students to re-experience the professor as they teach these skills. Given this, the webOption might be especially potent in these learning contexts. Surprisingly, the results we report here do not confirm that prediction. Students do use and appreciate the features of the webOption as was the case in our previous work, but those students who augmented their class attendance with online viewing, and those who used the lecture-control features the most, were actually the students who performed most poorly. Said another way, those students who had the most trouble with the course did indeed use the webOption as a way of understanding the material better but, interestingly, doing so did not result in better performance. Several possible reasons for this surprising result are considered.

**Keywords:** Online lectures, webOption, calculus, performance, surface versus deep learning

# peerScholar: an Evidence-Based Online Peer-Assessment Tool Supporting Critical Thinking and Clear Communication

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**Abstract:** The primary goal of universities is to create scholars; students who not only possess information but also know how to think and how to communicate their thoughts effectively. While it is relatively easy to assess how well knowledge has been acquired, it is much more difficult to promote and assess thinking and communication skills in ways that are both pedagogically powerful and logistically manageable. These challenges are especially apparent as class-sizes grow and the too common result is the elimination of any form of written assignment. Six years ago we created and began researching peerScholar, an internet-based peer-assessment tool that allowed us to return critical thinking and writing skills into a class that had, by then, grown to 1500 students. We continued to shape the characteristics of this program on the basis of both pedagogical principles and research findings. In 2008 this tool was licensed for distribution by Pearson Education Canada. This paper describes peerScholar, emphasizing how it provides a tool that is both pedagogically and logistically superior to the traditional practice of having an expert grade essays. We highlight research findings that provide quantitative support that (a) peerScholar is effective at promoting enhanced critical analysis skills, even after just one assignment, (b) the grades obtained within peerScholar are as fair as those provided by graduate-level teaching assistants and (c) when combined with a re-grade option the system remains logistically reasonable to implement and gains additional pedagogical and practical merits. We conclude by re-emphasizing the pedagogical benefits of the system, showing how it promotes scholarship that goes above and beyond the acquisition of knowledge.

**Keywords:** Peer assessment, peerScholar, critical thinking, writing, technology, student to faculty ratio

# Lessons Learned From an Online Human Physiology Course

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**Abstract:** With the explosion of user-friendly computer technology and availability of digital media, which are widely available the world over, the time is right for the development and delivery of online courses. Our new online Basic Human Physiology course (online PSL course) was created to give students more flexibility in terms of time and location, to allow self-directed learning within a semi-structured frame-work, and to give opportunity to many non-University of Toronto students to complete the course. Students in this course come from diverse background. Some need this course to fulfil a physiology prerequisite for one of the various health care professionals programs, while others just want to understand how the body works and be better educated about their own physical health. The online course consists of 51 online didactic lectures and corresponding topic-related “virtual labs” that involve computer simulations. The support for the online PSL course consists of a faculty monitored discussion board, direct email access to the lecturers, virtual TA hours and opportunity to post and answer questions on the course discussion board 24/7. Through comparative data analysis of the in-class courses and the online course, and through student evaluations, online surveys and analysis of web activity, we found that the online course appears to be as effective in terms of student grades, lecturer evaluation and open-ended questions. Moreover, we found that simple strategies like incorporating frequent online quizzes (something that is difficult to do in in-class courses) proved effective in enhancing the learning experience. We also found that taking full advantage of the frequent but voluntary discussion board and virtual TA session participation was crucial to the students’ success. Overall, our results suggest that the online course was as effective as the in-class course. Moreover, we found that the online course fostered the students’ ability for critical thinking and promoted problem solving skills. Results from analysis of data, student surveys and course evaluations in the online course will be discussed and compared with traditional in class course delivery.

**Keywords:** Online learning, human physiology, online evaluations

# **Active Learning with Digital Media: The use of Podcasting in Reflective Learning for Elementary Social Studies Instruction**

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**Abstract:** Podcasting exhibits a great educational potential by providing teachers with the opportunity to stimulate their students of varying abilities, learning styles, and conditions. This project examined the potential of Podcasting used in a K-4 Social Studies and Language Arts curriculum. Specifically, this presentation describes an integrated lesson in which Podcasting was used by students at a museum field trip and subsequently as a tool for deeper reflection once the students returned to the classroom. In an attempt to prepare students for a field trip to a museum, the classroom teacher prepared a Podcasting episode that emphasized particular details and historical facts. The use of Podcasting offered a pedagogical advantage over traditional learning in multiple ways: the ability to be replayed again after leaving the museum within their own time frame; a means to access specific vocabulary; a tool to develop language skills; the ability to maintain student attention; the ability to learn material through short phrases and sentences; and the ability to learn through multi-modality, both visual and auditory. Once back in the classroom, students were asked to research the artifacts that they experienced at the museum and to write a story as if they were coming America from another country. Following the completion of their writing, students recorded their own reflective Podcasting episodes. Students changed the intonation of their voices for different characters, injected sound effects, beginning and ending music, and utilized different strategies for conveying the meaning of their story. All students participated in this differentiated instructional activity. Differentiated assessment (e.g., comprehension, expression, recall of facts) was also used to gather information about student achievement. The most notable findings that resulted from this project were that students found the iPods easy to use even when they had never used one before; students were able to self-regulate their behavior when using the iPods; all students were on task during the field trip and maintained their attention; and students were extremely motivated to work with the iPods during the field trip and while completing the classroom assignments of creating their own Podcasting episodes.

**Keywords:** Podcasting, reflection, differentiated instruction

# The Future of e-Learning in the Dystopian Speculative Novels of Margaret Atwood

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**Abstract:** Canadian writer Margaret Atwood has gained a world-wide reputation as a writer who gazes at the world with a wry and unrelenting eye. A prolific author, she has published works in the genres of poetry, short story, literary criticism and the novel. Two of her novels, *The Handmaid's Tale*, first published in 1985, and *Oryx and Crake*, first published in 2003, have gained reputations as examples of the dystopian speculative novel, examples of which include George Orwell's *1984* and Aldous Huxley's *Brave New World*. In both her speculative novels, Atwood was careful to predict the future based on events that had already happened or inventions that had already been set in motion. Interestingly, Atwood describes a world in which books have disappeared as a means of communication and have become museum pieces. In *The Handmaid's Tale*, a book which was written before the advent of the Internet, books have been replaced by CD-ROMS. In the later novel *Oryx and Crake*, however, Atwood was able to speculate on the societal and political implications of the Internet and the world of electronic publishing, and her conclusions are bleak as she describes a world in which scholarly research has been sacrificed for the sake of corporate profit and intelligence has triumphed over wisdom. In the end, the smashed and scattered computers which dot the landscape of *Oryx and Crake* and denote the end of human civilization caution us to think about the implications of our headlong rush towards technological paradise.

**Keywords:** Margaret Atwood; speculative novels; dystopian novels; e-publishing; e-learning; future

# Apply ATI to Support Adaptive e-Learning

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**Abstract:** Most of the existing adaptive e-Learning research mainly focuses on how to use the latest technologies to provide adaptive features to learners. They neglected the importance of support from the educational theories. There is evident that educational theories provide lot of explanations on how can learners achieve better learning outcomes through adaptive way. Adaptive learning in fact is not a new concept in the field. It is originated from the individual differences of learners. Furthermore, certain previous adaptive e-Learning research focuses on using technology to personalize the content presentation style because of the individual differences in learning style. However, it seems that none of them has used adaptive e-learning to deal with the individual differences in aptitude which is more critical relatively.

Aptitude Treatment Interaction (ATI) theory addresses the fact that if the instruction methods and the aptitude of individual learner is matched properly, then the learner is having a higher chance to obtain a better learning outcome. Aptitude means ability or talent to learn a specific area of knowledge which is a quite consistent pattern and may take a long time to change or even cannot be changed. The only thing we can change is the instruction method. Snow (1989) suggests providing a highly structured learning environment or learning content to learners who have poor aptitude and vice versa. ATI theory is hard to be operationalized unless we know how to evaluate the aptitude level of learners and to determine what does it meant by appropriate instruction method. We then examined the literatures about curriculum design and found that Biggs' Constructive Alignment Model is designed for a similar purpose. Biggs suggests teacher to use assessment tasks to evaluate the level of attainment of the learners before the learner could advance to the next level of study. More highly structured learning content could be provided if needed immediately to avoid frustration.

We believe that building an adaptive e-Learning based on the ATI theory can help improve the intrinsic motivation of students and result in a better learning outcome eventually. To test our belief, we design an adaptation model, apply this model into an agent-based adaptive e-Learning system and conduct a controlled laboratory experiment. The result is satisfactory. This approach has narrowed down the differences in learning outcome in class. Students who have received the adaptive support have showed a significant improvement in the post-test result when compared to the control group. The written comments by the participants show that the perceived difficulty in the course contents is different among the class. That might be the individual differences in ability.

**Keywords:** Adaptive e-Learning, aptitude treatment interaction (ati), constructive alignment, intelligent agent

# **A Blended Learning Approach to Designing Prosthodontic Appliances: Introducing a Novel Interactive Online Module in the Traditional Curriculum**

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**Abstract:** A unique approach was planned and implemented for undergraduate dental students that would reinforce the principles of removable partial denture (RPD) design. 162 students were grouped according to their year of dental studies (66 second-year students and 96 third-year students) within the discipline of Prosthodontics at the Faculty of Dentistry, University of Toronto. Previous training for the students consisted of the traditional Socratic approach, including lectures, seminars, and laboratory pre-clinical hands-on exercises. All the students were given a case history of a patient. For both of the levels, one half of the class was instructed to design an RPD using the traditional approach, with a dental model that could be touched and seen. When finished, various treatment options were discussed. The other half saw the same dental model but in animated form *via* a computer-based e-learning scenario. The RPD was virtually fabricated with student choices of design features made in a particular orderly sequence as the students worked step-by-step through the computer simulation. A pre-test questionnaire was given to all students concerning their design choices and learning experiences. All students were then asked to design an RPD for a different but similar case using dental models in the traditional manner. Post-test questionnaires were given to assess the effectiveness of the method of their pre-test technique, in addition to their enjoyment of the approach. A cross-over situation followed one week later, whereby each group of students went through the reverse approach from the previous session. The results from the third-year student data and implications of this blended approach for teaching and learning RPD design are analyzed and discussed.

**Keywords:** Removable partial denture design, e-learning, dental education, computer-aided learning, computer simulation

# Design Research Outcomes of Collaborative Knowledge Building in a Web-based Continuing Education and Professional Development Program for Family Physicians

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**Abstract:** The challenge of knowledge translation to practice has not been adequately addressed by the increased variety and availability of didactic continuing education and professional development courses available to family physicians. The Macy Foundation on Continuing Education in the Health Professions (2008) recommended that traditional lecture-based continuing education be replaced with collaborative learning and supported by the use of information technology. Scardamalia and Bereiter posit that teacher-centred, didactic approaches should be supplanted by collaborative and improvable knowledge building for deep, relational understanding. Bereiter links relational understanding to intelligent action, the translation of knowledge into practice. The End-of-Life Care Distance Education Program was developed using knowledge building principles to evoke relational understanding. Online design in Knowledge Forum® was both structured/prescribed by expert-driven objectives and unstructured/emergent driven by participant ideas. This design research study examines knowledge building outcomes of the Program 2-years post-pilot, 2005/06 and 2006/07. The concept of relational understanding is explored through dimensions including perceived change in practice, knowledge gains, online discourse activity, and attitudes/opinions toward collaborative knowledge building, and the inter-relationship of these educational outcomes with online pedagogic design. This Program was created, in 2003 to meet the need, identified by the Romanow Commission on the Future of Health Care in Canada, to improve palliative care education and practice. The Program runs annually through Continuing Education and Professional Development, Faculty of Medicine, University of Toronto. Design research methodology was used. Multidimensional program evaluations from 2005/06 and 2006/07 are reported herein, including: Learning needs self-assessment (pre-course), Quantitative results of knowledge pre- and post-test scores (4 sets), Online activity measures (5 modules), Attitudes and opinions survey (post-course), and Knowledge translation reflective exercise (12-weeks post-course), and are correlated with online participatory design analysis. Combined participant data across years demonstrated an 8.5% improvement in pain knowledge from pre-test (72.9%) to post-test (81.4%). Mean online activity measures were exceptionally high. In 2005/06 participants read 86% of online notes; in 2006/07 participants read 92%. Participant attitudes and opinions towards online collaborative knowledge building and interactive videoconferencing were very positive in 2006/07. One hundred percent of respondents strongly agreed/agreed that they would recommend collaborative eLearning to a colleague. Pre-program learning needs self-assessment and 12-week post-course knowledge translation reflective exercise responses were analyzed. Participants self-reported improved confidence in all 10 aspects of knowledge and skills examined. Post-course knowledge translation qualitative feedback indicated physician change in patient pain management and communication. Educational design analysis demonstrated both structured/expert-driven and emergent/learner-driven online discourse. The End-of-Life Care Distance Education Program provides a communal web-based environment for scaffolded knowledge building, enabling geographically distributed family physicians the opportunity to cognitively work together to collaboratively improve their knowledge and deep understanding of palliative care. Multidimensional evaluation of the program indicates overall strength of design, implementation, and educational outcomes, as well as, potential for translation to practice. Further research on knowledge translation and changes in patient care is required.

**Keywords:** Knowledge building, collaboration, eLearning, design research, physicians

# Building Learner Profile in Adaptive e-Learning Systems

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**Abstract:** Researches and applications of e-Learning start with building course contents and materials based on Internet, besides the development of Learning Management Systems. However, in most early e-Learning systems, learners are often provided with identical services and learning materials, in the form of “*one size fits all*”. That means all learners are the same; the systems do not discriminate the learner’s backgrounds, learning goals and personal interests. Now, profile is being studied to apply widely in the e-Learning systems, in which the adaptation focuses on the goal of how helping learner to get knowledge, take interest in the learning activities effectively and suitably fit to learner. The core idea of our paper is to suggest a generic user model that supports more teaching activities and provides appropriately learning resources and services to each learner in the blended-learning environment: *traditional learning in the classroom* and *on-line training*. In this article, we will discuss building learner profile structure, especially initiating and updating profile. Structure of profile includes information components about *demographics, training experiences, self-study activities* and *learning demands*, in which each component can have the needed features to represent completely individual characteristics of learner when he/she joins in any training course of system. It is based on psychological and pedagogical foundations that we will present completely and clearly in article content. Besides, we deal with some main problems in the “*classical*” initiating and updating process based on explicit and implicit feedbacks. The updating process that is only based on the feedbacks still has challenges even when the correctness of feedbacks is ensured. Thus, we use rule-based induction approach for initiating and updating process. The inductive method is based on the  $\alpha$ -Community Spaces Model. The basic idea of this approach is the feature values of a learner’s profile that can be inferred basing on the profile of members in the same communities or learning groups with him/her. We have offered the architecture of Adaptive e-Learning System together with the proposed user model which has both the adaptability and communication support among the learners in learning activities formed from profile features. From the view of a personalized system, it aims at improving interactions between learner and materials, learner and instructor, and learners in group. Finally, some illustrated examples concretely for taking advantage of learner profile in system are also presented.

**Keywords:** Adaptive e-Learning System (AeLS), learner profile, user model, profile feature, rule-based induction,  $\alpha$ -community spaces model

# Chinese Adult e-Learners Experiences: Learner Reflexivity, Relationships and Experiential e-Learning

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**Abstract:** This paper describes the findings from a study of the learning experiences of Chinese adults on two e-learning programmes conducted in China, one a collaborative programme with Western institutions, the other developed entirely locally in China. Margaret Archer's approach to reflexivity (2007) informs the theoretical framework for this research in investigating the interaction between individual learners and their e-learning environment combined with their wider social cultural context. Qualitative data was collected in the two cases, with detailed accounts of learners' experiences obtained through interviews, digital audio diaries, informal discussions and reports. There were 336 participants in the field-work the data for which was collected in China between 2005-6. The findings identified the need for e-learning to be tailored to a specific cultural context. It is suggested that cultural influences on learning deserve to be more fully recognised when designing an e-learning course. An understanding of the social context in which the e-Learning takes place, in this case a Confucius Heritage Culture (Biggs and Watkins, 1996), is necessary. Where these Chinese adult students perceived that they had a degree of control over the learning process, including the access to appropriate tools, they created opportunities for dialogue, practice and reflection on knowledge. They adopted what could be termed an experiential approach to learning. The paper concludes by arguing for e-learning that includes more practical relevant and concrete tasks. These e-learners wanted to learn by doing to apply theory to authentic practice situations. The students in both case studies appreciated the opportunities to reflectively engage with knowledge in the company of others. They also wanted the learning experience to facilitate the achievement of 'Ren' – as balanced and trusting human relationship.

**Keywords:** e-Learning, China, learner experience, experiential-learning, reflexivity

# Acceptance of Podcasting to Support Learning in Higher Education

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**Abstract:** Podcasting is an innovative technology that is gradually picking up the steam as a supplemental tool to facilitate learning. This research investigated the appropriateness of applying the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) to study the acceptance of podcasting in a higher education setting. Specifically, it attempted to (1) identify and test appropriate antecedents to behavioral intention (i.e., intention to use) in the UTAUT, (2) establish the relationships among the antecedents to behavioral intention in the UTAUT, and (3) theoretically extend the UTAUT with additional external constructs, specifically the phenomenon of escalation of commitment. The constructs included in the tested model and the hypotheses made were derived from the review of literature concerning technology acceptance in higher education. A survey methodology was carried out to test the hypotheses. The result confirmed the effects of the four key antecedents on behavioral intention to adopt the technology in the UTAUT: facilitating conditions, social influence, performance expectancy, and effort expectancy. Among them, performance expectancy (e.g., perceived usefulness) is the most dominant predictor for behavioral intention. While the other three antecedents have direct impacts on behavioral intention, their impacts seem mainly mediated by performance expectancy. Furthermore, facilitating conditions pertinent to podcasting include technical support and copyright clearance. I-pod ownership and computer and web experience moderately contribute to effort expectancy. The phenomenon of escalation of commitment might not exist as i-pod ownership does not directly contribute to behavioral intention. The overall results are expected to contribute to theoretical development by enriching UTAUT with a new way to operationalize an antecedent (i.e., FC) to BI, the further refinement of the relationships among the four antecedents, the inclusion of such external constructs as escalation of commitment and computer and web experience. The overall results could also help industry practitioner in promoting the acceptance of podcasting as a supplemental tool for learning.

**Keywords:** UTAUT, TAM, podcasting, technology acceptance, technology adoption

# Online Learning Environments for Medical Education - A Case Study

**Lori Lockyer and Martin Olmos**  
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**Abstract:** New and established medical schools around the world have been facing challenges and opportunities of increasingly diverse and distributed student groups, an expanded teaching population and the changing practice of medicine. This has led to re-visioning medical education curricula and the technologies that facilitate teacher and student interaction and delivery of curriculum resources. This paper provides an overview of how technology is being used in medical education to meet these new contexts. Of focus is a case study of the Online Learning Environment designed for a new medical school located in Australia. This school – at the University of Wollongong – has been established with a particular focus on regional and rural health. The school is located across two campuses and clinical experiences are provided for students in numerous, geographically dispersed locations in a range of health care settings. As a graduate-entry school, students are drawn from a variety of backgrounds. Similarly, the teaching staff brings a diversity of academic and health care expertise. The Online Learning Environment integrates a learning management system and a content management system. The environment has been designed to respond to: the vision of the school; the profile of its student body; staff background and teaching practices; and, the research base in online teaching and learning in higher education that has developed over more than a decade. The case study describes and evaluates the Online Learning Environment in terms of the criteria set down by the IMS Global Learning Consortium as setting up the potential for ‘learning impact’ – access; affordability; quality; adoption; accountability; organizational learning; interoperability; and innovation. The paper considers these criteria and how the Online Learning Environment addresses the criteria.

**Keywords:** Online learning environment, medical education, content management system

## **Technologies and Delivery Methods**

**Pam Lowry and Richard Bush**

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**Abstract:** This study examined student perceptions of computer-mediated communication (CMC) tools when used across the three delivery modalities: Traditional, Hybrid or Blended, and Online. The study was conducted in the Spring of 2007, with 80 individuals participating (48 faculty and 32 students). This study used a survey instrument originally constructed from Davis (1989), Technology Acceptance Model, modified to include external variables. The survey allowed the researchers to examine perceived usefulness, ease of use and behavioral intention and how they may be influenced by gender, age and other variables across traditional, hybrid, and online course delivery strategies. The study provides an important understanding of faculty and student attitudes toward courses enhanced with CMC's and how that information may assist university administrators in funding and encouraging the use of course technologies.

**Keywords:** Technology acceptance model, traditional delivery, hybrid delivery, online delivery, computer-mediated communication

# What can Human Factors Tell us About Designing for Technological Affordances in Teacher Education?

**Kim MacKinnon and Earl Woodruff**  
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**Abstract:** This paper will discuss the results of a human factors analysis that was conducted as part of a three-year study involving implementation of online learning in a teacher education context. The human factors analysis was based on a modified approach to Cognitive Work Analysis (MacKinnon, 2009) originally proposed by others in the engineering sciences (Rasmussen, Pejtersen, & Goodstein, 1994; Vicente, 2003; 1999). This research expands on the notion of technological “affordances” which suggests that there is an interactional relationship between people and tools (Gibson, 1986; Norman, 1988). Vicente (2003) calls this interaction a “Human-Tech” relationship, and argues that social variables - which he calls “constraints” - play an important role in determining the degree to which technology can help individuals carry out goals and priorities under contextually-variable conditions. The researchers will make a case throughout this paper for a view of technology integration that takes into account measures of affordances and constraints. The researchers suggest that one cannot really understand effective use of technology for learning without thinking about affordances, and affordances cannot really be measured without thinking about constraints associated with the learning context. Essentially, the point the researcher is making is that constraints help to define - and even shape - what technological affordances ought to look like. Therefore, the researcher begins to answer the important - and arguably unexplored - question of how the complexities of varying teaching and learning contexts ought to be used to inform design. Findings from the human factors analysis was used to support a design study involving the use of online technology in the context of a teacher education program. This presentation reports on findings from two research questions: 1) What does a Human-Tech approach to technology integration, implemented through the use of a modified technology design tool called Cognitive Work Analysis, reveal about the system constraints of a two-year graduate level teacher education program? and, 2) What are the technological design implications of a Human-Tech approach to technology integration for supporting student research in the context of a two-year graduate level teacher education program (the student research became the primary focus of the design study)? In this case, the human factors analysis lead to the design of an open online research support forum.

**Keywords:** Human factors, technology integration, teacher education, online research mentorship

# Innovative use of Vodcast (Video-Podcast) to Enrich Learning Experience in Structures Laboratory

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**Abstract:** Students may have difficulty in understanding some of the complex concepts which they have been taught in the general areas of science and engineering. Whilst practical work such as a laboratory based examination of the performance of structures has an important role in knowledge construction this does have some limitations. Blended learning supports different learning styles, hence further benefits knowledge building. This research involves an empirical study of how vodcasts (video-podcasts) can be used to enrich learning experience in the structural properties of materials laboratory of an undergraduate course. Students were given the opportunity of downloading and viewing the vodcasts on the theory before and after the experimental work. It is the choice of the students when (before or after, before and after) and how many times they would like to view the vodcasts. In blended learning, the combination of face-to-face teaching, vodcasts, printed materials, practical experiments, writing reports and instructors' feedbacks benefits different learning styles of the learners. For the preparation of the practical, the students were informed about the availability of the vodcasts prior to the practical session. After the practical work, students submitted an individual laboratory report for the assessment of the structures laboratory. The data collection consisted of a questionnaire completed by the students, follow-up semi-structured interviews and the practical reports submitted by them for assessment. The results from the questionnaire were analysed quantitatively, whilst the data from the assessment reports were analysed qualitatively. The analysis shows that most of the students who have not fully grasped the theory after the practical, managed to gain the required knowledge by viewing the vodcasts. According to their feedbacks, the students felt that they have control over how to use the material and to view it as many times as they wish. Some students who have understood the theory may choose to view it once or not at all. Their understanding was demonstrated by their explanations in their reports, and was illustrated by the approach they took to explicate the results of their experimental work. The research findings are valuable to instructors who design, develop and deliver different types of blended learning, and are beneficial to learners who try different blended approaches. Recommendations were made on the role of the innovative application of vodcasts in the knowledge construction for structures laboratory and to guide future work in this area of research.

**Keywords:** Vodcast (video-podcast), e-Learning, mobile technology, blended learning

# **Employees Perception and Satisfaction about e-Learning in the Workplace**

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**Abstract:** In today's marketplace, companies should assist their employees through developing their knowledge and skills to gain higher efficiency, quality, innovation, and customer responsiveness. Corporate e-learning market is witnessing a rapid growth. A large proportion of organizations are adopting e-learning as their preferred method for human resources skills development. The main advantages of this web-based learning technology are the cost advantage and the flexibility of delivery. This paper investigates the perception and satisfaction of employees' usage of e-learning in a large Saudi oil company. Results show that employees are quite satisfied with the components of such program. Nevertheless, they have expressed their concern regarding relating such program to pay increase and promotion.

**Keywords:** e-Learning; human resources development; perception; satisfaction

# **Distance Education for Internationally Trained Pharmacists: The Challenges of Constructing an Online Patient-Interviewing Course**

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**Abstract:** This paper is about the current construction of an online course that teaches patient interviewing techniques to International Pharmacy Graduate (IPG) students. Communication skills, specifically patient interviewing techniques, are an integral component of meeting Canadian pharmacy practice standards and are presently taught in a traditional, face-to-face classroom setting. This paper will highlight various challenges faced by instructors when building an online communication course that focuses on English for Specific Purposes (ESP) for second language learners. Concerns related to evaluation will be emphasized such as the type of data that could be collected during the piloting phase to ensure the same quality as the established, face-to-face patient-interviewing course. A number of challenges related to technology will be discussed; including the selection of tools which can best be employed to instruct learners on various aspects of verbal and non-verbal communication. As well, this paper will reflect on the extent to which technology can overcome the difficulties of distance learning for second language learners such as social isolation from peers, language, and technological barriers. Finally, can the online program overcome other challenges for IPGs such as lack of Canadian experience? Various e-learning technologies such as webcams, videos, learning management systems (Blackboard) and Web 2.0 technologies such as weblogs will be explored to deliver program content. Along with a review of relevant literature, this paper will explore how e-learning technologies can be employed to provide possible solutions to the challenge of creating an English for Specific Purposes online course to instruct international pharmacists on patient interviewing skills.

**Keywords:** English for specific purposes, communities of practice, bridging programs, patient counselling, online language learning

# Relationship Between Learners' Characteristics and Learning Behavior of Japanese Students in Blended Learning Environment: A Three-Year Study

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**Abstract:** For three consecutive years, the authors have surveyed bachelor and masters students who were enrolled in blended courses at a Japanese university, in order to observe learners' behavior while engaged in blended courses and to develop a technique for organizing blended learning. Although survey results for each year were analyzed and discussed, no overall analysis and discussion have been done to date. Further, within three years, contextual issues for students, as well as teaching staff may have dramatically changed. Thus, being able to extract those changes will contribute significantly to the improvement of blended learning. The aim of this study, therefore, is to show quantitative differences in the causal relationship between learner characteristics and learning behavior across student levels (bachelors vs. masters) and the three survey years. Students were enrolled in two-unit bachelor or masters courses which were taught as blended courses by the same professor as blended courses. Students attended the face-to-face class and were also able to access the online content outside of class. The total number of students with valid survey data was 201 (91 bachelors; 110 masters). The survey instruments measured four constructs: motivation, personality, thinking styles and self-assessment of online learning experience. Three indices were used as indicators of learning performance: "the number of days attended", "the number of completed modules", and "the online test scores". To create common indices for learner's characteristics and learning experience, a factor analysis was conducted by analyzing the data set which included additional same format data from the extended surveys. Total numbers were 558 samples for learner characteristics and 456 samples for learning experience. As a result, revised factors were extracted, namely, four factors for characteristics: thinking style (legislative and judicial), positive emotionality, motivation, conscientiousness, and three factors for learning experience: e-learning evaluation, learning habits, learning strategies. To determine the relationship between these factors, a causal analysis was conducted using the Structural Equation Modeling technique and parameters were compared between groups using statistical tests. Differences among path diagrams for two student groups and three years could provide key points for organizing blended learning. When comparing results between bachelor and masters students, the impact of e-learning evaluation was significantly different. Differences on the impact of e-learning evaluation and "number of days attended" were also detected across three years. For bachelor students, the impact of conscientiousness, e-learning evaluation and learning habits were significantly different across three years, and the impact of motivation, conscientiousness, e-learning evaluation were significantly different for masters students. These differences may have resulted from students' familiarity with blended learning environments and one's level of information literacy. Students' information literacy was measured during one particular year, and then the relationship with common factors was analyzed. Comparing the causal paths between bachelor and masters students, the impact of conscientiousness and information literacy for operational confidence and knowledge understanding were significantly different. These results provide evidence that there are some key points regarding learner's characteristics that need to be considered, and which could help, in the design of effective blended learning environments. **Keywords:** Blended learning, learner's characteristics, learning behavior, path analysis, learning performance

# **Automated Personalized Summary Generation for Text-Based Courses in e-Learning Systems**

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**Abstract:** Nowadays e-learning has an important role in learning and education. There is no doubt in importance of personalized and adaptive learning. In this field there are many adaptation methods such as adaptive presentation and navigation methods. The idea of various adaptive presentation techniques is to adapt the content of a page accessed by a particular user to current knowledge, interests, and other characteristics of the user. In this paper we present a new method for content adaptation: Personalized Summary Generation. We consider user knowledge and interests to generate personalized summary for text-based courses in e-learning systems. If we can generate personalized summaries it can increase learning speed and improve learning process. Personalized summaries reduce the volume of irrelevance learning content. Our summarization method generates summary regarding to user knowledge and interests through four phases: Preprocessing, Initial scoring, scoring based on interest & knowledge and Personalized summary generation. We will test our proposed method and show experimental results.

**Keywords:** Text summarization, personalized summarization, e-learning

# Factors Influencing Argumentative Computer-Supported Collaborative Learning (ACSCL) in Higher Education

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**Abstract:** In the information and communication era, Computer-Supported Collaborative Learning (CSCL) is becoming prominent in higher education, and universities are gradually bringing argumentation in CSCL environments into the mainstream of their educational programs. The study proposed here is designed to identify the factors influencing ACSCL environments in order to promote the quality of the learning process and results. A comprehensive model for the factors influencing ACSCLearning is not yet available. So, the relevant literature has been reviewed to construct and develop a theoretical framework of factors which could influence the effectiveness of ACSCLearning. A preliminary model of ACSCL is proposed by identifying factors including student/peer, learning environment, learning processes and activities combined with possible sub-skills of argumentation thinking.

**Keywords:** Argumentation, collaborative learning, CSCL, ACSCL, higher education

# **The Negative Effects of Computer Experience on e-Learning: A Resource Model Approach to Understanding Learning Outcomes**

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**Abstract:** Students often report feeling more overloaded in courses that use e-learning environments compared to traditional face-to-face courses that do not use online environments. Discussions here consider online design and organizational factors that might contribute to students feeling overloaded. An experiment was conducted to test predictions that (i) students' online experience, (ii) the way online information is organized and the relevance of online information, and (iii) the level of task difficulty affect (i) learning outcomes, (ii) students' perceptions of overload, and (iii) students' perceptions of having enough time to complete experimental tasks. A total of 187 participants were tested in various experimental conditions and findings suggested that overly busy online environments that contain irrelevant information (i.e., stimulus-rich or "stimulus-noisy" online environments) had a negative impact on learning for students ranked "high" on experience with e-learning technologies, but no impact on learning for other students. There is no doubt that online environments contain vast amounts of information and stimuli; often some of which are irrelevant and distracting. How one handles irrelevant or distracting information and stimuli can have a significant impact on learning. Surprisingly, results here suggest that overload affected only experienced students. Perceptual load hypotheses are discussed to explain what initially seemed to be counterintuitive results. This paper examines literature that considers factors that can affect learning online, strategies for how teachers can ensure positive outcomes for the technology-based classroom, and strategies for avoiding online pitfalls that might leave students frustrated or burdened with feelings of overload.

**Keywords:** Online learning outcomes; overload; interface design; instructional design; user experience; task difficulty

# **E-teaching, the Other Side of the e-Learning Equation: The 21<sup>st</sup> Century Medical Educator**

**Nancy Posel and David Fleiszer  
McGill University, Montreal, Canada**

**Abstract:** Educational informatics provides medical educators interested in becoming e-teachers with a rich, active, and effective, environment for knowledge transfer, translation, and application. However, the integration of e-teaching strategies may challenge educators, and requires that they (a) appreciate the impact of the socio-cultural informatics revolution in education, (b) acknowledge the perspective, as well as the expectations, of the new e-learner, and (c) reach a comfortable understanding of educational informatics. This presentation will (a) review pedagogical and theoretical constructs that underlie medical education, with a specific focus on the integration of informatics technologies and e-teaching approaches, (b) address associated specific e-teaching methodologies, and (c) describe future directions for medical e-teaching.

**Keywords:** e-Learning, e-teaching, medical education informatics

# Managing and Assessing Projects and Dissertations at a Distance with a Modified e-Learning Infrastructure

**Blaine Price**

**The Open University, UK**

**Abstract:** E-learning systems and infrastructures have been deployed for many years to support classroom-based undergraduate teaching and assessment. Commercial systems such as Blackboard and open source systems such as Moodle provide an infrastructure for delivering teaching material and basic continuous assessment (assignments). While they fit the mould of standard university lecture-based courses, and to some extent distance-taught courses, they do little to support the development and assessment of advanced undergraduate and masters level projects and dissertations. Since undergraduate and masters students are rarely experienced researchers, projects and dissertations usually require regular progress checkpoints to keep the students on track. Another unusual feature of projects and dissertations compared to standard courses is that they usually require more than one person to assess them (double-marking or committee agreement). We have developed and evaluated a system for the management, administration, and assessment of distance taught masters level projects and dissertations which extends a conventional e-learning system. Called PADS (Projects and Dissertations System) it provides an authenticated web-based interface for researchers to propose projects for students to undertake as well as allowing students to propose their own projects. PADS supports the topic review and revision/acceptance/rejection process. It interfaces with standard university electronic assessment systems and manages the workflow for each of the student checkpoints, including managing the academics who review the work and managing moderation and third marking if two markers disagree. By automating the administration and management we are able to support over 100 students per presentation with over 200 students active at some stage of their project at a given time. In the two years since PADS was introduced we have seen the retention rate increase by more than 15% each year, the failure and resubmission rate dropped by 50%, and the percentage of dissertations awarded the top grade of distinction has increased from 5% to 16%.

**Keywords:** e-Learning infrastructure, graduate teaching, distance teaching, dissertations

# **Faculty Development: Issues in Embedding e-Learning**

**Linda Price**

**Institute of Educational Technology, The Open University, UK**

**Abstract:** This paper reports on a study investigating the professional development issues that faculties face in embedding elearning into practice. A study of seven faculties at a large distance teaching university is presented. The main the topics investigated were the current elearning requirements, current and future professional development policy, and the impact of the elearning on future operations. The findings were grouped into four main areas: university processes; management, induction, and the nature of professional development. 1) University processes were still largely linear paper based systems and this was in conflict with many new technology e-learning systems. 2) Professional development of faculty management needed to be improved and valued as career trajectories. 3) Induction could be improved for all categories of staff including those new to the university and new to different roles. 4) The nature of professional development in faculties was patchy in terms of its existence and its relationship to current and future visions. Embedding e-learning into educational practice requires coherent policies and strategies that develop staff and infrastructure. Marrying paper-based legacy systems with innovative elearning systems is problematic requiring university policies to support coherent changes. Staff will need considerable support in the future to facilitate changes in beliefs and practices if elearning is to become embedded.

**Keywords:** Faculty development, professional development, e-learning

# Knowledge Management Leveraging e-Learning in Universities

**Madan Singh Rawat**  
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**Abstract:** Success of any knowledge management project basically needs: people, process, content and technology. Today, knowledge and technology are key factors in transforming any organization. Leveraging e-learning in the Universities is based on interactive relationship between the knowledge creator and receptor on a global basis. Academicians and administrators in higher education institutions are busy to put knowledge into some context, embodying into documents or databases with the use of technology to disburse the same far and wide. Attempt has been made in this paper to use Knowledge Management by the Universities to enhance graduation rates and retain and increase more people for life long learning and resolve the issues of employees shortages. Knowledge Management support is important to offer expanded new web-based offerings with cost effectiveness by making use of suitable technology. Present paper attempts to highlight the fact that universities and their staff must constantly require and respond to their changing role in the knowledge based society. The need of the hour is therefore, to transform the university education delivery system to meet the needs of students anytime/anywhere. Knowledge Management offers something in better and effective manner to create and manage knowledge conducive for innovation as well, which is one of the main thrust of Universities and institutions of higher learning. The paper tries to analyze higher education system in India, where Indian government under its 11<sup>th</sup> Five Year Plan has put target of 7 million students for open distance learning. To meet the target Universities need to leverage technology that would meet the requirement. The scheme of the paper is to use knowledge management as being advocated and used in business activities as a strategic change. However, using a technology to facilitate e-learning in universities need to take certain precautions to implement scheme. Further staff including academic and administrative have to be encouraged, coached and made enthusiastic to contribute and work with the system. E-learning courses and knowledge management systems both go together and are increasingly becoming interdependent. Benefits of this relationship would offer enhanced, improved accessibility, assessment of learning effectiveness and simplified logistics. Universities are expected offering such courses, degrees with basic e-learning competencies and skills. Higher education institutions are expected to ease the growing skill shortage in the e-learning sector.

**Keywords:** Knowledge receptor, open distance learning, life long learning, innovation, accessibility, knowledge sharing and transfer

# Creating 3D Animations of Laboratory Experiments Using Open Source Tools

**Sameer Sahasrabudhe and Sridhar Iyer**

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**Abstract:** The importance of laboratory experiments in engineering education is well accepted. Though such experiments are part of the curriculum, commonly encountered problems in developing countries are: a) availability of infrastructure (which differs from place to place) b) maintenance of the laboratories (which has substantial implications on the results) and c) consistent explanation methodology (which depends primarily on the lab instructors). Animation is an effective way of augmenting the learning of lab experiments. Two dimensional (2D) animation is widely prevalent, and has been shown to be successful in many areas. Advent of three dimensional (3D) animation has expanded the possibilities and scope of the content in many ways. 3D animation not only continues to have the advantages offered by 2D, like interactivity and reusability, but also adds a whole new dimension of visualization possibilities. These include cross sections (to show the internal construction or assembly of an object), walkthroughs (synthesized video travel within the object) and different viewing angles (views that may not possible in real world). 3D animation has been used in eLearning in different domains but high cost of proprietary tools and scarcity of trained personnel for the content creation has not extended the reach as expected. Cheaper and more user friendly solutions are certainly required for wide accessibility, especially for developing countries. Blender ([www.blender.org](http://www.blender.org)) is a popular Open source 3D animation package, typically used for entertainment domain. It is free and is available for various platforms viz Windows, Apple, and Linux. However, we did not find any literature on using Blender for eLearning animations. In this paper we examine the suitability of Blender for content creation in eLearning. We present a methodology as well as a case study, of using Blender to create eLearning content for Chemical Engineering Labs. The experiment selected is a Vapour Liquid Equilibrium process from the curriculum of undergraduate Chemical Engineering. This experiment is suitable for the usage of 3D animation because of two main factors: (i) The complex assembly of different components, and (ii) The size of the actual apparatus, varies from 4-16 feet and it is expensive for replication in smaller institutions. We found that Blender has most of the desired features to create the eLearning 3D animation. Students who viewed the content found it useful and enjoyed working with it. We were also able to export the 3D models to an open source repository. We believe that the proposed methodology can be: (i) used to scale the 3D animated content creation of lab experiments, and (ii) adopted by other institutions elsewhere.

**Keywords:** 3D animation, lab experiments, blender, open source tools

# Is Generational Digital-Divide a Myth? A Comparison of Student and Faculty Attitudes Toward Digital Learning Technologies

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**Abstract:** This paper analyzes the digital native-digital immigrant dichotomy based on the results of a small-scale case-study conducted at the University of Toronto, Faculty of Dentistry, regarding students' and faculty members' perceptions toward the implementation of digital learning technologies in the curriculum. The first element chosen for measurement was user perception of the impact on learning of basic software such as email, web browsers, online e-texts as well as hardware devices such as personal computers, laptops and iPods. In addition, the study also evaluated Blackboard, the learning management system of choice introduced by the parent university in the academic year 2006-2007. A paper-and-pencil questionnaire consisting of 87 data-points in the form of Likert rating scales and measuring first-year dental students' experience with technology was distributed in one sitting at the beginning of the academic year 2006-2007. At the end of that academic year, an identical questionnaire was distributed, measuring the perceptions of first-year students after their exposure to learning technologies in dental studies. The evaluation of the responses was conducted only for those respondents whose pre- and post-implementation questionnaires could be matched. Thus, 32 matched-student questionnaires and 20 matched-faculty questionnaires were retained for analysis. The results of this study seem to suggest that there exists a slight generational difference at the Faculty in the perceived usefulness and importance of digital technologies for learning. In the case of Blackboard, both students and faculty members had rather unsatisfactory experiences, indicating that age was not a factor in the use of the learning management system. The study concludes that the digital native-digital immigrant duality is a complex phenomenon which cannot always be described in these extreme terms.

**Keywords:** Digital natives, digital immigrants, technology acceptance, technology attitudes, inter-generational differences

## Development of the Novel e-Learning System, “SPES NOVA” (Scalable Personality-Adapted Education System With Networking of Views and Activities)

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**Abstract:** The Faculty of Industrial Science and Technology at Tokyo University of Science developed a two-campus system to produce well-trained engineers possessing both technical and humanistic traits. In their first year of study, students reside in dormitories in the natural setting of the Oshamambe campus located in Hokkaido, Japan. The education program at Oshamambe instills a rich appreciation/awareness of humanity which especially enables them to empathize with nature. The faculty has been developing a novel e-Learning system called SPES NOVA (Scalable Personality-Adapted Education System with Networking of Views and Activities). SPES NOVA, which is intended to increase competency in communication skills, is based on a remote meeting system that is accessible simultaneously to multiple users via a Flash plug-in on the Internet. To link users in separate locations, each user must have a headset and web cam attached to a personal computer with an Internet connection. At Oshamambe, the SPES NOVA e-Learning system links the students to each other and to the professors. In one of the first applications of SPES NOVA, a student puts on a headset and sits in front of a computer equipped with a camera, and then accesses small-group instruction of a humanity course based mainly on discussion. An electronic whiteboard is displayed at the center of the monitor, and live-action shots of the users are arranged around the computer screen. The voice and picture data of the lecture are stored as educational materials on the server. Consequently, students can review an entire lecture as well as their own speech and behavior. The teacher can easily cut segments from the motion pictures of the lecture and combine them into teaching materials. SPES NOVA includes an e-Learning system that distributes educational materials via a wireless LAN during instruction. The system has also been used effectively in an example of ubiquitous computing in laboratory training courses, which included small group instruction. The students are able to browse the systematic exposition of experimental techniques as well as learn the correct usage of experimental apparatus by using a portable video game player during experiments. The teaching materials contain not only the answers to possible questions, but also the lectures for the day. The e-Learning system can record the laboratory training course lectures and then stream them back in video format. Furthermore, the portable video game player can save images as well as data from the experiments. This e-Learning system is connected to the computer network on campus. Therefore, students can review the learning materials by using a personal computer before and after the laboratory training courses. When used during the small group instruction of the laboratory training course, this unique system effectively helps participants develop lecture note-taking skills, hone communication skills, and learn the correct usage of the experimental apparatus used in liberal arts. Furthermore, with SPES NOVA, we can classify individual students not only according to their academic achievements, but also in relation to their behavior, temperaments, and lifestyles. Subsequently, we can establish a recursive evaluation system for each student. **Keywords:** Blended learning, knowledge management, communication skill, small group instruction, laboratory training course

# **e-Learning 2.0 and 3-D in Developing and Assessing Intercultural Communicative Competence (ICC): The AUT Experience**

**Alice U and Debbie Corder**

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**Abstract:** Changes in the learning and teaching approaches in New Zealand in recent years are presenting challenges for traditional practices. With the emphasis on life-long learning, the ability to operate in social groups, reflection, analysis, problem solving, and competency in ICT, there is need for a shift in paradigm from a teacher-centred transmission model to a student-centred, holistic experiential model. This model would seem to be particularly effective and necessary in the area of languages, where there has been a shift from communicative competence to intercultural communicative competence (ICC). This involves going beyond just cultural knowledge to include cognitive, affective and behavioural components, as well as self-awareness, open-mindedness and skills in interaction management. For this type of learning to be achieved, the nature of input and the learning environment are critical to ensure that students are provided with opportunities to develop the ability to notice, reflect and process the input they receive through a dialogic interaction with others. This paper is based on the authors' experiences of developing and teaching an ICC course for first year students majoring in different languages and disciplines at a university in New Zealand. The paper discusses the initial stages of a classroom-based action research on the effectiveness of the learning, teaching and assessment approaches adopted to facilitate intercultural learning and teaching through experiential learning and e-learning. E-learning 2.0 and 3-D is socially constructed and places much emphasis on social learning and use of social software including blogs, wikis and virtual worlds, such as Second Life. In this course, social software is used both to enable students to interact and reflect on the interaction applying relevant theories and frameworks, and to provide the basis for formative and summative assessment. Analysis of initial findings in relation to the development of students' knowledge and skills over the semester to meet the learning outcomes are discussed. The paper concludes with the authors' reflections on the effectiveness of integrating e-learning tools to develop and assess intercultural communicative competence.

**Keywords:** e-Learning, experiential learning, development, assessment, intercultural communicative competence

# **ELAM: a Model for Acceptance and use of e-Learning by Teachers and Students**

**Farida Umrani-Khan and Sridhar Iyer**

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**Abstract:** Use of technology to facilitate learning is accepted to be of value across educational institutions. Government of India has taken cognizance of the institutional support required for resources in e-learning and formulated the national mission on education through ICT. However, the focus is still largely on getting the infrastructure and creating the e-learning content. It is necessary to consider the individual factors that play an important role in the adoption of e-learning. For example, attitude of students and teachers towards e-learning may affect their acceptance of the technology in the teaching-learning process. While there have been studies to understand the factors of the instructors (e.g. release time for staff to engage in e-learning) and students (e.g. learning style) in acceptance of e-learning separately, a comprehensive view that considers both students and teachers in the same model is lacking (Jung, et. al., 2008; Nanayakkara 2007). To address this research gap, this paper considers the attitudes of students and the teachers that determine intention and actual use of the e-learning technology simultaneously in the model of e-learning. We present a conceptual framework for understanding acceptance of e-learning technology. Our model, ELAM, is based on the Unified Theory of Acceptance and Use of Technology (Venkatesh, et. al. 2003). ELAM (e-learning acceptance model) identifies the key factors in acceptance of e-learning as measured by behavioural intention to use the technology and actual usage. The four determinants of e-learning acceptance are --- (i) performance expectancy, (ii) effort expectancy, (iii) social influence and (iv) facilitating conditions. Performance expectancy is based on beliefs about perceived usefulness, interactivity and flexibility. Effort expectancy is based on beliefs about ease of learning, perceived ease of use and self-efficacy. Social influence is based on subjective norm and image. In developing countries, wherein educational institutions depend on governmental support to get the infrastructure and determine policies, institutional support plays a crucial role in the acceptance of e-learning. Hence, the model includes facilitating conditions as one of the determinants of e-learning acceptance. The following factors are included in this variable --- reliable infrastructure, institutional policies, training and support. As e-learning is associated with individualization of the teaching-learning process, the learning style of the student and teaching style of the teacher is an important factor affecting the adoption process. These factors are considered as mediators affecting the relation between performance expectancy beliefs and behavioural intention to use e-learning. The main contribution of the paper is that it presents a framework to understand e-learning acceptance as governed by the teacher, student and institutional factors.

**Keywords:** e-Learning acceptance, performance expectancy, social influence, facilitating conditions, learning style, teaching style

# Exploring Social Networks in Reproducible Computing and Collaborative Assignments

**Patrick Wessa**

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**Abstract:** Social constructivism and computer-assisted learning has received a great deal of attention in the pedagogical and technological research literature. However, there is almost no knowledge about the effect of social networks (c.q. interaction between students) in computational assignments and the educator's role as a provider of exemplary cases. Most studies have exclusively employed survey data to investigate social aspects of educational computing which can be shown to be highly misleading – if not biased. Some studies have tried to explore social networking based on objective measurements of forum data (c.q. discussion threads in learning environments) – the fundamental problem with these studies however, is the lack of content-related meta information (there is no information about the content of the discussion unless all posts are coded by the researcher). In contrast to existing literature, this paper presents an illustrated exploration of an educational database which contains objective measurements of meaningful, social behavior in statistical computing based on several statistics courses with large student populations. All communications between students are uniquely identified by their statistical and educational context which implies that crucial types of objective meta information about the meaning of those messages is available. The main emphasis is on the following educational aspects: collaboration between students, competition between groups of students, and the usefulness of worked-out examples that are provided by the educator. The aim of this paper is to show that the newly developed Reproducible Computing technology provides us with new ways to research social networking/interaction in assignment-based and constructivist learning. In addition, it is shown that a series of new research questions arise from the explorative data analysis of the measurements that were collected.

**Keywords:** Reproducible computing, social networking, collaboration, constructivism, assignments

# From Clinical Care to Online Communities, Exploring New Models for Survivorship Care in Lymphedema

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**Abstract: Background** The Breast Cancer Survivorship Program (BCSP) at the Princess Margaret Hospital (PMH) in Toronto, ON, supports cancer patients with, through and beyond their cancer. This is achieved through a combination of clinical care, self-management and self-care. For patients to succeed in their self-management and self-care, a multi-modal educational approach including small group sessions, one-on-one teaching and educational pamphlets and booklets is being used to teach a number of skills. This is the approach that is used in the lymphedema clinic. A study was designed to evaluate the feasibility of providing additional education to lymphedema patients using an online social networking platform. This paper will highlight the benefits and barriers to using this approach to blended learning in a clinical environment. **Methods:** A pre-test / post-test design was used to determine the impact of participating in synchronous online education on participants' ability to manage their lymphedema. Quantitative and qualitative methods were used to evaluate the feasibility of the addition of online education for lymphedema self-management. At the completion of clinical care, including group and one-on-one education, participants completed a series of questionnaires and were then encouraged to take part in four online educational sessions, conducted on the CaringVoices.ca platform in real-time. Educational sessions were available only to study participants, and were moderated by PMH clinicians. Questionnaires were re-administered after completion of the fourth session. **Results:** This study is ongoing and therefore results are still pending. From January 2008 – January 2009, all patients seen in the lymphedema clinic at PMH for an initial visit were invited to participate in the LymphLine research study. Thirty-one patients expressed interest and consented to be part of the study; 17 have completed all pre-intervention questionnaires. There have been 2 sets of 4 educational sessions with an average of 2 participants per session. Participants who attended the educational sessions have all completed the post-intervention surveys. Barriers include scheduling challenges for real-time chats and technical difficulties in downloading some of the educational resources. **Discussion/Conclusion:** Although online education offers an opportunity for additional meaningful education in this population of learners, barriers to participation have drawn into question the feasibility of synchronous chat. In response to these early findings, discussion forums are being established for the study participants to support asynchronous communication. Patients will have the opportunity to post questions and comments on a discussion forum that can be responded to by both clinicians and other participants at any time. Further research is required into the feasibility of using online interventions to educate patients to be active participants in their own care.

**Keywords:** Blending learning; synchronous communication, pre-test post-test design

# How do Demographic Variables Relate to Attitudes on English Reading and Writing When Using a Web 2.0 Tool?

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**Abstract:** Instructional technology has been integrated into teaching activities for a long time. The purpose of this study was to investigate the impacts of student learning attitudes by integrating Web 2.0 tools in an English reading and writing class. The study participants were 110 Mechanical Engineering major students between 20 and 36 years of age, at a low English proficiency and enrolled in a four-year college in Taiwan. The researchers employed a questionnaire and interview methodology design. The results indicated that both males and females held more positive attitudes toward utilization of a wiki as an effective pedagogical tool for their projects in English. Furthermore, females had significantly higher levels of participation in using a wiki than males. The results also showed that those who were younger had higher interests in learning English reading and writing through a wiki. In conclusion, the teaching methods integrating a Web 2.0 tool for learning activities can aid students into more effective learning and can indeed improve students' learning attitudes from passive to active toward English learning in Taiwan college students.

**Keywords:** English reading and writing courses, wiki, gender, attitudes, web 2.0

# **Research in Progress**

# **Weblogs in Higher Education – Why Do Students (Not) Blog?**

**Monika Andergassen, Reinhold Behringer, Janet Finlay, Andrea Gorra and David Moore**

**Leeds Metropolitan University, UK**

**Abstract:** Positive impacts on learning through blogging, such as active knowledge construction and reflective writing, have been reported (for instance, see Baumgartner 2005; Du & Wagner 2005; Kerres 2006). However, not many students use weblogs in informal contexts, even when appropriate facilities are offered by their universities. While motivations for blogging have been subject to empirical studies (Schmidt & Mayer 2006; Sifri 2008), little research has addressed the issue of why students choose not to blog. This paper presents an empirical study undertaken to gain insights into the decision making process of students when deciding whether to keep a blog or not. A better understanding of students' motivations for (not) blogging may help decision makers at universities in the process of selecting, introducing, and maintaining similar services. As informal learning gains increased recognition (Cross 2006), results of this study can help to advance appropriate designs of informal learning contexts in Higher Education. The method of ethnographic decision tree modelling was applied in an empirical study conducted at the Technical University Vienna, Austria. Since 2004, the university has been offering free weblog accounts for all students upon entering school, not bound to any course or exam. Qualitative, open interviews were held with 3 active bloggers, 3 former bloggers, and 3 non-bloggers to elicit their decision criteria. Decision tree models were developed out of the interviews. It turned out that the modelling worked best when splitting the decision process into two parts: one model representing decisions on whether to start a weblog at all, and a second model representing criteria on whether to go on with a weblog once it was set up. The models were tested for their validity through questionnaires developed out of the decision tree models. So far, 8 questionnaires have been distributed to non-bloggers, revealing a concordance of 7 out of 8 questionnaires with the decision tree models, whereas 1 questionnaire contained ambivalent answers. The same process is on-going for bloggers and former bloggers. First results show that the main reasons for students not to keep a weblog include a preference for direct (online) communication, and lack of time. Furthermore, the results indicate that intrinsic motivation factors keep students blogging, whereas stopping a weblog is mostly attributable to external factors.

**Keywords:** Weblog, higher education, informal learning, ethnographic decision tree modelling, motivation research

# Teacher Perception of Knowledge Management: A Case Study in a Secondary School

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**Abstract:** Fierce competition and constant changes have forced organizations to search for new ways to improve competitive advantage. Organizations and individuals are starting to understand and appreciate knowledge as the most valued asset in the emerging competitive environment. As a result, Knowledge Management (KM) through a variety of approaches and technologies is currently receiving considerable attention. In the education sector, current education reform and competition require schools to embrace change. Schools, like most organizations, should learn that KM improves decision-making and fosters innovation. KM can be used as an alternative strategy by schools to improve performance. However, little research has been undertaken on how KM can be applied in a school environment. As an approach for school development and performance improvement, KM is still a new management theory. To put KM into action, it is crucial to understand teacher perception of KM at the outset e.g. how teachers regard KM in the school environment, what they expect to achieve from KM, and what concerns they have while implementing KM. This study aims to look into the key factors of KM implementation in the school environment and teacher perception of the key factors. The study was carried out in a typical Hong Kong secondary school. A survey, based on relevant KM models and KM performance measurements, was used to measure teacher perception of KM. Eleven key factors of KM were included in the questionnaire: Leadership, IT Infrastructure, IT management, Knowledge Creation, Acquisition and Learning, Dissemination and Transfer, Application and Exploration, Personal Skills, School Support for Professional Development, Interpersonal Trust, and Management Trust. The results of the survey showed that “Leadership”, “Interpersonal Trust”, and “Management trust” were regarded as the three most important factors of KM implementation. Most teachers felt it was very important to motivate teachers and help them establish positive core values, beliefs and assumptions towards knowledge sharing to facilitate KM practice. In addition, support and recognition from top management during the process of implementing KM was regarded as an important factor of KM. Further analysis indicated that teachers with different KLAS (Key Learning Areas) held different views on team work, with female teachers perceiving IT as being more important than male teachers do. This survey was used to kick-start a KM action research project in the secondary school. The findings may provide insight on taking further action for KM implementation in the school.

**Keywords:** Knowledge management, case study, secondary school, perception

# Practitioner Paper

# Forming a National Consortium of University Continuing Medical Education Providers

**Fran Kirby, Richard Haywood, Randy Murphy and Lisa Fleet  
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**Abstract:** Health care professionals, especially those in rural and remote areas, are faced with the challenge of maintaining competency in clinical practice despite limited access to up-to-date health knowledge and medical specialists, and isolation from the large urban-based tertiary hospitals where much of this information is disseminated. Information and communication technologies, such as the Internet, and in turn distance education methodologies such as online continuing professional development (CPD) are being used to obtain relevant and timely information. This paper will introduce conference participants to MDCme.ca – a web portal unique in the world of Canadian online CPD. The web portal provides physicians and other health professionals with trusted, accredited continuing professional development in eleven therapeutic areas. Practice Management tools are also available through the site. With a wide variety of credit levels, it provides the flexibility, credibility and accessibility required by today's busy health care professionals. However, what makes MDCme so distinctive is not what it provides, but how it provides it. MDCme.ca is a premier eLearning consortium of seventeen Canadian medical schools, led by Professional Development & Conferencing Services (PDCS), Memorial University. Collaboration and cooperation among the Consortium partners is vital to ensuring quality and consistency in content creation. The partners support each other in the creation of online CPD courses by sharing content expertise across a full range of specialties. This can range from the creation of national review boards for accreditation of content purposes, to content writing teams, or to securing different avenues of funding for program delivery. Our pan-Canadian consortium provides MDCme.ca with access to a diverse group of content experts and course development teams. Through the inter-university collaboration that is involved in the web portal, MDCme.ca is able to overcome provincial borders and reach physicians and other health professionals throughout Canada. While all of the schools may have different motivations for being part of the Consortium, they are all reaching the same goals: to be socially accountable to the public, to meet the educational and professional development needs of physicians, and to ultimately, improve patient health care outcomes.

**Keywords:** Partnerships, e-learning, technology, continuing education, healthcare

# **Posters, Demonstrations and Presentations**

# Development and Evaluation of a Computer-Enabled, Virtual Slide-Based Program for Teaching Oral Pathology

Grace Bradley, Deepika Chugh, Joyce Nyhof-Young and Florin Salajan  
University of Toronto, Canada

**Abstract:** Teaching of histopathology is an integral part of the Oral Pathology curriculum at the University of Toronto. Microscopic examination is taught as a continuation of clinical examination, to explain clinical findings and provide the rationale for treatment. We emphasize clinicopathologic correlation, interpretation of microscopic findings rather than pattern recognition and active learning by students. Recently, we have adopted virtual microscopy to replace traditional microscopy for teaching Oral Pathology to undergraduate dental students to exploit the widening availability of computer technology to fulfill our teaching principles. Virtual slides were prepared with ScanScope GS® and Zoomify Enterprise® software and hosted online with the Blackboard® Learning Management System. Each slide has Flash based annotations and a Notes Box that gives the interpretation of the section and links to photographs and radiographs for clinicopathological correlation. A second interface presents the slide without Notes Box and the annotations are replaced by interactive multiple choice questions that test the student's understanding of microscopic appearance. 85 virtual slides are organized into 11 lab sessions, based on disease classification and corresponding to the lecture schedule. Students attend weekly labs and seminars in groups of 10 per instructor, where they resolve any difficulties with the virtual slides and discuss the clinical implications of microscopic findings. There is a term test consisting of 5 virtual slides from a separate testing bank, in which students interpret clinical data and microscopic appearance, and demonstrate their knowledge of diagnosis and treatment. The virtual slide-based program was developed within our Faculty through collaboration between Oral Pathology and Computer Technology. This allows a dynamic process of program development where improvements are made according to student feedback and classroom observations. The program's effectiveness is assessed by students' marks on the term test and an online student survey. In 2006, the virtual microscopy course was implemented for 25 students who scored higher on the term test compared to a group of students who took a glass-slide based course covering the same syllabus over the same period (average mark 88.8% compared to 68.7%;  $p < 0.001$ ). In 2007, a class of 96 students took a hybrid course with half the material taught with traditional microscopy and the other half with virtual microscopy. The average term test mark was slightly higher for the virtual microscopy section (73.8% vs. 67.1%;  $p < 0.01$ ). In the current academic year, students have completed the full virtual microscopy course and results of the term test are being analyzed. The major limitation with the development of virtual slide-based teaching is the demand for computer infrastructure, particularly servers for robust delivery and secure storage of teaching and testing banks of virtual slides, a student lap-top program and wireless network for virtual microscopy labs and seminars. Another drawback is that students do not learn the use of a microscope. These limitations are mitigated by the demonstration of effectiveness of our teaching program, positive feedback from both instructors and students and the opportunity for further improvement by integration with teaching of dental histology and general pathology.

**Keywords:** virtual microscopy, oral pathology, in-house program development

# **Development of an Accredited Online and Onsite e-Health Continuing Professional Development (CPD) Course: Summary of Needs Assessment Findings**

**Lisa Fleet and Fran Kirby**

**Faculty of Medicine, Memorial University, Canada**

**Abstract:** Purpose of Study: The purpose of this study was to identify the current learning needs of Canadian health professionals as they relate to the use of e-health technologies in practice.

Literature review & Environmental scan; Focus groups; Survey-questionnaire.

Overall, 59.3% of respondents report using e-health technologies in practice. Potential benefits to using e-health technologies in practice: immediate access to information; improves interprofessional collaboration, i.e. facilitates sharing of information, provides one record for access by multiple HPs; improves patient care, i.e. reduces delays in treatment, eliminates lag time. Potential barriers to using e-health technologies in practice and supports for implementing them are mainly technological in nature. More needs to be done to standardize e-health systems provincially and nationally. Suggested CPD topics: using e-health technologies to measure patient outcomes; electronic interface to lab/x-ray; best practices in using e-health technologies; online clinical practice guidelines; and electronic health records. The majority of respondents overwhelmingly indicated improved patient care as both a best practice and patient outcome. However, more research is needed into this area.

**Keywords:** e-learning, e-health, technology, continuing education, healthcare

# DiagnosisX a Medical Virtual Patient Simulation Application

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**Abstract:** DiagnosisX is a virtual patient or electronic cases application developed by the McGill Molson Project. Learners, generally undergraduate medical students, can simulate a patient encounter, determine, refine and prioritize their differential diagnoses, and then compare their course through the virtual patient case with that of an expert. Exploratory in approach, DiagnosisX is based on the medical model, and includes the potential for students to address history taking, physical examination, test ordering and associated procedures, as well as case management and follow up. Students must make choices during the course of the virtual patient case, demonstrative of their domain knowledge and clinical reasoning skills.

Virtual patient case authors can use DiagnosisX needing familiarity only with a word processing application. Cases are based on a QAR template, that is, each Question or Query has an associated Answer which is immediately available to the learner, and a more in-depth Rationale that is available when the case has been completed. Authors can import any kind of media, including images, audio, and video, as well as include links to both internal documents and external hyperlinks. Cases can be scored and costs can be associated with actions. Most significantly, DiagnosisX authors can develop a case on their desktop, and then immediately publish it to the Web without further technical support. Authors can use already defined templates to build their virtual patient cases, should they wish to make them even more challenging.

**Keywords:** virtual patient simulation, case-based medical education

# **PGCorEd™ An Innovative Learning and Evaluation Web Based e-Learning Program**

**Susan Glover Takahashi, Chi-Ming Chow, Tamara Bahr and Jodi McIlroy  
University of Toronto, Canada**

Abstract: This Research in Progress describes the development of an e-Learning system called CorEd™ Learning System developed to meet the just in time learning of foundational knowledge and skills for physician trainees. At University of Toronto, there are over 2000 postgraduate trainees every year spreading across over 80 programs. Due to the sheer size, it is difficult to implement programs to teach the residents these roles and principles in a uniform and coordinated fashion. The Postgraduate Medical Education Office (PGME) Core Curriculum Web Initiative was established to provide 10- 12 web-based e-learning modules to cover the foundational competencies. In developing the e-learning modules the CorEd™ Learning System was developed and the PGCorEd™ program is the specific application of the learning system. Two PGCorEd™ modules were launched in July 1, 2008. Four more PGCorEd™ modules will be launched by July, 2009.

The Research in Progress describes the key design features of the CorEd™ Learning System including:

• Modules use cases, stories and multimedia such as video scenarios to enhance delivery and retention of content

• The learning and evaluation material in each unit is designed to be self contained so that they can be done in any order (i.e. available for 'just in time' learning on a specific topic.

• The use of assessment throughout the units including:

- Survey or gaming styled questions.
- Use of "Key Features" style of testing in pretest, end of unit and end of module.

• There is 'take away' information, resources, etc built into each module (e.g. called 'Black bag' in PGCorEd™ modules).

The Research in Progress will describe the Steps to Designing the CorEd™ Learning System including recruiting and training novice content, gathering and focusing the curriculum and content, assembling the learning and evaluation materials.

The Research in Progress will demonstrate the variety of Learning-Teaching-Evaluation Strategies including:

• Text with audio

• Interactive table or graphic

• Readings (e.g. PDF article)

• Lecture + slides (i.e. video of lecture = PowerPoint highlights)

• Video Case Scenarios, Shared Perspectives

• Writing exercises.

The Research in Progress will highlight preliminary program evaluation results from the pilot testing and early implementation.

**Keywords:** e-Learning design; usability; evaluation ;Course development strategies

# Live Chat Inspires Incremental Change

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**Abstract:** The hypothesis central to this paper is that synchronous contact with student groups via channels such as live chat, both illuminates the students' approaches to learning and also suggests that, to be effective, changes in learning habits may be required. This, in turn, raises issues about the potential resistance to such change (Wieck & Quinn 1999) and whether such resistance can, in certain circumstances, help to refine the synchronous methods of delivery to achieve a more harmonious change process. (Burnes 2004). A survey of 70 online students resulted in data which suggests that this hypothesis is fundamentally sound and could be further refined – especially in the face of evidence from a wider data sample – to facilitate online synchronous exemplars of e-learning even further. Findings from the students indicated that initial feelings of anxiety at having little or no face-to-face contact had been heavily reduced within six weeks of synchronous conferencing. Further suggestions from students about both timing and format of synchronous conferencing were acted upon, in part, and resulted in higher levels of student satisfaction. In most student cases, the survey found that resistance to change was either light or not fully communicated. It was not possible to determine exactly the split between the two and further research across a broader student sample would be necessary to gain a more accurate reading of true reactions. However, constructive criticism in some areas such as timing and format have been adopted with little amendment and found to be effective in raising student response and active participation to a limited degree. This corresponds with the work of Wieck & Quinn, among others, who aver that such change in attitude can be affected by what they term the rhetoric of change – using metaphors to organise, analyse and examine the roles of change agents. In this instance, the change agents, the online tutors and their university, were open to constructive criticism and to making amendments to online conferencing practice, especially in live chat session, to maximise the benefit for the student. An output of this change process was that results were somewhat higher than had been previously experienced, although there were a number of other factors which could have impacted on this outcome so the survey does not purport to accord changes within online conferencing as the sole reason for improved performance. There is however, a case to be made for aligning Wieck & Quinn's belief that continuous change – which was the case in this study – is evolving and incremental, as opposed to episodic change where change is seen as being discontinuous and intermittent.

**Keywords:** synchronous, conferencing, incremental, change, habitual learning, criticism, methodological amendment

# International Student Generated e-Learning Within Learning/Intellectual Disabilities

**Bob Hallawell, Richard Windle, Heather Wharrad and Helen Laverty  
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**Abstract:** There has been intense interest in student-generated e-learning content in recent years, partly driven by the emergent Web2.0 technologies. Despite this interest, content generated in this way tends to be used in a limited manner, to engage or assess an individual or small peer group and there are few good examples showing a deeper, shared or more permanent embedding of these learning resources within courses. However, e-learning content generated by students and other stakeholder groups can provide a unique and rich perspective that many would benefit from, particularly on vocational, creative and practical courses. Furthermore, it may capture pedagogical approaches that are more effective than those preferred by tutors. There are, however, a number of reasons for the lack of deeper penetration of these learning resources, some relating to the quality issues of the materials themselves and others to the perceptions of the tutors and students. It is these barriers that we are seeking to investigate. The UK's Centre for Excellence in Teaching and Learning for Reusable Learning Objects (RLO-CETL) at the University of Nottingham has actively promoted student involvement in learning content design and generation. Here we report our experiences and evaluation of this approach; in particular, the findings from a study involving 35 student nurses from 7 Higher Education institutions in the UK and Republic of Ireland who engaged in the creation of learning objects based on their vocational experience.

Questionnaires and focus groups explored the use and perception of student-generated content, whilst pedagogical design and quality was assessed using the learning object attribute metric (LOAM). The tool builds on IMS Learning Design and consists of a range of validated pedagogical attributes scored on a Likert scale to allow a pedagogical "footprint" to be created. The tool was used to explore the pedagogical knowledge and intentions of the student-content creators, to compare these with an appropriate population of tutors and to analyse the content created. Initial findings showed that students expressed clear pedagogical intentions and goals when considering the design of e-learning materials, both when articulating the design factors they considered important and through an analysis of the storyboards they created. However, these varied significantly from tutors, with students placing more emphasis on aspects of user-functionality such as feedback, support and control, whilst tutors focused more on the learning environment being created in terms of media richness and contextualisation. The impact of these differences is currently being investigated.

**Keywords:** Student reusable learning objects disability

# Creating an Online Undergraduate Teaching Cases Module – What is Involved and is it Effective?

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<sup>2</sup>Brighton and Sussex Medical School, UK

**Abstract:** Introduction - We review the challenges of introducing an online module to support the final year curriculum at a UK Medical School, set up cost implications and student utilization. Methods – Brighton and Sussex Medical School opened offers a 5 year undergraduate programme, with year 5 spent in several regional centres. To facilitate equitable curriculum delivery it proposed that a formative, case-based online module should be introduced in year 5 to be made available to a cohort of 101 students in the 2007/2008 academic year. Cases were written and submitted on a dedicated template by a broad spectrum of staff, edited and then uploaded and released via the University based learning management system. Cases covered core year 5 specialities including medicine, elderly care, surgery, obstetrics and gynaecology, paediatrics, primary care, therapeutics, clinical investigations and mental health. Student satisfaction was assessed via three online module related questionnaires undertaken just prior to commencing year 5 and then mid and end of year after finals examinations. Results – A total of 490 cases had been written, edited and loaded onto the database by academic year end containing 2462 questions and 363 of the cases were released to students by the end of the year. 265 cases contained a form of image media and 371 cases had attached online learning resources. . Mapping student utilisation online revealed a mean number of hits on cases per student of 1766 during the year, with total hits on cases and associated links of 274,000. There was no correlation between student utilisation and final quartile exam performance. High levels of user satisfaction in surveys were demonstrated in surveys and these were maintained throughout the academic year. An estimated 2450 hours of labour were involved in module set-up with an approximate cost per case of £137 (\$200, €150). Conclusion - Successful preparation and integration of an online module into an undergraduate (or postgraduate) curriculum can be achieved but has significant initial set-up cost implications, although once the module is up and running these costs will reduce. Emphasis must be placed on high quality IT links and support and also on creating relevant cases of an appropriate level of difficulty to ensure student user satisfaction and engagement with the module.

**Keywords:** e-Learning design and evaluation, Asynchronous interaction, online assessment, student access

# Real-time, Online Teaching to Enhance Undergraduate Learning

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**Abstract:** A real-time and interactive online case based educational module, synchronized with course work, was introduced in 2008 at Brighton and Sussex Medical school. The school offers a 5 year undergraduate programme with 100 final year students rotating through several regional centres. Students are able to complete case based modules covering the entire year 5 curriculum including core specialties of Medicine, Surgery, Paediatrics, Obstetrics and Gynaecology, Mental Health, Primary Care, Therapeutics and Clinical Investigations. Professional aspects, including consent, patient safety, medical ethics and law are also covered. Increasing utilisation of online teaching techniques has been adopted within year 5 to help provide equitable curriculum delivery at multiple geographically different sites. An interactive and real-time module was proposed to enhance the existing online initiatives within the medical school due to the perceived benefits of “live” teacher/student interaction and the ability to cover large areas of teaching material in a short space of time. The medium acts as a vehicle for innovations in teaching delivery centred on web based and video techniques and further diversifies the range of teaching resources available to the students. To coincide with the beginning of the 2008 academic year a programme of real-time case-based tutorials were introduced to cover all core year 5 specialties and to run for 1 week twice a month. Cases were all similar in format with a brief history and images or video sequences supplemented by open questions to stimulate discussions. These interactive tutorials were created on an open source social network virtual learning environment plug-in accessed via the University network providing easy to use, readily availability, support for images and video media and network security. A discussion room community was created with each case entered by the module team as a new blog entry. Students were invited to comment and specialty moderators lead on-line dialogue through the week. Case answers with annotated images were posted at the end of the week with detailed feedback and attached online links to learning resources. There have been good levels of student engagement with the cases with between 6-8 students making 20-25 postings per case. Student feedback from an online questionnaire showed 73% of student users found the module a good or excellent adjunct to their learning. It was also clear from feedback that many more students observed the teacher/student interactions than actually posted comments. Innovative video simulations of computed tomography radiology image series and fetal heart tracings during complicated labour worked well on the site and these were particularly appreciated by the students. The real-time teaching process was labour intensive for teachers but the workload has been spread across several moderators. Overall this new module has been a highly successful addition to other online initiatives and is a valued learning resource for the students.

**Keywords:** e-learning implementation, online and computer aided assessments, course development strategies, problem based learning

# The Design of an Interactive Web-Based Atlas of the Human Muscular System

**Klodiana Kolomitro**

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**Abstract:** The acquisition of anatomical knowledge via the Internet is continuously gaining momentum, and the creation of a Web-based human anatomy application is highly desirable. During my experience as a teaching assistant at Queen's University, I observed that undergraduate students enrolled in anatomy courses have difficulties in learning the muscular system. An interactive Web atlas could help in the retention of the material and address educational issues such as shortage in the laboratory learning hours, decline in qualified faculty, and increase in student enrollment. Prosected upper limbs were obtained from the anatomy museum at Queen's University and photographs in digital format were taken. Using Microsoft FrontPage I designed a web-based atlas for the muscles of the arm and provided a good template for other muscles to be added in the near future. The use of real cadavers instead of drawings is one of the unique features of this Web-based atlas. The atlas reinforces the concept of "learning by doing" in the anatomical sciences, since it requires the users' input in order for the prosected upper limbs to display muscles' action. By simply clicking on the name of the muscle, students initiate a short animation that demonstrates the action of that muscle. Having an accurate portrayal of muscles' action on the Web-based atlas enhances the anatomy laboratory sessions where the students can only observe and touch the muscles. Animations of muscle movement are coupled with information on the muscles' origin, insertion, innervation, and action. Another component incorporated in this atlas is self-assessment quizzes. The purpose of these quizzes is to track the users' progress in learning the muscles, by helping them assess their own knowledge and highlight areas that require further study. The Web-based atlas might help avoid the students' misperception that anatomy consists strictly of memorization. Furthermore, it will help students use their time more efficiently when they attend the laboratory sessions. Even though initial surveys and observations for the need of this atlas were done in the musculoskeletal course, this atlas is not geared towards a specific course. It can be used by undergraduate anatomy students, nursing, pathology, and medical students who have to know the muscles in detail. Presenting anatomy in a dynamic way could get the students more excited and make them approach this subject with the right attitude. This way, the information will make a deeper impression, and the students will be able to retain the new knowledge. The project is a 'work in progress', yet to be completed and evaluated. However, preliminary feedback obtained from questionnaires indicated a positive reaction to this educational resource.

**Keywords:** anatomy, muscular system, web atlas

# **A Conceptual Reference Model for Competencies; Development of an ISO/IEC International Standard for Information Technology for Learning, Education, and Training**

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**Abstract:** ISO/IEC international standards are being developed to provide a conceptual reference model that will allow information technology systems to share and manage competency information. This conceptual reference model must be flexible and adaptable to support the interoperability requirements of disparate IT systems in a manner that respects privacy concerns. Competency data typically combines information from multiple stakeholders in an organization, such as employers, managers, and employees. These stakeholders have concerns about access to their information and how it will be used. Learners, whether they are students, government employees, health care personnel, or corporate workers, want to be assured that they have individual control over their own personal performance information, such as transcripts, professional certificates, and assessment information. Similarly, hiring personnel want to be assured of the authenticity of the competency information they are receiving from prospective job candidates. As the fusion of competency data from different sources becomes more automated, these stakeholders expect that the computerized agents creating the competency records will protect their interests in negotiating access to the data.

Subcommittee 36 of the ISO/IEC JTC1 develops international standards for information technology for learning, education, and training. Currently SC36 is building a Conceptual Reference Model (CRM) for competencies and related objects whose entities include the stakeholders and whose relations indicate potential data sharing between entities. The CRM is being validated by collecting use cases from the national standards bodies that are members of ISO. Two general categories of requirements have emerged from the work on the CRM: the need to identify who owns what data and the need to assure the authenticity of the data. This poster describes the development of the conceptual reference model for competencies and related objects and the use cases that have been collected, as well as the strategies that have emerged for addressing these requirements.

**Keywords:** ISO/IEC standard, competency, conceptual reference model

# Design Research Outcomes of the Web-based Communication and Cultural Competence Program for International Medical Graduates

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**Abstract:** The advantages of Web-based learning are often cited as “anywhere, anytime”; however, initial results of this study indicate advantages may be more than just about convenient access. The Communication and Cultural Competence Program focuses on medical literacy and is designed to help physicians, particularly International Medical Graduates (IMGs), understand the Medical Council of Canada C2LEO (Considerations of Communication, Culture, Legal, Ethical and Organizational) objectives (<http://icarus.med.utoronto.ca/ccc>). Knowledge building theory was used in the pedagogic design of the Communication and Cultural Competence Website. Five specific strategies were employed: 1) authentic simulations videoed to visually explicate tacit aspects of professional behaviour; 2) concurrent feedback and resources embedded in interactive “Knowledge Checks”; 3) Contextualized resources woven into case content; 4) “Reflective Exercises” to promote examination of strengths/weaknesses of options and decision-making (when no one correct answer exists); and, 5) “Commentaries” on “Reflective Exercises” to prompt “reflection-on” reflection, beyond self-directed learning/self-reflection, aimed at deeper level cognitive engagement. We call this approach cognitive layering for knowledge building. Design research studies were conducted with IMG volunteers. Feedback was used formatively for iterative development. Study 1 (n=20) examined Website usability and relevance. Studies 2 (n=39) and 3 (n=33) examined Case 1 and 2 participation patterns and knowledge test outcomes. Data was collected via automated online forms and analyzed in SPSS.

Study 1 survey results of case 1 were very strong overall; for example 89.5% participants strongly agreed/agreed that their understanding of Canadian communication and cultural issues increased. It appears from the initial descriptive statistical results of Studies 2 and 3 that participants use the Web-based interactive self-assessment components of the E-Learning cases often more than once, and sometimes 3 or more times. Participation patterns indicated “Knowledge Checks” were completed 3-4 times, beyond prompted 2nd time tries. Notably, on 3rd try participants obtained more substantive gains. “Reflective Exercises” were often completed up to 5 or 6 times; participants were unprompted. These findings are concurrent with educational research on the importance of recursion and revision of knowledge and ideas for continual improvement in relational understanding and translation to practice. The study demonstrates that the CCC Website, not only facilitates easy access to E-Learning, but more importantly, supports multi-pass knowledge building. The CCC Program is sponsored by the Medical Council of Canada and the Ontario College of Physicians and Surgeons.

**Keywords:** e-Learning, Knowledge-building, e-Design, e-Pedagogy, design-research

# **Building Collaboration: Use of an Online Synchronous “Build-a-Case” Method to Promote Interprofessional Health Education**

**Heather Mac Neill, Elizabeth Hanna, Steve Rankin and Steve Hall  
University of Toronto, Bridgepoint Hospital**

**Abstract:** Interprofessional education (IPE) is a way in which health care professionals come together to learn with, from and about each other.<sup>1</sup> Theoretically, this is a very powerful concept, however, there are many roadblocks including scheduling difficulties and accommodating diversity and different professional cultures among learners<sup>2</sup>. On the other hand, online learning minimizes geographic and learner barriers that are difficult to accommodate in face-to-face IPE. It is also able to respond by multiple modalities, various learning styles, levels and cultures of adult learners<sup>3</sup> often found in an IPE forum. However, in online learning, learners need to become part of a virtual learning community in order to promote connection and interactivity with each other and the material.<sup>4</sup> Online IPE requires the development of both community and collaboration strategies in order to flourish. Bringing together multiple health professionals requires a common focus on which to base the development of community and collaboration. The common denominator of health professionals is the patient- which in a learning environment can be translated into case based learning. Ryan et al described a face-to-face method of case building with small groups of continuing education learners and a facilitator to build a patient case by consensus, discuss opinions on treatment options, and lastly compare their case to established guidelines.<sup>6</sup> This session will outline the pros and cons of IPE and online learning, while discussing the uniqueness of the marriage of these two entities. Furthermore, it will discuss the theory and practical applications behind developing an online build-a-case model using synchronous communication strategies to promote online IPE. Through its use we hope to gain a better understanding of how participants in an online course experience interprofessional education (IPE) by collaborating together on subject content creation.

**Keywords:** Interprofessional education, synchronous online learning, case based learning, build-a-case method, interactivity between learners

# **Saying What you Mean and Meaning What you say to Your Patients; Developing Communication Skills–Using PGCORed™**

**Dawn Martin, Alexandra Easson, Susan Glover Takahashi and tamara Bahr**  
**University of Toronto, Canada**

**Abstract:** This poster illustrates the key design steps for a module to develop communication knowledge and skills for physician trainees using PGCORed™.

The Postgraduate Medical Education Office (PGME) Core Curriculum Web Initiative was established to provide 10- 12 web-based e-learning modules to cover the foundational competencies for physician trainees. Resident as Communicator is one of the PGCORed™ modules.

At University of Toronto, there are over 2000 postgraduate trainees every year spreading across more than 70 residency programs. Due to the sheer size it is difficult to implement education programs to teach students in a uniform and coordinated fashion. Distance learning is an effective approach to overcome this obstacle and has become a mandatory part to teach all postgraduate trainees the generic foundation competencies.

The aim of “Resident as Communicator” is to help postgraduate trainees learn about the knowledge, skills and attitudes required to be effective communicators. The module includes six interactive units: Culture of Communication, Communication Skills, The Clinical Encounter, Delivering Information, Reporting Findings, and Challenging Scenarios.

The poster describes the key design features of the PGCORed™, the Steps to Designing the module and Learning-Teaching-Evaluation Strategies used in the module. Resident as Communicator uses video-vignettes, interactive quizzes, evidence-based literature, and downloadable learning tools imbedded into the units to enhance delivery and retention of the content. PGCORed™ uses an evaluation approach that focuses on inquiry about the learner’s understanding of the ‘key features’ of the course content.

The poster will highlight preliminary program evaluation results from the pilot testing and early implementation.

**Keywords:** Innovation in the e-Learning Context, Instructional design, Course development strategies

# Can Interactive Simulations Introduce Basic Laboratory Skills to Undergraduate Students in Large Cell and Molecular Biology Classes?

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**Abstract:** Developing laboratory skills in introductory undergraduate biology courses is always challenging, but is particularly so for large classes. At the University of Toronto (St. George Campus), the introductory cell and molecular biology courses have an enrolment of >1500 students who attend 3-hour bi-weekly laboratories containing 24 students. In order to get the most out of the laboratory exercises, in the past it has been recommended that students study paper copies of diagrams of pipettors and microscopes along with written instructions for their use prior to lab. This method did not engage many students in their lab preparations and as a consequence, too much class-time was spent on the mechanics of micro-pipettor and microscope use, instead of being devoted to the inquiry-based laboratory exercises using these tools. As a result, interactive simulations using Flash, were developed to help introduce students to the correct use of micro-pipettors and compound light microscopes prior to attending the laboratory. The micro-pipettor animation involves the use of realistic problems ranging from “Crime Scene Investigation” scenarios to those commonly encountered in hospital and university research labs. The student must read the problem, and use the mouse and arrow keys to select the correct micro-pipettor and set the micro-pipettor to the correct volume as dictated by the problem. The student can find out instantly whether he/she is correct and can select another problem on which to work. The compound microscope animation involves a diagram of the labelled parts of the microscope, instructions on how to optimise resolution of the microscope by setting it up with Koehler illumination, and a microscopic image whose resolution improves when the microscope is set up correctly. The microscope animation allows students to use the mouse and arrow keys to move the specimen about on the stage, adjust the position of the condenser and iris diaphragm, adjust the fine and coarse focus, and re-position the objectives. The image changes instantly based on the adjustments made by the student and provides the student with feedback regarding whether optimal resolution has been achieved. Student surveys have reported a greater interest in learning how to use the equipment prior to lab, and Teaching Assistants (TAs) have reported that students learn more quickly how to use the equipment correctly in class. This has led to a reduction in student frustration when learning how to use new equipment while at the same time improving the basic laboratory skills of students. These simulations have also allowed the students and TAs to spend more time on the inquiry-based portion of the lab. Finally, these simulations allow students to practice using equipment as often as desired while preparing for laboratory exams. This poster aims to present these animations (a laptop will supplement the poster) as a mechanism for introducing cell and molecular biology laboratory skills to biology students. The learning problem, user needs, design, user testing and improvements to the original design will also be discussed. This poster will be of interest to participants involved in teaching science courses with laboratories.

**Keywords:** Instructional design; instructional technology; interactive learning; interactive applications

# Experiences in Design and Implementation of a Radiology Education Portal

**Edmund Ng and Nasir Jaffer**  
**University of Toronto, Canada**

**Abstract:** Radiology education is heavily dependent on visual images and case-based teaching files comprising medical images are important tools for teaching diagnostic radiology. With the development of e-learning and its ability to provide rich animated content, new methods for teaching medical imaging have evolved as hardcopy film is being rapidly replaced by digital radiological images in teaching hospitals. Currently, most elective programs in radiology for medical students are a combination of self directed learning with some teaching by residents and radiologists. The radiology portal developed at the University of Toronto provides a specific framework, offering students an individualized learning plan combining text, images, videos, animations, and quizzes for learning assessment and showcases adaptive release of content, interactive teaching cases and a discussion board. Disease-based teaching files are generated for all areas of imaging to teach diagnostic principles and imaging algorithms. The site focuses on a student-centered approach and contains interactive flash diagrams and self tests after each organ based module. Students are evaluated pre- and post-elective using a randomized block of 10 multiple choice questions from pre developed question pools involving areas such as basic anatomy, chest pathology, abdominal pathology, and neuropathology. Performance is documented for statistical analysis factoring in variables such as their medical institution and level of training, previous exposure to radiology, and student choice of future specialty. In addition, students contribute to the core content of the site by submitting topics for discussion and questions to test their peers. On the development side, the radiology portal offers clinicians with little computer expertise the ability to submit images found in the hospital imaging system for teaching with ease. Radiologists can easily keep track of student progress and provide feedback when appropriate.

With over 60 third and fourth year medical students from various medical schools across Canada enrolled since its inception in 2006, quantitative (pre and post elective test scores) and qualitative feedback (post elective questionnaire) indicate that radiology learning can be implemented with e-learning strategies relatively easily and at low cost by radiologists with minimal computer expertise, and can find receptive and appreciative student audiences. The radiology education portal will continue to play a significant role in providing education to medical students throughout their careers.

**Keywords:** Radiology, medical education, adaptive system, e-Learning portal

# Can Transactional Distance be Breached?

**Marie Rocchi**

**University of Toronto, Canada**

**Abstract:** Canada relies heavily on immigration; internationally educated health care professionals (IEHPs) face cultural and practice divides that can create barriers in their access to regulated, licensed employment. Although many profession-specific bridging programs are available in Canada, the vast majority are classroom-based, thereby creating an additional barrier, that of time and location, given the likelihood that most IEHPs, of circumstance or necessity, have family or work commitments. In 2006, Health Canada provided funding to the Faculty of Pharmacy, University of Toronto, Canada, to develop a pan-Canadian Orientation course in Health Care Systems, Culture and Context. A needs assessment revealed a preference for online learning by the IEHPs, although a national advisory committee and educators demonstrated a strong preference for classroom-based learning, citing the nature of the material and workplace skills. Early development phases of the project resulted in the implementation of a curriculum of 10x3 hour classroom sessions anchored in 10 key concepts in health care (including ethics, professionalism, collaboration, funding models, and patient-centred practice), with the added dimension of an inter-professional learning environment (6 health care professions, later expanded to be inclusive of all) in 8 Canadian cities. The potentially rich inter-professional context presented its own challenges however; that of role identity and the potential for conflict (also common to domestically trained practitioners), layered upon cultural differences and the challenges of settling in a new country. An online course was designed using open source software (Moodle) with an array of supports based on a literature review (a “Readiness for Online Learning” admission requirement to identify potential learner needs with concomitant support, an “Orientation-to-Orientation” LMS to obviate the potential for early technical difficulties and foster social presence, embedded language support in the form of a roaming language tutor, individualized journal feedback, and uber-facilitation, in the form of synthesized retrospective feedback). Previously developed classroom materials (readings, presentations and video-clips) were repurposed and EPresence (an open source video-archiving software) was integrated in the LMS. During the pilot in 2008/2009, applications for the online course outpaced those for classroom sessions, particularly in cities where immigrants typically settle (Toronto, Vancouver, and Calgary). Formative evaluation data informed further development and summative evaluation data (still being collected and analyzed) will be presented.

In 2009, the online course will be offered to IEHPs pre-arrival so that the course can be completed prior to immigration, thereby allowing the licensing process to begin in countries of origin. Data from this pilot will illuminate any technical challenges in the face of limited staff, as well as the likelihood of an increased rate of enculturation for individuals who have not yet “landed” in a system that is their collective destination. Funding will develop “video-postcards” from Canada to augment the current content, thereby allowing for a situated experience. The implications of this research are significant both pedagogically and economically, given global migration patterns and impact on health human resources, as well as serving as an example of the instrumental use of technology to breach transactional distance in a global context.

**Keywords:** e-Learning design; usability; evaluation, Student access, diversity

# Persisting Chat for Online Communities of Practice

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**Abstract:** This poster presents a prototype for a novel unified web-based system to support persistence of semi-synchronous text-based discussions within the context of a traditional asynchronous learning network (ALN) for the purpose of sustaining distributed communities of practice. Motivation for the prototype comes from observed usage patterns of semi-synchronous group text chat in committed learner communities exhibited over the past twenty years. Environments reviewed include Internet Relay Chat (IRC), Jabber and PicoSpan, the latter as used by The Well. These semi-synchronous technologies provide a more rapid means of communication than is normally supported by anALN, yet is not as ephemeral as that of telephony, videoconferencing, or one-to-one instant messaging. These systems have been vital to the development of relationality and the ongoing sustenance of distributed communities of dedicated practitioners. Key to the continuing use of such environments by experts is the use of personal caches of logs, supplemented by various search and analysis tools. However, issues of privacy and an intolerance of obscure interfaces common to group text chat have restricted wider adoption. A rapid contextual design approach with online graduate students inexperienced in semi-synchronous chat helped develop the prototype design, utilizing a survey and a paper prototype. Three key design goals were captured through this process: social presence, asynchronous integration for discussion persistence, and visualization. These were overlaid with best practices of expert users of semi-synchronous technology from established communities of practice. Results from the survey indicate support for the approach, especially with digital natives and their associated digital immigrant educators.

The developed prototype provides a server-based infrastructure for the automated capture, analysis and presentation of group text chat activity across any number of simultaneous persistent communities. Configuration supports identity management, multiple levels of privacy and data scrubbing to meet the needs of most communities and research protocols. The system also provides a simplified web interface for legitimate peripheral participation in semi-synchronous discussion, extending the persistent, thematic discussion spaces to the newcomer. Open-source components are incorporated for search and tagging functionality, visualization and back end interfaces into established chat networks. Guidelines and scaffolds are also presented for effective integration into existing ALN environments. Archived data is also exposed through programmatic interfaces for extensibility. Future work will leverage this platform to determine if it can help meet the needs of distance learners and flex-time students participating in graduate studies.

**Keywords:** semi-synchronous communication, chat, communities of practice, knowledge management, use of open-source

# Knowledge Transfer in the On-Line Environment

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**Abstract:** A recent study conducted in the UK by the Joint Information Systems Committee (JISC), 'The learner experience of e-learning' (2006), highlighted a need to endorse and value studies which focus on the learner experience. In particular, 'learner choice and control over technology' was emphasised as an under-researched factor. Since then, a further JISC report 'Great Expectations of ICT' (2008), illustrated the need for students to have control and ownership of their online environments in order for them to be successful. However, this latter study only included full time students, in the 17-19 age bracket. As a consequence, this research aimed to fill the gap by exploring the development of an online community within a diverse group of mature, work-based, distance learners (MWBDL's).

This poster gives details of this empirical research study, which explores the online environment. It also identifies the factors needed to enable work-based students to learn from sharing their professional experience. The study focuses on the use of discussion boards within a virtual learning environment (VLE) and identifies the optimum conditions needed for knowledge transfer, not only between students, but also between their professional and academic arenas.

The authors believe that there is a need for insight into the ways in which this sub-group of students communicate, and the individual learners' experience within this. This poster will therefore discuss how the project explores the processes that lie behind the foundations of a successful online community, in the hope that this will help us to better manage these work-based on-line courses. It will explain the results of an observational study carried out to investigate the aspects of learner choice and control over technology with MWBDL's. By watching how successful online relationships are formed and maintained within this sub-group, the research bridges the gaps in previous e-learning research.

This research uses mainly qualitative methods of analysis, e.g. thematic analysis. We will discuss the factors which influence student involvement in the VLE, what draws them into the discussion boards and what keeps them there. We believe that this may inform innovative approaches on how to successfully manage independent, work-based learners within the online environment. It will therefore be of value and interest to those involved in designing e-learning, work-based modules.

**Keywords:** Knowledge transfer, work-based, distance learners, discussion boards, learner choice