

**Abstracts  
and  
Conference Materials  
for the  
13th International Conference  
on e-Learning**  
The Cape Peninsula University of  
Technology  
Cape Town, South Africa



**5 - 6th July 2018**

**Abstracts of Papers  
Presented at the**

**13th International Conference on e-Learning  
ICEL 2018**

**Hosted By  
The Cape Peninsula University of Technology  
Cape Town, South Africa**

**5 - 6th July 2018**

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## Preface

These proceedings represent the work of researchers participating in the 13<sup>th</sup> International Conference on e-Learning (ICEL 2018), which is being hosted this year by Cape Peninsula University of Technology at their Granger Bay campus in Cape Town, South Africa on 5-6 July 2018.

ICEL is a recognised event on the international research conferences calendar and provides a valuable platform for individuals to present their research findings, display their work in progress and discuss conceptual and empirical advances in the areas of e-Learning. It provides an important opportunity for researchers and practitioners to come together to share their experiences of researching in this varied and expanding field.

The conference includes five keynote presentations on a diverse range of e-Learning issues. The first of which is from Professor Susan Geertshuis from the University of Auckland Business School in New Zealand on *“Blending institutions: Technology as a means of uniting universities in the service of our students”*. Professor Cheryl Hodgkinson-Williams from the University of Cape Town (UCT), will address the topic *“Challenges of online learning for campus-based universities: Open educational practices and resources as a response”*. Professor Paul Prinsloo from the University of South Africa (Unisa), will discuss *“Using student data: Moving beyond data and privacy protection to student data sovereignty as a basis for an ethics of care”*. On the second day of the conference, Professor Wallace Chigona, from the University of Cape Town, will talk about *“A critical discourse analysis of e-learning policies in Higher Education Institutions (HEIs) in a developing country context”* and Professor Johannes Cronjé, from the host university, Cape Peninsula University of Technology will reflect on *“What Pokémon Go taught me about collectionism in e-learning”*.

With an initial submission of 167 abstracts, after the double blind, peer-review process, there are 61 academic Research papers, 3 PhD Research, 3 Masters Research and 2 Work in Progress papers published in these Conference Proceedings. These papers represent truly global research in the field, with contributions from Australia, Bangladesh, Bhutan, Canada, Chile, Colombia, Czech Republic, Denmark, Egypt, France, Germany, Malta, Nigeria, Norway Saudi Arabia, Slovakia, South Africa, Taiwan, Uganda, UAE, UK, USA, Zambia and Zimbabwe.

We wish you a most interesting conference.

### **Professor Eunice Ivala**

ICEL Conference Chair, Cape Peninsula University of Technology, South Africa

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## Biographies

### Conference Chair



**Dr Louis Fourie** is the Deputy Vice-Chancellor, Knowledge and Information Technology Services at Cape Peninsula University (CPUT), Cape Town South Africa. He obtained his doctorate at the University of Stellenbosch in 1991. In 1999 he completed his MBA degree (cum laude) at the Potchefstroom University where he received the Old Mutual Gold Medal for exceptional achievement and the best MBA student. He also received recommendations for the best dissertation in information technology. Louis has been involved in various research projects regarding human-machine cognition; e-learning, social networking, mobile apps, cyberlaw; and bridging the digital divide.

### Programme Chair:



**Dr Eunice Ndeto Ivala** is an Associate Professor and Coordinator of the Educational Technology Unit at the Cape Peninsula University of Technology, Cape Town. Her research focus is in ICT-mediated teaching and learning in developing contexts. Recently, she was a team member in an international digital storytelling project dealing with foreign youth experiences abroad, supported by the European Union.

### Keynote Speakers



**Wallace Chigona** is a Professor in Information Systems at the University of Cape Town, South Africa. His research focuses on the use of ICTs for human development and ICT policy. He has researched on the use and impact of ICTs amongst the disadvantaged communities in different African Countries. Prof Chigona is currently on the editorial boards of Electronic Journal of Information Systems in Developing Countries (EJISDC) as well as on the African Journal of Information Systems. Prof Chigona is rated as an Established Researcher by the South African National Research Foundation (NRF). He has collaborated on research projects with international scholars from Tanzania, Malawi, United Kingdom, Switzerland and other South African universities. Prof Chigona is currently a member of (i) UNESCO/Netexplo Advisory Board; (ii) the Communication Policy Research for Global South.



**Johannes Cronjé** is the Dean of Informatics and Design at the Cape Peninsula University of Technology, Cape Town. He has supervised or co-supervised 72 Masters and 55 Doctoral students and published more than 42 research papers. His hobbies include public speaking, running and dabbling in social media. He is married to Franci and they have 3 children.



**Prof Susan Geertshuis** is the Director of Learning and Teaching and Professor of Lifelong Learning at the University of Auckland Business School, New Zealand. Previously she held positions of Professor of Organisational Studies, Director of the Centre for Learning and Innovation and Director of the Centre for Learning Research across a number of universities in the UK. She has led national and international research in the field of post compulsory education and corporate learning, attracting over \$10,000,000 in funding. She is currently Director of the Maori and Indigenous Business Programme. Susan is a principal Fellow of the Higher Education Academy.



**Cheryl Hodgkinson-Williams** is an Associate Professor in the Centre for Innovation in Learning and Teaching (CILT) at the University of Cape Town (UCT), South Africa. She holds a PhD in computer-assisted learning and has taught and supervised in the field of information communication technologies (ICTs) in education since 1994, first at the University of Pretoria, then at Rhodes University in Grahamstown and now at UCT. She teaches online learning design and research design on the Educational Technology postgraduate programme and is the Co-ordinator of the Mellon-funded scholarships for this programme. She supervises PhD and Masters students and is a supervisor for the Global OER Graduate Network (GO-GN). Her particular research interests include online learning design, electronic portfolios and the adoption and impact of open educational resources (OER). She is the Principal Investigator of the IDRC-funded Research on OER in the Global South (ROER4D) project. This project includes 18 sub-projects in three regions, South America, Sub-Saharan African and South and Southeast Asia and comprises over a 100 researchers and research associates.



**Paul Prinsloo** is a Research Professor in Open and Distance Learning (ODL) in the College of Economic and Management Sciences, University of South Africa (Unisa). His academic background includes fields as diverse as theology, art history, business management, online learning, and religious studies. Paul

is an established researcher and has published numerous articles in the fields of teaching and learning, student success in distance education contexts, learning analytics, and curriculum development. His current research focuses on the collection, analysis and use of student data in learning analytics, graduate supervision and digital identity. Paul was born curious and in trouble. Nothing has changed since then. His Twitter handle is @14prinsp and he blogs at <https://opendistanceteachingandlearning.wordpress.com>

## **Mini Track Chairs**



**Dr Daniela Gachago** is senior lecturer at Fundani, the Center for Higher Education Development, at the Cape Peninsula University of Technology. Her research interests lie in the use of emerging technologies to improve teaching and learning in higher education, with a particular focus on social media and digital

storytelling for social change. Daniela completed a Masters in Adult Education at the University of Botswana and her PHD from the School of Education at the University of Cape Town. For more information on our work visit the blog [www.cput.ac.za/blogs/edutech](http://www.cput.ac.za/blogs/edutech)



**Liza Hitge** is an Independent Educational Consultant with an interdisciplinary design background. She has a Masters degree in media management and educational technology and experience working with schools, higher education institutions and non-profits. Her consulting services include learning design, online product development, driving student engagement and coaching design-mindedness. She enjoys the risks and messiness of designing, piloting and scaling new programmes. Liza sometimes spends weekends teaching chatbots to pun.



**Jolanda Morkel** is passionate about all things design: environments, experiences and artefacts. She's a registered architect and senior lecturer in the Department of Architectural Technology at the Cape Peninsula University of Technology (CPUT) in Cape Town, South Africa, where she teaches design in the undergraduate architecture studio, offered through a university-industry collaboration with OpenArchitecture. Her focus is on the design and facilitation of flexible and blended learning environments for culturally diverse and non-traditional students and technology-mediated learning experiences including simulated tutor apps, QR codes and digital storytelling.



**Izak van Zyl** is an Associate Professor of Transdisciplinary Studies in the Faculty of Informatics and Design, Cape Peninsula University of Technology. Izak has an MA in Social Anthropology from the University of Stellenbosch and a PhD in Communication Science from the University of Italian Switzerland. Izak's primary research interests include the anthropology of technology and media, and computers in education. Methodologically, he is interested in digital ethnographic and meta-analytic approaches.

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**Dr. Ambrose A. Azeta** is a Lecturer in the Department of Computer and Information Sciences, Covenant University, Ota, OgunState, Nigeria. He holds B.Sc, M.Sc and Ph.D in Computer Science. His current research interests are in the areas of Artificial Intelligence in Education, e-Learning, Dialogue Systems (Voice-enabled Systems), Software Engineering, Internet Programming and Mobile Computing.

**Professor Liz Bacon** PhD, CEng, CSci, FBCS, CITP, PFHEA, is Deputy Pro-Vice Chancellor at the University of Greenwich, London, UK. She is President of EQANIE, British Computer Society Past President, Past Chair of the Council of Professors and Heads of Computing, and Co-Director of the eCentre research group. She has been involved in e-Learning research for more than 20 years.

**Tiffany Baffour**, Ph.D., M.A., M.S.S. has eighteen years experience with administrative capacity-building, and teaching in higher education to support curriculum development of face-to-face, online and hybrid courses. She is the inaugural Director of the Master of Social Work Program at The University of North Florida in the USA.

**Touhid Bhuiyan** is Professor of Software Engineering, Daffodil International University (DIU), Bangladesh. His research interests are in cyber security, intelligent recommendations, social network, trust management, big data analytics and e-Learning. Before joining DIU he was employed by several Universities including The University of Western Australia, Queensland University of Technology, University of Western Sydney and University of Malaysia Perlis.

**Delio Ignacio Castaneda**, PhD (Cum Laude) in Organizational Behavior from the Universidad Autónoma de Madrid, Spain. He also holds a Masters (with Distinction) in Education from the University of Manchester, England. He is currently a Full Professor at Pontificia Universidad Javeriana, as well as a researcher, consultant and invited Professor in the fields of Knowledge Management, Organizational Learning and Strategic Talent Management.

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**Andrew Deacon** works in the Centre for Innovation in Learning and Teaching at the University of Cape Town, South Africa on curriculum and course design projects, including the development MOOCs. His other work includes learning analytics, large-scale assessment and online course design.

**Christo Dichev** is a professor of computer science at Winston Salem State University, North Carolina in the USA with international academic experience. His research interests include Advanced Learning Technologies Open Educational Systems, Knowledge Organization, Information Extraction and Reasoning Systems. He has co-authored more than 110 research papers, co-authored one book and has chaired several international conferences.

**Darina Dicheva** is Paul Fulton/Delta Sigma Theta Distinguished Professor at Winston-Salem State University, USA. Her research interests include Human Computer Interaction, Gamification, Intelligent Learning Environments, User Modeling and Semantic Web. She has authored over 185 research papers, co-authored/edited 13 books and was on the PCs of more than 60 international conferences in the recent years.

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**Dr Marlena Kruger** founded the MindUnique Education Institute as well as Technolife Wise Foundation NPC. As a researcher she has designed a neuro-synergetic framework and offers life-transforming programmes to empower people with critical knowledge and skills to make smart choices when using technology and social media @home, @ school/varsity and @work.

**Greig Krull** is an educational technology specialist. He has a PhD in e-Learning where the focus of his thesis was on mobile and seamless learning. He has more than ten years of experience in learning and development in the corporate and academic sectors in South Africa and in other countries.

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**Motlhabane Jacobus Maboe** has a Master's degree. He is currently a lecturer at the University of South Africa where he teaches modules in computing.

**Lachlan MacKinnon** BSc, PhD, FBCS, CITP, MIEEE, MACM, MAACE is Professor of Computing Science (Strategic Development), at the University of Greenwich, London, UK. He is Head of the Disruptive Technologies Research Group and Co-Director of eCentre. His research interests are information and knowledge engineering, smart systems, games and creative technologies, eHealth and eLearning, and computer security.

**Linda Manashe** is a Courseware Developer within the Centre for Innovative Educational Technology (IET) at Cape Peninsula University of Technology in South Africa. She is currently studying towards a Masters Degree in Information Technology. Her research interests include Language and Technology in higher education and she is currently working in the area of developing and using indigenous languages as scientific languages for teaching and learning.

**Debbi Marais** is a Senior Fellow of the UK HEA with almost 20 years of experience in the higher education environment, initially at Stellenbosch University, South Africa and then at the University of Aberdeen, Scotland and is currently at University of Warwick, UK. Debbi is committed to supporting and promoting innovative teaching, reflective practice and enhancing the student experience.

**Dr Elisha Markus** is currently a senior lecturer in the Electrical, Electronic and Computer Engineering Department at the Central University of Technology, Free State, South Africa where he lectures to undergraduate students on Electronics. His research interests are nonlinear control, robotics, Power systems, Differential Flatness, Telecommunications and artificial intelligence.

**Tabisa Mayisela** works in the Centre for Innovation in Learning and Teaching, University of Cape Town, South Africa. Her research interests include student digital literacy, professional development of academics and how academics integrate educational technologies and digital literacy into course curricula.

**Dr Rada Jancic Mogliacci** is a Postdoctoral Researcher on the Unbundling Higher Education Project, at the Centre for Innovation in Learning and Teaching, University of Cape Town, South Africa. She obtained her PhD in Human Development in Social and Cultural Research from Bielefeld University, Germany. Her recent work has been on teacher professional development, and education policies formulation and implementation in the Global South.

**Matthew Montebello** is an Associate professor in the Department of Artificial Intelligence at the Faculty of ICT, University of Malta. He graduated from the University of Malta with a B.Ed. (Hons) in 1990 and went on to study Computer Science in the UK, completing a Masters in 1996 and a Doctorate in 1999. He also completed an MA in 2009 and an Ed.D. in 2016, specialising in the application of AI to e-Learning.

**Ismaeel Motala** graduated with a BCom degree majoring in Finance and Information Systems from the University of KwaZulu-Natal, South Africa, in 2016.

In 2017 he completed a BCom (Hons) degree in Information Systems. He became a member of the Golden Key International Honorary Society in 2015. He is an Associate in IT Risk Assurance at PwC, South Africa.

**Douglas Mpondi** is an Associate Professor and Chair in the Africana Studies Department at Metropolitan State University of Denver, Colorado, USA, where he teaches African politics and history, research methods and contemporary African cultures. He received his PhD in Cultural Studies and African Studies at Ohio University and an MA from the University of Zimbabwe.

**Cedric Bheki Mpungose** is a Lecturer in Curriculum Studies/Physical Science at the University of KwaZulu-Natal, South Africa. He coordinates different undergraduate and postgraduate programmes, and teaches and supervises postgraduate research in Curriculum Studies/Physical Science. He has published in local and international journals.

**Lindiwe Carol Mthethwa** is a PhD student at UNISA and working at UNIZUL in the department of Educational Foundations and Management. Her field of interest is connecting nodes for learning using emergent technologies.

**Theopista (Toppie) N. Mukasa-Lwanga** is currently an administrative manager for the Department of Public Administration and Management at the Muckleneuk Campus (Pretoria) of the University of South Africa (UNISA). She was previously an administrative assistant in the School of Computing, also at UNISA, where she conducted the empirical research for her M.Sc.

**Kazuhiro Muramatsu** is an Assistant Professor in the Electronics and Communication Engineering Department, College of Science and Technology, Royal University of Bhutan. His research interests include collaborative e-Learning and m-Learning environments.

**Josephine Najjemba** holds a Masters of Education from Makerere University, Uganda. She worked as a secondary school English as Second language (ESL) teacher and now as a teacher-educator specializing in innovative pedagogies for ESL pre-service teachers. She is currently a doctoral candidate at the University of the Free State in South Africa, where her area of study is Web 2.0 technologies in second language learning.

**Dick Ng'ambi** is a leading researcher in emerging technologies and digital practices in resource constrained environments. He is the pioneer and stream

leader of the postgraduate programme in Educational Technology at the University of Cape Town's School of Education, where he also convenes the doctoral programme.

**Ndiyakholwa Ngqulu** is a junior researcher at the Centre for Science technology and innovation indication, Cape Town, South Africa. He is a Masters Student at the Cape Peninsula University of Technology, Department of Information Technology, focusing on the field of Education technology and his thesis title is "learning Analytics to enhance throughput and success"

**Sibangiso Ngwenya** is employed as a computer science lecturer at the National University of Science and Technology, Bulawayo, Zimbabwe. He spends most of his time teaching, researching and helping communities. Currently, he is doing a PhD in computer science focussing on ontology and semantic web technologies. He also assists schools and universities in implementing e-learning systems.

**Vuyisile Nkonki** is an Associate Professor and Manager of the Teaching and Learning Centre, University of Fort Hare, South Africa. His specialty areas include continuing professional development of academics as teachers, as well as the assessment of learning in the higher education context. He has a strong interest in the scholarship of teaching and learning.

**Travis Noakes** is an Honorary Research Associate at the University of Cape Town, South Africa. His research describes young adults' diverse strategies and productions as online content creators. It also frames how their varied repertoires reflect students' very different situations in Cape Town. His critical action research supports the creative appropriation of software, then interrogates related outcomes.

**Dr Indira Padayachee** is a senior lecturer at the University of KwaZulu-Natal, South Africa. Previously, she was employed as an Associate Director at the Durban University of Technology. She has a PhD in Information Systems obtained from the University of South Africa. Her research interests include eLearning, smart education, human computer interaction and information technology adoption.

**Victor N Paledi** is a PhD candidate (Information Systems) at the University of South Africa, School of Computing. He holds an MTech degree in Business Information System from Tshwane University of Technology. His research interests include mobile learning, technology readiness, ICT4D, technology usage and adoption in developing countries.

**Dr Nicola Pallitt** is a lecturer in the Centre for Innovation in Learning and Teaching at the University of Cape Town, South Africa. She co-teaches on formal programmes in educational technology and is a member of the e/merge Africa team, an online professional development network for educational technology researchers and practitioners in African higher education.

**Michele Parker** earned a Ph.D. in Educational Research, Statistics, and Evaluation from the University of Virginia in the USA. She is an Associate Professor in Educational Leadership and has taught online for a decade. While serving as the Associate Director of the Center for Teaching and Learning at UNC Wilmington she became involved in educational development activities abroad.

**Katrina Plastow** is an academic staff member of the Adelaide Dental School, University of Adelaide, Australia with 15 years' experience in dental education. She has an interest in developing and utilising engaging, student-centred teaching and learning initiatives including blending on-line learning and direct instruction, co-creation and small group discovery, and clinical simulation.

**Archana Raju** works as a mathematics teacher for the Higher Colleges of Technology, Abu Dhabi. She has a Masters in Mathematics and Bachelors in Education from an Indian University. Currently she is doing a PhD in Maths from Banasthali University India. When she is not in college, she enjoys spending time with her family, listening to music and playing badminton.

**Dr. Gloria Ramírez** is an Associate Professor in the School of Education at the Thompson Rivers University (TRU) Kamloops, Canada.

**Rayne Reid** is an Instructional Designer in the Faculty of Engineering, the Built Environment and Information Technology at the Nelson Mandela University in South Africa. She holds a PhD in Information Technology.

**Yolande Reyneke** is a member of the South African Institution of Chartered Accountants (SAICA). She received her Masters of Philosophy (with specialization in Accounting Sciences) in 2016 through the University of South Africa. She has published two conference papers and one accredited article in an international journal indexed by Scopus.

**Puna-Rimam Ripiye** obtained a Master degree in E Commerce from the University of Westminster, London and has been a Research administrator for 12 years and e

learning content developer for 4 years. At the moment Ripiye is a research student with the University of Greenwich, London, UK.

**Jozef Ristvej** gained his Ph.D. in 2007 at the University of Zilina, Slovakia – the EU, in Crisis Management. Since October 2014 he has been Vice-Rector for International Relations and Marketing at the university. In his work he is focusing on supporting information systems in the area of the decision making process in crisis management.

**Osman Sadeck** holds a MEd (e-Learning, UTS, Australia), DTech: Informatics (CPUT, Cape Town). He is experienced in research, curriculum development/evaluation, instructional design, policy development. Osman is a research fellow at CPUT and an on-line lecturer at the Two-Oceans Graduate Institute (Cape Town). He has presented at national/international conferences and published in an accredited journal.

**Ningi Patricia Sibisi** is a lecturer at the University of South Africa, Pretoria, in the Department of Curriculum and Instructional Studies. She is currently teaching Practice Teaching modules for PGCE students. Her research interests include teacher development, TVET Education, Gratitude in Education and ODeL Student support.

**Imelda Smit** is a lecturer at the Vaal Campus of the North-West University in Vanderbijlpark, South Africa. She lectures Systems Analysis & Design to second year students and guides honours students' projects, as well as master's students' dissertations. Her research interests are the philosophy of Dooyeweerd and the teaching of technology using technology.

**Nihal Somers** has a Bachelor of Commerce degree, majoring in Information Systems and Technology, from the University of KwaZulu-Natal, Durban, South Africa. He then graduated with a BCom (Hons) degree in Information Cum Laude. He is now a graduate at Dimension Data, Johannesburg, aspiring to innovate the world one technological solution at a time.

**Ming-Jiun Sung** is Assistant Professor at the Chaoyang University of Technology, Taiwan. He has a Major in Early Childhood Special Education; MA and BA from the Department of Industrial Technology Education, National Taiwan Normal University; PhD in Assistive Technology, Department of Special Education, National Changhua Normal University, 2000.

**Bronwyn Swartz** is a lecturer in the Department of Industrial and Systems Engineering at Cape Peninsula University of Technology. She lectures statistics and supervises students' research projects on both BTech and MTech level. She is passionate about her students, which prompted her to actively look for ways to support her teaching.

**Judy van Biljon** is a research professor at the University of South Africa where she holds a Chair in Information and Communication Technology for Development (ICT4D). Her research specialisation lies at the intersection of Human-Computer Interaction, and E-learning, specifically the usability and accessibility of mobile technology for teaching and learning in resource constrained environments.

**Geesje van den Berg** is an associate professor and the Head of the Department of Curriculum and Instructional Studies in the College of Education at the University of South Africa. Her research interests include online learning and curriculum theory and practice.

**Ronell van der Merwe** is a lecturer in the School of Computing at the University of South Africa. Her research specialisation lies within Information Systems with specific focus on Citizen Science, Big Data and NLP within Data Science. She is currently enrolled for her PhD in Information Systems at UNISA with Prof Judy van Biljon as study leader.

**Brenda van Wyk** is currently part of The Central Academic Team at The Independent Institute of Education. She holds a PhD in Information Science from the University of Pretoria, EBIT Faculty. Her research interests include Webometrics, knowledge and information management and research data curation. She has published in accredited journals and conference proceedings.

**Dr Joseph Vancell Ph.D.** is currently a resident Senior Research Fellow at the School of Education and Social Sciences of the Faculty of Arts, Cultures and Education at the University of Hull, UK. There, through a Reach High Post-Doctoral scholarship, he is investigating the potential of e-learning programmes for older workers in the Malta.

**Ass. Prof. Tone Vold** lectures at The Inland University of Applied Science, Norway, in courses within knowledge management, organizational learning, informatics and systems engineering. She is currently working on a PhD within the area of Enterprise development and worklife research, doing research on involving students in their own learning process to prepare for worklife in organizations.

**Johan Vorster** has been involved in higher education for over 20 years. While living in London he worked in the field of Business Intelligence, completing various Project Management and Business Intelligence certifications. He currently manages the IT department at Monash South Africa, and his major interests lie in technology adoption and integration in teaching and learning.

**Sukaina Walji** works as an Online Education Project Manager at the Centre for Innovation in Learning & Teaching at the University of Cape Town. Her research interests include online learning design, MOOCs, Open Educational Practices and Higher Education models. Sukaina has a Masters in Online and Distance Education from the Open University UK, and a BA in History from Oxford University.

**Musango Mandela Wope** was born in Cameroon in 1994 and grew up in Cape Town, South Africa. He studied Bachelors Science in information Technology at CTI Education Group then proceeded to do Information Systems (Honours) at UCT. His research project during his Honours forms the foundation of the conference paper. He currently works as a Front-End Developer for BOnline in Woodstock Exchange.

**Dr. Praise Zenenga** is Associate Professor and Program Director of Africana Studies at the University of Arizona. He promotes the critical and creative use of digital technology in the research and teaching of aesthetics, politics, identity, race, social change and social justice and their intersections with his main fields of theater, dance, performance, visual art and literature.

# Keynote Outlines



## **Keynote Outlines**

The following are outlines for the Keynote Speeches which will take place at ICEL 2018

### ***A critical discourse analysis of e-learning policies in Higher Education Institutions (HEIs) in a developing country context***

**Wallace Chigona, Department of Information Systems, University of Cape Town**

Over the past 20 years, many Higher Education Institutions (HEIs) in South Africa have formulated e-learning policies. Most of these policies are based on the institutions' dominant ideas about teaching and learning, some of which tend to be ideological. Technologically deterministic views continue to pervade much of the thinking about technologies in education.

This keynote speech will discuss a study which uses critical discourse analysis (CDA), to investigate the articulation of e-learning policies in three public universities in South Africa. The aim of the research is to understand the discourses and dominant ideas embedded in the policies. Using the three dimensional model of CDA the paper goes beyond a simple linguistic analysis of policies to understanding how the policy discourses were influenced by the interactional context and the broader social structural context. The study showed that technocratic views continue to pervade much of the thinking about technologies in teaching. The dominant narrative in e-learning policies continues to focus on educational technologies as value-neutral. What is overlooked are alternative ways of thinking that question the assumptions about e-learning technology. Technological determinism discourse is supported in subtle but persistent ways that require explication, reflection and critique in order to lead to a change in thinking and practice.

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## ***What Pokémon Go taught me about collectionism in e-learning***

**Dr Johannes Cronjé, Cape Peninsula University of Technology**

The current approach to curriculum and instructional design is still very much focused on a deficit-based model (Orr & Cleveland-Innes 2015) that holds that learners of trainees “lack” something that needs to be rectified. This is seen in most instructional design models (Branch & Kopcha 2014) where some kind of needs analysis is conducted in the initial phases of the process. The problem with the focus on needs is that it downplays the opportunity. Moreover Hiemstra & Van Yperen (2015) demonstrated convincingly that strength-based learning strategies significantly outperformed deficit-based strategies in improving students’ effort intentions. (López 2017) . This talk will share my experience in using a flipped classroom approach in which students collect assets, rather than complete assignments The talk will discuss the pleasures and the pitfalls of a gamified approach to teaching communication at undergraduate level.

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## ***Challenges of online learning for campus-based universities: Open educational practices and resources as a response***

**Cheryl Hodgkinson-Williams, University of Cape Town (UCT)**

Many campus-based universities are now offering a combination of on-campus and online tuition (often referred to as hybrid or blended learning) or even fully online courses. The reasons for this move towards technology enabled learning are as varied as the institutions employing these technology supported pedagogies. The traditional campus-based universities face a number of challenges in this transition, one of which is how to provide access to good quality and affordable resources to students. These challenges are particularly pertinent to higher education where there is variable access to technology in economically constrained environments and where the curriculum itself is under scrutiny. This keynote will offer some insights on the role of open educational practices and resources in higher education in the Global South drawing upon the Research on Open Educational Resources for Development (ROER4D) project and personal experiences at the University of Cape Town.

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## ***Blending institutions: Technology as a means of uniting universities in the service of our students***

**Prof Susan Geertshuis, University of Auckland Business School**

Universities are charged with serving their nations well and with preparing their people for successful futures. As institutions we tend to strive hard but alone in our efforts to serve our students, however, technologies offer universities the potential to collaborate in order to address our shared responsibilities.

This keynote describes a collaboration of six universities which is delivering an online Masters programme in Māori and Indigenous Business. The thrust of my talk is the collaborative model and an exposition of the challenges we encountered and ways of working we have evolved.

Attendees will gain an insight into the potential of collaborative online programmes in enabling a small country with academic talent distributed over multiple institutions to deliver cutting edge programmes in emerging disciplines. Attendees will also gain an appreciation of the curriculum development, learning design and technological support regime developed to suit Māori and Indigenous students.

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## ***Using student data: Moving beyond data and privacy protection to student data sovereignty as basis for an ethics of care***

**Paul Prinsloo, University of South Africa**

Higher education has always collected, analysed, and used student data for a variety of purposes, including, but not limited to, informing operational and strategic planning, resource allocation, as well as reporting to a range of stakeholders and regulatory bodies. There is, however, growing interest in how student data can inform curricula, pedagogy and student support as well as allowing students to make more informed choices. Amid the increasing digitisation of learning, access to more student (learning and personal) data than ever before, advanced software and analytical methods, there are also growing concerns about the appropriateness of our thirst for more data, the governance

of data and ensuring the protection of the privacy of students. While there are concerns that legislation and regulatory frameworks are almost always lagging behind developments in the collection, analysis and use of personal data, higher education has a fiduciary duty to take cognisance of recent legislation and regulatory frameworks such as the South African Protection of Personal Information Act (POPI) (Act number 3, 2013) and the new General Data Protection Regulation (GDPR) (EU Regulation 2016/679, coming into effect May 25th, 2018). Complicating matters is the fact that very few higher education institutions in the Global South have the hardware, software and human resources to collect, analyse and use student data. Institutions therefore increasingly rely on commercial vendors and providers of institutional learning management systems to support, or take full responsibility for the collection, analysis and use of students' learning data.

In this presentation I propose that compliance to legal and regulatory frameworks is not enough, but only one element in formulating institutional responses committed to the responsible collection, analysis and use of student data. We have consider the question of whose interests are served, whose understanding of learning matters, as well as critically engage with the relationship and tensions between those who collect and control the data collection, analysis and use and those who provide the data and seek to benefit from that contribution. We have to consider the notion of student data sovereignty as central to formulating an appropriate and ethical framework for the governance of student data. Our assumptions regarding our power and authority to 'make rules and decisions about the design, interpretation, validation, ownership, access to and use of data' need to be scrutinised and opened up for a conversation.

In the context of the broader discourses surrounding the decolonisation of the curriculum and the urgent transformation of the South African higher education landscape, as well as international indigenous peoples' reclamation of their right to own, control and interpret their own data, I hope to propose some pointers for an ethics of care based on student data sovereignty.

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# **Research Paper Abstracts**



# Effects of Blended Learning Teaching Strategies on Students' Self-Direction

Dina Adinda and Pascal Marquet

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**Abstract:** This contribution is about teaching strategies in blended learning environments and its effects on students' self-direction. Literature shows a correlation between teachers' teaching approaches, learning environments and students' engagement in their learning activities. Indeed, student-centered teaching approaches encourage students' active and deep learning. Several researchers highlighted that the technical aspects of blended learning can also enhance student-centered learning activities (Peraya et al., 2014). Our contribution to this perspective is meant to provide more insights on how teaching strategies are used in a blended learning environment and to study how students develop their personal competencies, such as self-direction, in this particular learning context. Our main hypothesis is that student-centered teaching approaches in an interactive blended learning setting have a positive impact on students' self-direction. This work, performed at the University of Strasbourg, involves lecturers who were chosen among those who teach at the undergraduate level in diverse subjects. First, teachers were invited to declare their teaching approaches by completing a questionnaire. Then, some observations of their face-to-face sessions and online platform helped to identify their real teaching approach and the pedagogical design of their online environment. This method pointed out a possible difference between declared and observed teaching approaches. A pre-post questionnaire, which aimed to measure participants' progress on self-direction, was completed by the students of these teachers. By then, the aim was to show if there is a relationship between identified teaching strategies and students' self-direction. Collected data showed that students whose lecturers practice student-centered teaching approaches and provide an online communication tool or implement a flipped classroom scenario in their blended learning environment developed their self-direction in learning.

**Keywords:** Teaching approaches, learning environments, blended learning, undergraduate students, self-direction.

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# Supporting Formative Assessment Using a Class Response System FAMA

Luis Alberto Álvarez-González and Esteban Huenumán Villarroel

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**Abstract:** Formative assessments improve the education, because with this type of assessment, teachers can know in real time the learning process of each student or a group of students. With this information, teachers can do personalized education. However, to know the learning process at any moment of any student inside of a classroom, it's beneficial to have Classroom Response Systems (CRSs). The paper starts with the literature review about formative assessments, which is oriented to content objectives and process objectives. After the literature review, a brief analysis of several free CRSs is presented. There are some limitations of existed CRSs: Most of them only allow three or fewer types of questions; all of them only support English except Socrative which also supports Spanish (important for us); the questions can't be shared with other applications; none of them allow tracking students. For this reason, we developed a new CRS, FAMA (Formative Assessments with Mobile Accessories). FAMA has following features: (1) it supports seven types of questions, (2) it supports Spanish language, (3) it is developed under IMS-QTI specification to share questions with different LMSs, and (4) it allows to do a tracking of the students, because it stores the answers of the students of past lectures. We evaluated FAMA in real classrooms from three aspects. Firstly, we used Evidence-Based Teaching (EBT) methodology where a pre-test was taken at the beginning of the lecture and the results were known in real time for the teacher to adapt the lecture accordingly. At the end, we deployed a survey examining the student acceptance of FAMA and found out that FAMA has a 64.3 of acceptability on a scale of 0-100. Secondly, we provided FAMA for students as a voluntary assessment system before summative assessments and found out that students who used FAMA in their study had higher summative assessment scores. Thirdly, we conducted a usability test and found out that in general FAMA has good usability, but it could be further improved.

**Keywords:** Formative assessment; Evidence Based Teaching; Question Drive Instruction; Classroom Response System; IMS-QTI specification.

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# A Flipped Classroom Model for Adaptive Systems in E-Learning

**Ambrose A. Azeta, Deborah O. Fatinikun, Ubaka M. Nkiruka, Mark O. Ogese, Fawehinmi O. Abimbola**

Department of Computer and Information Sciences, Covenant University, Ota, Nigeria

**Abstract:** The flipped classroom is a form of blended learning model, which changes the conventional electronic learning in the class as well as outside the class, while focusing attention on students' active learning. Student and computer interaction becomes more prominent where visual-auditory hardware and materials are required at home and classroom environment. For example, instead of having lectures during class session, students get most of their required learning resources mainly outside the lecture room by reading downloadable online lecture materials, watch video lectures or listen to podcast lectures or other audio lecture formats. Such learning contents need to be tailored to the students using adaptation technique. Adaptive flipped classroom technique is learning and teaching model that flips the traditional classroom based on the profile of the learner, in other words activity that ought to be done during class in the traditional classroom, is now done outside the class or at home. The approach helps in changing user's attitudes towards learning and presents the learning ideas according to students' learning ability. The objective of an adaptive flipped classroom model technologies is to achieve creative and innovative learning environment for those who have difficulty accessing education such as the poor, illiterate, less privileged, and those with location and financial constraints. The objective of this study is to provide flipped classroom model that will incorporate the context of adaptive expert system to improve learning outside the classroom. The study employs a combination of technologies such as system design and modeling using Unified Modeling Language (UML), server side scripting, web-based system development, data management and rule-based reasoning in order to develop a prototype for an adaptive flipped classroom model for an e-learning system. The developed system was evaluated to determine the level of usability. The result of the usability evaluation showed that the developed application has an 'average usability' rating of 4.05 out of 5 scales. This shows that the adaptive flipped classroom system will not only complement the existing e-learning system, it is also expected to be of immense benefit to all students with different level of learning and assimilation. The proposed model is

generic and can be used to implement flipped learning applications for the virtually impaired students.

**Keywords:** Adaptive learning, Flipped Classroom, UML, Industry, Applications, Visually Impaired.

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## **Comparative Analysis of Flipped Learning and Other Learning Methods**

**Ambrose A. Azeta, Deborah O. Fatinikun, Ige O. Oyeyemi, Mark O. Ogese and Ogunde Bisola**

Department of Computer and Information Sciences, Covenant University, Ota, Nigeria

**Abstract:** The modern day learning has moved from teacher-centered to learner-centered. Educational learning skills have gradually grown from cognitive skills to affective things, such as the feeling of students, the belief system and personal attitude. This evolution has infused multifaceted communication skills, self-management, non-routine problem solving, adaptability and systems thinking as vital skills in the educational sector. Technology-enhanced learning has continued to reform different learning methods for the 21<sup>st</sup> century world, where a universal perspective and cooperative skills are vital. The interest in modern day learning has led to so many learning methods. Educational learning skills have drastically moved from cognitive skills to affective things, such as the feeling of students, the belief system and personal attitude for able-bodied and visually impaired learners. In recent years, there has been an increasing interest in applying the modern day learning methods in the educational system. The focus of this study is to compare flipped learning and other learning methods such as inquiry-based learning, project-based learning and problem-based learning and. A Random sampling technique was used to select the articles that were used for analysis. The attributes engaged for comparative analysis includes case studies 1 and 2. For case study 1, the following attributes were considered: Discussions, Accountability, Facilitation, Apprenticeship, Tutorial, Attendance, Engagement, Performance and Learning attitude. Case study 2 used Efficiency, Portability, Effectiveness, Interoperability and Flexibility. After a detailed review of the various research papers on learning methods, it was found that each learning method differs from each other based on their efficiency; effectiveness and perfect learning support tools for students, although some were similar. However, the results of findings show that the flipped learning model performs better

among the four learning methods investigated. The project-based learning model nearly matches the flipped learning model. Flipped learning model as described in this paper will move educational system from instructor-centered to learner-centered system, which will help student to be an independent learner, accountable and responsible for their learning.

**Keywords:** Flipped learning, Inquiry-based learning, Industry, Applications, Visually Impaired..

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## **Gender Differences and Technology Usage amongst Postgraduate Students in a Christian University**

**Ambrose A. Azeta and Mc Donald van der Merwe**

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**Abstract:** One research focus area that has recently received greater attention in developing countries is gender equality in Information and Communications Technology (ICT) use at postgraduate level. At face value, post graduate students offer a well-defined group wherein to study ICT effects. Furthermore and often overlooked, is the ethos of Higher Education Institutions (HEIs) where such gender studies are conducted. Most HEIs are higher public or private institutions. The former are mostly state-run, more accessible, and generally more liberal in both teaching and learning. The latter are independent entities who set their own and very specific rules and regulations. This exploratory study took place in the context of a private Christian-based Higher Education Institution in a developing country involving Nigeria, with the purpose to examine, at post-graduate level, gender differences in hardware and software used for general and class work purposes, as well as gender-specific relationships between selected ICT use constructs and class marks. Negligible gender gaps pointed at no significant gender differences in hardware and software use. Positive and significant correlations were reported between class marks and selected constructs. Teaching with the aid of ICTs, Student engagement and Student use of ICTs, suggests that active use of ICTs has a profound impact on both teaching and learning at postgraduate level, and ultimately on student performance and achievement.

**Keywords:** Christian Private University, Class marks, Gender Differences, ICT use, Student Academic Achievement and Postgraduate Students.

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# A DevOps Software Architecture for Recommender Systems in Digital Library

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Fawehinmi O. Abimbola and Ogunde Bisola**

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Ota, Nigeria

**Abstract:** Digital libraries are platforms that provide learning resources to users so that a defined community or set of communities will be able to reach a collection of digital resources that are readily available to them. Its aim is to make people who are seeking information reach the vast collection of data. Most digital libraries in developing countries are not intelligent systems and as such, they are unable to filter useful information for the users out of the vast collections of information. Recommender systems try to recommend the most appropriate items to users by making predictions. Prior studies on digital libraries did not address the wall of confusion that exists between the developers of the digital library systems and the librarians. With the increasing demand for library resources and the pressure on library management to deploy an intelligent search for resource materials, it has become necessary to evolve digital library system from being a sequential search tool to a recommender-based search system. The conventional digital library applications are built around repository software and an information system to store, extract and preserve digital information. The continuous revolution of library needs and the necessity for speed of software delivery has created a need towards using a third generation software development methodology called DevOps. DevOps is an emerging movement that preaches a collective working relationship between development and IT operations team. This study provides a DevOps software architecture for recommender systems in digital library. The architecture was designed using information from literature survey. The architecture will be of immense benefit to researchers in digital library and provide future direction to potential software development team and organizations in the education industry.

**Keywords:** Agile, DevOps, Digital library, Industry, Applications, Visually Impaired

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# The Effectiveness of Electronic Tools to Share Knowledge

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**Abstract:** The purpose of the study is to investigate the effectiveness of information and communication technologies tools to share tacit knowledge in organisations. Sharing knowledge is about interactions between human actors where raw material is knowledge. What people share are experiences, skills, codified and contextual information. This behavior is critical to the creation and application of organizational knowledge, and the core of a field called knowledge management. A way of defining sharing knowledge is as the process by which employees exchange tacit and explicit knowledge. Tools based on information and communication technologies have been traditionally used to share explicit knowledge, while in the literature there is no clarity about the effectiveness of these tools to share tacit knowledge. There are reports of the ineffectiveness of electronic tools to share tacit knowledge, as well as reports of their effectiveness to share it. The debate about electronic tools as facilitators of tacit knowledge sharing suggests a current gap in the knowledge management literature. The study followed a quantitative approach. Data were collected from 217 knowledge workers in New Zealand and United Kingdom. In the study, we found that those electronic tools that facilitate dialogue, for example, audio conferences and text messages, are effective to share tacit knowledge and that electronic tools that do not facilitate knowledge dialogue, for example internet and emails, are not effective to share tacit knowledge.

**Keywords:** Knowledge sharing, tacit knowledge, Information and communication technologies

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# Converting from ‘Doubter’ to Promoter of Blended Learning Approaches in Higher Education

**Paula Charbonneau-Gowdy and Monica Frenzel**

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**Abstract:** Scholarship is revealing increased evidence of the successful accomplishments of e-learning practitioners. Yet, there is no shortage of research underlining the presence of those who fail to recognize the potential of technology applied to learning contexts, the so-called ‘resisters’ to e-learning uptake, especially in higher education blended programs. Less is known about how to inspire individuals, especially if they hold key positions in these contexts, to move from one side of the line to the other. This paper reports on such a case. The report records the experiences of a seasoned educator and director, with both feet firmly embedded in traditional 20th century teaching practices, who, with guided e-learning advice and support over a 5-month academic semester, becomes a ‘convert’ to 21st century social learning practices and an active promoter of the social media tools that support these practices. The inquiry is focused on the changes to practice and mindsets in learning of both the educator/director and learners that took part and benefitted in this trajectory. Qualitative data sources were individual interviews, field and reflective notes and observations as well as evidence from analyzing social media content. Whereas some scholars would have us believe that it is solely by compiling positive evidence of the benefits of e-learning that we will reach universal acceptance and adoption, this inquiry clearly indicates that the journey is much more complex. As many of us concerned with promoting sustained quality development in education realize, particularly those involved in parts of the world where this development is most elusive, the study results reveal that it will take more than positive marketing to make lasting conversions to e-learning happen. We believe that the model that leads the way to such a goal is based in current learning theories – a sociocultural-based, constructivist process that requires an investment in time and the support of stakeholders at all levels.

**Keywords:** Blended Learning, Action Research, Sociocultural Theory, Practical Inquiry Model, Meso level Higher Education change

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# Wrapping of a Social Innovation MOOC

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**Abstract:** Massive Open Online Courses (MOOCs) have created opportunities for other educators to reuse them in their own courses. In this study we investigate various forms in which the ‘Becoming a changemaker: Introduction to Social Innovation’ MOOC has come to be reused in other courses. This MOOC is based on an existing Masters course and intended to develop ways of thinking about the complexities of social change beyond the university. The academic department uses the MOOC materials to support its own teaching. Educators might ask their on-campus students to participate partially or fully in a MOOC and supplement this online learning experience with classroom activities. Outside the university other educators may support an in-person facilitated MOOC encounter to ameliorate connectivity and bandwidth constraints. These approaches are often referred to as “wrapping a MOOC”. In this study we interviewed five educators who have been wrapping this UCT MOOC, both within and outside the university. From the literature and analysis of the interview data we develop a characterisation of the different forms of wrapping and their intended purposes. The clear differences between wrapping inside and outside the university context reflected how the MOOC curriculum design was interpreted, with a wider interpretation and a localisation of the curriculum outside the university. Wrapping also offers insights to how MOOC initiatives are being recognised and valued by others.

**Keywords:** MOOCs, blended courses, reuse, social innovation, wrapping

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## Gamification Driven Learning Analytics

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**Abstract:** In this paper we introduce our approach towards learning analytics and associated visualizations implemented in a gamified learning platform. Driven by the goal to better encourage learners to reflect on and monitor their learning

activities, we aim at bridging the gap between learning analytics and educational gamification research. We discuss the principles and the learning analytics support incorporated in the form of learning dashboards into the course gamification platform OneUp Learning. The focus of the paper is on leveraging the potential of combining learning analytics and gamification, on the feedback capabilities and mechanisms of OneUp dashboards, and on utilizing their motivational effect in a learning context. The paper presents the design strategy, the visualization approach of the dashboards, and the provided support for learners and teachers.

**Keywords:** Gamification, learning analytics, dashboard, feedback, visualization, motivation, self-regulation

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## **Change Management: Blended Learning Adoption in a Large Network of European Universities**

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**Abstract:** We report in this paper on a multiyear endeavour within the EIT (European Institute of Innovation and Technology) Digital community, during which EIT Digital built an international community of Innovation and Entrepreneurship (“I&E”) teachers at Master level by implementing a blended learning strategy. We see this challenge as a case in change management, which could offer relevant insight to run similar initiatives of blending learning adoption as an enabler to developing pedagogical cooperation in networks of universities with real impact on practices. Through the lenses of change management theory,

we describe and analyse the methods that allowed EIT Digital to create and enhance a community of “teacher-producers” in order to develop and deploy blended education from scratch. EIT Digital, a Knowledge and Innovation Community of the European Institute of Innovation and Technology (EIT), provides IT education at Master’s level since 2013 and in association with its around 20 member universities, including a strong “Innovation & Entrepreneurship” (“I&E”) education component. EIT Digital developed a blended learning strategy whose originality came from the fact that some of the teachers are also producers on behalf of the entire community, receiving associated co-funding and technical support from EIT Digital. More specifically, teachers actively took part to the production agenda, according to which producers were chosen within the community to create and deliver the agreed online contents. EIT Digital library now encompasses more than 500 basic online contents (“nuggets”) covering most topics relevant for I&E education at the graduate level, from basic business model introductions to complex technology transfer strategies. This amounts to more than 45 hours’ worth of videos along with dozens of written cases, quizzes and other forms of online/offline assignments. Depending on the various universities’ contexts, different blending strategies were deployed, which had practical consequences on the global EIT Digital development. The heterogeneity of the universities’ profiles probably significantly increased the value of the EIT Digital network which proved relevant with regards to blended learning adoption, while EIT Digital’s change management strategy contributed significantly to uplifting the I&E education offered at the member universities, notably giving momentum to its I&E teacher community.

**Keywords:** Blended learning, Change management, Community of Practice, User-Innovators, Teacher-Producers

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## **Modelling the Knowledge-Sharing Behaviour of Students on Facebook**

**Mohamed Emran Hossain, Touhid Bhuiyan, Imran Mahmud and Md. Shohel Arman**

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**Abstract:** This paper aims to illustrate the relationship between the constructs of social cognitive theory and social exchange theory with regard to the knowledge-sharing behaviour of students on Facebook. This research was conducted on 123 students using self-administrative survey questionnaires. The technique of

structural equation modelling was employed to examine the hypothesized relationships between the variables. The findings of this study indicate that affiliation and innovativeness significantly influence the knowledge-sharing behaviour of students. Overall, perceived reciprocal benefit, perceived enjoyment, knowledge power, and affiliation and outcome expectations are found to be strong predictors of such behaviour. Previous research mostly examined the knowledge sharing attitude or intention in the industry setting. This study has been conducted in the educational setting and particularly focuses on the influence of the educational climate and expectation outcome on the knowledge sharing attitude of students.

**Keywords:** Educational climate, Facebook, knowledge share, outcome expectations, social cognitive theory, social exchange theory

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## **Towards Flexible Learning through Distance Learning: ND Real Estate Learners' Experiences**

**Daniela Gachago, Barbara Jones and Sarita Edwards**

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**Abstract:** More and more campus-based Higher Education Institutions (HEIs) offer distance learning in an attempt to respond to an increasing demand for flexible, part-time course offerings both nationally and globally. This case study reflects on an existing National Diploma in Real Estate, offered online for the first time in 2017, at a university of technology in the Western Cape. Applying a flexible learning framework, this study reports on learners' experiences of the distance education programme based on data generated through an online survey and interviews with the distance learning coordinator. Looking at the various elements of flexible learning, such as admissions criteria and processes, curriculum design, delivery and support systems, the opportunities and challenges of flexible learning emerging from the case study are explored. Preliminary findings show that the flexible delivery of the course, offering learners a maximum of choice in terms of how and where to study and the flexible assessment schedule were highly appreciated by learners, while the flexibility of curriculum design and support can be improved. Most importantly however, as other studies have shown, it is the inflexibility of the institutional systems and institutional culture, and also how lecturers perceive their roles and responsibilities within a distance learning offering, that are the biggest stumbling blocks towards implementing flexible learning. Recommendations for

improvement of the course in particular and towards flexible design principles in general conclude the paper.

**Keywords:** flexible learning, distance learning, higher education, Real Estate, student perceptions, South Africa

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## **Designing for Design Thinking: Fostering an Elearning Champion Mindset through Academic Staff Development**

**Daniela Gachago, Izak van Zyl, Liza Hitge, Eunice Ivala and Jolanda Morkel**

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**Abstract:** Design thinking is entering higher education as traditional thinking models characterised by linear, siloed, and signature pedagogies are proving to be inadequate to respond to the increasingly complex and multifaceted problems students face. In this paper, the authors reflect on a staff development intervention on blended learning course design offered at a University of Technology in South Africa. Drawing on a previous project, which identified shared characteristics of eLearning champions, such as collaboration, empathy for the learner and problem orientation, which largely corresponded to a ‘design thinking mindset’, this course was developed to explore whether and how, through the incorporation of design thinking principles such a mindset could be stimulated among academics. Design activities were selected to strengthen participants’ creative confidence as well as disrupt some of the traditional thinking models that they encountered in practice. Evidence of this mindset was elicited through weekly reflections, a focus group and survey. Findings show that participants showed a growing understanding of students’ diversity, complexity and needs, creative problem-solving, increased resilience and appreciation of interdisciplinary collaboration. However, sustaining this mindset beyond the first intervention was found to be critical in deepening lecturers’ creative confidence. Some participants started to transfer what they learnt into their practices and departments – thus becoming change agents. Recommendations on how to improve the course and suggestions for further research conclude the paper.

**Keywords:** design thinking mindsets, academic staff development, eLearning, higher education, South Africa

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# e-Learning an ICT Course in an Online and Open Distance Education Environment

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**Abstract:** The purpose and focus of the study reported on in this paper was the dissemination of the findings of the pilot phase of an e-learner course evaluation undertaken by the Directorate of Institutional Research in September/October of 2014. Research questions towards effective teaching for meaningful e-learning to address the challenges related to an Information and Communication Technology (ICT) course in an online and open distance education environment, at the University of South Africa (UNISA), were targeted, in order to monitor progress and highlight limitations and/or areas for improvement through e-learner feedback. The objectives of the survey not only included piloting the data collection instrument for e-learner course evaluation, but also to provide an overall picture by focusing on the e-learners' views and experiences of the course, in order to provide data for improvement. The evaluation also covers the usability of integrated e-learning technologies, the educational environment and advanced uses of multimedia, together with the e-learning tutor services available to support individual e-learners' cognitive styles towards promoting anytime/anywhere e-learning. The paper proceeds to a review of the literature on research into effective teaching for meaningful e-learning to address the challenges of an ICT course, in some cases in online and/or open distance education environments, as well as studies conducted at UNISA. Related literature, presenting opportunities for further investigation, is also included. Regarding the methodology used in the empirical research undertaken, a mixed-method study design resulted in not only key quantitative findings, but also some qualitative comments. In conclusion, the value of the findings from the e-learner course evaluation lies in providing data towards the aim of improvement, which could be of use with regard to the future of such e-learning course evaluations. The outcome of this 2014 pilot has implications for a full-scale roll out of e-learner course evaluations, which are planned to employ an automated tool. This, however, is contingent on a successful tender process.

**Keywords:** e-Learner Course Evaluation, Online and Open Distance Education, University of South Africa.

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## **Diversity among Postgraduate Students Belonging to a South African Community of Scholars**

**Patricia Harpur and Johannes Cronjé**

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**Abstract:** This preliminary interpretive study investigates diversity among master's and doctoral students belonging to a closed WhatsApp group. Based on the notion that the research-world of postgraduate students is isolated and chaotic; this study contributes to an improved understanding of diversity among postgraduate students. A review of recent literature provides theoretical underpinnings for the study, informs the content of the mobile interviews and validates the following research question: What is the nature of the diversity noted among postgraduate students who belong to a community of scholars and who contribute to a closed WhatsApp group? Three data collection methods were implemented to investigate the research question. Firstly, a brief thematic analysis of posts to the closed WhatsApp group was undertaken. Then, structured, mobile interviews were conducted digitally among purposively-selected, group members. Finally, the researchers contributed their own reflections. Thematic analysis of textual data collected from literature sources, WhatsApp posts and mobile interviews was analysed thematically using a Computer Assisted Qualitative Data Analysis Software (CAQDAS) tool, ATLAS.ti. The iterative development and application of a custom-designed codebook presents a view of diversity with respect to four foci: communities, communication, climate and confines where a total of twelve sub-themes are defined.

**Keywords:** Chaos, Community of scholars, Diversity, Isolation, Microblogging, Research productivity

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# **‘Living Discourse’: Critical Pedagogic Coaching for Active Student Learning in Educational Technology**

**Jill Jameson**

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**Abstract:** This theoretical paper adopts a critical pedagogic approach (Freire, 1970; Darder, 2003) to challenge overly-optimistic narrowly defined goals of teaching e-learning in prior literature which aim only to facilitate training for technology adoption. The paper proposes instead an original critical pedagogic coaching model for face-to-face ‘living discourse’ based on students’ expressed needs and personal identities in learning about educational technology for their own purposes. Rather than starting classroom practice with a defined aim of teaching students about specific e-learning tools or platforms, and measuring responses to the use of these, the model proposes that pedagogic interaction with students should start from students’ expressed face-to-face meaningful self-identity and living goals. The paper builds on earlier critiques of research and practice in educational technology and technology enhanced learning (Bayne, 2015; Selwyn, 2011; 2013) to draw out concerns that some practices in the field have become dehumanized, with an instrumentalist focus on technologically deterministic ends rather than on the messier ‘living discourse’ of active student learning. The paper argues that an important gap exists in the field regarding face-to-face coaching pedagogy for student educational technology usage that follows student need, rather than technology-dominated tutoring, lecturing, training or teaching, as in much prior research. The concept of ‘living discourse’ is based on Bakhtinian concepts of ‘social dialogue’ in which the student is respected as a unique person expressing ‘living utterances’ situated in specific contexts defined by socio-economic and demographic histories. Each student’s life story has its own validity, unconstrained by any other. Therefore, the paper recommends that teachers of educational technology should, firstly, determine students’ coaching needs from their lived personal stories, and, secondly, select an appropriate specialist combination of coaching methods and techniques to equip students with e-learning tools, platforms and software that the educational situation can best provide. This is not merely yet another student-centred technology acceptance model (TAM) approach, but a ‘living discourse’ critical pedagogic coaching personalised approach informed by long expertise in supervision and tutoring, to enable students, with the expert guidance of a teacher-as-pedagogic-coach, to become designers of their own learning (Jameson, 2000, 2002, 2012) with and from technology.

**Keywords:** Critical educational technology, critical pedagogy, living discourse, coaching, dialogic education

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## **#FeesMustFall: A Reflective Practice Approach to Project-Based Learning for Information Technology Students in the Extended Degree**

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**Abstract:** This paper reflects on the use of project-based learning as oppose to traditional written examinations. The aim of this study is to discuss the reflective practice approach that was followed when extended information technology degree students completed summative assessments in the form of project-based learning. Students were prompted to create a serious game on the topic of #FeesMustFall. Examples of projects are illustrated and discussed. The paper further discusses why the process of introducing project-based learning is a reflective practice approach for both the student as well as the instructor. Using reflective practice, shortfalls in the artefacts of the students as well their soft and technical skills are identified and improvements for future project-based learning ventures are suggested.

**Keywords:** Reflective practice, project-based learning, fees must fall, #FeesMustFall, information technology, extended degree.

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## **Design of a Low Cost Master Control System for a Training Robot**

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**Abstract:** Interconnection, communication, machine recognition (vision), autonomous control and the possibility of cooperation with humans are all topics under investigation in the context of the expansion of robotic workplaces. This article introduces a teaching project that is part of integrated learning where different technologies are combined. The integration of theoretical and practical knowledge is also included. Different pedagogical approaches including individual,

group and class work are used. The project includes a rich set of teaching, learning and technological components. All these attributes combine to create a comprehensive, integrated learning environment. Students use a range of multimedia during the project, which offers significant potential for enhancing the learning process. In the other parts of the project, which are also outlined in this article, students use smart Android applications for robot control and labVIEW software to develop tests and control applications. This student project was conceived as a low cost opportunity to retrofit the CRS-F3 robot for future options. The Arduino UNO R3 Module Board was chosen because it meets the low cost requirement and has sufficient computing power for the selected application. Students program the module to carry out the required tasks of the application. The module also ensures correct communication of the control instructions, including back-checking of the robot's activities. The CRS-F3 robot is ideally suited for testing the designed master control system. This programmed system complements the robot with other important features for performing new automated tasks that allow human workers to move in the same space. The advantage in this case is that the extra costs associated with technical modifications, specialized programming and the creation of protected robot handling zones are avoided. This solution with the master module can easily be supplemented with other sensors to meet the new requirements of the application without affecting the robot's functional system. A cooperative robot equipped with these systems offers a real opportunity to become a person's smart helper.

**Keywords:** integrated learning, student project, smart control system, robot

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## **Using E-Learning Materials in the Teaching of Basic Mechanisms**

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**Abstract:** One of the most important requirements demanded by employers from engineering graduates during job interviews is the possession of practically useful skills. However, a common criticism from potential employers is that graduates usually lack the basic skills they should have acquired during their studies. These skills also include more detailed knowledge and practical use of basic mechanisms. All machines consist of a series of simple basic mechanisms that

together perform the desired function of the whole machine. Without a good knowledge of the mechanics of these mechanisms it is not possible to design reliably and effectively functioning machines. Therefore an understanding of basic mechanisms is vital for every mechanical engineer. This is the reason why 3D CAD (Computer-aided design) software has been implemented into the teaching of the mechanics of basic mechanisms at the University of West Bohemia (UWB) at the Faculty of Mechanical Engineering (FME) in the Department of Machine Design (DMD). CAD software is an indispensable tool for mechanical engineers, and every graduate from this branch of engineering must be able to work with at least one type of 3D design software. Advanced CAD software can be equipped with extension modules that enable the creation and simulation of the movements of mechanisms. Using these modules, it is possible to animate movement of the designed mechanisms, which can be further analysed in terms of movements, velocities, forces, moments, etc. For the purposes of teaching the functioning of mechanisms in our department, a series of e-learning materials has been created based on animations of basic types of mechanisms. These e-learning materials broaden and complement the study materials which are used in these subjects. The study materials have also been extended with manuals for creating mechanisms in CAD software, allowing students to create and analyse a variety of mechanisms by themselves. By implementing these CAD software animations of basic mechanisms into the educational process, students expand the practical knowledge which they will use in their future careers and will enable them to gain better positions on the labour market.

**Keywords:** mechanical engineering, basic mechanism, CAD software, education, e-learning.

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## **Reflection: Usage of the Learning Management System at the Faculty of Military Science**

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**Abstract:** This paper aims to report on the usage of a Learning Management System (LMS) in order to establish standard aspects of information that should be availed in a course in the institutional LMS. The paper provides a framework that is used as a self and peer review tool of modules in the LMS. Data were collected through mixed methods. All active modules in the LMS have been analysed in

terms of firstly, the LMS tools used within respective modules and secondly what these tools have been used for within these modules. This paper draws on quantitative and qualitative data collected through questionnaires completed by 23 lecturers and 89 students as well as interviews with 12 lecturers responsible for both residential and distance education students enrolled in any one of five programmes offered in the Faculty of Military Science of Stellenbosch University. Findings reveal that a consultative and inclusive process and top down approach promotes ownership, constant self and peer review of learning opportunities within and across departments, it increases usage of the institutional LMS and provides opportunities to plan and tailor support and training interventions. These findings enrich our understanding of how the guide is used to maintain quality at any stage of the module developmental process in the LMS.

**Keywords:** design, facilitate, guide, Learning Management System, learning opportunities, review

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## **Use of the Moodle Curriculum by Lecturers at a South African University**

**Simon Bheki Khoza and Cedric Bheki Mpungose**

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**Abstract:** The Moodle curriculum is very important in the teaching of Mathematics because it helps lecturers to fulfill their diagonal needs through interacting with students. The Moodle curriculum promotes horizontal (societal), vertical (discipline), and diagonal (personal) needs that are generated by competence-based, performance, and pragmatic curricula. Moodle curriculum has been dominated by horizontal and vertical needs at the expense of diagonal needs that help lecturers with students to know and understand who they are. Therefore, this article presents a pragmatic action research of three lecturers out of eight lecturers who taught Mathematics Curriculum at a South African university. The purpose and objective of the study were to explore and understand the lecturers' needs when they use the Moodle curriculum in teaching. The research questions for the study were: what are lecturers' needs of the Moodle curriculum when they teach Mathematics at a South African university? And, what informs the lecturers' needs of the Moodle curriculum when they teach Mathematics at a South African university? The lecturers' reflective activities, one-on-one semi-structured interviews, and observation were used for data generation. The study concluded that although they were initially informed by the vertical and horizontal needs in the first phase of action research,

they transformed in the second phase to be informed by diagonal needs. Purposive with convenience sampling was used to select the three most accessible participants from the eight lecturers. This article consequently recommends the use and understanding the Moodle pragmatic curriculum which is capable of helping individuals to self-actualise and be able to address societal and discipline needs.

**Keywords:** Curriculum, diagonal need, horizontal need, Moodle, pragmatic, vertical need.

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## **Does Using Real Cases when Educating Health Managers Enhance Relevance and Learning Outcome?**

**Linda Kiønig, Marte Tøndel, Ingunn Schult, Stig Holen and Tone Vold**

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**Abstract:** At The Inland Norway University of Applied Sciences, a set of courses have been developed to support health managers in their jobs. These courses are available and give 10 study points (equal European Credit Transfer and Accumulation System's european credit points (ECTS)). In these courses, different techniques and approaches have been used, like blended learning, flipped classroom and ordinary lectures. Some of the courses use case work as a part of the pedagogical approach. The cases the students use are developed by the students themselves and they use cases from their own work place. The paper presents the results from a round of interviews that were undertaken with the students. The reasoning for asking the students to choose a case from their own work place is twofold. First, it is to tie the curriculum to a work situation and thereby obtain a relevance for the course back to the work place. Second, it is to enhance the learning outcome from the courses as students are then able to use their own backgrounds to write and analyse the cases. The students are asked about the learning outcome in the courses with the real-life cases, compared to the courses where they have no case work. Our aim is to establish if there is a link between using real-life cases and enhanced relevance and achievement of learning outcomes.

**Keywords:** "Real life" cases, enhanced learning outcome, relevance, higher education

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# Peer Feedback with Peergrade

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**Abstract:** The act of producing content - for example in forms of written reports - is one of the most used methods for teaching and learning all the way from primary school to university. It is a learning tool which helps students relate their theories to practice and getting relevant and helpful feedback on this work is important to ensure a good learning experience for the students. Providing this feedback is often a time-consuming job for the instructor. An effective way to learn is to teach others, and similarly give feedback on work done by others. One way to approach a combined solution to the above challenges, is to use peer assessment in the classroom which as a learning method has become more and more popular. In this paper we present the web-based peer feedback system Peergrade and the dataset generated by it. Over the last two years Peergrade has been used by hundreds of thousands of students, in more than 20,000 classes in over 100 countries, by instructors in schools, colleges, universities and the private sector. Peergrade offers a wide range of common features included in peer assessment tools, including novel concepts such as intelligent allocation of reviewers to optimize the feedback quality, the ability for students to give feedback on their feedback, custom feedback rubrics, submission in groups, flagging of answers for teacher moderation and instant messaging-conversations between students and teachers. The main contributions of this paper are Peergrade itself, the dataset generated by Peergrade which is (in anonymized form) available for research by others and a discussion of challenges faced when attempting to adress all desired features requested by literature.

**Keywords:** peer feedback, peer assessment, peer grading, collaborative learning, peer to peer learning

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# Using Open Educational Resources to Support Entrepreneurship Training

**Gabriel S Konayuma**

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**Abstract:** Though entrepreneurship training has been offered in Technical and Vocational Education and Training (TVET) institutions in Zambia since 2000, there have been challenges of inadequate and inappropriate teaching resources that may have affected the quality of entrepreneurship training. The purpose of this study is to explore the possibilities of using Open Education Resources (OER's) and wiki's to support Entrepreneurship Training in Technical and Vocational Education and Training. This is done by making an analysis of entrepreneurship training materials available online and exploring how these could be adapted for use in TVET institutions in Zambia. The study explores how OERs have been used to address similar challenges before by other institutions. OERs can be used as an innovative means of improving teaching and learning in TVET institutions in Zambia by promoting a more learner-centred approach to teaching and learning and more quality contact between teachers and learners. The study ends with key recommendations that can assist policy makers and training providers on what are the most suitable ways of integrating ICT's in education, and ICT tools such as OERs and wiki's in a socio-economic environment like Zambia, where textbooks cannot be easily afforded by most students and lecturers.

**Keywords:** open educational resources, wiki; collaboration; entrepreneurship; entrepreneurship training

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## Neuroscience and E-learning: Where is the Ideal Nexus?

**Marlena Kruger**

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**Abstract:** We live in a technology-immersed world where people of all ages, including students, high school children and many younger children and even toddlers, already have their own tablets, laptops as well as smart phones. Many people are convinced that the use of digital technologies, as in e-learning or blended learning is the best way to learn at school, varsity, home and at work. However, the reality is that many decision-makers are ill-informed on

neuroscience and therefore the real advantages, as well as the disadvantages when using these technologies for learning from an early age. In many cases, much more time is needed for decision-makers, parents and educators to explore in-depth research articles on learning- and development topics before being lured into embracing these mesmerising technologies, under the umbrella of being educational. It is essential to have more in-depth knowledge around “good learning”, with and without digital technologies. Only when we are empowered with knowledge and critical insights on these learning topics, including neuroscience and the impact of the misuse of technology and social media on the holistic development of all people, will we be able to make smarter and wiser decisions towards a brighter future and wellness for our children and humanity overall. Technology addiction and its associated negative impact on human minds, bodies and souls, are already well researched and will be referenced. Report will be given on a research project where learners were asked to complete a Self-assessment questionnaire, focusing on Multitasking. Based on research results and when applying critical and creative thinking, will we be able to find the ideal nexus for our learners’ holistic development, learning performance and future! We must be pro-active and more critical in today’s techno-immersed world to ensure we are embedding the ideal nexus with the relevant knowledge, strategies and 21st Century skills, and ready for the Fourth Industrial Revolution. A brief overview of an integrated holistic ecosystem to “Master Techno-life Balance™” and wellness as a solution to our real-world challenges in a techno-saturated world will be given.

**Keywords:** Neuroscience; blended learning; technology addiction; holistic; techno-life wellness.

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## **Meeting the Needs of Digital Learners: Learner Support Patterns and Strategies**

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**Abstract:** The use of different digital devices (laptops, smartphones etc.), together with the associated software and internet services, are affecting the study patterns of Open and Distance Learning (ODL) students. However, most educators do not take students’ use of personal technologies into account in the design or support of learning experiences. ODL students require both academic and

technological support to succeed. Enhanced and responsive learning support can help to reduce student drop-out and promote student success. This study investigates the academic and technological support needs of ODL university students making use of personal technologies. Understanding the needs and learning practices of students can help universities to improve the design of learning experiences and support offered to students. Data was collected through an online survey and follow-up semi-structured interviews at two ODL universities, one in Spain and one in South Africa. The results show that students make use of both formal and informal means to develop their cognitive/learning and technological skills. Although students look for support in different ways and the levels of support needed are varied, students are supported by educators, other students and by personal and online networks. Recommendations by students to improve academic support to better meet their needs include: i) greater use of short video tutorials; ii) more personalised assessment feedback; and iii) use of synchronous chat or video conferencing for urgent issues. Similarly, student recommendations to improve technological support include: i) provision of mobile apps and notifications; ii) improve the design and usability of university systems; and iii) offer discounted rates for hardware, software or connectivity. These results imply that universities need to ensure that students are aware of and able to use the different formal and informal mechanisms of support available to them and help them to develop the relevant digital literacy skills to promote success.

**Keywords:** study habits, open and distance learning, academic support, technical support, digital devices.

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## **The Experience of Students with Disabilities at an Open Distance e-Learning Institution**

**Motlhabane Jacobus Maboe, Mariki Eloff, Marthie Schoeman and Omotayo Kayode Abatan**

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**Abstract:** Today, almost all business applications are digitised in such a way that every user of the applications is compelled to adapt to using the internet and computers to achieve their learning experiences in the form of an electronic learning, referred to as 'e-learning'. This article is a qualitative research that investigates the experience of students with disabilities in the use of e-learning platforms at an ODeL institution in South Africa. The study identified those factors

that influence the use of e-learning by students with disabilities. The findings of the study indicate that students with disabilities are able to study at this institution. The study established that well-designed e-learning platforms such as the institution's website and learning management systems (LMS) will ensure efficient and effective use by students with disabilities. Therefore, it is possible to overcome all digital and social divides in order to create a society which respects all people, irrespective of their abilities. The study suggests that it is important for e-learning designers/developers to apply accessibility and usability design principles, guidelines and standards during the development process of e-learning websites in order to reduce digital divide and marginalisation. This becomes even more significant when the target user groups have limited capabilities or disabilities.

**Keywords:** Digital divide; e-learning; e-learning websites; ICT; IT; ODeL.

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## **Developing User-Driven Engagement in Public Information Campaigns: Lessons from Practice**

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**Abstract:** The provision of public information campaigns commenced in the early eighteenth century, and over the ensuing three centuries of mass media campaigning they have evolved into two specific types of campaign, referred to in contemporary literature as information campaigns, which are seen as unidirectional broadcasting of information to either a targeted audience or the public in general, and communication campaigns, which are more participative in nature and seek to establish some form of dialogue with the public. However, whilst there can be no doubt that engaging in dialogue with individual members of society is likely to have the greatest impact in achieving the behavioural change sought by such campaigns, there is a growing resistance to their intrusiveness. The authors ran a large European survey on public awareness of the actions to be taken in the event of a natural disaster, the services available to provide support, and intention to engage in preparation for such events. This demonstrated a significant percentage of respondents were unwilling to engage in any form of preparation, which, combined with the resistance to engage with communication campaigns, highlights a growing problem. This paper considers some of the lessons learned from a number of public communication campaigns run by the

authors, using MOOC technology and their own Pandora+ cloud-based training system, which highlight a number of issues in developing effective public information campaigns using digital media. A framework is then described that sets out a communication model offering minimal intrusion and ephemeral engagement at the outset, with the potential for greater levels of engagement driven by user wish, while still capturing relevant analytic data on the subject of the campaign.

**Keywords:** Public information campaigns, user-driven engagement, population disaster awareness and preparation, behavioural change.

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## **Advancing Students Learning Experiences in Laboratory Reporting through the use of a Course Management System**

**Elisha D. Markus and Ntombizanele Maqache**

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**Abstract:** Students at universities have often complained about the amount of time allocated to assessments while conducting laboratory experiments. This in addition to the mounting pressure on their teachers to achieve high pass rates despite limited resources has further compounded the problem. Therefore, teachers and students end up frustrated and mostly exhausted which could lead to students scoring poor marks in laboratory reports. Many such universities and institutions of higher learning are resorting to 'digital scholarship' as a means of pedagogy in a bid to solve students' performance issues. The course management system (CMS) is a veritable tool in the hands of teachers to achieve this objective. This paper presents the results of an ongoing study to find better ways for students to report laboratory work. The case study involves Electrical, Electronic and Computer Engineering National Diploma students in their second year. As laboratory reporting is a key requirement for successful completion of most of their modules, using online resources for this purpose is crucial to achieving digital scholarship. More so, the study takes into cognisance that standards are not compromised in the process. Results show the effectiveness of this tool for successful management of learning and assessments.

**Keywords:** Course management system, laboratory reporting, e-learning, engineering

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# Enhancing First-year Students' Digital Content Creation at a South African University

**Tabisa Mayisela**

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**Abstract:** Digital literacy, and thereby digital literacy practices are emerging phenomena that both international and national higher education institutions (HEIs) are still grappling to explicitly define. The conceptualisation of digital literacy in higher education however, revolves around technical or operational, cognitive and social-emotional dimensions. The cognitive dimension includes information literacy and media literacy while the social-emotional dimension is about how individuals conduct themselves in social networking digital spaces. Drawing on this wide description of digital literacy, our university has explored different approaches to helping first year students acquire digital literacies for learning, such as integrating digital literacies into the curriculum. The purpose of this study was to determine how could digital literacies be integrated into first year course curricula to enhance student digital content creation within a learning context. Using a digital literacy practices framework adapted from Ng's (2012; 2015) digital literacy framework (that comprises of technical, cognitive and social-emotional dimensions), the study explored the digital literacy practices of a purposive sample of first year students from two extended degree programmes. The findings from this case study reveal that students created their own digital content, which they sometimes shared; adapted other people's content; shared it or used it 'as is', for academic and personal purposes. These findings suggest that integrating digital literacies into the course curricula supports students in: 1) becoming content creators rather than consumers, and 2) acquiring digital literacy practices deemed fit for learning and employability.

**Keywords:** Digital content creation, digital literacy, digital literacy practices, discipline, learning activities

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# Enabling a Smart Classroom through New e-Learning Affordances

**Matthew Montebello**

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**Abstract:** The research and literature pertaining to smart classrooms is still in its infancy as the complexity and heterogeneity of all the factors involved are not only intricately multifarious, but intrinsically dissimilar in nature and function. To unravel and potentially offer a solution to such a multifaceted task we partition the enterprising undertaking into different aspects or dimensions, one of which is undoubtedly the educational component. Seven affordances from our e-learning ecologies model are revisited and effectively applied to shed light on specific academic issues distinct from social or technological issues that also form part of our conceptual model. We present our smart classroom setup and justify the rationale as well as highlight the challenges we encountered throughout our research project. The paper closes with the conclusions drawn together with recommendations to what might characterise the future of classrooms as we know them.

**Keywords:** e-learning affordances, smart classroom, new learning, e-learning ecologies

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# Readiness to Adopt the Internet of Things at the University of KwaZulu-Natal

**Ismaeel Motala and Indira Padayachee**

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**Abstract:** Information and communication technology is evolving, and students are currently living through a digital transformation. Higher education institutions need to keep up with the latest trends in ICT technologies to advance pedagogy growth and progress. One of the emerging trends in the world of computing is the Internet of Things (IoT). It involves the interconnection of internet capable devices to increase communication and openness of information, which can help transform and enhance teaching and learning styles in higher education. The purpose of the study was to understand the perceived benefits, as well as the technological and environmental barriers of adopting the IoT approach in higher education. The study adopted a quantitative approach and was underpinned by

an adaptation of the TOE framework. The findings revealed there was significant agreement on the benefits of IoT, namely remote flexible connection, increased communication with the students and increased student creativity for teaching and learning. The findings also revealed that the IoT approach does have some technological barriers in terms of internet capability and network security, as well as challenges such as data privacy and protection. These challenges could be overcome by maintaining a secure and reliable Wi-Fi connection, and adherence to the laws, standards and protocols set out by ICT regulatory bodies. The findings also suggested a positive relationship between perceived IoT benefits and willingness to adopt IoT among academics at the University of KwaZulu-Natal.

**Keywords:** Internet of things, pedagogy, higher education, IoT benefits, IoT barriers

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## **Enhancing Learning through Formative Assessment for First Year Education Students**

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**Abstract:** Various scholars have insisted on the importance of formative assessment in a higher learning environment, with more of theoretical formula as opposed to the practical side, especially in large classes. This was impossible without the intervention of emerging technologies on handling effective and efficient assessment. This was an option to fight challenge of the availability of sufficient resources to cater for all students. Understanding Human-Computer Interaction (HCI) appeared to be the barrier for many lecturers. The rationale for integrating technology in education is rooted in the need to offer quality education which is informed by formative assessment. The main question is how can learning be enhanced by formative assessment in large classes for the first year education student? This case study is framed within constructivist theory. The use of technologies in education cannot replace current delivery system but can support and enhance learning by adapting to emerging technologies that will facilitate formative assessment. Semi-structured interviews were used to collect data from six lecturers. Their formative assessments were scrutinised, which were on hard copies and how they used Moodle as their Learning Management System. Qualitative study revealed a number of factors which influenced lecturers' decisions not to emphasise on effective and efficient formative assessment. The review highlighted and recommended thorough induction on emerging technologies which are: ease of use, support, collegiality at university, and

commitment to professional learning to integrate HCI with collaborative learning. Moodle was noted not to be fruitfully utilised by lecturers because of the shortage of computers on campus. Future study is aimed at exploring usage of mobile devices as emerging technologies to communicate with students; surveying what other departments within the institution use, so as to identify the constraints and opportunities of handling formative assessment effectively.

**Keywords:** Human-Computer Interaction, enhancing; formative assessment; assessment principles, emerging technologies

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## **Collaborative e-Design Education Using a Cloud Computing Platform**

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**Abstract:** Design education is important at technical universities and colleges. Usually, students learn a design skill by the individual use of CAD software. In this paper, we propose collaborative e-design education using a cloud computing platform. As a cloud computing platform, we adopt Autodesk A360. Using the cloud computing platform, students can share their design model with the other students. The process of the collaborative e-design work is as follows. First, four or five students form a group in the design class, and one student creates a design model by the CAD software, AutoCAD. Second, the created model is shared with the other students in the group through A360 Drive, which is one of the A360 integrated services. Third, all members of the group discuss the created model by communication tools. Finally, another student modifies the model according to discussion. Then, sharing, discussion and modification are repeated. As communication tools among the students, we consider oral communication, online chat, and a message attached to the email notification. The notification email is sent from A360 to the other students with the message when the student uploads the design model to A360 Drive in order to share it. As a result, online chat is better than the message attached to email notification, because online chat is in real time and bidirectional. In conclusion, collaborative e-design education is a kind of active learning, thus the students learn the modelling

effectively. Also, a tutor can give remote students e-design education by the above-mentioned communication tools.

**Keywords:** design education, collaborative education, CAD software, AutoCAD, A360 Drive, cloud computing

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## **An Ontology-Based E-Learning Assessment System for Online Learners in Higher Learning Institutions**

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**Abstract:** Learning is a process of acquiring knowledge and skills in a particular domain of interest. This process, though continuous in one's life, ends with formative or summative assessment, in specific domain. In higher learning institutions, learning is acquired mostly through reading, experiments, observation, discussion, collaboration, lecturing etc, where sources of information play a fundamental roll. Repositories of learning resources are made available to students through portals that are integrated into e-learning management systems. Observations have showed that students are interested in these learning resources so that through utilising them they can acquire knowledge and skills, a part that is fundamental for one to be described as learned. The paper delves on the development and implementation of an ontology based innovative e-learning system with regard to acquisition of knowledge and skills by online learners at higher learning institutions set up where only core learner activities are identified. An e-learning ontology is used to model a domain of knowledge, thus complementing the functionalities of other learning systems that do not implement this technology. The paper presents assessment of students using assignments with instant feedback on the performance of the students following a Student-Teacher interaction algorithm (STia). The system is developed following creative design methodology and tested with the undergraduate students in the department of Computer Science at the National University of Science and Technology (NUST) in Zimbabwe. Empirical results are given with regard to the strengths and weaknesses of the system as seen by the users. Recommendations to higher learning institutions in terms of policy, e-learning technologies and utilisation of e-learning systems are given.

**Keywords:** Ontology, learning ontology, learning system, e-learning, online learners, learner activities

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## **Capital Meets Capabilities: Negotiating Cultural Exclusion in Participatory Culture**

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**Abstract:** Rather than focusing on institutional workarounds in ‘times of trouble’, our educational research explores the different challenges that arts students negotiated in curating their e-portfolios. We propose a ‘Capital meets Capabilities’ framework that combines Sen’s capability approach with Bourdieusian cultural sociology to situate students’ contrasting circumstances and repertoires. This framework describes how people make strategic use of their capital for developing a range of cultural and leisure repertoires. Visual arts e-portfolio curation is an example of participatory culture in which people’s designs can be strongly influenced by digital divides and other gaps. The gaps in participatory culture have not been conceptualised within a theoretical framework. To test whether a Capital meets Capabilities framework might be appropriate, we present a case study for “Masibulele”. He worked around scarcity in his parents’ household in the Khayelitsha township of Cape Town to become a fashion entrepreneur while studying at a high school. Despite having limited internet access, he taught himself to design fashion and shared this business via social networks. In curating an e-portfolio for the visual arts subject, he eventually included his fashion creations alongside those repertoires he was taught in arts class. The Capital meets Capabilities framework addressed the opportunities that Masibulele leveraged as an aspirant designer and fashion entrepreneur. The framework identified known gaps in participatory culture and suggested new ones related to cultural exclusion: Masibulele had to negotiate dominant cultural repertoires and taste regimes from a marginalized position. Unlike well-resourced emergent fashion designers, he was also heavily constrained. For example, he did not use his intermittent mobile-centric internet access to set up a presence on the most popular platforms for promoting fashion designs.

**Keywords:** participatory culture, digital divides, capital, capability.

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# Contextualising M-Learning Readiness Actor Network in an Open Distance Learning University

**Victor Paledi and Patricia Alexander**

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**Abstract:** The use of technology to facilitate learning in universities has increased in both developed and developing countries and hence has been the subject of several scholarly studies. Some of these have made recommendations on how to use available technologies, including mobile technologies, effectively in a learning environment. However, many universities in developing countries are still faced with the challenge of using these mobile technologies successfully to facilitate learning. There is evidence that an early assessment of the m-learning readiness of these universities could increase the success rate. Using Actor-Network Theory as a lens, this study aims to inform open, distance learning universities of a wide variety of factors that need to be addressed to improve m-Learning readiness. Data was collected at a large open distance learning university using qualitative, open-ended questionnaires and semi-structured interviews. The outcomes of the study indicate that the success of m-Learning is dependent primarily on socio-technical issues. A number of critical actors, both animate (or social) and inanimate (including technology-related) actors were identified, many of whom would obviously be expected to play key roles. These actors are lecturer, student, university, top management, IT expert, learning management system, m-Learning policy, mobile device, researcher and infrastructure. However, it is the roles that these actors play, the relationships between them, and how best they can present their ideas and products to other actors that received special attention. Awareness, content presentation, alignment of interests, training programmes, the change management process, appropriate communication channels, costs and funding were all found to be important attributes influencing m-Learning readiness within the environment studied. This paper contributes practically, as the socio-technical concerns (comprising the actors and the associated attributes) can be used as a foundation to assess m-Learning readiness in other universities, particularly other open distance learning universities. Theoretically, this paper provides evidence that m-Learning readiness is complex and might be difficult to examine using traditional technology readiness, adoption and use models.

**Keywords:** Open Distance Learning; Distance Learning University; Mobile Learning; M-Learning; M-Readiness; e-Readiness; Actor Network Theory; Socio-Technical.

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## **Perspectives on Learning Design in African Higher Education**

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**Abstract:** While blended and online learning are increasingly becoming a prominent feature of higher education in Africa, there is little related formal research on learning design as a field of study, a profession, a process or a product. This collaborative research is motivated by an interest in sharing and improving practices around learning design. The paper reports on the learning design activities and understandings of individuals employed in a number of higher education institutions across Africa. A pre-event questionnaire, conducted prior to an e/merge Africa professional development webinar on learning design in Africa, provided the data on which this paper is based. While the questionnaire attracted too few responses to be considered statistically representative of learning design in higher education institutions in Africa, a content analysis of the responses offers valuable insights into this poorly researched area, suggesting key themes and areas for future study. We found variations in how lecturers and other professionals at universities across the continent define learning design, including the processes and approaches involved. Such variations depend on institutional resources, beliefs about learning and teaching, and a range of other factors. The results draw attention to local meanings of learning design in several African universities and contextual factors that shape it. Since we found little research comparing learning design practices across African universities, this paper makes a novel contribution towards this area both locally and at a global level.

**Keywords:** learning design, e-learning, online learning, blended learning, higher education, Africa

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# The i3 Model: Rethinking How Faculty Teach Quality Online and Blended Courses

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**Abstract:** Extensive research shows that building high quality online and blended courses are tantamount to student success and engagement; but faculty motivation to move to new modalities lags behind demand. To assist faculty with making the successful transition, we developed the Instructional Innovation Incubator (i3) model, first implemented in North Carolina, U.S.A from 2014-16. The i3 model combines elements of research online course development, faculty motivation (innovation), engaged teaching and learning (instructional), and entrepreneurship (incubator). The model is based on six design principles: transferability, innovation, intensive format; human-centred design and sustainability. During the week long-event itself, a robust support structure is coupled with a range of flexible components (e.g., innovation talks; group activities; video sessions; problem-based learning; vendor demonstrations, and instructional design consultation). In this multi-year, cross-sectional study, we investigate the effectiveness of the i3 model across five iterations in the southern region of the United States. The researchers asked, is i3 an effective model for addressing faculty motivation, encompassing an increase in faculty (a) knowledge (b) confidence and (c) experience with online teaching? Eighty-four faculty across nineteen academic institutions and numerous disciplines participated in the study. For each cohort of i3 fellows, a pre and post electronic survey was used based on the Participant Perception Indicator (PPI). Across the i3 sites, there were statistically significant differences in fellows' knowledge, confidence and experience with online courses. We discuss the findings in regards to the extant literature and implications for practice, including the potential for extending the model to other sites.

**Keywords:** Faculty Development, Online Education, Innovation; Multi-institutional, International

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## **Promoting Active Learning Using an E-learning Platform**

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**Abstract:** E-learning platforms are increasingly being used by institutions to augment the learning and assessment process. Basic sciences form the core of the scientific practice of medicine (Rosenberg M, 2001). Still, medical students in their initial years of study (especially in schools following traditional models of pedagogy) are unable to relate to the application aspect of basic sciences. This reduces their motivation to learn and affects the outcome of the learning process. This study was performed to study the impact of online open-book quizzes with multiple attempt options on the motivation as well as learning outcomes for the students. Students were assigned learning tasks to be accomplished by them at their pace and in their own time. This was to be followed by an online quiz at a pre-determined time, which could be taken from any remote location as per the convenience of the students. One test opportunity comprised of 10 questions randomly selected from a pool of 30 questions (multiple choice MCQ type 1 questions). The students could attempt the test multiple times, and the best score was to be considered for grading. 456 undergraduate students were enrolled in the study during the semester. The test was un-invigilated and the students were free to refer to their books or materials in the allotted time. The response was very enthusiastic and 100% of the students participated in the quizzes- all of them availing the maximum number of attempts allowed. Over the attempts, there was a significant improvement in the score of the students. We can conclude that this format of learning and assessment was able to motivate the students for active learning as well as promote the deliberate practice of core concepts.

**Keywords:** E-learning, active learning, deliberate practice, basic sciences, pooled open-book quizzes; innovative teaching, assessment drives learning

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## **Hybrid Learning Environment: Learning Mathematics using ALEKS software**

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**Abstract:** Standard educational techniques have sustained several vicissitudes where technological innovations are happening at a fast pace. Students have boundless entrance to information about latest technological advancements like laptops, tablets, and smartphones. Incorporating such technology in education can make the learning experience very remarkable. This trend has led to an explosion of online courses and programs across colleges and universities. For any online curriculums, there is a bracketed interactive e-learning system that plays the role of a knowledge base and trainer. Amalgamation of face-to-face classroom and online bustles is known as a hybrid learning environment. The rationale of this program is to take the best advantages of the highlights of face-to-face and online bustles so that they reinforce, complement and elaborate one another. ALEKS (Learning in knowledge spaces) is such a platform which employs hybrid education techniques with the aid of AI (Artificial Intelligence). In this paper, we estimate the efficacy of ALEKS in providing a hybrid learning environment for students in higher education. ALEKS enhances the learning practices in a classroom and as a result, the student gets transformed into a reflective practitioner. This paper summarises teaching and learning methods used in ALEKS and the contribution of this platform in transforming the traditional hierarchical classroom into a hybrid learning environment.

**Keywords:** ALEKS, Hybrid educational system, Artificial intelligence.

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## **Revitalization of an Indigenous Language: Which is Better the Teacher or the App?**

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**Abstract:** The main purpose of this study was to identify whether using digital technology such as apps can enhance Indigenous language learning. Currently there are less than 200 fluent speakers of Secwepemctsin; therefore, insights from this study will make a valuable contribution to the community efforts to revitalize the language. This study examined the effect of using two apps to teach Secwepemctsin to a group of elementary school children (N = 96). Indigenous children from K-7 were assigned to one of two conditions: (a) learning vocabulary related to clothes with the language teacher or (b) learning the same content playing with apps designed for the study to teach Secwepemctsin. Over a period of two weeks, each group had the opportunity to learn target vocabulary during 15-20 minutes, two times on different days. At the end of the lesson on the second day, children were tested on their learning using a multiple-choice vocabulary test. To identify further learning, all participants were tested a second time a few days later. Two separate analyses of variance were performed with vocabulary at time one and time two as outcome variables. Methods of instruction (apps versus teacher), and school level (primary versus intermediate) were fixed factors. Univariate analyses showed that at time 1, children performed similarly regardless of the condition or level. However, at time two there was a main effect for method of instruction and an interaction between method and level. Children in the upper grade level and the teacher only condition performed significantly better than children in the apps condition. This suggests that whereas children in the teacher condition continued to learn vocabulary over the teaching time but those in the apps condition did not. It is possible that the effect of the apps disappeared by the third lesson, whereas the teacher was able to continue innovating and engaging the children in learning. Implications for effective incorporation of language learning apps into teaching and for app design are discussed.

**Keywords:** Indigenous language revitalization, gamification, apps, language teaching

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## **Instructional Design for EBEIT Blended Learning Course Materials**

**Rayne Reid and Johan Van Niekerk**

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**Abstract:** Blended learning educational approaches are progressively being implemented at South African tertiary education institutes. This trend has

increased since the first 2016 #FeesMustFall campaigns, which resulted in widespread prevention of service (education) delivery at many of South Africa's larger universities. Lecturers are currently trying to transition, augment, and redesign their coursework to offer the advantages of blended learning. However, in many cases the resultant course is not well designed from a pedagogical perspective. Many lecturers currently lack the instructional design knowledge and skills needed to implement their courses as blended learning educational experiences. Thus, there is a need for guidance in this regard. This paper presents a report on the lessons learned from the pilot implementation of a blended learning course designed to provide instructional design training to 63 lecturers in the Faculty of Engineering, the Built Environment and Information Technology at Nelson Mandela University.

**Keywords:** blended learning, instructional design, academics as teachers

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## **Training Unashamedly Ethical Accounting Graduates in an E-learning Environment**

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**Abstract:** Accountants play an important role in the economy and the persistent rise in accounting scandals compels educators to intensify ethics education. Plagiarism, the act of kidnapping the work of others without proper acknowledgement, is but one form of dishonesty that educators should address in their quest to raise students' awareness of sound ethical behaviour. Like corporate scandals, plagiarism cases are also increasing. Globally, professional accounting bodies expect their members to behave ethically and professionally. It might seem extreme to mention plagiarism and other unethical behaviour committed by accountants in the same sentence; however, a lack of integrity remains at the root of both these dilemmas. An increased tendency to plagiarise can be ascribed to different factors, including the availability of technology that facilitates plagiarism, a fear of failure, ignorance and unawareness. In the rapidly changing e-learning environment, students often fall prey to plagiarism. Technology has removed the barriers that previously prevented students from appropriating others' intellectual knowledge and ideas. Increased access to information via the internet and social networking platforms have not only made it easier for students to interact with their peers, but have also created a fertile environment for plagiarism. Proposed practices to combat plagiarism should be

embraced, and accounting e-learning educators should endeavour to use new technology to prevent and detect plagiarism. They should for example create videos or podcasts, incorporate discussions on interactive platforms and use various available plagiarism-checkers. This paper seeks insight from the literature on how accounting e-learning educators might deliver accounting graduates who are aware of ethical issues, specifically plagiarism.

**Keywords:** Academic integrity, e-cheating, ethical accountant, plagiarism, plagiarism causes, plagiarism prevention

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## **The Role of Social Media in Motivating Students in Pre-Connectivist MOOCs**

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**Abstract:** Over the past decade, the Massive Open Online Courses (MOOCs) have experienced rapid development. Nevertheless, despite its success, high dropout rate has become a prominent issue and studies have shown that 50 % of those who register for MOOCs don't start the course. Currently, there are relatively few studies that addresses the issue of why students sign up for MOOCs and don't start the course. In order to motivate students and increase engagement most MOOCs instructors are now cultivating the active learning environment, by incorporating a variety of external tools like social media to enhance motivation, engagement, and retention. However, there are lack of (1) Empirical evidences on why most students who sign up for MOOCs don't start the course. The time between which students sign up and the start of the course is referred to in this study as pre MOOC period. To further build understanding on this phenomenon, the goal of this studies is to (1) Find out, if early engagement of students on social media before the course begins i.e. pre MOOCs period, will motivate students to start the course. (2) To get a deeper insight into how students' usage and perception of social media engagement between the periods they signed up and start the MOOC affects their motivation. The research also aim to answer the research questions :(1) How motivated are students who engaged in social media interaction alongside with MOOC? (2) Does early engagement in social media motivate students who sign up to start the MOOC course? Specifically, the studies engaged MOOCs students who sign up to use social media voluntary before the start of the MOOC on Facebook, Google Hangout and WhatsApp platforms.

Students engaged for five weeks on social media before the MOOC course started. Quantitative and qualitative methods were used to collect data via questionnaire on the social media platforms during the pre-MOOC period. The results of the studies showed that (1) The early engagement of students on social media motivated students to start the MOOC course. (2) Most of the students were motivated interacting on the social media forums. (3) The early engagement also helped to prepared and warm up students for the MOOC. This paper would contribute and provide insights to future MOOCs and online instructional designer with greater understanding on how they can use social media to improve students' motivation in MOOCs. We discussed the design implications in the early engagement on social media in pre-MOOCs period, benefits and recommendations for future MOOCs platforms.

**Keywords:** MOOCs, Connectivism, Online Learning, Social Media

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## **A Tool for the Acquirement of Currently Required Competencies of Crisis and Security Managers**

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**Abstract:** Ten years ago we started discussion around Europe to develop a tool to create a link between the worlds of students, pedagogues and expert public within the frame of the EU in fields of security. This article describes process of solving the project approved by The Education, Audiovisual and Culture Executive Agency (EACEA) in period from 10/2009 until 10/2012. The idea of the eSEC project originated from the social requirement to increase the quality of education in the field of Security. The fault of the current educational systems is common detachment of the taught theory form the real practical requirements. That is the reason why it is necessary to focus more on the way in which the participants of education process can be prepared for the challenges which emerges from the labor market, which competencies are required and how it would be possible to link the educational systems of various institutions most efficiently. Therefore, the aim of our project eSEC is to develop and increase the

competencies of students, pedagogues and research personnel working in the field of security, but even the expert public within the EU and the world. To achieve these objectives, an electronic portal eSEC was established and developed. The solutions of security problems and crisis situations are accompanied by many specific traits. Some of them are typical for all crisis situations, some of them denote the one singular form of crisis only. One common trait of crisis situations is shortage of time and information which places high demands on managers and decision-makers. Contemporary opinions about the solution of crisis situation concur that those crises produce new dimensions in the organization scene. Demands for people readiness at particular positions and for decision-making process are rising. Therefore the demands on crisis and security managers are rising too, proportionally with the complication of the situation. Within this paper we conclude the last ten years with results and case study of the functioning eSEC portal. Also we open the question of acquiring of special competencies in field of security.

**Keywords:** The eSEC Portal, Electronic Tool, Required Competencies, Security Management.

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## **When TAM Just Won't Do**

**Osman Sadeck and Johannes Cronjé**

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**Abstract:** Understanding adoption and actual use of technologies is complex. Many studies have used the technology acceptance model (TAM) with extensions or adaptations to the original core concepts. There appears to be an under-utilisation or non-adoption of the available tools and technologies for educational benefits. To understand the contributing factors of adoption, it was necessary to explore the relationship amongst a range of theories and models related to adoption. Key aspects from the literature on adoption were first mapped and the key elements relevant for the study were distilled into a conceptual framework. The incorporation of these elements to the original TAM, resulted in an adapted TAM.

**Keywords:** TAM, Motivation, Benefits, Expectancy, Cognitive, Affective

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# Flipping the Classroom for Health Managers

**Ingunn Schult, Marte Tøndel, Linda Kiøgnig, Stig Holen and Tone Vold**

The Inland Norway University of Applied Sciences, Rena, Norway

**Abstract:** Offering higher education to adult students can be challenging when using different techniques for activating the students. Adult students that have been in a work life for a shorter or longer period may have a different mind-set about what education is. In some cases, using Flipped Classroom as a way of engaging and activating the students, work very well. In other cases it may be more challenging. In this paper we present research done amongst the teachers/lecturers and students in the Health Manager education at The Inland Norway University of Applied Sciences. Our main research topic has been to disclose what the teachers/lecturers focus on when flipping the classroom, and how the students perceive the different approaches to flipping the classroom. Will it support their learning process and learning outcome? And in what way? And how does it support the teachers/lectures in their pursuit of activating students? The results from surveys and interviews show that the students perceive being activated as contributing towards their learning outcome. Not all of the lecturers make use of Flipped Classroom. The students rate the courses where the lecturer use Flipped Classroom higher with regards to learning outcome, although they are content with the other courses. Important contributing factors are the organization of the “flipped classroom”, student input and teachers facilitation, with regards to the learning outcome.

**Keywords:** Flipped Classroom, activating students, enhanced learning outcome

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# Betwixt and Between: The Liminality of Guiding Students

**Imelda Smit**

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**Abstract:** In an age of technology where students have constant access to smartphones and other electronic devices to get just-in-time information, educationists need to continuously adjust to keep users engaged. With this

premise in mind, the North-West University, South Africa, started an initiative to digitalise printed study guides. Academic Development & Support on the Vaal Campus took ownership of coordinating the shared development of the project; in 2013 a group of 14 academic volunteers developed the pilot SMARTguides. During the first year much emphasis was placed and research done on ensuring that the electronic interactive study guides have been effectively designed, and achieved the desired learning outcomes for students. Since then many study guides have been successfully converted to SMARTguides, of which some are utilized across campuses. At the North-West University a restructuring process has been embarked on since the end of 2015. This process was concluded at the onset of 2018 and resulted in a unitary university where more focus is placed on alignment of courses across campuses. This wind of change will also blow over study guides – where the current support for electronic interactive study guides may be withdrawn. This paper provides a background on the evolution of the initiative to implement electronic interactive study guides; from the design, development and implementation of the pilot guides until the present situation. In addition, it focuses on the particular case implementation in the two subject modules of Systems Analysis & Design, a second year subject offered in the Information Technology course; starting with its inception as pilot SMARTguide, and following its development into a well-developed SMARTguide. Feedback from students using the Systems Analysis & Design guides over a number of years, are scrutinised to determine its value. Lastly, in preparation of possible study guide changes to be imposed by a unitary university, the authors reflect on the preferences of the current Systems Analysis & Design students regarding study guide implementation options.

**Keywords:** Electronic interactive study guide, Teaching and Learning, Learning Management System

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## **Perceptions on the use of Social Media to Facilitate Learning**

**Nihal Somers and Indira Padayachee**

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**Abstract:** Technology today is continuing to innovate at a staggering pace, expanding the potential for web based communities such as social media. With the advent of web based technologies, face to face traditional learning is simply not sufficient to facilitate learning. Traditional learning methods need to evolve

with technology. This study investigates the use of social media to facilitate learning amongst ISTN students at the University of KwaZulu-Natal (UKZN). The study adopted a quantitative methodology and was underpinned by the UTAUT framework. The findings of the study indicated that ISTN students at UKZN predominately use social media for social reasons. However, social media is also used to a certain extent for educational purposes. The students believe that student-teacher relationship building is a key benefit of adopting social media as a facilitative learning tool. However, reduced face-to-face interaction was cited as a key limitation. ISTN students were most influenced by peers when it came to their decision to adopt social media as a learning tool. However, the findings indicate that current policies at UKZN limit the adoption social media as a facilitative learning tool.

**Keywords:** e-Learning, blended learning, social media learning, social media, web 2.0.

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## **A Study of Social Skills Intervention for Children with ASD Using Learning Apps**

**Ming-Jiun Sung**

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**Abstract:** the primary goal of this single-subject study was to examine the effects of using mobile learning apps on the social skills of three preschool children with Autism Spectrum Disorder (ASD). A secondary goal was to gain an in-depth understanding of the teacher's perceptions of the feasibility and value of the intervention. Navigating appropriate social skills for children with autism is a major challenge for the teacher of these children. It is argued that children with autism may be less motivated to imitate by social interaction, but may be motivated to imitate to receive a non-social reward. So we used the mobile learning apps to give the children with ASD an opportunity to demonstrate their social language, and to make the modelling examples much more meaningful. The apps used for teaching the children with ASD included 'Cuedin-Autism Early Intervention App', 'Autism Help', 'Social skills for Autism KLoog2' and an app made by ourselves that fits the individualized scenarios of each subject in this study, because children with ASD vary widely in their skills, interests and needs. Three young children diagnosed with autism participated in this study. Intervention for the children with ASD was implemented by their teachers and an A-B-A-B single-case research experimental design was used to assess the

differences between the non-embedded and embedded social conditions. The teachers taught the children to use the apps in some embedded social interaction conditions. Prior to the start of the study, child-preferred items and activities were determined for each child. All sessions were conducted once a week for two hours in the kindergarten. After all the experiment sessions were implemented, the teachers were asked to complete the 'The Teacher Perception Measure'- a 26 item questionnaire to rate the teachers' perceptions of students' social skills. Overall, this mobile learning apps intervention resulted in substantial improvements in social skills and teacher perceptions of the feasibility and worth of the intervention were reported as highly favourable. Limitations and future directions for research are discussed.

**Keywords:** Social skills, intervention, children, ASD, Learning Apps

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## **Students' Perceptions of Screencast Feedback in Postgraduate Research Supervision**

**Bronwyn Swartz and Daniela Gachago**

Cape Peninsula University of Technology, Cape Town, South Africa

**Abstract:** Feedback plays a critical role in identifying areas to improve, ultimately enhancing and supporting the learning process. A growing body of research has investigated student perceptions of written feedback in higher education; however few studies have considered feedback perceptions in one-on-one contexts such as postgraduate projects, in particular audio-visual feedback through screencasts. Feedback narrows the gap between current and desired performance, and thereby positively contributes to the student learning experience. Engaging a student's visual and auditory senses through screencasts has been demonstrated by previous studies to enhance learning. The personalised and conversational nature of audio-visual feedback is considered to support students' comprehension of, and engagement with feedback. Furthermore, the use of expression through tone and emphasis of voice is believed to convey nuanced meaning which differs from written communication. This enables 'meaning' that is frequently lost in written feedback to be transmitted and retained, thus supporting students to better understand. This paper reports on a case study that examined three postgraduate students' perceptions of the value of using screencasts as a feedback medium, at a University of Technology (UoT) in the Western Cape, South Africa. It sought to evaluate the use of screencasts as a means of enhancing the formative assessment process for postgraduate students

and to develop guidelines for practitioners wishing to adopt its use. Data analysis was guided by a framework advanced by Marriott and Teoh (2012) to gauge students' perceptions of screencast feedback. Concepts were clarity and coherence, strengths and weaknesses, personalisation and formality and amount of feedback. Within the theme strengths and weaknesses a research lens offered by Hoessler and West (2014) facilitated the exploration of student perceptions on communication, support and scaffolding and multidimensional nature. The findings reveal that students are very positive about the introduction of audio and visual feedback. Students reported that screencast feedback is more engaging, detailed and supportive when compared to written feedback and thereby promoted metacognitive self-monitoring. The paper concludes with the implications and limitations of the study and recommendations for further research.

**Keywords:** Screencast feedback, innovative assessment, technology-assisted learning, postgraduate supervision

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## **Designing Pedagogically Integrated Environments: Changing Classroom Practice Using a Teaching Change Frame**

**Isabel Tarling and Dick Ng'ambi**

University of Cape Town, South Africa

**Abstract:** One of the challenges facing teachers in general, and those in South Africa, is the lack of skills to design pedagogically integrated eLearning environments. This paper argues that the use of a Teaching Change Frame (TCF) (Tarling and Ng'ambi, 2016) is a useful framework to guide teachers to effectively design eLearning environment. In addition, conceptually and theoretically, the TCF is designed to develop teachers' dispositions of the mind and body, guiding both conceptual and practice-based design. The article reports findings from a large-scale teacher professional development initiative that capacitated teachers to design integrated eLearning activities mediated by emerging technologies which had an impact on classroom practice. The study involved 450 in-service K-12 teachers predominantly from resource-poor rural and urban schools in the Western Cape, South Africa. These teachers enrolled for a short course in Information and Communication Technology (ICT) Integration. Our approach in the course was to create and model a pedagogically integrated eLearning environment in which teachers could, through playful, active learning, experience,

create and innovate pedagogical practices that integrates eLearning activities. The capacitation approach used was to model the design and allow teachers to create artefacts in a non-judgemental, playful and light-hearted environment. Teachers' digital artefacts created during these sessions were analysed. The different artefacts were aggregated in each teachers' ePortfolios produced during the contact sessions, and was continuously updated thereafter. Over 450 teachers created an ePortfolio of their work-in-progress. The paper concludes that changing classroom practices starts with capacitating teachers to manage their change processes using the TCF as a personal change guide/map.

**Keywords:** Teaching Change Frame, ePortfolio, classroom practice, artefacts, teachers

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## **Students as Co-Developers of Courses in Higher Education**

**Marte Tøndel, Linda Kiønig, Ingunn Schult, Stig Holen and Tone Vold**

The Inland Norway University of Applied Sciences, Rena, Norway

**Abstract:** At The Inland Norway University of Applied Sciences, there has been offered a series of courses for Health Managers. The courses were originally developed as a response to a demand from the Norwegian Directorate of Health to make Health Managers and municipalities across Norway able to handle a Health organisation reform called "Samhandlingsreformen" – the interaction reform of Health Care in Norway. The municipalities are paying customers, and were originally offered four different courses. However, after the agreed courses were held, the demand for more courses became apparent. At this time, it was important to seek to cooperate with the health managers in order to develop the next modules. In addition, the students from the previous modules suggested new areas where felt they needed more input. From a service point of view, this can be compared to principles of value co-creation from the domain of Service Dominant Logic. Utilizing the input from the students, new modules were developed and executed. The research presented in this paper, show the results from survey and interviews with the students regarding how they perceived to be co-developers and how this has affected their learning outcome from the new modules (courses).

**Keywords:** value co-creation, service dominant logic, co-developing, learning outcome

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## **Research on Mobile Cloud Computing in Teaching and Learning: A Conceptual Framework**

**Judy van Biljon and Ronell van der Merwe**

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**Abstract:** Advances in cloud computing technology coupled with increasing volumes of data has driven the growth and differentiation of cloud-based solutions in teaching and learning. The cloud computing industry has matured over the past decade and the number of publications steadily rose, to build on the maturity of the field researchers investigating cloud computing research in the mobile teaching and learning domain need to be cognisant of the state of the art. The objective of this paper is to analyse the available literature in the field of cloud computing for mobile teaching and learning to identify the main categories of research, the prevalent methodologies and research gaps, and then integrate the findings in a conceptual framework representing the current state of the field in terms of research opportunities. A systematic mapping study on relevant publications in journals and conferences was conducted. Mapping studies are a suitable method for structuring a research field concerning research questions about contents, methods and trends in the available publications. A systematic literature review and mapping was used to select 107 articles from a total of 21 822 publications in five prominent databases, namely ACM, ERIC, IEEE, Google Scholar and Springer. The analysis was done in October 2017 on papers published between 2013 and 2017. The contribution is to classify existing work and suggest future opportunities based on a systematic mapping of mobile cloud computing (MCC) for teaching and learning research. The analysis provides an overview of the field in terms of what is researched, how that is researched and where the future research contributions may lie. The findings are integrated to present a non-prescriptive, conceptual framework on mobile cloud computing research for teaching and learning. Researchers can use the proposed framework as a point of reference in starting or aligning their own projects and establishing where future research opportunities exist.

**Keywords:** mobile, cloud computing, maturity, m-learning, e-learning

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# How Important Is Interaction to Students? A Case Study in Open Distance Learning

**Geesje van den Berg**

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**Abstract:** One of the most important factors relating to online learning is student interaction, ensuring that students are actively involved, create their own knowledge and reach a high level of achievement. Interaction in distance learning has traditionally been divided into three categories, as introduced by Moore (1989). These are interaction with content; interaction with the instructor; and interaction with peers. Bouhnik and Marcus (2006) introduced a fourth category of interaction, namely interaction with the system. Although ample research exists on the importance of interaction in open distance learning, not much has been written on how students experience the four categories of interaction. This paper reports experiences of students doing an online course. Since this was the first fully online course for many of the first-year education students at an open distance learning (ODL) institution that follows a blended approach to teaching and learning, it was of particular interest to describe how students experienced their learning. Within a case study design, the study followed a mixed-method approach. The results confirm some previous studies, had inconsistencies and had very specific findings about the fact that internet access is expensive for students to have Internet connections and some students found it difficult to find the money for this. This study suggests that lecturers and other stakeholders at universities should consider the uniqueness of students and their contexts when planning online courses. Furthermore, it remains the universities' responsibility to put systems in place to support their students. Only then can they optimally benefit from studying in an ODL environment.

**Keywords:** Student interaction, open distance learning, student centeredness, online learning

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## Citizen Science: The Ring to Rule Them All?

**Ronell van der Merwe and Judy van Biljon**

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**Abstract:** There are many uncertainties about the future of e-Learning, but one thing is certain: e-Learning will be more data-driven in the future. The automation of data capturing, analysis and presentation, together with economic constraints that require evidence-based proof of impact, compels this data focus. On the other hand, the importance of community involvement in learning analytics and educational data mining is an accepted fact. Citizen science, at the nexus of community engagement, and data science can bridge the divide between data-driven and community-driven approaches to policy and content development. The rationale for this paper is the investigation of citizen science as an approach to collecting data for learning analytics in the field of e-Learning. Capturing data for policy and content development for learning analytics through citizen science projects is novel in the e-Learning field. Like any other new area, citizen science needs to be mapped in terms of the existing parent fields of data science and education so that differences and potential overlaps can be made explicit. This is important when considering conceptual or functional definitions, research tools and methodologies. A preliminary review of the literature has not provided any conceptual positioning of citizen science in relation to the research topics of learning analytics, data science, big data and visualisation in the e-Learning environment. The intent of this paper is firstly to present an overview of citizen science and the related research topics in the academic and practitioner literature based on a systematic literature review. Secondly, we propose a model that represents the relationship between citizen science and other salient concepts and shows how citizen science projects can be positioned in the e-Learning environment. Finally, we suggest research opportunities involving citizen science projects in the field of e-Learning.

**Keywords:** E-learning, learning analytics, data science, citizen science

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## **Learn 3.0 meets Library 3.0: A case study**

**Brenda van Wyk and Hermien Geldenhuys**

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**Abstract:** The global uptake of eLearning systems in higher education is improving rapidly. One of the burning questions is whether eLearning courses provide learners with adequate access to academic quality information and readings to aid in the development of critical thinking skills, and to support independent learning. An evaluation of recent research and Web developments alludes to the underutilisation of available information sources and support services in eLearning. Tschirhart, Hamm, Perpich, Powell, and Reiman-Send (2013) state that

even the latest and more flexible online learning management systems (LMS's) fail to embed access to academic information sources. ELearning 2.0 and 3.0 developments are familiar concepts and are being incorporated in online learning programmes. Similarly, leading academic library and information services (LIS) offer Library 2.0 and Library 3.0 services and tools for improved access to academic information (Kwanya, Stilwell, & Underwood, 2015). LIS Services include access to known databases and platforms and offer further support services for the development of digital literacy skills, research data management, and digital rights management (DRM). Although these services are geared to enhance learning experiences and academic skills, they lack planned and meaningful integration with LMS's. Realising this gap in alignment between the LMS and LIS, a private higher education institution in South Africa embarked on an inter-departmental collaboration project to embed and integrate existing digital library service and systems in their LMS, to assist content developers, lecturers and learners. This initiative forms part of the institutional eStrategy and is developed and managed by the institution's Central Academic Team (CAT) according to uniform standards across programmes and faculties. This case study reports on how the project, informed by teaching and learning theories, supports and enriches eLearning. Collaboration across departments and disciplines within the institution promoted the integration of information support services and allowed access to academic information via the LMS, for a better student experience.

**Keywords:** eLearning; Web 3.0; embedded digital library services; LMS; Learn 3.0; Library 3.0.

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## **From Face-To-Face to Online Learning: The Experiences and Perceptions of Non-Traditional Students**

**Joseph Vancell**

University of Hull, UK

**Abstract:** There are great concerns about the sustainability of welfare systems and the supply of labour in many European member states due to increasingly aging populations. In the past decade, urged by the European Commission, national governments have tried to motivate more workers to remain in employment beyond their retirement age through various incentives and initiatives that included a more widespread provision of continuous education and training programmes. However, older workers face many challenges to attend classroom-based courses because of their employment, social and family

commitments. They want courses that offer more accessibility and flexibility. Online courses can, in part, answer this demand. The transition from face-to-face education to online learning however presents many challenges. This paper attempts to identify these challenges and barriers by exploring the findings of a grounded theory investigation of an online course by the University of Malta. It reports on the students' experiences and perceptions of their transition from local face-to-face education characterised by schooling practices that are dominated by the transmission of knowledge teaching model, to an online course that uses methodologies inspired by constructivist learning theories. The findings indicate that this shift from brick-and-mortar to online courses may be problematic for non-traditional students who grew up, were educated and worked in a society where banking education practices are pervasive if this shift is not well-planned, gradual and involves a process of scaffolding. In this process, the instructor must play a central and determining role. Through his or her presence, the instructor must create activities, in which dialogue is a key element. These activities must create adequate social and cognitive presences in order to sustain an active and democratic community of enquiry. It is also essential that each student's motivation is maintained through constant communication and formative assessment tasks, and, above all, the students are treated as adults and their prior knowledge and experiences are built into the course.

**Keywords:** transition to online learning, e-learning, adult education, constructivism, Grounded Theory, Malta

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## **Understanding How Participants Use Open Online Courses for Transitions**

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**Abstract:** Massive Open Online Courses (MOOCs) are created with a broad audience and learning purpose in mind, and informal feedback has shown that they have been used by people making transitions. From the twelve MOOCs we created, we have seen cases of how participants valued the learning that is very different to a traditional formal education trajectory. Understanding and supporting transition pathways - in and out of learning and work - is increasingly important for universities aiming to, for example support working adults in

ongoing professional development. Our research explores experiences of participants from African countries taking MOOCs offered by the University of Cape Town (UCT). In 2017, a pilot survey and interviews were conducted of people taking three UCT MOOCs. The interviews were conducted with a sample of learners living in Africa. We categorised the kinds of value participants report from taking open online courses, and consider how our categorisation relates to how transitions are often framed. Current framings of transitions in the research literature has emphasised school leaving youth entering higher education, while our interest is probing the needs of adults looking for flexible online learning opportunities. From the pilot interviews, we see innovative uses of open online courses for making life changes - such as preparing for postgraduate study, changing field within the workplace and discipline crossing to studying in new fields. Framing of transitions helps illuminate how these participants value open online courses for their own personal and professional development, to acquire skills and knowledge and to support their pathways in and out of learning and work.

**Keywords:** MOOCs, transitions, adult learners, online learning

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# **PhD Research Papers**



# Field Guide to Gamification: Game Components and Motivation in Higher Education

**Laura Lenz, Valerie Stehling, Max Haberstroh and Ingrid Isenhardt**

IMA/ZLW & IfU, RWTH Aachen University, Germany

**Abstract:** Although digital and analogue games differ in many ways, they still trigger multiple types of gaming experiences, which, inter alia, entail sensation, fantasy, narrative, challenge, fellowship, discovery, expression and submission. Most games contain several of these gameplay categories, which predict the individual enjoyment of the game and therefore which type of player is attracted and motivated by which type of gaming experience. The match between game design and player perception can be modelled and measured using the Mechanics-Dynamics-Aesthetics (MDA) framework (Hunicke et al., 2004). In higher education, game elements are used to increase motivation or to trigger a change of behavior. This is called gamification, or in other words, the addition of game elements to existing processes. However, there is a research gap concerning the measurement of motivation created by gamification and which type of player is attracted by which kind of gameplay. At RWTH Aachen University in Germany, the Cybernetics Lab IMA/ZLW & IfU is working on the implementation of a student-centric gamification design into a mandatory mechanical engineering lecture called Communication and Organizational Development (KOE I). Up to 1,500 freshmen apply every year. As has been shown in a recent study, there is an increased student demand for gamification, especially in the study entrance phase (Lenz et al., 2017). Students expect that gamification will make learning more enjoyable and motivate them. This PhD research paper deals with the question of what lecturers need to take into consideration in order to apply game elements in their courses to increase student motivation. The hypothesis is that the key component to increased motivation is a match between individual motivational types and MDA taxonomies as well as a deliberate transfer into gamification scenarios. How can lecturers actively predict which gaming experience students desire and how can they produce playful activities that satisfy these needs? The results of this thesis shall serve as a first step to a gamification field guide in higher education beyond interdisciplinary borders.

**Keywords:** gamification, mechanical engineering, higher education, motivation, MDA framework

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# Towards a Framework for Partnerships between Higher Education Institutions and e-Learning Schools

**Johan Vorster and Leila Goosen**

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**Abstract:** The topic of the study that this paper will report on revolved around a research question related to the continuing development of a framework for describing partnership relationships between higher education institutions and e-learning schools, or e-schools. The framework reported on in this paper describes an extensive set of collaboration areas, where higher education institutions can support the establishment and success of such e-learning schools along various dimensions, while ensuring mutual benefit from the engagement. The framework was developed using a Design Science approach as research method, and is the outcome of the first stage of a broader research study. It used the Innovation Diffusion Theory, the Technology Acceptance Model, and the Levels of Teaching Innovation framework as primary theoretical lenses. Secondary data included success factors and barriers to the integration of e-learning technologies identified from literature and policy documents. The research currently being undertaken is mainly qualitative, and resulted in a framework, which showed how partnerships for e-learning school development are situated within broader contexts with regard to policy and society. It organised activities in relation to major areas relevant to e-schools, such as management and administration, effective teaching and meaningful e-learning, as well as enabling factors, such as infrastructure and connectivity, and policy and budget. The framework is organised in three distinct phases, Readiness, which reflected the creation of enabling environments, leading to Implementation and then Sustainability. This paper should be of interest to conference participants, with the value of the findings including these being of use to schools and higher education institutions, who could implement the framework for guiding the inclusion and timing of activities as they jointly develop plans to collaborate, from initial introduction to the continued enhancement of e-learning technology integration. The next stage of this study will involve an empirical validation of the framework.

**Keywords:** e-learning schools, Higher Education Institutions (HEIs), partnership framework, e-learners, e-learning teachers.

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# Exploring Wiki-Based Collaborative Writing Activities among ESL Pre-Service Education Students

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**Abstract:** This pilot study was conducted to explore how English as Second Language (ESL) pre-service education students interact online when engaging in collaborative writing tasks on a wiki platform. The aim of the study was to establish how the integration of wiki based collaborative writing activities in ESL course helped to promote students' writing skills. The study was purely qualitative and it employed case study design. A total of 48 ESL pre-service education students at one university in Uganda working in groups of 8 participated in an eight-week study. Students' wiki pages and history tracking system were analysed to establish the role of students' engagement in peer edits as well as form and meaning-related revisions. In addition, focus group interviews were conducted to find out students' experiences of wiki-based collaborative writing activities. Results indicated that while there were variations in the way students collaborated in the wiki-based collaborative writing activities, with some groups exhibiting high numbers of peer-edits, form and meaning-related changes and others very low numbers of peer-corrections, students reported that these activities helped them to generate, organise and express ideas in writing accurately and meaningfully. The results also suggested that students concentrated more on meaning-related revisions than form-related edits. Finally, students' experiences of using wikis in ESL writing were positive and they believed that working collaboratively on a wiki platform helped them perform better in writing. This study recommended that due consideration should be given to the selection of topics that will elicit student engagement in terms of creativity in language usage and sharing of own ideas in the main research.

**Keywords:** collaborative writing, English as Second Language, pre-service students, Web 2.0, wikis, writing instruction.

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# **Masters Research Papers**



# Towards Meaningful e-Learning of ICT Courses in Online and Open Distance Education

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**Abstract:** This abstract contains a brief introduction to research on the topic of providing a mainly qualitative perspective on teachers' use of e-learning technologies towards effective teaching for meaningful e-learning to address the challenges of Information and Communication Technology (ICT) courses in an online and open distance education environment. A more detailed research question towards this purpose is provided in the paper. The paper proceeds to a review of the literature on research into how teachers use e-learning technologies towards effective teaching for meaningful e-learning, in order to thus increase throughput rates, in some cases in online and/or open distance education environments. As examples of what will be discussed in this section, online learning objects have been investigated from the perspective of constructivist theory through to application, and why online learners drop out interrogated, while some researchers worked towards a framework to support transformation through quality assurance at the University of South Africa. As an example of a research design that had been implemented in a previous investigation, a phenomenological study was used as part of a qualitative, interactive design in order to investigate e-learner interaction experiences in an online and open distance education context. In terms of the methodology used to collect the data, aspects relating to the data collection instrument, sample and sampling technique, validity and reliability of the instrument and data analysis were discussed in an earlier paper. Although some perspectives on a summary of quantitative results are provided, this paper mainly discusses results aimed at providing a qualitative perspective on teachers' use of e-learning technologies towards effective teaching for meaningful e-learning to address the challenges of ICT modules in an online and open distance education context. Conclusions are presented, including a summary of the most important results, and their value. The authors show how the results of this research could make a significant and original contribution regarding emerging trends in, and the promotion and development of knowledge in fields related to, teachers' use of e-learning

technologies towards effective teaching for meaningful e-learning in an online and open distance education environment.

**Keywords:** e-learning, Information and Communication Technology (ICT), online and open distance education.

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## **Investigating the Adoption and the Application of Learning Analytics in South African Higher Education Institutions (Heis)**

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Centre for Science, Technology and Innovation Indicators, Human Sciences Research Council (HSRC), Cape Town, South Africa.

**Abstract:** The universities in South Africa are faced with low student success and throughput rate. These challenges go beyond the strength of the available tools, yet universities continue to use the same tools in addressing their challenges and yet they expect different outcomes. As a result, universities are taking steps towards improving their students' performance. In addressing these challenges, several universities have taken progressive steps; moving towards digitalization of education in order to apply data-driven decisions. So far, this is a positive move towards addressing some of the challenges that are contributing to low students' performance. This study aims to investigate the potential of introducing learning analytics as a tool to analyze student data; to respond to the low student performances faced by South African universities. Learning analytics is an emerging field with the potential to enable higher education institutions to gather information to provide an understanding of students' learning needs and use it to improve student performance and throughput. Learning analytics has been studied and implemented in other countries, such as the United Kingdom, Australia, and other parts of Europe. In these countries, learning analytics as one of the systematic ways of analyzing data, has been reported to have the ability to improve student success and throughput. It also provides an opportunity for early identification of students who are at risk, because, among other things facing the universities of South Africa, are the factors mentioned above. Informed by the background explained above, the main question of the study is; how the introduction of learning analytics will help South African universities to improve

student success and throughput rate? To respond to this question, five South African universities of technology were used as case studies and thematic analysis was applied to analyze the collected data.

**Keywords:** South-Africa-Universities, learning-analytics, performance, throughput, success.

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## **Using Facebook by First Year University Students to Adjust to the Tertiary Environment**

**Musango Wope and Jean-Paul Van Belle**

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**Abstract:** The transition from high school to university can be very challenging for some first-year university students, especially if they move away from home. However, research on how the use of Social Networking Sites (SNSs) by first-year university students makes any difference to their adjustment process is scarce. In this study, fifty-seven first year university students at a university in South Africa completed the Student Adaptation to College Questionnaire (SACQ) originally developed by Baker and Siryk (1984) to measure whether Facebook has made any difference in their adjustment to their new environment. We found that most of the respondents did not universally experience Facebook to contribute positively to their adjustment process. However, significant minorities of first year university students agreed that Facebook is, indeed, an aid to adjusting to the first-year university life away from home. In particular, Facebook appears to help these students with social, institutional as well as emotional adjustment. By contrast, personal and academic adjustment seemed not to be an area where Facebook was viewed as a help. Neither gender nor faculty affiliation affected these findings i.e. they did not play a significant moderating role. Our findings should be useful to university authorities contemplating placing restrictions on Facebook access using university networks, as well as educational researchers interested in how information technologies assist with first year adjustment in higher education.

**Keywords:** Facebook; SNS; university adjustment; social adjustment; first-year students.

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# **Work in Progress Papers**



# Voice Training for Lecturers of Large Classes in Mixed Reality

**Kathrin Hohlbaum, Valerie Stehling, Max Haberstroh and Ingrid Isenhardt**

IMA/ZLW & IfU, RWTH Aachen University, Germany

**Abstract:** Even though their voice is one of the most important tools for conveying information, lecturers often lack knowledge of its proper and effective use. A permanent incorrect use can result in chronic voice problems like e.g. a sore throat, hoarseness and even occupational incapacity. For this reason, many universities offer voice trainings. The environment of those trainings, however, often does not allow for a realistic simulation of large lecture halls and side effects in terms of noise and other disruptions. This problem is addressed within the context of the cooperative project "ELLI2" - Excellent Teaching and Learning in Engineering Science. The developed Mixed Reality-Voice Lab (MR-Voice Lab) integrates visual and acoustic data from real lecture halls into a specially developed Mixed Reality scenario. This gives lecturers the opportunity to participate in immersive voice trainings, where they can train their voice in a virtual setting that is both an acoustic and visual realistic simulation of their everyday teaching environment. The latest prototype of the MR-Voice Lab comprises six different rooms of various sizes. To generate these settings, real lecture halls have been visually captured by using 360° cameras and acoustically traced, based on their original construction plans. The acoustic and visual immersion of the participants is enabled by the use of VR headsets, headphones and a microphone. While the lecturers apply the methods learned in a safe and realistic virtual environment, they are guided and provided with direct feedback by a professional vocal coach. This paper describes the conceptualization of the MR-Voice Lab and contributes to answering the question whether Mixed Reality constitutes a reasonable addition to classical voice trainings. Hereby, the authors refer to their specialized knowledge regarding the special aspects of teaching and learning in Mixed Reality as well as to their background as speech and language pathologists. The implementation of the Lab will be thoroughly evaluated and constantly adjusted towards the needs of all parties involved. In the future, the open source MR-Voice Lab will be applicable to other universities and in additional contexts.

**Keywords:** Mixed Reality, MR, Voice Training, Teacher, Lecturer, Large Class

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# Flipping and Drawing to Enhance Student Engagement and Learning in Dental Anatomy

**Katrina Plastow and Suzanne Gardner**

University of Adelaide, Australia

**Abstract:** Oral health students need to know key anatomical features of each tooth type to correctly identify teeth in a dental examination, and to reproduce tooth morphology when restoring. First year students often have difficulty learning the subtle differences between tooth classes and differentiating between them, and many struggle transitioning to the self-directed learning approach at university. This may reflect as student dissatisfaction, lack of engagement and poor academic performance. 'Flipped learning' is a pedagogical approach using pre-class activities to introduce new information through online, interactive content and group time to revise key concepts; the educator guiding students in collaborative activities to clarify and conceptualise new knowledge. The 'drawing to learn' framework supports and encourages students to interpret visual information and create drawings as a powerful tool for thinking, enhancing observational skills and communicating complex information simply. This approach results in greater engagement, application and a deeper understanding. The aim of the project is to improve engagement, knowledge and identification skills of first year Bachelor of Oral Health students at the University of Adelaide in Dental Anatomy using a blended learning approach. Short videos were produced using simple drawings made on a WACOM Intuos tablet to highlight the key anatomical features of each tooth type, and a Lightboard to demonstrate differences between various tooth classes. Students could access the videos prior to a weekly tutorial and complete a short online quiz to test their understanding. Key features were then reviewed in class and further clarification given where necessary. Using oversized plaster tooth models and natural teeth, students completed 5:1 labelled drawings from different aspects of the focus tooth type as formative exercises. Accurate identification of selected natural extracted teeth was the summative assessment required. Results will be collated and analysed on completion of the project by June 2018 using Learning analytics captured by the University's learning management system, Canvas. Student satisfaction, engagement and academic performance will be evaluated. It is anticipated that students will demonstrate increased knowledge prior to class activities which will translate to improved practical performance. Evaluation of the project will inform further refinement of resources and learning activities.

**Keywords:** Flipped learning, student engagement, 'drawing to learn' framework, video resources

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# Abstracts Only



# E-Content Evaluation Process at Mansoura University and Steps for Improving Development Team Capacity

**Mohamed Ahmed**

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**Abstract:** Mansoura University has established an eLearning center to develop eLearning content and to manage the eLearning processes in the university. The first step involved the development of e-content which was evaluated centrally at the National eLearning Center. The researcher observed that the evaluation standards for content development have changed many times over his eleven year period of involvement. A rubric-based tool has subsequently been developed for the evaluation of e-content at Mansoura however some issues have been raised about some aspects of the tool. The researcher is developing a framework to guide the processes for enabling the e-content development team to improve both their content development and content evaluation skills. The aim of this poster is to present a framework to guide improved processes for e-content development and evaluation. The framework takes into consideration learning design, e-content and technical development processes. It is anticipated that the framework will help in solving some of the problems affecting e-content development such as the extended time required for the development process, the existence of mistakes in both the pedagogy and the technical processes involved. It is anticipated that use of the framework to guide e-content development processes will result in improved e-content through streamlined processes, the use of relevant pedagogy and the e-content team's improved evaluation capacity. Development of the framework will involve interrogation of a variety of models such as: Schiffman's Instructional Design Model (1986) Course Content Buzzetto and Pinhey (2006), Pedagogical Decontextualisation Level Kurilovas and Dagiene (2009) and Navigation Buzzetto and Pinhey (2006), Kurilovas and Dagiene(2009). The main part of this study includes questions about the quality of electronic content and how we can improve development team capacity in developing electronic content with quality standers and frameworks. And determine a framework for evaluating e-content and how to improve the team capacity.

**Keywords:** E-Content evaluation, team capacity, framework, eLearning center, criteria

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# To Blend or not to Blend? Blended Learning during Student Protests

Laura Czerniewicz and Genevieve Haupt

University of Cape Town, South Africa

**Abstract:** With the 2015, 2016 and 2017 #feesmustfall protests and subsequent shutdown at the University of Cape Town, the university executive proposed a move to a blended learning/online approach to teaching and learning to ensure that students would be able to complete the academic year. This was met with a notable increase in online activity by both academics and students alike in 2016. The online activities included, the use of UCT's learning management system (Vula) for providing resources, communication and discussions between academics and students, in addition enquires about the use of lecture recording increased during this period, etc. Despite the increased activity academics remain divided around the use of blended learning, generally and more so during university shutdowns. This paper is based research conducted at UCT which forms part of a larger collaborative project of four South African universities funded by Carnegie. The main aim of the larger project is to establish the perceptions and understanding of blended learning of both students and academics as well as how the method was implemented (or not) during the #feesmustfall campus disruptions at these universities. For the UCT study, we drew on both Activity Theory and Ethics of Care to understand what academics understand blended learning to be and how they implemented it during the shut downs to assist students to complete the academic year. We conducted face-to-face interviews with academics across the university with the use of random sampling. The overall finding indicates that academics made use of various strategies and tools to continue teaching and learning activities, such as (but not limited to) lecture recording, providing off-campus meeting venues, live chat groups for question and answer sessions on the learning management system (VULA) and other systems (Adobe connect) etc. Academics thus highlighted that what they chose to do was not necessarily blended learning, instead it was a means to use flexible and creative ways to assist students to be successful and complete their academic year. Understanding how academics interpreted and responded to the call for the use of blended learning could give insight into how academics could integrate technologies into learning and teaching activities during challenging moments and beyond.

**Keywords:** Blended learning, Ethics of Care, Activity Theory

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# Blended Learning in Challenging Circumstances: The Student Perspective

**Genevieve Haupt, Laura Czerniewicz and Kyle Rother**

University of Cape Town, South Africa

**Abstract:** In October 2017, the atmosphere at the University of Cape Town (UCT) was once again marked by uncertainty and frustration as the 2015 #feesmustfall protests flared up. The #feesmustfall campaign calls for the implementation of free higher education for all. These protests have led to university shutdowns for specific periods of time in 2015, 2016 and 2017, preventing all face-to-face teaching and learning, not only at UCT but at a number of universities across SA. In order to ensure that the academic project continued, i.e. students were able to complete their academic year, a blended learning approach was proposed by UCT's executive. In previous research conducted in 2016 at UCT investigating personal mobile device use in the classroom (PMD Project, Brown & Haupt, 2017), it was established that students had a very negative perception of blended learning, more particularly when it was implemented during the shutdown periods. In 2017 Carnegie provided funding for a collaborative project of four South African universities to establish the perceptions and understanding of blended learning of both students and academics as well as how the method was implemented (or not) during the #feesmustfall campus disruptions at these universities. Using an Activity Theory lens we investigated how UCT students engaged with blended learning during the university shutdown of 2016 and 2017. Thus, this paper presents findings from the focus group discussions and semi-structured interviews with randomly selected students across the university. The main finding highlights that students had an overall negative perception of blended learning as they perceived it as a learn-on-your-own method. However, despite their negative perceptions, students engaged with the use of resources provided by lecturers. In addition, students drew on their own agency by actively seeking tools and resources to assist them with completing their academic year.

**Keywords:** Blended learning, #feesmustfall, Activity Theory, Agency

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# Conceptual Development in a Computer-Simulated Learning Environment

Lizel Hudson, Penelope Engel-Hills and Christine Winberg

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**Abstract:** Computer-simulated learning environments (CSLEs), are virtual or augmented reality environments that engage students in the health sciences to learn more effectively, largely due to the multi-sensory experience provided by a CSLE. In a world where access to clinical sites is reducing it is critical to consider the benefits of these environments. Prior studies have focused on the methods of learning in a CSLE, rather than the content of what is learned. This paper focuses on the content of the learning in a CSLE, in the form of students understanding and retention of radiation physics concepts. We draw on the idea of ‘threshold’ and ‘key’ concepts to explain the central role that underpinning concepts play in applied radiation physics and radiotherapy practice. Our particular focus in this paper is on the affordances of the CSLE for conceptual development in radiation physics. There are three research questions that guide this study, namely: 1) how the affordances of a CSLE enable and/or constrain the learning of threshold concepts; 2) the kinds of knowledge that students acquire when learning threshold concepts in a CSLE; and 3) the effect of learning in a CSLE on clinical practice. The research design is longitudinal in that it traces students’ conceptual development across four years of study. Data sources include document reviews, observations, semi-structured individual and focus group interviews with academics, students and clinical staff, and the researcher’s and supervisors’ field notes. Our findings show how developing conceptual knowledge can be facilitated in a CSLE when the CSLE is well-integrated into a blended teaching approach, particularly one that extends into clinical practice. We argue that if the affordances of the CSLEs are well-aligned with that of the concepts that students need to develop, CSLEs are useful for strengthening and deepening students’ understanding and retention of the key and threshold concepts underpinning practice. This study thus has implications for the appropriate selection and alignment of educational technologies with core concepts in a curriculum.

**Keywords:** Threshold concepts, Legitimation Code Theory, Health Science Education, Radiation Therapy Education, Virtual Environment for Radiotherapy Training

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# **A Theory-Driven Learning Analytic Model for Detecting Students-At-Risk in Higher Education: An Integrated Approach**

**Sonwabo Jongile**

Cape Peninsula University of Technology, South Africa

**Abstract:** Business Intelligence (BI) and analytic solutions are an inception of Learning Analytics, which has recently emerged in the education domain as an aftermath of the successful application of data mining models in business organisations. However; within the context of higher education globally, it is currently not clear which business intelligence models can be used in the selection of predictor variables for identifying students-at-risk (students failing in their courses and are likely to drop out of university if they are not well supported). Learning Analytics is an emerging field being tested and used in some Higher Education Institutions globally to inform learning and teaching practices by tracking students' interaction and success in fully online and blended courses. Furthermore, most studies on Learning Analytics are data-driven and not based on theory, the study from which findings presented in this paper are derived was grounded on Tinto's Longitudinal Model of Dropout used when selecting predictor variables that could be extracted from integrated Learning Management Systems and institutional administrative systems data for interpretation. Data was gathered through document analysis, which were analysed inductively. Thus, this paper presents a modified model based on Tinto's Longitudinal Model of Dropout as a potential theoretical model of business intelligence aimed at developing a Learning Analytic approach which universities may consider worthy for identifying students at risk of dropping out of University.

**Keywords:** Academic data, At-risk students, Institutional administrative systems, Learning analytics, Learning management system

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# Issues of Social Justice, Science, Mathematics, Technology, Teaching and Learning

Chaired by **Cheryl B. Leggon**

Georgia Institute of Technology, Atlanta, Georgia USA

*With: **Judy Jackson**, Massachusetts Institute of Technology, Boston, Massachusetts USA; **Evelynn Hammonds**, Harvard University, Boston, Massachusetts USA; **Jann Adams**, Morehouse College, Atlanta, Georgia USA; **Willie Pearson, Jr.**, Georgia Institute of Technology, Atlanta, Georgia USA; **Gilda Barabino**, City University of New York, USA; **Michael S. Gaines**, University of Miami, Florida USA; **Elva Jones**, Winston-Salem State University, North Carolina USA; **Omari Simmons**, Wake Forest University School of Law, North Carolina USA; **Peter Romine**, Navaho Technical University, Crown Point, New Mexico, USA; **Geesje Van den Berg**, University of South Africa, Pretoria, South Africa; **Martinus van Rooy**, University of South Africa (Retired), Pretoria, South Africa; **Vijay Reddy**, Human Sciences Research Council, Pretoria, South Africa; **Medeva Ghee**, Brown University, Providence, Rhode Island, USA*

**Abstract:** The proposed roundtable seeks to build on two previous international projects on issues of social justice, science, mathematics, technology, teaching and learning. One project was an international conference on reducing the science and mathematics achievement gap within and across North and South countries; the other project is an edited volume on science and mathematics teaching and learning and social justice in South Africa, New Zealand and the United States. The primary goal of the proposed roundtables is to bring together a group of international scholars and practitioners to discuss the potential use of blended learning strategies that can be implemented to reduce the inequities in science, mathematics, and technology teaching and learning, and innovative technology experiences for both students and teachers to better understand and promote practices that increase student success. To date, much of the teaching and learning tends to focus on one mode. A blended approach has the potential to address geographic, economic and cultural barriers that result in far too many students underperforming and/or lacking access to high-quality teaching and learning environments. This results in intergenerational impoverishment and the underutilization of human capital. Mathematic, communication and scientific skills are the building blocks of a country's economy and enhance the life chances of its citizens. The proposed roundtables have the potential to devise a teaching and learning approach and strategy that can reduce extant inequities. Because of historical and contemporary circumstances, some demographic groups continue to experience disproportionate shares of poverty, inequities and other injustices. The proposed roundtables seek to proactively address strategies to reduce these patterns through a social justice approach to teaching and learning.

**Keywords:** Science, Mathematics, Technology, Social Justice

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# Online Multilingual Glossaries in Teaching and Learning: A Feasibility Study

**Linda Manashe, Boniface Kabaso, Monwabisi Ralarala and Eunice Ivala**

Cape Peninsula University of Technology, Cape Town, South Africa

**Abstract:** In South Africa the development of subject specific multilingual glossaries, particularly at university level is gaining momentum in current research, where different techniques and models are used to share these glossaries with students as study aid to provide academic support. While these institutions have come up with innovative ways to incorporate African language learning with new technologies in the form of static webpages of multilingual glossaries, CPUT has developed an online hypermedia multilingual glossaries tool as one of the multilingual teaching and learning model, to assist in teaching and learning of key concepts and difficult terms in prescribed programmes, using the student's first language. The CPUT online multilingual glossaries tool further make provisions for the un-static nature of learning by incorporating multimedia (that is both audio and visual) elements of verified, subject-specific multilingual content. This paper details the evaluation results of the online multilingual glossaries tool on the academic experiences of students, particularly in mastering key concepts in their programmes. Students' focus group reflections highlight their preferences among the current multimedia technologies embedded on the tool. Lecturers' feedback is focused on their perceptions of the students' performance after having engaged with the online multilingual glossaries.

**Keywords:** multilingual glossaries, multimedia, hypermedia, key concepts, access and success

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## Enhancing e-Learning through Differentiated Learning

**Matthew Montebello**

University of Malta, Msida, Malta

**Abstract:** The development of e-learning systems has gone through numerous transformations over the years as technologies evolved and the need increased. Advanced web tools and artificially intelligent techniques have enabled new affordances that permitted online education to make great strides amongst which is differentiated learning. In this paper, we discuss the different affordances that

have enriched e-learning since the new millennium with particular focus to personalised education and the benefits that customisation and learner profiling bring to e-learning. We position our research within a case study to illustrate the effect of the various e-learning affordances while introducing a novel learning environment which incorporates an online component. The paper comes to a close with our recommendations to future work, together with conclusions drawn from this research.

**Keywords:** e-learning affordances, personalisation, online education.

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## Enhancing Blended Learning for Part-Time Health Professionals

**Debbi Morais**

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**Abstract:** Part-time postgraduate students within the health sciences pose a unique set of challenges for engaging them with their learning. Not only are they usually juggling a very busy professional life, but they are also mature students with family and financial responsibilities. This group also often come from varied backgrounds in cultural, discipline and geographic terms, which makes it even more challenging to engage them in their learning. This action research study aimed to enhance blended learning materials for PGT students at Warwick Medical School. The progressive problem solving was conducted by a community of practice involving key stakeholders and based on evidence and best-practice to improve the use of the virtual learning environment (VLE), namely Moodle. The first step involved an audit of current practice of VLE use among the 46 available PGT modules. The audit was conducted by the Education Quality Team, based on a previous university-wide undergraduate audit and examples of best practice from UK universities. The audit concluded that mainly basic information is included in module Moodle spaces and the VLE is rarely used for interaction/engagement. Recommendations leading from this audit were for standardised requirements and support to enhance engagement to be developed. The report and recommendations were discussed by the community of practice and led to the development of a working group to develop Module Templates for the VLE (Moodle). The proposed templates were then evaluated by the community of practice and input was obtained from students via the Student Staff Liaison Committee. To support academic staff in developing more engaging blended learning sites, a guidance and ideas site on the VLE was developed for

staff. This space provides ideas of how engagement can be improved as well as easy 'how to' guides and tips.

**Keywords:** blended learning, faculty development, part time, postgraduate

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## **Issues and challenges of online learning at MSU Denver, USA**

**Douglas Mpondi**

Metropolitan State University of Denver, USA

**Abstract:** This paper examines issues and challenges of online learning at Metropolitan State University of Denver in Colorado, USA. The university employs traditional face-to-face classes, blended courses and full online courses and programs. In its attempt to improve online learning, MSU Denver has encountered issues and challenges of course design and development, online evaluation and assessment issues, Quality Matters issues, faculty training, student engagement, developing fully online programs, resources and funding challenges. Employing the qualitative grounded research method and interviews, my paper investigates how MSU Denver has tried to find solutions to these issues and challenges and also trying to provide quality online programs to its students and constituencies. The paper attempts to answer the following questions: 1) How has MSU Denver addressed issues of course design and development 2) What are some of the challenges MSU Denver faces in regards to online student evaluation and assessment 3) How does MSU Denver apply Quality Matters in assessing its online courses and programs 4) What kinds of training are available to both faculty and students for online teaching and learning 5) What challenges do students at MSU Denver face in their engagement with online learning 6) What are some of the challenges that MSU Denver faculty and staff have encountered in their bid to develop fully online courses and programs 7) Are there any funding and resources challenges in trying to develop online courses and programs? My findings will help MSU Denver and other institutions of higher learning to rethink critically about their ongoing process of online program development so as to improve their online teaching and learning programs at their institutions.

**Keywords:** MSU Denver, online learning, blended courses, online evaluation, Quality Matters

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# **An Evaluation Framework for the Institutionalisation of Blackboard in a Higher Education Institution**

**Vuyisile Nkonki, Alanna Riley, Siyanda Ntlabathi and Livuyo Mkonqo**

University of Fort Hare, Alice, South Africa

**Abstract:** This presentation seeks to provide evidence of the institutionalization of Blackboard in one university, by drawing data on the Technology enhanced Learning (TeL) documents such as TeL concept document, Blackboard course planning and request forms, Blackboard usage statistics and quarterly reports over a period of time. It seeks to document how this institution moved beyond the adoption phase to highlight the progression to legitimation and institutionalization of Blackboard, a Learning Management System (LMS). Whereas literature abound with studies on the adoption and acceptance of Blackboard in institutions of higher learning, there is however, limited scholarship on how a particular LMS becomes embedded in culture of a particular institution. Framed within the legitimacy theory, this paper provides a theoretical device for understanding the processes that lend institutional legitimacy to LMS usage, as well as guidelines, criteria, and indicators of legitimacy of Blackboard in an institution of higher learning. The framework used in this paper helps to point out areas of successful engagements with TeL that need to be consolidated, as well as areas for improvement and further development. This paper suggests that the legitimacy framework could be used to reflect on the institutionalization of other Technology enhanced Learning (TeL) tools, post adoption.

**Keywords** Blackboard, LMS, Institutionalisation, Evaluation, Higher Education

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## **Possibilities of Online Education in South African TVET Institutions**

**Patricia Sibisi and Thabisile Maphumulo**

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**Abstract:** This paper points to the necessity to conduct research on the possibilities in implementing online education in Technical Vocational Education and Training (TVET) in South Africa. The TVET Colleges are learning institutions that offer the following programmes: National Curriculum Vocational (NCV) is a 3-

year course with theory and practical, Nated engineering is theory and offered in trimesters and Nated Business Studies that is the theory offered in semesters. There are also skills programs, which are mainly practical. Each year thousands of prospective students try to apply for admittance in semester/trimester programs in TVET Colleges, because of limited space available, few numbers can be accommodated. There is a perception that, most of applicants do not qualify to attend university or they do not afford university fees. Most students in TVET Colleges receive study assistance called National Student Financial Aid Scheme, which is not refundable. Nated courses offer part- time classes to students working full time. The Department of Higher Education (DHET) which TVET fall under has a target of 1,238,000 TVET students by 2019/20. Target for 2016 was 828 000 and 2014 enrollment was 709533. To increase access to TVET, online education may be the answer. Full time workers can also improve their education professionally through an easy access if they can enroll for online courses. Nated courses may also be offered online, as the content is mainly theoretical. Document analysis will be used to gather data on possibilities to implement online education and questionnaires will be sent to TVET College staff to get their views on the matter. Recommendations will be made on how the online education can be implemented in the TVET Colleges in South Africa, which will assist DHET with future enrollment plans. Research question: Is it possible for South African TVET institutions to implement online education?

**Keywords:** Online education, TVET, Courses, Theory, Practicals

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## **Changing Higher Education Provision through Unbundling and Marketization in South Africa**

**Sukaina Walji and Laura Czerniewicz**

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**Abstract:** The concept of ‘unbundling’ in Higher Education - defined as the increasing disaggregation of services and curricula provided by a Higher Education institution - is a fruitful approach to exploring how Higher Education provision is changing, mediated both by digital technologies and increasing marketization in the sector. In the past few years the South African Higher Education sector has seen the appearance of many flexible online courses often delivered in new partnerships with private providers. Such ‘unbundling’ and ‘rebundling’ of educational provision to offer new types of online and blended courses or

qualifications is often considered to constitute opportunities for increasing access, flexibility and reach of educational provision for larger numbers of students. However there is little empirical evidence to consider the nature, process and impact of such unbundling and rebundling. Drawing on interviews and focus groups with some 30 senior decision makers and online education strategists as well as interviews with a number of private providers of HE services, this session explores why some South African universities are considering and embracing digital technologies and online and blended forms of provision and how this relates to unbundling. A number of drivers are encouraging some South African universities to consider creating online and blended courses. These include needing solutions to teaching during physical disruption during fees protests, increasing austerity, the need for third stream income, accessing new markets, or responding to overtures from private providers to develop new business models. Our findings indicate that differentiation between universities based on structural inequalities in the South African HE sector influences the nature of engagement with online and blended learning especially with regards to partnering with private companies. The interview data has been augmented by desk research that categorises types of online provision and relationships with private providers. This session provides a landscape view of emergent trends in online and blended forms of Higher Education provision in South Africa.

**Keywords:** Digital technologies; Higher Education, Marketization, Online Education

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## **Dancing with Avatars: Engaging Motion Capture, 3D Animation and Virtual Reality to Teach Practical Dance Classes**

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**Abstract:** With regular face-to-face classes increasingly migrating to and making use of online platforms with the intention of allowing students to continue engaging and extending the classroom experience outside the physical space, questions have arisen as to how such practical, experiential, engaging and immersive subjects like dance movement can be taught online? My presentation explores the perennial challenges associated with creating opportunities for online students to attain the exact or closest semblance of the actual practical experience involved in learning dance movements, skills and practices. Unlike a

real live face to face instruction, teaching a practical dance movement class online traditionally offers little immersive or tactile interaction, thus making it hard for students to engage with the material. In particular, the practical dance movements together with the step by step demonstration of dance styles, postures skills and techniques can be very challenging to impart through online. This presentation and the accompanying demonstration illustrate how motion capture can be integrated with 3D animation, virtual reality and immersive environments to create an optimal authentic immersive learning experience for students taking practical dance classes online

**Keywords:** motion capture, avatars, 3D animation, Practical Dance Movement, Immersive Experiential Learning

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# **Additional Materials**



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