ascilite2015
Australasian Society for Computers in Learning and Tertiary Education
Curtin University, Perth, Australia

Conference handbook
Table of Contents

Welcome from the ascilite 2015 Convenors 1
Welcome from the ascilite President 2
ascilite 2013 Conference Committee 3
ascilite 2015 Reviewers 4
Keynote Speakers 9
Invited Speakers 13
Full and Concise Paper Abstracts 15
Poster abstracts 41
Index of Authors 49
Campus Map 52

Disclaimer The ascilite 2015 Conference Committee, Conference Secretariat and Conference Manager accept no responsibility for omissions and errors.
Welcome from the ascilite 2015 Convenors

The ASCILITE 2015 Organising Committee extends a warm welcome to you and all delegates to the 32nd International Conference. For over three decades ASCILITE has brought colleagues together to share their experience and research into the role of technologies in teaching and curriculum. This year at Curtin University, we hope that you will enjoy seeing Perth in the sunny west and learning what we are doing to transform the university through digital learning environments.

The theme of this year’s conference - Globally connected, digitally enabled - signals a focus on reaching out to the world and bringing the world to our students as two of the remarkable affordances of educational technology. Many other benefits will be presented and discussed over the next few days.

The annual ASCILITE conference exists on the enthusiasm of its speakers and the submissions from interested colleagues. We thank everyone for their proposals and especially congratulate and celebrate those who have come together to share their work, research and progress. We acknowledge the generous support of many sponsors, who have contributed to the range and variety of program. We trust that you will find the program informative and fun and that it will bring you new ideas. Thank you for attending and helping us celebrate the opportunity to meet colleagues and make new friends.

Vanessa Chang, David Gibson, Torsten Reiners and Brian Von Konsky, Conference Co-Convenors
Welcome from the ascilite President

It is indeed my pleasure to extend a very warm welcome to all delegates of the ascilite 2015 conference here in the beautiful city of Perth, Western Australia.

2015 has been a year of great uncertainty and change in higher education and in our global society. Undoubtedly, rapid technological change remains a significant catalyst in our continued evolution. In and beyond tertiary education, we are seeing novel global business models and practices emerge, many mature technologies displaced, cloud computing as the ‘new normal’, mobile device ownership at prodigious and ever-increasing levels, and the Internet of Things generating previously unimaginable forms and volumes of data that are being collected to understand and predict learning and other human and non-human forms of behaviour. The ascilite2015 conference theme of ‘Globally connected, digitally enabled’ is well suited to the current context. The sub-themes invite reasoned responses to complex challenges around ethics and privacy, digital equity and social justice, learning ecosystems, innovative uses digital media across formal and informal settings. Such sobering challenges also beg the question - how we can possibly educate students and teachers for such a rapidly changing Century?

Certainly, there is much to discuss, share, exchange, critique and explore. Your participation in ascilite2015 offers you the opportunity to be part of a rich discussion among a community of practitioners and researchers. Your evidence-based and critical perspectives are invaluable. Collectively, and in partnership with students, teachers and industries we have to address our global and technological challenges to transform tertiary education for this globally connected and digitally enabled world.

I would particularly like to thank Curtin University for hosting the ascilite2015 Conference, the Curtin Conference Organising Committee for their superb efforts in putting this all together and of course our Conference Sponsors for partnering with us. In my final year as ascilite President, I would also like to thank all those I have served with on the ascilite Executive and the ascilite community for giving me the opportunity to lead such a high caliber professional Society. I am very proud of all that has been achieved during my 9 years on the ascilite Executive.

This is going to be a spectacular ascilite conference here in Perth; let’s bring it on and make the most of it!

Dr Caroline Steel ascilite President
ascilite 2015 Conference Committee

Conference Committee
Vanessa Chang
Conference Co-Convenor
David Gibson
Conference Co-Convenor
Torsten Reiners
Conference Co-Convenor
Brian von Konsky
Conference Co-Convenor
Karen Clarke
Conference Administrator
Susan Willis
Conference Support
Sophie Hazell
Conference Support
Tammie Burke
Conference Support

Executive Committee
Dr Caroline Steel
President
Dr Dominique Parrish
Vice-President
Mark Nichols
Treasurer
Dr Janet Bucha
Committee Member
Chris Campbell
Committee Member
Allan Christie
Committee Member
Liz Coulter
Committee Member
John P Egan
Committee Member
Dr Sue Gregory
Committee Member
Mark Northover
Committee Member
Alan Soong
Committee Member
## ascilite 2015 Reviewers

<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reem Abu Askar</td>
<td>University of Auckland</td>
</tr>
<tr>
<td>Chie Adachi</td>
<td>Deakin University</td>
</tr>
<tr>
<td>Mifrah Ahmad</td>
<td>Sultan Qaboos University, Oman</td>
</tr>
<tr>
<td>Zakiya Al Nadabi</td>
<td>University of Queensland</td>
</tr>
<tr>
<td>Peter Albion</td>
<td>University of Southern Queensland</td>
</tr>
<tr>
<td>Sakinah Alhadad</td>
<td>Griffith University</td>
</tr>
<tr>
<td>Garry Allan</td>
<td>RMIT University, Melbourne Australia</td>
</tr>
<tr>
<td>Hussain Alyami</td>
<td>The University of Auckland</td>
</tr>
<tr>
<td>Cris Antona</td>
<td>Otago Polytechnic</td>
</tr>
<tr>
<td>Douglas Atkinson</td>
<td>Curtin University</td>
</tr>
<tr>
<td>Simon Atkinson</td>
<td>BPP University</td>
</tr>
<tr>
<td>Kofi Ayebi-Arthur</td>
<td>University of Canterbury</td>
</tr>
<tr>
<td>Karin Barac</td>
<td>Griffith University</td>
</tr>
<tr>
<td>Mark Bassett</td>
<td>Auckland University of Technology</td>
</tr>
<tr>
<td>Pierre Benckendorff</td>
<td>The University of Queensland</td>
</tr>
<tr>
<td>Sue Bennett</td>
<td>University of Wollongong</td>
</tr>
<tr>
<td>Trevor Billany</td>
<td>Charles Darwin University</td>
</tr>
<tr>
<td>James Birt</td>
<td>Bond University</td>
</tr>
<tr>
<td>Carina Bossu</td>
<td>University of Tasmania</td>
</tr>
<tr>
<td>Scott Braden</td>
<td>James Cook University</td>
</tr>
<tr>
<td>Rachel Byars</td>
<td>Otago Polytechnic</td>
</tr>
<tr>
<td>Leanne Cameron</td>
<td>Australian Catholic University</td>
</tr>
<tr>
<td>Chris Campbell</td>
<td>The University of Queensland</td>
</tr>
<tr>
<td>Gail Casey</td>
<td>Deakin University, Geelong</td>
</tr>
<tr>
<td>Mark Caukill</td>
<td>Nelson Marlborough Institute of Technology</td>
</tr>
<tr>
<td>Vanessa Chang</td>
<td>Curtin University</td>
</tr>
<tr>
<td>WeiFong Cheng</td>
<td>Tunku Abdul Rahman University College, Malaysia</td>
</tr>
<tr>
<td>Jasmine Cheng</td>
<td>UTS:Insearch</td>
</tr>
<tr>
<td>Frederick Chew</td>
<td>The Australian National University</td>
</tr>
<tr>
<td>Rashmi Chhetri</td>
<td>University of Houston</td>
</tr>
<tr>
<td>Lyn Fung Choy</td>
<td>National Institute of Education</td>
</tr>
<tr>
<td>Tom Clark</td>
<td>Otago Polytechnic</td>
</tr>
<tr>
<td>Thomas Cochrane</td>
<td>Auckland University of Technology</td>
</tr>
<tr>
<td>Meg Colasante</td>
<td>RMIT University, Melbourne</td>
</tr>
<tr>
<td>Linda Corrin</td>
<td>University of Melbourne</td>
</tr>
<tr>
<td>Michael Cowling</td>
<td>CQUUniversity Australia</td>
</tr>
<tr>
<td>Iwona Czaplinski</td>
<td>Queensland University of Technology</td>
</tr>
<tr>
<td>Kun Dai</td>
<td>The University of Queensland</td>
</tr>
<tr>
<td>Barney</td>
<td>Dalgarno</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Kashmira</td>
<td>Dave</td>
</tr>
<tr>
<td>Amanda</td>
<td>Davies</td>
</tr>
<tr>
<td>Irwin</td>
<td>DeVries</td>
</tr>
<tr>
<td>Eva</td>
<td>Dobozy</td>
</tr>
<tr>
<td>Tracy</td>
<td>Douglas</td>
</tr>
<tr>
<td>Linda</td>
<td>Fang</td>
</tr>
<tr>
<td>Helen</td>
<td>Farley</td>
</tr>
<tr>
<td>Victor</td>
<td>Fester</td>
</tr>
<tr>
<td>Kim</td>
<td>Flintoff</td>
</tr>
<tr>
<td>Katharina</td>
<td>Freund</td>
</tr>
<tr>
<td>Stanley</td>
<td>Frielick</td>
</tr>
<tr>
<td>Steve</td>
<td>Gallagher</td>
</tr>
<tr>
<td>Timna</td>
<td>Garnett</td>
</tr>
<tr>
<td>Dragan</td>
<td>Gasevic</td>
</tr>
<tr>
<td>Belma</td>
<td>Gaukrodger</td>
</tr>
<tr>
<td>Megan</td>
<td>Gibbons</td>
</tr>
<tr>
<td>David</td>
<td>Gibson</td>
</tr>
<tr>
<td>Sue</td>
<td>Gregory</td>
</tr>
<tr>
<td>Tim</td>
<td>Griffin</td>
</tr>
<tr>
<td>Paul</td>
<td>Gruba</td>
</tr>
<tr>
<td>Eugene</td>
<td>Gvozdenko</td>
</tr>
<tr>
<td>Patrick</td>
<td>Halloran</td>
</tr>
<tr>
<td>Maggie</td>
<td>Hartnett</td>
</tr>
<tr>
<td>Michael</td>
<td>Henderson</td>
</tr>
<tr>
<td>Vincent</td>
<td>Horner</td>
</tr>
<tr>
<td>Dirk</td>
<td>Iffenthaler</td>
</tr>
<tr>
<td>Leah</td>
<td>Irving</td>
</tr>
<tr>
<td>Tomayess</td>
<td>Issa</td>
</tr>
<tr>
<td>Martin</td>
<td>Jenkins</td>
</tr>
<tr>
<td>Deborah</td>
<td>Jones</td>
</tr>
<tr>
<td>Hazel</td>
<td>Jones</td>
</tr>
<tr>
<td>Anthony</td>
<td>Jones</td>
</tr>
<tr>
<td>Doris</td>
<td>Jung</td>
</tr>
<tr>
<td>Jo-Anne</td>
<td>Kelder</td>
</tr>
<tr>
<td>Shannon</td>
<td>Kennedy-Clark</td>
</tr>
<tr>
<td>Wai Jing</td>
<td>Kwok</td>
</tr>
<tr>
<td>David</td>
<td>Kwok</td>
</tr>
<tr>
<td>Jo</td>
<td>Lander</td>
</tr>
<tr>
<td>Romy</td>
<td>Lawson</td>
</tr>
<tr>
<td>Name</td>
<td>Affiliation</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Yik Sheng Lee</td>
<td>Tunku Abdul Rahman University College, Malaysia</td>
</tr>
<tr>
<td>Sabrina Leone</td>
<td>UniversitÃ© Politecnica delle Marche, Italy</td>
</tr>
<tr>
<td>Fui-Theng Leow</td>
<td>INTI International University, Malaysia</td>
</tr>
<tr>
<td>Danny Liu</td>
<td>Macquarie University</td>
</tr>
<tr>
<td>Jason Lodge</td>
<td>The University of Melbourne</td>
</tr>
<tr>
<td>Swee-Kin Loke</td>
<td>University of Otago</td>
</tr>
<tr>
<td>Kulari Lokuge Dona</td>
<td>Swinburne University of Technology, Melbourne</td>
</tr>
<tr>
<td>Susie Macfarlane</td>
<td>Deakin University</td>
</tr>
<tr>
<td>Stephen Marshall</td>
<td>Victoria University of Wellington</td>
</tr>
<tr>
<td>Romana Martin</td>
<td>Curtin University</td>
</tr>
<tr>
<td>Yvonne Masters</td>
<td>University of New England</td>
</tr>
<tr>
<td>Jenny McDonald</td>
<td>University of Otago</td>
</tr>
<tr>
<td>Mark McGuire</td>
<td>University of Otago</td>
</tr>
<tr>
<td>David McMeekin</td>
<td>Curtin University</td>
</tr>
<tr>
<td>Salome Meyer</td>
<td>EIT Institute of Technology, Hawke’s Bay</td>
</tr>
<tr>
<td>Carol Miles</td>
<td>University of Newcastle</td>
</tr>
<tr>
<td>Aidrina Mohamed Sofiadin</td>
<td>Curtin University</td>
</tr>
<tr>
<td>Heng Ngee Mok</td>
<td>Singapore Management University</td>
</tr>
<tr>
<td>Michelle Moscova</td>
<td>University of Wollongong</td>
</tr>
<tr>
<td>Adrienne Moyle</td>
<td>The University of Auckland</td>
</tr>
<tr>
<td>Ariel Muvhunzwi</td>
<td>Zimbabwe Library Association</td>
</tr>
<tr>
<td>Tse Kian Neo</td>
<td>Multimedia University, Malaysia</td>
</tr>
<tr>
<td>Mai Neo</td>
<td>Multimedia University, Malaysia</td>
</tr>
<tr>
<td>Maria Northcote</td>
<td>Avondale College of Higher Education</td>
</tr>
<tr>
<td>Mark O’Rourke</td>
<td>Deakin University</td>
</tr>
<tr>
<td>Mariya Pachman</td>
<td>Macquarie university</td>
</tr>
<tr>
<td>Abelardo Pardo</td>
<td>The University of Sydney</td>
</tr>
<tr>
<td>Helen Partridge</td>
<td>University of Southern Queensland</td>
</tr>
<tr>
<td>Robyn Philip</td>
<td>Queensland University of Technology</td>
</tr>
<tr>
<td>Rob Phillips</td>
<td>Murdoch University</td>
</tr>
<tr>
<td>Oleksandra Poquet</td>
<td>University of South Australia</td>
</tr>
<tr>
<td>David Porter</td>
<td>University of Wollongong</td>
</tr>
<tr>
<td>Petrea Redmond</td>
<td>University of Southern Queensland</td>
</tr>
<tr>
<td>Torsten Reiners</td>
<td>Curtin University</td>
</tr>
<tr>
<td>Emanuel Reiterer</td>
<td>Curtin University</td>
</tr>
<tr>
<td>Xiang Ren</td>
<td>University of Southern Queensland</td>
</tr>
<tr>
<td>Pauline Roberts</td>
<td>Edith Cowan University</td>
</tr>
<tr>
<td>Andrew Rowatt</td>
<td>Massey University</td>
</tr>
<tr>
<td>Carol Russell</td>
<td>Western Sydney University</td>
</tr>
<tr>
<td>Michael Sankey</td>
<td>University of Southern Queensland</td>
</tr>
<tr>
<td>Name</td>
<td>Last name</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Mark</td>
<td>Schier</td>
</tr>
<tr>
<td>Ratna</td>
<td>Selvaratnam</td>
</tr>
<tr>
<td>Simon</td>
<td>Smith</td>
</tr>
<tr>
<td>Hugh</td>
<td>Soord</td>
</tr>
<tr>
<td>Erica</td>
<td>Southgate</td>
</tr>
<tr>
<td>Lee</td>
<td>Stoner</td>
</tr>
<tr>
<td>Kenneth</td>
<td>Strang</td>
</tr>
<tr>
<td>Jennie</td>
<td>Swann</td>
</tr>
<tr>
<td>Marko</td>
<td>Teras</td>
</tr>
<tr>
<td>Danielle</td>
<td>Teychenne</td>
</tr>
<tr>
<td>Lisa</td>
<td>Thomas</td>
</tr>
<tr>
<td>Sarah</td>
<td>Thornycroft</td>
</tr>
<tr>
<td>Susan</td>
<td>Tull</td>
</tr>
<tr>
<td>Deborah</td>
<td>Veness</td>
</tr>
<tr>
<td>Elena</td>
<td>Verezub</td>
</tr>
<tr>
<td>Susie</td>
<td>Vergers</td>
</tr>
<tr>
<td>Brian</td>
<td>von Konsky</td>
</tr>
<tr>
<td>Nick</td>
<td>Wallingford</td>
</tr>
<tr>
<td>Debbi</td>
<td>Weaver</td>
</tr>
<tr>
<td>brian</td>
<td>Webby</td>
</tr>
<tr>
<td>Simon</td>
<td>Welsh</td>
</tr>
<tr>
<td>Rachel</td>
<td>Whitsed</td>
</tr>
<tr>
<td>Yvonne</td>
<td>Wisbey</td>
</tr>
<tr>
<td>Lincoln</td>
<td>Wood</td>
</tr>
<tr>
<td>Carolyn</td>
<td>Woodley</td>
</tr>
<tr>
<td>Emma</td>
<td>Yench</td>
</tr>
<tr>
<td>Nau</td>
<td>Zaung</td>
</tr>
<tr>
<td>Yu</td>
<td>Zhao</td>
</tr>
</tbody>
</table>
Keynote Speakers and invited Speakers
Keynote Speaker

Jonghwi Park
Programme Specialist & Head of ICT in Education, UNESCO Asia Pacific Regional Bureau for Education

ICT-enabled Quality Lifelong Learning for All: A Call to Action

Monday 30 November
9:30 am to 10:25 am

Dr Jonghwi Park is Programme Specialist in ICT in Education, UNESCO Asia-Pacific Regional Bureau for Education (UNESCO Bangkok). Her main duty is to support 46 Member States of the Asia-Pacific region in integrating ICT in their education system. Led by Dr Park, ICT in Education Team at UNESCO Bangkok provides ICT policy review, technical supports for ICT policy development and regional comparative research on ICT in education. Her team is also specialised in designing and implementing various capacity building modules for teachers and teacher educators to facilitate the effective ICT-pedagogy integration. She oversees high-level policy fora to promote policy dialogues on ICT in Education at regional and sub-regional levels, including the Asia Pacific Ministerial Forum on ICT in Education, the Central Asia Symposium on ICT in Education, and the Regional Seminar on Innovative ICT Practices, to name a few.

Prior to joining the UNESCO Bangkok, Dr Park managed various e-learning projects in both private and public sectors in Korea and worked as ICT-pedagogy consultant for secondary teachers and university professors in Canada. She holds MA in Educational Technology from Hanyang University, Republic of Korea and PhD in Educational Psychology (specialised in Learning Sciences) from McGill University, Canada.

This year marks the end of the Education for All (EFA) movement. Over the last fifteen years, the international community has made collective efforts to provide quality and equal education opportunities for all, regardless of age, gender, income, or geographic locations. This year’s Global Monitoring Report shows the great “quantitative” progress in all six goals of the EFA movement; however, it is still doubtful if we have achieved “quality” education for all that goes beyond these numbers. The new Education Agenda 2030 is therefore set to “ensure inclusive and equitable quality lifelong learning for all” and is incorporated through the UN Summit in September as one of the 17 Sustainable Development Goals (SDGs). One of the distinct features of the Education Agenda 2030 is its emphasis on ICT as an essential enabler in achieving the new goals, due to great anticipation that the recent exponential growth of ICT has brought about. This talk will 1) provide an overview of the achievements and remaining issues in education and development across the Asia Pacific region, along with an introduction to the new Education Agenda 2030, 2) expound the reality and readiness of developing countries in harnessing the full potential of ICT to strengthen the education systems, and 3) invite researchers and educators to collectively deliberate on potential areas for collaboration in order to move forward together to achieve ICT-enabled quality lifelong learning for all.
Jeff Gomez, CEO of Starlight Runner Entertainment, is a leading expert in the field of transmedia storytelling, specializing in the expansion of entertainment properties, premium brands and socio-political themes into highly successful multi-platform franchises and international campaigns.

As a transmedia producer, Jeff also develops the story worlds of films, television shows, toys, books, comics, apps, videogame titles, and theme park attractions across an array of media touchpoints, which deepens audience engagement, and generates massive fan communities and multiple revenue streams. Jeff’s pop culture work has impacted such blockbuster entertainment properties as Disney’s Pirates of the Caribbean, James Cameron’s Avatar, Hasbro’s Transformers, Sony Pictures’ Spider-Man and Men in Black, Microsoft’s Halo, and Nickelodeon’s Teenage Mutant Ninja Turtles. Jeff is currently the transmedia producer of Mark Burnett’s Lucha Underground TV series. Other current clients include Sesame Workshop and Disney Parks & Resorts.

Jeff’s proprietary transmedia development and implementation methods have also been applied to educational and geo-political causes, accelerating positive social movements and increasing resistance to organized crime, violent extremism, and corruption. Through applications of transmedia population activation, he has helped to address crises in Mexico, Colombia, and the Middle East North Africa region. He has recently started work at Curtin University to use transmedia techniques and new narrative models to increase retention among first-year students, particularly those from Low Socio-Economic Status, Aboriginal an Torres Strait Islander, and Regional and Remote backgrounds.

As transmedia development and production techniques are quickly being adopted across the globe, new breakthroughs are being made in teaching and leveraging concerted multi-platform narrative on university campuses. In this exclusive talk, renowned transmedia producer Jeff Gomez will describe the evolution of his process from entertainment franchises to applications in social change and education. Along the way, Jeff will discuss such innovative concepts as “transposition,” where students can adopt video gameplay dynamics to surmount real world academic challenges, and “superpositioning,” where social networks can be leveraged for self-empowerment. Finally, Jeff will discuss how his work on Student Equity out of the Centre for Aboriginal Studies on the Curtin campus has contributed to his discovery of a new narrative model, which has emerged as a direct result of the digital age: The Collective Journey.
Keynote Speaker

Paul Resta
Professor, Department of Curriculum and Instruction, College of Education, University of Texas at Austin

Dr Paul E. Resta holds the Ruth Knight Millikan Centennial Professorship in Learning Technology. He teaches advanced graduate courses in learning technology, instructional systems design, online learning, technology planning, and computer-supported collaborative learning at the University of Texas. His current work focuses on Web-based learning environments, computer-supported collaborative learning, and national planning and policy issues in the use of information and communication technologies in teacher education.

Dr Resta is the Founding President of the International Society for Technology in Education (www.iste.org), the world’s largest educational technology organization, and also served as President of the International Council for Computers in Education. Dr Resta currently serves as the President of the International Jury for the United Nations Education, Scientific and Cultural Organization (UNESCO) King Hamad Bin Isa Al-Khalifa Prize for the Use of Information and Communication Technologies in Education and was recently honored by the UNESCO Director-General for his leadership at the award ceremony in Paris.

Digital Technology to Empower Indigenous Culture and Education

Wednesday 2 December
9:30 am to 10:25 am

Digital information and communication technologies afford a dual potential for indigenous communities. They have the potential to support and sustain Native culture as well as the potential to accelerate its erosion. In education, the new digital technologies may empower and support the creation of new culturally responsive learning resources and environments for Indigenous children. They may also be used to accelerate the dominance of Western-based modes of thought, culture, and learning strategies in the educational environments of Native children and to provide access to cultural knowledge without the knowledge or sanction of indigenous communities. This presentation will discuss both the ways that ICTs have contributed to the loss of Indigenous culture, language, history, and traditional knowledge of American Indians1 and the ways that digital technologies may be used in culturally responsive ways as a tool to empower Indigenous culture and education.

1. Throughout this presentation the phrases American Indian, Indian, Native and indigenous peoples to refer to the descendants of the indigenous peoples of what is now referred to as the United States.
Invited Speaker

**Dirk Ifenthaler**  
*Adjunct Associate Professor at Curtin University, Australia and Affiliate Research Scholar at the University of Oklahoma, USA*

Dirk Ifenthaler is Adjunct Associate Professor at Curtin University, Australia and Affiliate Research Scholar at the University of Oklahoma, USA. His previous roles include Professor and Director, Centre for Research in Digital Learning at Deakin University, Australia; Manager of Applied Research and Learning Analytics at Open Universities, Australia; and Professor for Applied Teaching and Learning Research at the University of Potsdam, Germany. He was a 2012 Fulbright Scholar-in-Residence at the Jeannine Rainbolt College of Education, at the University of Oklahoma, USA.

His research focuses on the intersection of cognitive psychology, educational technology, learning science, data analytics, and computer science. His research outcomes include numerous co-authored books, book series, book chapters, journal articles, and international conference papers, as well as successful grant funding in Australia, Germany, and USA. He is the Editor-in-Chief of the Springer journal Technology, Knowledge and Learning.

Learning analytics emphasizes insights and responses to real-time learning processes based on educational information from digital learning environments, administrative systems, and social platforms. Currently, promising learning analytics applications are being developed which use learner generated data and other relevant information in order to personalise and continuously adapt the learning environment. Students will benefit from learning analytics through optimised learning pathways, personalised interventions, and real-time scaffolds. Learning analytics will provide teachers detailed analysis and monitoring on the individual student level, allowing to identify particularly instable factors, like motivation or attention losses, before they occur. Learning analytics will further facilitate decision-making on institution level and help to analyse churn as well as to identify gaps in curricular planning.

However, are institutions and academics as well as administrative staff prepared for learning analytics? Along a benefits matrix for learning analytics, this presentation will explore the required technical infrastructure, staff capabilities, data mining and visualisation, automated semantic assessment, as well as privacy issues.
Invited Speaker

Marion Kickett
Director, Centre for Aboriginal Studies, Curtin University

Associate Professor Marion Kickett is a Noongar from the Balardong language group. Marion was born in the wheatbelt town of York and spent her early years living on the York Reserve. She has a nursing background and has spent all her working life in the area of health. She lectured in Aboriginal Health and Culture for twenty years and completed her PhD at the University of WA on Resilience from an Aboriginal perspective.

Marion is the newly appointed Director of the Centre for Aboriginal Studies at Curtin University and believes the key to a better future for Aboriginal and Torres Strait Islander people is education for all Australians.

Aboriginal Leadership in Two Worlds
Tuesday 1 December
1.05pm to 2pm

Leadership in two worlds as an Aboriginal woman takes a great deal of courage, energy and most of all resilience. It is having the ability to move frequently and comfortably between two worlds - The Aboriginal World and the more dominate Non-Aboriginal world. Emerging from the current discourse on resilience there has been a shift from the western perspective of resilience that refers to the ability of an individual to overcome adversity and to survive and thrive in what is perceived to be a “normal” environment (Resilience Research Centre, rrc@dal.ca) towards discourses that refer to a more collective and holistic view of resilience. It is this latter view that embraces the Aboriginal concept of resilience.

Resilience from an Aboriginal perspective is the ability to have a connection and belonging to one's land, family and culture, and therefore an identity. Resilience allows the pain and suffering caused from adversities to heal. It is having a dreaming, where the past is brought to the present and the present and the past are taken to the future. Resilience is a strong spirit that confronts and conquers racism and oppression strengthening the spirit. It is the ability not just to survive but to thrive in today's dominant culture (Kickett cited in Singleton 2012). How this resilience is then translated and evidenced by an Aboriginal woman in a contemporary leadership role means one must be able to straddle two worlds.
**The Conceived, the Perceived and the Lived: Issues with 21st Century Learning and Teaching**

Karin Barac  
Griffith University, Australia

A bespoke course design framework was implemented in an Australian university to help academics convert face-to-face courses to blended or online offerings in response to increasing demand for universities to offer 21st century learning environments. While the design framework was grounded in evidence-based approaches that exemplify quality delivery, these course designs have had variable reactions from students in their implementation. As such, a student dimension to the evaluation of the framework was added and the findings from the initial pilot are reported here. It has been found that students may not be as ready for 21st century learning and teaching practices as current rhetoric implies. This paper begins to formulate a theory to help resolve this through an exploration of ideas through the lens of Lefebvre’s *production of space* (1991).

**Keywords:** Course Design, Student Expectations, Blended Learning, Higher Education

**Learning design for science teacher training and educational development**

Ole E. Bjælde  
Centre for Science Education  
Aarhus University, Denmark

Mikkel Godsk  
Centre for Science Education  
Aarhus University, Denmark

Annika B. Lindberg  
Centre for Science Education  
Aarhus University, Denmark

Michael E. Caspersen  
Centre for Science Education  
Aarhus University, Denmark

ikke F. Hougaard  
Centre for Science Education  
Aarhus University, Denmark

This paper presents the impact and perception of two initiatives at the Faculty of Science and Technology, Aarhus University: the teacher training module ‘Digital Learning Design’ (DiLD) for assistant professors and postdocs, and the STREAM learning design model and toolkit for enhancing and transforming modules. Both DiLD and the STREAM model have proven to be effective and scalable approaches to encourage educators across all career steps to embrace the potentials of educational technology in science higher education. Moreover, the transformed modules have resulted in higher student satisfaction, increased flexibility in time, pace, and place, and in some cases also improved grades, pass rates and/or feedback.

**Keywords:** learning design, science education, teacher training, educational development

**Navigate Me: maximising student potential via online support**

Colin Clark  
Student Life and Learning  
UNSW Australia

Rita Kusevskis-Hayes  
Student Life and Learning  
UNSW Australia

Shauna Perry  
Student Life and Learning  
NSW Australia

Jessica Andreacchio  
Student Life and Learning  
UNSW Australia

Jessie Lui  
Student Life and Learning  
UNSW Australia

Ethan Taylor  
Student Life and Learning  
UNSW Australia

This paper reports on the development of NavigateMe, an online tool currently being trialled at the University of New South Wales. The tool is a student-centred initiative designed to support students in accessing university-wide, faculty-based and external information and support services to improve and enhance their learning and university life. Based on responses provided, an action plan is produced that allows students to reflect on their current situation and be directed to specific services and information according to their individual needs and interest at any point in their student life. The tool was developed through a collaborative and iterative process in consultation with staff, students and faculties. The tool is in the strategic plan approved by the DVC(A) and it has received significant funding from the university.

**Keywords:** Online tool; student support; student engagement; technology; enabling; reflection

**Tensions and turning points: exploring teacher decision-making in a complex eLearning environment**

Scott Bradney  
James Cook University

Understanding how university teachers experience and respond to imperatives to integrate digital technologies into their curricula and teaching practice is essential for addressing the gap between the potential of such technologies to articulate with institutional objectives and their uptake by university teachers. This article reports on a study in a regional Australian university focused on capturing the complex ways that individual and contextual factors can interact to support or impede the integration of technology into teaching practice. The lens of cultural-historical activity theory is used to describe and interpret the complex activity of designing and teaching a blended-mode course from the perspective of an experienced lecturer. An analytical focus on emergent tensions and the identification of turning points as markers of critical encounters requiring the lecturer to make decisions and take action provides an insight into potential transformations in their thinking and practice.

**Keywords:** activity theory, university teaching, blended learning, technology integration
Designing an authentic professional development cMOOC

Thomas Cochrane  
Centre for Learning and Teaching  
Auckland University of Technology

Vickel Narayan  
Centre for Learning and Teaching  
Auckland University of Technology

Victorio Burcio-Martín  
Centre for Learning and Teaching,  
Auckland University of Technology

Kate Diesfeld  
Health and Society  
Auckland University of Technology

While there has been a lot of hype surrounding the potential of MOOCs to transform access to education, the reality of completion rates and participant profiles has tempered this hype such that within the hype cycle MOOCs have already hit the trough of disillusionment. However we argue that embedding cMOOC design within an educational design research methodology can enable the design of authentic professional development model that can indeed demonstrate transformation in pedagogical practice. Our design model links mobile learning theory, practice, and critical reflection within an EDR methodology to create an authentic experience for participating lecturers.

**Keywords:** Educational design research, cMOOC, CMALT, professional development, mlearning

Community volunteers in collaborative OER development

Irwin J. DeVries  
Open Learning  
Thompson Rivers University, Canada

The purpose of this comparative case study is to explore and examine the practices of open course design and development community volunteers undertaken in the Open Education Resource universitas (OERu) network, an international partnership of member post-secondary institutions. With a focus on the design and development of an OER-based university-level course, the study identifies and describes features of an OERu open design and development volunteer community and compares and contrasts it to a similar community in the free and open source software (FOSS) development field.

**Keywords:** OER, free and open source software, open course design and development, OERu

Investigating the effectiveness of an ecological approach to learning design in a first year mathematics for engineering unit

Iwona Czaplinski  
Science and Engineering Faculty  
Queensland University of Technology, Australia

This paper reports on the results of a project aimed at creating a research-informed, pedagogically reliable, technology-enhanced learning and teaching environment that would foster engagement with learning. A first-year mathematics for engineering unit offered at a large, metropolitan Australian university provides the context for this research. As part of the project, the unit was redesigned using a framework that employed flexible, modular, connected e-learning and teaching experiences. The researchers, interested in an ecological perspective on educational processes, grounded the redesign principles in probabilistic learning design (Kirschner et al., 2004). The effectiveness of the redesigned environment was assessed through the lens of the notion of affordance (Gibson, 1977,1979, Greeno, 1994, Good, 2007). A qualitative analysis of the questionnaire distributed to students at the end of the teaching period provided insight into factors impacting on the successful creation of an environment that encourages complex, multidimensional and multilayered interactions conducive to learning.

**Keywords:** ecology of learning, affordances, blended learning, probabilistic learning design

A ‘participant first’ approach to designing for collaborative group work in MOOCs

Kulari Lokuge Dona  
Swinburne University of Technology

Janet Gregory  
Swinburne University of Technology

This paper discusses the learning design of two Massive Open Online Courses (MOOCs), the Carpe Diem MOOC and the Autism MOOC, both of which were designed and delivered by Swinburne University of Technology in Melbourne, Australia. The authors propose a set of principles to guide the design and development of MOOCs where the intent is to facilitate interaction and peer support between participants. They present details of how these principles were enacted in the design of the Carpe Diem MOOC and the Autism MOOC, particularly in the design of groups, and suggest that these principles can be viewed as a ‘participant first’ approach to design. Key elements of this approach include accessibility, navigation, clarity and consistency, purposeful use of tools and resources and effective support to enable participants to engage easily in collaborative work in MOOC environments.

**Keywords:** Massive Open Online Course, MOOC, learning design, Carpe Diem, design principles, online learning, MOOC design
Building graduate attributes using student-generated screencasts

Jessica Katherine Frawley  
Faculty of Engineering & IT  
University of Technology, Sydney

Jonathan Tyler  
School of Business  
University of Technology, Sydney

Laurel Evelyn Dyson  
Faculty of Engineering & IT  
University of Technology, Sydney

James Wakefield  
School of Business  
University of Technology, Sydney

There has been an increasing emphasis in recent years on developing the “soft” skills, or graduate attributes, that students need once they finish their university studies in addition to the specific domain knowledge of their discipline. This paper describes an innovative approach to developing graduate attributes through the introduction of an optional assignment in which first-year accounting students designed and developed screencasts explaining key concepts to their peers. Screencasts have been used in recent years for teaching but the approach of students, rather than teachers, making screencasts is far less common. Quantitative and qualitative analysis of student surveys showed that, in addition to improving their accounting knowledge and providing a fun and different way of learning accounting, the assignment contributed to the development and expression of a number of graduate attributes. These included the students’ ability to communicate ideas to others and skills in multimedia, creativity, teamwork and self-directed learning.

Keywords: Graduate Attributes, Student-Generated Content, Peer Learning, Accounting Students

Self-organising maps and student retention: Understanding multi-faceted drivers

David Carroll Gibson  
Curtin University

Matthew Gardner  
Curtin University

Abstract: Student retention is an increasingly important yet complex issue facing universities. Improving retention performance is part of a multidimensional and deeply nested system of relationships with multiple hypothesised drivers of attrition at various sample sizes, population clusters and timescales. This paper reports on the use of a self-organising data technique, Kohonen’s Self Organising Map, to explore the potential retention drivers in a large undergraduate student population in Western Australia over a six-year period. The study applied the self-organizing method to two point-in-time data sets separated by 18 months and was able to identify a number of distinct attrition behaviour profiles appropriate for creating new tailored intervention.

Keywords: Attrition, retention, predictive models, machine learning, educational data mining, learning analytics.
applications, reuse skills and experiences gained to develop new applications, and to share and reuse existing virtual resources. This is against a background of varied support from institutions, colleagues, students, funding bodies and also changing understanding and awareness of virtual environments and virtual reality by the general community as a result of consumer developments such as the popularity of multi-user online role playing amongst both children and adults, and the acquisition of technologies by companies with deeply entrenched technologies. At the same time, the ongoing development and availability of new multi-user virtual environment platforms, associated peripherals and virtual reality technologies promise new and exciting opportunities for educators to collaborate with researchers on a global scale, while also exploring the affordances of these technologies for enhancing the learning outcomes for an increasingly diverse and distributed student population.

Keywords: 3D virtual worlds, immersive learning, repurposing, reusing, virtual environments

Conditions for successful technology enabled learning

Michael Henderson
Monash University

Glenn Finger
Griffith University

Kevin Larkin
Griffith University

Vicky Smart
Griffith University

Rachel Aston
Monash University

Shu-Hua Chao
Monash University

This paper reports on the findings of a 16 month project funded by the Australian Government Office for Learning and Teaching. The project utilized an iterative mixed method design to investigate (a) what digital technologies are used and valued by students and educators for learning, and (b) the different factors within the ‘ecology’ of the university that contribute to these successful uses of digital technology. In total 2838 students and staff across two Australian universities and a further 114 leaders from all 39 Australian universities participated in the project. Through large scale surveys and in-depth case studies thirteen ‘conditions for success’ were identified that appeared to stimulate, support, and/or sustain specific success stories. These conditions relate to different aspects of the ‘ecology’ of higher education – from individual skills and attitudes through to institutional policymaking. This paper describes the conditions for success, and concludes with challenges to the higher education sector.

Keywords: Technology enabled learning

To type or handwritten: student’s experience across six e-Exam trials

Mathew Hillier
Monash University
University of Queensland

This paper reports on student’s experience of e-Exams as collected via surveys undertaken in conjunction with a series of optional live trials of an open source, bring-your-own-device (BYOD) based e-Exam system in six mid-semester undergraduate examinations during 2014 at The University of Queensland, Australia. A set of surveys were conducted prior and following each exam that covered ease of use, technical issues, comfort, confidence, time, typing versus handwriting prowess. Responses to Likert items were compared between those students who elected to type and those that handwrote their exam. Insights as to which issues proved significant for students will prove useful to institutions looking to implement computerised exams.

Keywords: e-exams, computer-assisted assessment, high-stakes testing, bring-your-own-device (BYOD).

Predictors of students’ perceived course outcomes in e-learning using a Learning Management System

David Kwok
Republic Polytechnic, Singapore

This study examined the factors that influence students’ perceived course outcomes in e-learning using the Learning Management System (LMS), and the extent to which the factors significantly predict course outcomes. A total of 255 polytechnic students completed an online questionnaire measuring their responses to 5 constructs (lecturer support, interaction with peers, perceived ease of use, perceived usefulness and course outcomes). Data analysis was conducted using structural equation modeling. Results showed that perceived usefulness and interaction with peers were significant predictors of course outcomes, whereas perceived ease of use and lecturer support did not. However, perceived ease of use had an indirect relationship with course outcomes through perceived usefulness. Lecturer support also had an indirect relationship with course outcome through interactions with peers. Overall, the four antecedent variables contributed to 77.0% of the total variance in course outcomes. Based on the study findings, implications for educators and researchers are discussed.

Keywords: Course outcomes; e-learning; Learning Management System
Digital leap of teachers: two Finnish examples of rethinking teacher professional development for the digital age

Irja Leppisaari
Centria University of Applied Sciences, Finland

Leena Vainio
Omnia, Finland

Digitisation and modernisation of education are central objectives in educational policy. This challenges to rethink teaching methods and update teacher pedagogic expertise. This article examines how two Finnish vocational education institutions are supporting transition of teacher professional development to the digital age. The comparison identified similar elements of success and areas for development. Strategic planning and leading of development for a digital leap is the starting point for success. Wireless connections must be universally available to enable use of one’s own devices (BYOD). However, the key change factor is teacher transformation. Digital technology has led to professional development models being in a state of transition. Traditional face-to-face methods are not enough to modernise teacher competences. Peer learning, teacher-initiated collaborative development, online training, and use of learning badges will be key methods in teachers taking a digital leap. A promising practice is student-teacher partnerships to change practices for the digital age.

Keywords: digitisation of education; teacher professional development; digi-pedagogical competences; pedagogical and technical support; trial culture; peer learning; learning badges

An enhanced learning analytics plugin for Moodle: student engagement and personalised intervention

Danny Yen-Ting Liu
Macquarie University

Jean-Christophe Froissard
Macquarie University

Deborah Richards
Macquarie University

Amara Atif
Macquarie University

Moodle, an open source Learning Management System (LMS), collects a large amount of data on student interactions within it, including content, assessments, and communication. Some of these data can be used as proxy indicators of student engagement, as well as predictors for performance. However, these data are difficult to interrogate and even more difficult to action from within Moodle. We therefore describe a design-based research narrative to develop an enhanced version of an open source Moodle Engagement Analytics Plugin (MEAP). Working with the needs of unit convenors and student support staff, we sought to improve the available information, the way it is represented, and create affordances for action based on this. The enhanced MEAP (MEAP+) allows analyses of gradebook data, assessment submissions, login metrics, and forum interactions, as well as direct action through personalised emails based on these analyses.

Keywords: Moodle, learning analytics, students at risk, engagement, indicators, intervention.

Prior knowledge, confidence and understanding in interactive tutorials and simulations

Jason M. Lodge
ARC Science of Learning Research Centre
Melbourne Centre for the Study of Higher Education, University of Melbourne

Gregor Kennedy
ARC Science of Learning Research Centre
Melbourne Centre for the Study of Higher Education, University of Melbourne

The balance between confidence and understanding can be difficult for students to manage, particularly in digital learning environments where they start with different levels of prior knowledge. The level of prior knowledge and perception of how well understood this prior knowledge is will drive the level of engagement and integration of new knowledge as students are exposed to it. Exploring the relationship between these factors is therefore important for the design of digital learning environments. In this paper we describe two studies examining the levels of confidence and understanding reported by students completing interactive and non-interactive exercises in a digital learning environment. The reported levels of confidence and understanding are then contrasted against pre- and post-test performance and self-reports of the experience completed at the conclusion of the session. The results suggest that students’ prior knowledge influences their confidence and perceived difficulty of the material but does not necessarily influence performance.

Keywords: prior knowledge, confidence, simulations
Higher education students’ use of technologies for assessment within Personal Learning Environments (PLEs)

Lynnette Lounsbury  
Avondale College of Higher Education Lake Macquarie, New South Wales

Paula Mildenhall  
Edith Cowan University Western Australia

Maria Northcote  
Avondale College of Higher Education Lake Macquarie, New South Wales

David Bolton  
West Chester University Philadelphia, USA

Alan Anderson  
University of New England

Higher education students’ use of technologies has been documented over the years but their specific use of technologies for assessment-related tasks has yet to be fully investigated. Researchers at two higher education institutions recently conducted a study which sought to discover the technologies most commonly used by students within their Personal Learning Environments (PLEs). A specific aim of the study was to determine which of these technologies the students used when they complete and submit assessment tasks such as assignments and examinations. Results from questionnaires, focus groups and mapping exercises are reported and the implications of the findings for developing institutional infrastructure to engage students and support their learning are highlighted.

Keywords: assessment, student use of technologies, Personal Learning Environments (PLEs)

Analysis of MOOC Forum Participation

Oleksandra Poquet  
School of Education  
University of South Australia

Shane Dawson  
Learning and Teaching Unit  
University of South Australia

The integration of social learning practices into massive open online courses (MOOCs) raises numerous learning and teaching challenges. While research into formal online education has provided some insight into the strategies for facilitating online learner-to-learner and learner-to-teacher interactions, the differences between MOOCs and more mainstream online courses impede any direct adoption and application. This paper reports a study linking the analysis of MOOC learner and teacher interactions to those in formal online education. The study compares MOOC forum activity of the individuals occasionally posting on the forum, and the ones contributing to the forum regularly. Through the social network analysis of forum posting and voting, we highlight the similarities and differences in how the networks of regular and occasional participants develop and interact. The findings provide some insight into how social learning practices can be promoted regardless of the course population size.

Keywords: social learning, MOOCs, social network analysis, forum interactions

Designing for relatedness: learning design at the virtual cultural interface

Alison Reedy  
Office of Learning and Teaching  
Charles Darwin University;

Michael Sankey  
Learning Environments and Media  
University of Southern Queensland;

This paper draws on the initial analysis of data from an education design research study that investigated the experience of Indigenous higher education students in online learning. The interrelated themes of racial identity and relatedness were found to be significant to the experiences of these students. The paper examines a number of widely used learning design models and online facilitation approaches to determine the extent to which identity and relatedness are considered in the design of online environments and in the facilitation of learning. It concludes with a series of recommendations as to how an institution may mediate a level of relatedness for its students in online learning environments.

Keywords: Relatedness, design models, e-learning, Aboriginal and Torres Strait Islander.
Open and Interactive Publishing as a Catalyst for Educational Innovation

Xiang Ren
University of Southern Queensland

This paper reviews the educational value and innovative uses of open and interactive publishing (OIP) in learning design. OIP is defined in its broadest sense including all the emerging practices brought about by using open approaches and networked technologies to publish and engage with content. It explores two aspects of educational values and uses: (1) Open publications and scholarship provide new forms of open educational resources that stimulate innovations in learning designs and pedagogies beyond textbooks. (2) OIP is by nature a digital learning space whereby creative learners are able to learn from peers and communities through self- and social publishing activities. It also discusses the impact and challenges of OIP inspired innovations, from which practical recommendations are derived.

Keywords: open publishing, interactive publishing, OERs, learning design, learning space

Learning Design for digital environments: agile, team based and student driven

Spiros Soulis
Office of Dean, Learning and Teaching
RMIT University, Australia

Angela Nicolettou
Office of Dean, Learning and Teaching
RMIT University, Australia

Digital learning environments are a catalyst for change and development in Higher Education. One way to respond to this is by going to the foundation of the environment – the learning design process. Using an Australian university’s major project in learning design as an example, this paper will look at how students need to be active members of Curriculum Design Teams to ensure that responsive, relevant and engaging digital learning ecosystems are created. Strategies based in design thinking, socio technical systems, learners as designers, and agile methodologies for project management, will be shown to be central to the effectiveness of the project. Challenges emerging from the projects’ implementation are identified as key directions to be addressed in the evolution of the process.

Keywords: learning design, agile, digital learning, design thinking, elearning

Interdisciplinary opportunities and challenges in creating m-learning apps: two case studies

Erica Southgate
School of Education
The University of Newcastle

Shamus P. Smith
School of Electrical Engineering and Computer Science
The University of Newcastle

Liz Stephens
School of Education
The University of Newcastle

Dan Hickmott
School of Electrical Engineering and Computer Science
The University of Newcastle

Ross Billie
School of Electrical Engineering and Computer Science
The University of Newcastle

Mobile digital devices such as smart phones and tablets support mobile learning (m-learning) and this is reinventing pedagogical and curriculum approaches in education. The unprecedented growth in digital technologies, and the educational apps they support, provides a unique opportunity to increase engagement in learning anywhere and at any time. However, the development of m-learning apps requires collaboration between learning and content experts and technology specialists. Such interdisciplinary collaboration presents both opportunities and challenges. This paper describes two case studies related to m-learning app development with the aim of highlighting the range of educational and technical issues that arose in the collaborative process, and the solutions devised by the interdisciplinary team.

Keywords: m-learning, app development, interdisciplinary teams, literacy, academic literacy, higher education, digital learning
Studying learning engagement analytics in Moodle

Kenneth David Strang
School of Business & Economics
State University of New York

This study examines Moodle engagement analytics and Moodle log data as input to statistical analysis to measure the relationships between online course activity and student learning. Moodle learning analytics indicators were not positively related to, nor could the factors statistically predict, student learning performance. However, several interesting deductions from the learning analytics indicators and system log data give rise to ideas for further research. Sense making of puzzling statistics suggests a mediating pattern of students having poor self-regulation skills, focusing more on the assignment requirements, but less on the lesson materials needed to complete the assignment, and thereby performing worse, thus, resulting in lower grades.

Keywords: analytics and visualization; data science in higher education; learning analytics research and development; big data; online undergraduate business course; student learning performance.

Paving the way for institution wide integration of Tablet PC Technologies: supporting early adopters in Science and Engineering

Diana Taylor
Faculty Learning Engagement Team
Science & Engineering, Curtin University

Judy Schrape
Faculty Learning Engagement Team
Science & Engineering, Curtin University

Jacqui Kelly
Faculty Learning Engagement Team
Science & Engineering, Curtin University

The implementation of a new technology into an institution can be challenging when faced with limited support and restricted procurement procedures. Academics in the Faculty of Science and Engineering at Curtin University have been using tablet PC technology for several years to transform passive presentations into media rich, collaborative and engaging learning experiences. Recent advancements in tablet PC technology have stimulated new interest in tablet technology but also raises the question of how a university responds to the support and procurement of such new technology. In addition, what professional development is required to ensure that staff are comfortable and competent when teaching effectively with these devices. This paper presents the experiences and findings from a Community of Practice at Curtin University that embarked on evaluating and implementing three models of tablet PC at the university. The Community also engaged in a number of different professional workshops that demonstrated various strategies and fostered communication around current practice. The outcomes presented in this paper indicate the need to support academics using tablet PC’s in a responsive way rather, rather than being prescriptive on tools available through service agreements. The collaborative approach to investigating an educational technology situation used in this project could be seen as a model applicable to other contexts that involve many stakeholders across an institution.

Keywords: Tablet PC, Technology Integration, Science and Engineering, STEM, Tablet Technology

MyCourseMap: an interactive visual map to increase curriculum transparency for university students and staff

Lisa B.G. Tee
School of Pharmacy
Curtin University

Kate Rodgers
Curtin Teaching and Learning
Curtin University

Vanessa Chang
Curtin Teaching and Learning
Curtin University

MyCourseMap is an interactive curriculum map created to increase curriculum transparency for both students and staff. It provides access to the entire curriculum at a glance, displays alignment of unit learning outcomes, assessments, course learning outcomes, and graduate attributes and links video from employers, graduates and students to help students reflect on the curriculum and its relevance. A prototype developed for the Bachelor of Pharmacy course at Curtin University as a proof-of-concept was tested and evaluated in 2014 and 2015. This evaluation utilised a mixed-methods approach using a blend of quantitative and qualitative data through online survey and structured focus group discussions. From the evaluation, the perceived benefits of the MyCourseMap include students’ increased understanding of their degree structure and its relevance to their chosen profession. From a staff perspective, the MyCourseMap helps with review and development of curriculum and professional accreditation. Barriers and challenges have led to prototype refinements.

Keywords: Interactive curriculum map, mobile application, transparency, staff and student evaluation
Standing on the shoulders of others: creating sharable learning designs

Debbi Weaver
Learning and Teaching
La Trobe University, Australia

Samantha Duque
Academic Services International, Academic Partnerships, USA

As online and blended learning becomes the norm in higher education practice, academic developers and learning designers are increasingly required to work as part of curriculum development teams to facilitate the design of engaging and interactive online courses and activities. A range of highly-effective models of workshops and programs focused on curriculum design have been developed and widely reported, each with the primary aim of developing a ‘learning design’. But what form does this learning design take? How is it prepared, shared and edited amongst the curriculum team members? And how is it then translated into a functioning online site or activity for students to access? This paper focuses on the output of curriculum design workshops, and presents a highly simplified and accessible solution for time-poor curriculum teams.

Keywords: Learning design; online learning; rapid curriculum design, backwards mapping

Higher Education Teachers’ Experiences with Learning Analytics in Relation to Student Retention

Deborah West
Learning and Teaching
Charles Darwin University

Henk Huijser
Flexible Learning and Innovation
Batchelor Institute of Indigenous Tertiary Education

David Heath
Charles Darwin University

Alf Lizzio
Learning Futures
Griffith University

Danny Toohey
School of Engineering and Information Technology
Murdoch University

Carol Miles
Teaching and Learning
The University of Newcastle

This paper presents findings from a study of Australian and New Zealand academics (n = 276) that teach tertiary education students. The study aimed to explore participants’ early experiences of learning analytics in a higher education milieu in which data analytics is gaining increasing prominence. Broadly speaking participants were asked about: (1) Their teaching context, (2) Their current student retention activities, (3) Their involvement in, and aspirations for, learning analytics use, (4) Their relationship with their institution around learning analytics. The sampled teaching staff broadly indicated a high level of interest but limited level of substantive involvement in learning analytics projects and capacity building activities. Overall, the intention is to present a critical set of voices that assist in identifying and understanding key issues and draw connections to the broader work being done in the field.

Keywords: Learning Analytics, Student Retention, Higher Education

Exploratory and Collaborative Learning Scenarios in Virtual World using Unity-based Technology

Karin Wilding
Graz University of Technology

Vanessa Chang
Curtin University, Australia

Judy Schrape
Faculty Learning Engagement Team
Science & Engineering,
Curtin University

This paper focuses on learning tools developed for the integration in virtual learning worlds that enable instructors to create in-world scenarios more easily. The tools were implemented in consideration of several learning concepts on exploratory, collaborative and challenge-based approaches. It elaborates on the design and development of a virtual world project on two platforms, namely Unity and Open Wonderland which is based on an Egyptian learning
Remote Access Laboratories for Preparing STEM Teachers: A Mixed Methods Study

Wu Ting
Australian Digital Futures Institute
University of Southern Queensland

Peter R Albion
School of Teacher Education and Early Childhood
University of Southern Queensland

Lindy Orwin
Australian Digital Futures Institute
University of Southern Queensland

Alexander Kist
School of Mechanical and Electrical Engineering
University of Southern Queensland

Andrew Maxwell
School of Mechanical and Electrical Engineering
University of Southern Queensland

Ananda Maiti
Australian Digital Futures Institute
University of Southern Queensland

Bandura’s self-efficacy theory provided the conceptual framework for this mixed methods investigation of pre-service teachers’ (PSTs) self-efficacy to teach Science, Technology, Engineering and Mathematics (STEM) subjects. The Science Teaching Efficacy Belief Instrument-B (STEBI-B) was modified to create the Technology Teaching Efficacy Belief Instrument (T-TEBI). Pre-test and post-test T-TEBI scores were measured to investigate changes in PSTs’ self-efficacy to teach technology. Interviews and reflections were used to explore the reasons for changes in pre-service teachers’ self-efficacy. This paper reports results from a pilot study using an innovative Remote Access Laboratory system with PSTs.

Keywords: Self-efficacy, STEM, Remote Access Laboratories (RAL)

A Mobile App in the 1st Year Uni-Life: A Pilot Study

Yu Zhao
The University of Sydney

Abelardo Pardo
School of Electrical and Information Engineering
The University of Sydney

The transition process that students undergo from high school to university, especially during the first year has a significant impact on their academic success. Higher education institutions try to cater for the needs of these students with a variety of initiatives. Although there are numerous resources made available in university websites, in most cases, they are underutilized. With the high adoption rate of smart phones among university students, mobile apps can be used to provide personalised support during the transition from high school to university. But, questions such as what is the truly relevant information that should be given to students, how should the information be delivered, and how should such a mobile application be designed remain unanswered. To explore these issues, we have developed a prototype mobile application called “myUniMate”. We conducted a pilot study in which 13 first year engineering students used the app for 6 weeks during a normal semester. Both qualitative and quantitative data was gathered to analyse the usability and feasibility of the app and to identify the features that were more useful. The obtained results have provided clear guidelines for the evolution of the application.

Keywords: transition, mobile learning
Learning maps: A design-based approach for capacity building in tertiary online learning and teaching

Chie Adachi  
Teaching Support  
Deakin University

Mark O’Rourke  
Teaching Support  
Deakin University

This paper addresses the importance of creating high quality and contextualized resources for capacity building of academics for online learning and teaching. Drawing on a design-based research framework, the paper presents work-in-progress learning maps. Learning maps are an increasingly popular concept and resource among learning designers which capture and organize various theories and resources for the target learners. In a climate where the tertiary sector struggles to provide quality resources and support for teaching and learning practice, we argue that the creation and implementation of learning maps poses clear advantages and a successful model for teacher capacity building, and subsequently improves student learning.

Keywords: Design-based research, Learning Map, Online Learning, Instructional Design

Using Learning Design to Unleash the Power of Learning Analytics

Simon Paul Atkinson  
BPP University, United Kingdom

New learning technologies require designers and faculty to take a fresh approach to the design of the learner experience. Adaptive learning, and responsive and predicative learning systems, are emerging with advances in learning analytics. This process of collecting, measuring, analysing and reporting data has the intention of optimising the student learning experience itself and/or the environment in which the experience of learning occurs. However, it is suggested here that no matter how sophisticated the learning analytics platforms, algorithms and user interfaces may become, it is the fundamentals of the learning design, exercised by individual learning designers and faculty, that will ensure that technology solutions will deliver significant and sustainable benefits. This paper argues that effective learning analytics is contingent on well structured and effectively mapped learning designs.

Keywords: Learning analytics, learning design, SOLE Model, visualisation

The future of practice-based research in educational technology: Small steps to improve generalisability of research

Sakinah S. J. Alhadad  
Griffith University

Implicit in the discourse of evidence-based practice are two fundamental concerns. One is the generalisability of research evidence where issues of external validity are integral to translation, relevance, and application in complex and multifaceted higher educational contexts. The other relates to practice-based evidence, where issues of internal validity impact on the design, interpretation, and dissemination of research. While practice-based research has an advantage in terms of high external validity, threats to internal validity can cause significant issues in terms of the subsequent inference, translation, and generalisability of findings. In educational technology, evaluation and research of e-learning in higher education is conducted by both practitioners and academics, each contributing different pieces of the puzzle towards a better understanding of the learning processes in complex real world settings. In this paper, I propose small, practical steps towards improving the generalisability of practice-based research.

Keywords: Practice-based research, evaluation research, research methods, validity, measurement, generalisability

Features of an online English language testing interface

Zakiya Al Nadabi  
Language Centre, Sultan Qaboos University, Oman  
School of Education, University of Queensland, Australia

This paper describes an online English language proficiency testing platform that uses Moodle-hosted selected and open response questions along with other useful features. These features include enhanced test security settings aided by the Safe Exam Browser; an embedded MP3 player for listening skills; and a split screen mode for reading tests. The paper highlights significant elements of this particular approach to testing as they apply to formal high-stakes e-exams (testing of learning) and for continuous assessment (testing for learning). Snapshots of sample online test materials illustrate these features. Issues of concern in the field of web-based, computer-assisted assessment will be discussed in light of experience gained from a recent pilot study in which this interface was used in a series of mock exams in 2015.

Keywords: Moodle, web-based testing interface, technology-enhanced language assessment
Fostering deep understanding in geography by inducing and managing confusion: an online learning approach

Amaël Arguel
School of Education
Macquarie University

Rod Lane
School of Education
Macquarie University

Confusion is an emotion that is likely to occur when learning complex concepts. While this emotion is often seen as undesirable because of its potential to induce frustration and boredom, recent research has highlighted the vital role confusion can play in student learning. The learning of topics in geography such as tropical cyclone causes and processes can be particularly difficult because it requires the reconstruction of intuitive mental models that are often robust and resistant to change. This paper presents the design framework for an online module designed to enhance university students’ depth of knowledge of tropical cyclones. In particular the intervention aims manage the level of confusion during learning. We hypothesise that in this way learners can engage with the cognitively demanding ideas in this topic and they are less likely to experience emotions such as frustration and boredom, which would be detrimental to the development of deep understanding.

Keywords: Online module; geography; confusion; conceptual change; academic emotions

Towards a Pedagogy of Comparative Visualization in 3D Design Disciplines

Pierre Benckendorff
The University of Queensland
Australia

Belina Gibbons
University of Wollongong
Australia

Marlene Pratt
Griffith University
Australia

Spatial visualization and interpretation are important skills for designers. However, these skills generally require significant experiential development over the course of years. Visualizations allow the human brain to convey complex spatial concepts in intuitive, navigable and manipulable forms improving learner outcomes and perceptions. But often these visualizations are studied as single modality solutions. Dual modality and multimedia presentation studies show positive improvements in learner outcomes but dual modality is often difficult to compare. This paper presents ongoing research in the use of comparative multimodal visualizations produced with emerging technology solutions in 3D Design classrooms. Presented are previous findings from multimedia design and a methodology to widen the scope of study. The context for this study is a university first year undergraduate course in architectural design. The presupposed outcome is that students become adept at interpretation and mental conversion at a rate greater than they would through more traditional curricular means.

Keywords: Visualization; dual modality; 3D printing; virtual reality; multimedia; architecture.

Using expectation confirmation theory to understand the learning outcomes of online business simulations

Pierre Benckendorff
The University of Queensland
Australia

Belina Gibbons
University of Wollongong
Australia

Marlene Pratt
Griffith University
Australia

The purpose of this paper is to contrast learners’ expectations of the knowledge and skills developed by an online business simulation at the start of the semester with their perceptions of how well the simulation performed in meeting these expectations at the end of the semester. The study draws on expectation confirmation theory to measure the expectations and perceived performance of two business simulations. Data were collected from 225 students studying at two Australian universities. The findings indicate that both online business simulations performed strongly in terms of helping learners understand strategy, real world problems and the importance of interaction and cooperation between different business departments. Both simulations also performed well in developing skills across all five levels of Bloom’s taxonomy. There were some notable differences between expectations and performance between the two cohorts and the implications of these differences for business simulation choice and design is discussed.

Keywords: business, simulation, pedagogy, assessment, learning outcomes
Implementing blended learning at faculty level: Supporting staff, and the ‘ripple effect’

Rosy Borland
Faculty of Science
Swinburne University of Technology

Liam McManus
Faculty of Science
Swinburne University of Technology

More and more Australian universities are mandating blended learning approaches, whether for efficiency reasons to reduce face-to-face classes or the need for scarce teaching spaces, to create more engaging learning environments by accessing the benefits online learning provides, or simply to keep up with competitors who have implemented such approaches.

The challenges surrounding the adoption of online teaching approaches are not new. In the face of pressure to offer greater flexibility in their course offerings, Australian universities have, for a number of years, grappled with how to successfully embrace technology-supported learning in a way which engages both academic staff and their students.

In this paper, we use an action research approach to describe how blended learning was introduced at a STEM faculty. We focus on how this has resulted in certain types of staff support provided. We also highlight the faster than expected diffusion of innovation that we have observed.

Keywords: Blended learning, staff engagement, change management

The ethical considerations of using social media in educational environments

Leanne Cameron
Australian Catholic University

Kim Mahoney
Hills Grammar School

Students in an undergraduate pre-service teacher education course were asked to utilise Twitter to access the professional educational community. Their tweets were to be used to promote the sharing of educational resources and establish a local supportive community of practice, to keep others informed of their teaching experiences and provide a vehicle for support and advice, both inside and outside the university. The ethical issues in relation to the use of social media in educational environments were wide-reaching and complex. This paper reports on a pilot study that begins an investigation on the practices of university students using social media in their studies. The ultimate aim of the project is to develop workable guidelines on the ethical use and practice of social media use in university education.

Keywords: Social media, Ethical use of Social Media, Professional Learning Networks

Teachers Cloud-based Content Creation in light of the TPACK Framework: Implications for Teacher Education

Chris Campbell
The University of Queensland

Aisha Al Harthi
Sultan Qaboos University

With the advent ubiquitous computing, cloud-based content creation is becoming more popular and readily accessible. In Malaysia the government equipped 10,000 public primary and secondary schools with 4G Internet connectivity and a cloud-based learning environment called the Frog VLE. This study investigated the alignment and compatibility the TPACK framework to teachers’ learning designs. A rubric was developed, based on the TPACK framework, and after feedback from an expert panel, 152 cloud-based sites were analysed. Results show that most areas were somewhat aligned with the TPACK framework while three areas were fully aligned and one area was minimally aligned. The fully aligned areas were use of links, design navigation flow and design functionality. The minimally aligned area was interactivity. This research finding can potentially inform teacher education as if specifically taught this can empower teachers when creating cloud-based content.

Keywords: learning design, TPACK, teacher education, cloud-based content

The Next Wave of Learning with Humanoid Robot: Learning Innovation Design starts with “Hello NAO”

Xin Ni Chua
Monash University

Esyin Chew
Monash University

Today, humanoid robotics research is a growing field and humanoid robots are now increasingly being used in the area such as education, hospitality and healthcare. They are expected to serve as humans’ daily companion and personal assistant in including in education. On the other hand, students may complain that the classroom today is boring and not engaging. Students are using mobile devices extensively but the traditional lectures remain PowerPoints. Is there a educational synergy for integrating a humanoid robot in daily teaching? Responding to the needs, the paper reports a work-in progress pilot study that designs the learning innovation with humanoid robot, NAO. Initial experiences are reported. Rule-based reasoning and progress test design are developed and recommended. The educational program is developed based on the design and pilot tested at the learning and teaching at Monash University Malaysia. Future work and recommendation are discussed in innovative technology engaging learning.

Keywords: learning enhancement, NAO robot in education, IT education innovation
Loop: A learning analytics tool to provide teachers with useful data visualisations

Linda Corrin, University of Melbourne  Gregor Kennedy, University of Melbourne
Paula de Barba, University of Melbourne  Aneesha Bakhraria, University of South Australia
Lori Lockyer, Macquarie University  Dragan Gasevic, University of Edinburgh
David Williams, University of Melbourne  Shane Dawson, University of South Australia
Scott Copeland, University of South Australia

One of the great promises of learning analytics is the ability of digital systems to generate meaningful data about students’ learning interactions that can be returned to teachers. If provided in appropriate and timely ways, such data could be used by teachers to inform their current and future teaching practice. In this paper we showcase the learning analytics tool, Loop, which has been developed as part of an Australian Government Office of Learning and Teaching project. The project aimed to develop ways to deliver learning analytics data to academics in a meaningful way to support the enhancement of teaching and learning practice. In this paper elements of the tool will be described. The paper concludes with an outline of the next steps for the project including the evaluation of the effectiveness of the tool.

Keywords: Learning Analytics, Higher Education, Learning Design, Data Visualisation

An investigation of blended learning experiences of first-year Chinese transnational program students at an Australian university

Kun Dai, University of Queensland

The extensive uses of information and communication technologies (ICT) in higher education have reformed the traditional classroom-based study mode. Blended learning, the combination of online and offline learning methods, has become an essential teaching and learning strategy for both instructors and students. An increasing number of Chinese students choose to conduct their undergraduate study through China-Australia transnational programs. Due to the differences in teaching and learning styles between Chinese and Australian universities, the perceptions of transnational students on blended learning strategies may impact their study experience and the adaptation to a different environment. Although previous studies have investigated learning experiences and adaptation issues of Chinese students from various perspectives, limited studies have explored the perceptions of Chinese transnational program students on blended learning in their first-year Australian study. This study describes a series of preliminary qualitative findings of these students blended learning experiences, especially the online section, in an Australian university.

Keywords: Blended learning; Online Learning; Transnational education; Chinese students; Higher education

Teaching Complex Theoretical Multi-Step Problems in ICT Networking through 3D Printing and Augmented Reality

Michael Cowling, School of Engineering & Technology, CQ University, Australia  James Birt, Faculty of Society and Design, Bond University, Australia

This paper presents a pilot study rationale and research methodology using a mixed media visualisation (3D printing and Augmented Reality simulation) learning intervention to help students in an ICT degree represent theoretical complex multi-step problems without a corresponding real world physical analog model. This is important because these concepts are difficult to visualise without a corresponding mental model. The proposed intervention uses an augmented reality application programmed with free commercially available tools, tested through an action research methodology, to evaluate the effectiveness of the mixed media visualisation techniques to teach ICT students networking. Specifically, 3D models of network equipment will be placed in a field and then the augmented reality app can be used to observe packet traversal and routing between the different devices as data travels from the source to the destination. Outcomes are expected to be an overall improvement in final skill level for all students.

Keywords: mixed media visualization, networking, augmented reality, 3D printing, ICT
A comparison of undergraduate student experiences of assessed versus non-assessed participation in online asynchronous discussion groups: Lessons from a cross disciplinary study in health and sociology

Tracy Douglas
School of Health Sciences
University of Tasmania

Carey Mather
School of Health Sciences
University of Tasmania

Sandra Murray
School of Health Sciences
University of Tasmania

Louise Earwaker
Library, Division of Students and Education University of Tasmania

Allison James
Department of Maritime and Logistics Management

Jane Pittaway
School of Health Sciences
University of Tasmania

David Williams
University of Melbourne

Shane Dawson
University of South Australia

Brady Robards
School of Health Sciences
University of Tasmania

Susan Salter
School of Health Sciences
University of Tasmania

This paper discusses a pilot study investigating perceptions from undergraduate students enrolled in units in which asynchronous online discussion boards were utilised formatively or linked to summative assessment. Of the influences that determine level of student engagement in online discussions, one key factor is whether discussions are assessed. Whilst assessing student discussions does motivate participation, this approach is not always valued by students as they are critical of the value of asynchronous discussion boards to their learning. The type of postings can be an influencing factor in student engagement, with effective facilitation, clear purpose and group participation perceived to be important. Students also viewed discussion boards as a platform in which peer engagement and information sharing occurred. Students who were enrolled in a unit in which discussion postings were assessed demonstrated emerging critical thinking skills. Students strongly indicated discussion boards must be fit-for-purpose and integrated into the curriculum regardless of whether they are assessed or not.

Keywords: assessment, discussion boards, asynchronous, student, engagement, higher education

Digital Futures research and society: action, awareness and accountability

Joanne Doyle
Australian Digital Futures Institute
University of Southern Queensland

Lisa McDonald
Australian Centre for Sustainable Business and Development

Michael Cuthill
Institute for Resilient Regions
University of Southern Queensland

Mike Keppell
Learning Transformations
Swinburne University of Technology

The contemporary Higher Education research environment demands ‘real-world’ impact as a key means of accounting for public sector funding. As such, there is increased pressure on researchers and research institutions to ensure research delivers outcomes for public good. This paper reports on research focused on a Digital Futures collaborative research program. The aim of the research was to explore how researchers and research stakeholders understand research impact. Impact was articulated as ‘making a difference’ however that ‘difference’ was translated by research participants as meaning the tangible impacts related to quantitative components of research activities. The more subtle influences of research impact on society were less well articulated. Results from this research suggest that in the complex world of impact, action, awareness and accountability, as elements of research practice, are key to creating maximum value from knowledge creation initiatives.

Keywords: research impact; technology; learning; evaluation; Higher Education; collaboration
Making the Connection: Allowing access to digital higher education in a correctional environment

Helen Farley  
Australian Digital Futures  
Institute University of Southern Queensland

Sharron Dove  
Australian Digital Futures  
Institute University of Southern Queensland

Stephen Seymour  
Australian Digital Futures  
Institute University of Southern Queensland

John Macdonald  
Australian Digital Futures  
Institute University of Southern Queensland

Catherine Abraham  
Australian Digital Futures  
Institute University of Southern Queensland

Chris Lee  
Australian Digital Futures  
Institute University of Southern Queensland

Susan Hopkins  
Open Access College  
University of Southern Queensland

Jacinta Cox  
Australian Digital Futures  
Institute University of Southern Queensland

Brady Robards  
School of Health Sciences  
University of Tasmania

In most Australian correctional jurisdictions, prisoners are not allowed access to the internet precluding them from participating in higher education online. This paper reports on an Australian government-funded project, *Making the Connection*, which is taking digital technologies, that don’t require internet access, into correctional centres to enable prisoners to enroll in a suite of pre-tertiary and undergraduate programs. A version of the University of Southern Queensland’s learning management system has been installed onto the education server of participating correctional centres. The second stage of the project will see notebook computers preloaded with course materials, allocated to participating prisoners. At the time of writing, the project has been deployed at eight correctional centres in Queensland and Western Australia, with negotiations underway for further rollout to Victoria, New South Wales and South Australia. It is expected that the technologies and processes developed for this project will enable the delivery of higher education to other cohorts without access to reliable internet access.

**Keywords:** correctional education; digital inclusion; digital divide; higher education; digital equity

Badging digital pathways of learning

David Gibson  
Curtin Learning and Teaching  
Curtin University

Kathryn Coleman  
Melbourne Graduate School of Education  
University of Melbourne

Leah Irving  
Curtin Learning and Teaching  
Curtin University

Educators worldwide are witnessing a change in thinking concerning digital learning, teaching and assessment resources as well as the theories and practices connected to making claims about learning based on digital evidence. These shifts are occurring as three elements have combined to form new digital pathways for learning: 1. Self-organizing online global communities engaged in informal learning activities, 2. A new globally supported mechanism for sharing and managing data, files, images and metadata concerning those activities known as ‘open badges’, and 3. Rapidly changing conceptions of higher education, continuing education, and the boundaries of informal to formal learning. So in addition to learners being on a personal learning journey to fulfill their aspirations for professional growth, higher education institutions worldwide are also on learning journeys to modernize and respond to these changes, which have the potential for disruption and transformation of the university’s business model and role in society.

**Keywords:** Digital badges, learning pathways, credentials, lifelong learning

The Agile Learning Model: Using big data to personalise the acquisition of accounting skills

Brent Gregory  
UNE Business School  
University of New England

Matthew Wysel  
UNE Business School  
University of New England

Sue Gregory  
School of Education  
University of New England

Big data mirrors the accounting process to the extent that it deals with how we capture, categorise, summarise and report information so that users can make informed decisions. By modelling this process, we can both demonstrate the future of accounting to our students, and build an agile learning environment that identifies for a student their ‘next crucial action’ in the learning process. Presented in this paper is a pilot study.

**Keywords:** Agile learning, education big data, personalised learning, automated intervention
PST Online: Preparing pre-service teachers for teaching in virtual schools

Steve Grono
School of Education
University of New England

Yvonne Masters
School of Education
University of New England

Sue Gregory
School of Education
University of New England

Improvements in available technologies and an increased popularity of online learning spaces have seen a shift in the dominant ways students engage with formal and informal learning in their day-to-day lives. This is especially true for the distance education experience through the rise in virtual schools. As this shift occurs, it becomes increasingly important to reflect these new changes in curriculum design for pre-service teachers. Increasingly, these pre-service teachers will be engaging with students, not just in the traditional, physical classroom space, but also in online spaces and via distance. These new virtual learning environments require their own separate skillset to be properly navigated by both the learner and teacher to provide meaningful and rich learning experiences. In order to develop resources to facilitate the learning of these skills, current pre-service teachers have identified their own understandings of online learning and their readiness to teach within these new spaces.

Keywords: virtual schools, pre-service teachers, online teaching, OER, distance education

Can learning analytics provide useful insights? An exploration on course level

Eva Heinrich
Massey University
New Zealand

This concise paper reports on an analysis of access logs of a first year university course that was delivered in a blended format. This analysis is an initial step in a wider project aimed at investigating if learning analytics can provide useful insights on course level, targeting both student learning and the needs of teachers. Preliminary findings show potential in noting when students need targeted help, a lack of correlation between access logs and grades, and insights into the degree by which course completion rates are affected by the lack of student engagement.

Keywords: Learning analytics, first year courses, blended learning

A pedagogical end game for exams: a look 10 years into the future of high stakes assessment

Mathew Hillier
Monash University, Australia

Belina Gibbons
University of Tasmania, Australia

This short paper looks ahead 10 years to a possible future for high stakes assessment in Australian higher education. The authors discuss some of the drivers pushing towards this future along with desirable operational features and pedagogical capabilities of an e-exam system for the year 2025. This paper represents a vision or road map to which a newly established, half million-dollar, Australian Government Office for Learning and Teaching national project on e-exams will be contributing over the next three years.

Keywords: high-stakes assessment, forecasting, futures, e-exams

Occupational Medicine Simulation Project

Aaron Griffiths
F/Xual Education Services

In 2013 the Occupational and Aviation Medicine (OAM) unit of the University of Otago secured a project grant to develop a simulated virtual world environment for students of this unit, specifically those studying occupational medicine as distance learners. The simulation would be employed by facilitated student groups to contextualize occupational data for specific work processes, to re-enact occupational health examinations in the compiling of clinical assessments and to develop a research proposal for assessing health outcomes in these hazard environments. Developmentally, the underlying intent of the project was twofold; firstly, to investigate the virtual elements essential to the creation of an authentic context for learning and secondly, to explore those virtual aspects that might provide a supportive learning environment for the geographically dispersed student body. This paper details the pedagogical and design rationale employed by the author in the pursuit of this intent.

Keywords: Virtual, simulation, occupational medicine, contextual learning, authenticity, presence
Are Higher Education Institutions Prepared for Learning Analytics?

Dirk Ifenthaler
Curtin University

Learning analytics may provide multiple benefits for higher education institutions and for involved stakeholders by using different data analytics strategies to produce summative, real-time and predictive insights and recommendations. However, are institutions and academic as well as administrative staff prepared for learning analytics? Considering a learning analytics benefits matrix, this study investigates the current capabilities for learning analytics at higher education institutions, explores the importance of data sources for a valid learning analytics framework, and builds an understanding on how important insights from learning analytics are perceived. Findings revealed a lack of staff and technology being available for learning analytics projects. It is concluded that more empirical research focussing on the validity of learning analytics frameworks and on expected benefits for learning and instruction is required to confirm the high hopes this promising emerging technology is suggesting.

Keywords: learning analytics, benefits matrix, higher education, readiness

A blended learning ecosystem: What are the motivational issues for students?

Alison Kearney
Massey University

Mandia Menti
Massey University

As technologies evolve, the places and spaces for learning are rapidly changing and learners are required to take increasing responsibility for directing their own learning. By doing so, students are presented with a range of opportunities and challenges within these complex learning environments. Research suggests that an important consideration is the effect on learner motivation. This paper reports on motivational issues for students working within an online post-graduate professional teacher education programme that blends lecturer-directed and student-directed learning. In 2014, students completed a survey about their experiences of setting their own learning goals and negotiating their own curriculum with an emphasis on motivation. This was followed by a series of interviews aimed at exploring these experiences in more depth. Preliminary findings highlight anxiety about choosing course content and setting learning goals were among key concerns identified by students. Results provide insight into motivational considerations for learners in complex learning eco-systems.

Keywords: blended learning; self-directed learning; motivation; inquiry learning and inter-professional learning, learning ecosystems

Measuring creativity in collaborative design projects in pre-service teacher education

Shannon Kennedy-Clark
University of Notre Dame, Australia

Sean Kearney
University of Notre Dame, Australia

Katrina Eddles-Hirsch
University of Notre Dame, Australia

Rod De La Hoz
University of Notre Dame, Australia

Vilma Galstaun
University of Sydney

Penny Wheeler
Australian Catholic University

Pre-service teacher education in the use of information and communication technologies (ICTs) has been the focus of numerous studies. In this paper, we further extend this body of research by examining the functions of creativity and how creative outputs are measured in pre-service teacher education, chiefly by discussing how students are assessed in terms of their creativities in design projects. The research aimed to evaluate the measures that had been put in place to ensure that the creative value of the student tasks was assessed objectively. Several strategies were used including a process-based task design, opportunities for students to revisit and refine designs, collaborative brainstorming, self-assessment, rubrics, panel marking by experts, and a design space that supported creativity. It was found that while interpretations of creativity were subjective, the students’ aim to develop creative outputs was fostered by the peer review and self-review processes adopted for the study.

Keywords: creativity, assessment, collaboration, design learning, pre-service teacher education
How to develop an online community for pre-service and early career teachers?

Nick Kelly  
University of Southern Queensland, Queensland  
University of Technology

Marc Clarà  
University of Lleida

Steven Kickbusch  
Queensland University of Technology

This paper contributes a number of design principles for developing large-scale online communities of pre-service and early career teachers (PS&ECTs). It presents the paradigms of connected learning, networked learning and communities of practice and contrasts them. It describes the potential for online communities to meet the needs of PS&ECTs and it identifies gaps that exist within certain types of existing online communities that currently support PS&ECTs. The paper proposes design principles for a new type of online community for PS&ECTs. These principles are drawn from the literature and from the preliminary outcomes of a pilot study.

Keywords: teacher education, online community, early career, pre-service, design based research, connected learning, networked learning, community of practice

A digital what? Creating a playspace to increase the quality of technology-enhanced teaching and learning

Heather Lamond  
Massey University, New Zealand

Andrew John Rowatt  
Massey University, New Zealand

This paper outlines a work in progress to create a shared learning space that will enable teaching staff to be exposed to a broad range of established and emerging digital technologies with the aim of increasing their digital literacy and self-efficacy levels so that technologies can be integrated into teaching practice. The project is a partnership between the Centre for Teaching and Learning, and the Library and will facilitate easy, supported access to technologies that individual teaching staff would not otherwise be able to experience. Premised on the importance of experiential learning to develop knowledge, skills and confidence the space will be designed for collaborative and play-based learning and development.

Keywords: barriers to adoption, emerging technology, digital literacy, teacher development

Collaboration between Primary Students and the Use of an Online Learning Environment: The Previous Collaborative Work Experiences Factor

Aikaterini Kokkinaki  
University of Bristol

This paper reports findings from a research study which involved the use of an Online Learning Environment by Greek primary students in their school classroom and from home for a period of six weeks for the development of a wiki for a school project. This research study sought to answer whether and how collaboration can be supported between primary students with the use of an Online Learning Environment. Although collaboration is often reported as the outcome from the use of technology in an educational context, this paper presents research findings to show that collaboration between primary students with the use of an Online Learning Environment is associated with students’ previous collaborative work experiences.

Keywords: Collaboration, Online Learning Environment, Primary Education, Previous Experiences

The three pillars to building staff capability to create digital learning experiences

Catherine Manning  
University of Melbourne

Hero Macdonald  
University of Melbourne

Many institutions are grappling with building staff capability in the complex task of designing and creating high-quality, technology-rich digital learning experiences informed by pedagogy. This paper provides an overview of a pilot program with two interactions implemented at the University of Melbourne called the Digital Learning Design (DLD) program. Focused on building Library’s organisational capability the program was built on three pillars of staff capability; deep knowledge of learning theory, learning design principles and skills in selecting digital technologies. The DLD design drew on research in change management, effective capability building as well as best practice in developing digital technology skills. Learners experienced the learning theories taught with the program design including the concepts of the flipped classroom, authentic learning and community of practice. This paper showcases an innovative and successful approach to addressing the issue of enduring staff capability to create digital learning experiences.

Keywords: digital learning, capability building, staff professional development, global challenges in education, digitally enabled learning for a global society
Developing Self-Regulated Learning through Reflection on Learning Analytics in Online Learning Environments

Alexander Mikroyannidis
The Open University, Milton Keynes, United Kingdom

Tracie Marie Farrell Frey
The Open University, Milton Keynes, United Kingdom

This paper describes a conceptual framework for developing self-regulated learning through facilitated dialogue and reflection on learner activity in online learning environments. In particular, the framework focuses on the motivational and contextual aspects of self-regulated learning and how the field of learning analytics can support student metacognitive knowledge in these two areas and distribute instructional support.

Keywords: learning analytics, self-regulated learning, critical pedagogy, inclusion

Personalising professional learning mobility in Higher Education

Maxine Mitchell
University of the Sunshine Coast

Caroline Cottman
University of the Sunshine Coast

The trends and impacts of digital technologies in the higher education sector mean that change is an ongoing, organic factor in response to the personalised nature in which society works, learns, lives, communicates, and connects. Such dynamic educational settings provide new environments for learning mobility that transcend boundaries of time, place, convention and learning community. This paper is fundamentally concerned with how educators, as adult learners, learn in a time when institutions, through their teaching staff, are attempting to address the fast pace innovations in learning and teaching. This paper describes a regional university's approach to reconceptualising a model of professional learning that offers personalised, collaborative, and transformative learning experiences for its educators. The aim is to develop professional learning initiatives that are responsive to the educator's learning mobility needs whilst also enriching the student learning experience and addressing institutional strategic priorities.

Keywords: learning mobility, professional learning, digital technologies

Connecting fun and learning- an activity-theoretical approach to competency based game development

Mark O'Rourke
Deakin University, Australia

Games-based learning has the potential to improve engagement and skill development. This research explores the development of the White Card Game and the impact that fun has on learning outcomes. The first-person shooter style game offers a contextualised, situated experience that equips learners with skills and an understanding of the socially complex world of work. The research has approached the analysis through an Activity Theoretical framework. This approach involved: analysing the interactions between components in the games-based learning activity system while they evolved; identifying contradictions and exploring the mediation that progressed the activity outcome; and examining fun within the games-based learning context. This analysis revealed significant increases in knowledge transfer, skill development and engagement with the curriculum in comparison to conventional pedagogical approaches.

Keywords: games-based learning, immersive environments, activity system, fun, scaffold

Learners’ confusion: faulty prior knowledge or a metacognitive monitoring error?

Mariya Pachman
Macquarie university
Australia

Amael Arguel
Macquarie university
Australia

Lori Lockyer
Macquarie university
Australia

Research often treats confusion as a turning point of the learners’ cognitive-affective dynamics in digital environments (e.g. D’Mello, Grasser and colleagues). The origin of confusion, however, is a topic of a debate. Could inaccurate prior knowledge serve as a source of confusion, or does confusion relate to metacognitive processes? In this paper we are attempting to address this question by employing case study analysis with fourteen participants who worked through simulated learning problems with feedback in a digital environment. Physiological and self-reported data were combined to examine problem-solving patterns. Preliminary findings highlighted the role of metacognitive monitoring in confusion development and its interrelation with inaccurate prior knowledge.

Keywords: prior knowledge, metacognitive monitoring, confusion, self-regulated learning
Exploring my university students’ online learning activities in Wikis

Choon Lang Gwendoline Quek
Learning Sciences and Technologies Academic Group
National Institute of Education,
Cong Liu
Institute of Arts and Humanities,
Shanghai Jiao Tong University

Students’ responses in an online learning environment serve as a powerful means to communicate feedback to instructors’ instructional design and facilitation of student learning. This study tapped on the metadata in wikis (supported by Google Sites) as online classroom data to investigate 72 university students’ online learning activities performed for their module weekly. The students were engaged most frequently in commenting and editing, but least frequently in updating and recovering files. Trends of students’ responses towards online learning over four semesters provided an insight for instructors to reflect on the appropriateness of their design and types of learning activities for their students.

Keywords: Classroom data, online learning, online teaching, Wikis

Learning to swim in an ocean of student data

Carol Russel
Office of DVC
University of Western Sydney

Like other Australian universities, Western Sydney University collects a large amount of data on student learning experiences, including their use of technologies. For busy discipline academics the task of mining and analysing all the data, to create meaningful evidence that informs teaching practice, can seem overwhelming. Graphs of responses to multiple choice questions are relatively straightforward to generate and share. But text comments in response to open-ended questions, although potentially very revealing, are often not used systematically. The University is making both quantitative and qualitative student survey responses available in a format that teaching staff can access directly through an institutional data dashboard. There has been some progress and there are some challenges. During 2015 we have been aiming to encourage teaching staff not just to dip their toes in the water but to take the plunge and use both quantitative and qualitative data actively and with purpose.

Keywords: student feedback, data mining, text analytics

Benchmarking for technology enhanced learning: Longer term benefits

Michael Sankey
Learning Environments and Media
University of Southern Queensland

It is one thing to undertake Benchmarking in the areas of technology enhanced learning (TEL) as a one-off activity, but it is quite another to build this form of activity into your strategy for future and long-term growth at an institution. This paper reports on a follow-up study conducted in 2015 with 22 of the 24 institutions who first participated in major inter-institutional benchmarking activity in June 2014, using the ACODE Benchmarks. The study was conducted eight months after the initial activity to understand how the institutions that had participated in the initial activity had used this to build their capacity for future growth. It will provide evidence of the longer-term value of this type of activity and will conclude with a series of recommendations on how an institution may apply this methodology to enhance its capacity to deal with the rapidly changing TEL space.

Keywords: Benchmarking, technology enhanced learning, quality indicators, improvement

Building a framework for improved workplace assessment practice and better outcomes through online platforms

Mark A Schier
Department of Biomedical & Health Sciences
Swinburne University of Technology, Hawthorn, Australia
Louise Dunn
Swinburne University of Technology, Hawthorn, Australia

This paper discusses the development of an online platform used to build upon an existing system for assessing student workplace learning. It includes the background and rationale for the project, an overview of a rubric developed for the purpose of improving the understanding of the assessment criteria for all stakeholders. Our aim was to improve the pedagogical approach to student workplace learning in order to enhance learning outcomes for students as well as providing benefits to the university and workplace supervisors. To do this, we created a streamlined approach to assessment within the LMS at our university (Blackboard) enabling students to upload and submit their WIL portfolios. A more consistent process for academic supervisors to grade and provide timely feedback to the students, greater clarity in assessment requirements for students and workplace supervisors appears to have been well achieved.

Keywords: Work Integrated Learning, WIL, assessment, portfolio
Promoting Critical Thinking in a Large Class through Outcomes-Based Approach by Means of an Audience Response System

Teck Keong Seow
Department of Biological Sciences
College of Alice and Peter Tan
National University of Singapore

Swee Kit Alan Soong
Centre for Development of Teaching and Learning
National University of Singapore

One of the first considerations that comes to bear in the design of a new course will inevitably be the learning outcomes. Some of the learning outcomes are specifically related to the subject matter while others may be more broad-based goals like the honing of critical thinking skills. The General Biology course that is offered at the National University of Singapore (NUS) is one such course in which the promotion of critical thinking skills is incrementally weaved into the various learning activities and assessment components of the course. The large enrolment of the course also necessitates taking into consideration the affordances of technology in the outcomes-based design of the course. This paper aims to share how the General Biology course, using the topic of fermentation as an example, could be designed using outcomes-based approach, with learning activities supported by an audience response system, in order to promote critical thinking in a large class setting. As this is a work-in-progress project, some preliminary findings from the feedback of the students of the course are presented here.

Keywords: Outcomes-Based Education; Large Classes; Critical Thinking; Formative Assessment, Technology

Digital and ragogy: A 21st century approach to tertiary education

Rachel Sheffield
School of Education
Curtin University

Susan Ellen Blackley
School of Education
Curtin University

This paper revisits the term “andragogy” (adult education) and develops new ways of working in tertiary education based upon an analysis of the skills and dispositions of 21st century learners through the lens of adult education, and the affordances of readily-accessible digital technologies. These ways of working constitute what we term “digital andragogy”. In order to engage and retain students and revitalise tertiary education, lecturers need to take account of the profiles of their learners and seek to create learning spaces that best suit their needs and wants. We posit that tertiary learners should be encouraged and supported to transition from pedagogical practices experienced in their school years to tertiary education contexts for learning that are grounded in digital andragogy. Described in this paper is a proof-of-concept project that is currently being undertaken with 88 undergraduate students in a Bachelor of Education Primary course.

Keywords: digital and ragogy, tertiary learners, digital affordances

Blended Learning Adoption Monitoring

Simon Douglas Smith
University of South Australia

A debate exists regarding blended learning definitions; current research relies heavily on concepts developed in online and distance education contexts. A recent review of blended learning studies reveals that colleges and universities do not readily keep records of who teaches blended courses, and faculty are not fully cognizant of whether they are teaching in blended learning format (Skrypnyk et al, 2015). Driven by needs such as improved course delivery and student retention, tertiary institutions are strategically increasing their blended learning offerings, yet there exists no widely accepted reporting mechanism to monitor blended learning adoption. This paper introduces a practical method for monitoring blended learning adoption at an institution, and recommends an approach towards semi-automating the process.

Keywords: Blended learning adoption, evaluation, monitoring

The value of digital critical reflection to global citizenship and global health

Lee Stoner
Massey University
Auckland, New Zealand

This paper will contend that digital critical reflection can play a key role in tackling contemporary global health concerns. More specifically, institutes of higher education can utilize study abroad to foster global citizenship, which in turn may empower students to become civically engaged and potentially drive social change. However, global citizenship, as an educational outcome, is optimally facilitated when educational experiences are married with appropriate pedagogy, including the shaping of subsequent understandings and actions with critical reflection. This paper will discuss a pre-existing global health study abroad course, and outline: (1) why critical reflection is an essential step to fostering global citizenship, and (2) how digital story telling is being utilized to enrich the critical reflection process.

Keywords: digital stories; critical reflection; transformative learning; educational travel; mobile pedagogy
**Authentic context as a foundation for gamification and game-based learning**

Hanna Teräs  
School of Education  
Murdoch University  
Marko Teräs  
School of Information Systems  
Curtin University  
Jarmo Viteli  
School of Information Sciences  
University of Tampere, Finland

Engage learners, the results of these endeavours are varied and there is still limited understanding of the success factors and design principles of pedagogically meaningful gamified and game-based learning. Gamified and game-based learning are becoming increasingly widespread in formal education. While the primary motivation for employing gamification and game-based learning tends to be the attempt to motivate and. This paper suggests that understanding the role of an authentic context is a useful starting-point for a meaningful gamified learning design. Drawing from human-computer interaction and educational research in situated and authentic learning it proposes the first steps for a roadmap towards a deeper understanding of the phenomena of gamification and game-based learning, venturing beyond the “fun factor”.

**Keywords:** Authentic learning, context, gamification, game-based learning, interaction design

---

**A gamified eLearning approach to teaching food regulation**

Danielle Teychenne  
Deakin University  
Australia

Knowledge of food regulation in Australia and New Zealand is fundamental for higher education nutrition students. Despite its importance, students are often disengaged with the learning content as it involves legislation, regulatory bodies, complex application procedures, food safety testing and political debates that often dismiss scientific fact. At a university in Victoria, students were taught this content in a passive, 2-hour, face-to-face lecture. This lecture did not provide any active learning opportunities for the students to apply their newfound knowledge. This paper describes a proposed pilot project to address learner disengagement through a gamified eLearning tool, *The Story of Hemp*. This digitally immersive teaching approach aims to reengage students with a real world context for their learning, leaving them with a greater sense of identity and significance as budding nutritionists.

**Keywords:** eLearning, gamification, student engagement, game-based learning, narrative-based learning

---

**Pre-service teachers’ reflections on their participation in 1:1 laptop programs**

Rebecca Maria Walker  
Curtin University  
Australia  
Susan Ellen Blackley  
Curtin University  
Australia

A number of government and non-government schools have implemented a one-laptop-per-student (1:1) policy. Whilst there was initial interest in the implementation of these programs, little has been done to track the uptake of digital learning technologies afforded by access to the laptops. This study examined tertiary students’ reflections on their experiences with 1:1 laptop programs after graduating from secondary school and at the commencement of their Bachelor of Education course. It is an extension of a previous study conducted by the researchers (authors, 2015) that presented findings about teachers’ use of laptops in 1:1 laptop program schools. The objectives of this second-phase research were to:

- Capture recollections of the students’ experience of 1:1 laptop programs
- Categorise these recollections into positive and negative experiences
- Investigate the impact of 1:1 laptop programs on students’ perceptions of teaching with ICTs and their personal learning at University.

**Keywords:** ICTs, laptops, pre-service teachers
Mind the Gap: Exploring knowledge decay in online sequential mathematics courses

Brian Webby
University of South Australia

Diana Quinn
University of South Australia

Amie Albrecht
University of South Australia

Kevin White
University of South Australia

Open access, digitally-enabled learning can provide freedom and choice for new learners – not only in how and what they study, but when. With this freedom comes risk. One potential risk lies in the timing of enrolment in courses, particularly where fundamental knowledge is built across a year and where extended gaps between sequential courses might cause knowledge decay. Mathematics may be susceptible here. Our concerns were allayed; an examination of data suggested that new students preferentially minimise gaps and found no significant evidence for knowledge decay over periods of up to 12 months. Nevertheless, to support student learning in open online learning environments, it could be important to provide resources for student self-assessment of knowledge deficiencies, and the facility to refresh and regain understanding.

Keywords: Online education, mathematics, knowledge decay, timing of courses

Clearing the Fog: A Learning Analytics Code of Practice

Simon Welsh
Adaptive Learning and Teaching Services
Charles Sturt University

Stewart McKinney
Blackboard Analytics
Charles Sturt University

Learning Analytics is an area of practice that impacts the legal and ethical obligations of educational institutions. New legislative regimes, growing concern about online privacy, and the affordances of the data being collected mean Learning Analytics could represent a risk to universities to the same extent that it represents an opportunity. These risks augur the need for institutions to develop formal practice and/or policy frameworks around Learning Analytics to define supported practice, actively manage risks and begin to build trust and ethical practice through transparency. There is a danger for Australian universities that the development of such “checks and balances” are not keeping pace with the technological advancements in this field. This paper outlines how one university is seeking to provide a frame for lawful and ethical practice of Learning Analytics through a Code of Practice.

Keywords: Learning Analytics; Ethics; Privacy; Learning Technology; Code of Practice; Higher Education

Dreaming of Electric Sheep: CSU’s Vision for Analytics-Driven Adaptive Learning and Teaching

Simon Welsh
Adaptive Learning and Teaching Services
Charles Sturt University

Philip Uys
Learning Technologies
Charles Sturt University

Current institutional approaches to Learning Analytics which focus on student risk and engagement are problematic in terms of their ability to support improved student learning and success outside of retention. Charles Sturt University’s (CSU’s) deductive work on defining its institutional model of Learning Analytics has led it to reconfigure its Learning Analytics activities into an Adaptive Learning and Teaching program. Adaptive Learning and Teaching is defined as any educational approach that utilises feedback or analytics on student learning to adapt content, teaching, systems and/or design to enhance learning effectiveness. A key feature of the CSU vision is to focus analytic processes on students’ representations of knowledge and integrate with the student “digital footprint” to provide real-time adaptation of online learning experiences and personalise online learning. Concurrently, CSU’s Adaptive Learning and Teaching Services team is working to build capability in using Learning Analytics to inform adaptation in learning and teaching practices.

Keywords: Learning Analytics; Adaptive Learning; Deductive; Inductive; Analytics Strategy; Organisational Design; Student Success; Personalised Learning; Online Learning

SkillBox: a pilot study

Rachel Anne Whitsed
Charles Sturt University, Australia

Joanne Parker
Charles Sturt University, Australia

The aim of this project is to research, develop and evaluate a set of tools that can be used in tertiary subjects to formatively scaffold the skill base of students. The SkillBox instrument uses text, video and quizzes to deliver learning materials and formative assessment to students on a specific topic within a discipline area. A pilot project evaluated the use of a Matrix SkillBox in a Charles Sturt University (CSU) Distance Education (DE) subject and found its use appeared to increase knowledge and confidence in the topic areas covered. These findings will be further investigated in ongoing research involving larger numbers of students.

Keywords: SkillBox; discipline-based skills, web-based learning tools
Digital equity: A social justice issue for staff, not just students

Julie Willems
Office of the Vice Provost
Learning and Teaching, Monash University

It can be forgotten that it is not simply students who face the challenges of digital equity in higher education. Staff can also face digital challenges, and employment at an institution is not necessarily a safety net to protect staff from the digital divide. This paper attempts to give this voice to this issue. The digital equity challenges that they may face can range from internet accessibility, diversity in skills, or access to the required equipment and software, including necessary upgrades. This process is, however, is compounded when staff are geographically dispersed from the institution, disconnected by time, or where access to technology and Internet connectivity varies greatly between the institution’s sites. Much of these issues can be beyond the control and capacity of staff to alter. However, in terms of a staff-led approach to address such issues and empower others, a robust professional development program on digital technology is but one means to help stem the digital divide between staff ‘haves’ and ‘have nots’.

Keywords: digital equity; digital divide; social justice; educational technology; higher education; professional development; educational equity
**Metacognitive Development in Professional Educators: NZ teacher experiences using mobile technologies in a tertiary education environment**

Reem Abu Askar  
University of Auckland, NZ

This research focuses on three areas: 1) The interaction between practising teachers’ metacognitive knowledge and regulation skills in relation to their classroom practices using mobile technologies; 2) perceived barriers and facilitators to the successful integration and use of mobile technology in the classroom; and 3) the impact of introducing a professional development programme (iPads Professional Development Programme) (iPDP) aimed at developing tertiary teachers’ metacognitive knowledge and regulation skills in order to improve their classroom practices. The main purpose of this study is to determine whether the development of teachers’ metacognitive knowledge and skills improves teachers’ pedagogical practices and integration of mobile technologies, such as iPads, and increases their proficiency using mobile devices for teaching and learning in tertiary blended classroom environments in New Zealand. This aligns with the “educational design research’s” (EDR) characteristics of offering practical solutions to real-world problems from the perspectives of both the participants and the researchers.

**Keywords:** iPad use, Teachers’ metacognition, Educational design research, Professional development, Tertiary education.

---

**Digitise Your Dreams the Indigenous Way**

Aaron Matthews  
Centre for Aboriginal Studies  
Curtin University

Rachna Aggarwal  
Centre for Aboriginal Studies  
Curtin University

Siew Leng Lim  
Curtin Teaching and Learning  
Curtin University

Dreamtime stories are the Indigenous way of understanding the world. These stories gave unity and purpose to Indigenous societies in the past and are important today in maintaining their identity and culture. They are seen to be the beginning of knowledge and thus make them good artefacts for capturing learning experiences. Research has shown that the sharing of stories from experience helps student see the purpose of learning hypothetical or conceptual content (Bittel & Bettoi, 2014). As such, the key to learning would lie with the choice and design of stories to make sure their connections with real world problems and prior knowledge are prominent.

A digital story strategy captures the entire enquiry process by acting as the channel for self-expression in a digital era, including students’ information fluency towards constructing knowledge based on what they have observed and reflected on, to developing the ability to apply this new knowledge to a problem later (Kervin et. al., 2014). Riesland (2005) wrote that visual literacy education will empower the twenty-first century students with the skill to survive in a dynamic and fast revolving online world as they learn to decipher hypermedia information to develop critical thinking and analytical skills.

**Keywords:** Enabling course, Indigenous, dreamtime, digital story, visual literacy, learning style, traditional storyline, technology

---

**Introducing StatHand: A Mobile Application Supporting Students’ Statistical Decision Making**

Peter Allan  
School of Psychology and Speech Pathology  
Curtin University

Lynne Roberts  
School of Psychology and Speech Pathology  
Curtin University

Frank Baughman  
School of Psychology and Speech Pathology  
Curtin University

Quantitative research methods are essential to the development of professional competence across a broad range of disciplines. They are also an area of weakness for many students. In particular, students are known to struggle with the skill of selecting quantitative analytical strategies appropriate for common research questions, hypotheses and data types, and this skill is not often practiced in class. Decision trees (or graphic organisers) are known to facilitate this decision making process, but extant trees have limitations. Furthermore, research indicates that students are more likely to access mobile-based material than content delivered via the web or face-to-face. It is within this context, and with funding from the Australian Government Office for Learning and Teaching, that we developed StatHand (see https://stathand.net), a cross-platform mobile application to designed to support students’ statistical decision making.

In this poster, we will briefly articulate the rationale behind StatHand, highlight ongoing research into its efficacy and provide delegates with hands-on experience with the application.

**Keywords:** Statistics; decision tree; graphic organizer; mobile application; iPad; iPhone; iOS.
E-learning, resilience and change in higher education: A case study of a College of Business

Kofi Ayebi-Arthur  
University of Canterbury  
e-Learning Lab  
Christchurch, New Zealand

Niki Davis  
University of Canterbury  
e-Learning Lab  
Christchurch, New Zealand

Una Cunningham  
University of Canterbury  
e-Learning Lab  
Christchurch, New Zealand

What can e-learning offer in a crisis that closes the University campus? This paper presents the emerging findings in a case study of one College of Business impacted in 2011 by earthquakes in New Zealand. Analyses from interviews of nine staff and documents they recommended were used to describe processes of increasing resilience with e-learning over the worst seismic events. Increasing deployment of the University’s learning management system by staff and students plus audio recordings and video recordings of lectures enabled the College to continue its teaching. The Technology Acceptance Model (Davis, Bagozzi, & Warshaw, 1989) and the generic model of organisational resilience by Resilient Organisations (Resilient Organisations, 2012) will be used to evaluate the adoption and adaptation of e-learning when a crisis occurs.

Keywords: E-learning, crisis, resilience, higher education, Technology Acceptance Model (TAM).

Enhancing Student Learning Outcomes with Simulation-based Pedagogies

Pierre Benckendorff  
The University of Queensland

Gui Lohmann  
Griffith University

Marlene Pratt  
Griffith University

Paul Reynolds  
University of South Australia

Paul Strickland  
La Trobe University

This poster reports on an Australian Government Office for Learning and Teaching (OLT) project to assist business educators to embed simulations into the curriculum. The purpose of this project was to gather and disseminate good practice in the design of pedagogy and assessment in simulation-based units in business. Data collection included interviews with educators and decision makers, student focus groups and surveys. The project included the development of an online toolkit consisting of case studies, a good practice guide and a simulation learning barometer. A ‘framework for simulation-based pedagogy’ is presented as a key outcome of the project.

Keywords: business, simulation, pedagogy, assessment, learning outcomes.

Creating concept vignettes as a module supplement for active and authentic learning

Chandrima Chatterjee  
SUTD, Singapore

Teaching Quantum Mechanics can be a daunting task for instructors. Typical classroom lectures may not be sufficient at times for proper understanding of the fundamental concepts. Hence there is a need to incorporate an effective scheme in the present teaching curriculum to further the learning experience of the students thereby enhancing their understanding of complex and abstract concepts. As such developing short educational and instructional videos known as Concept Vignettes on selected topics can help to supplement the existing lesson materials in quantum mechanics (Garik et al, 2005; Kohle et al, 2010). Concept Vignette videos have been created on various topics previously by MIT’s Teaching and Learning Laboratory and are specially designed to enable students to learn a key concept in Science or Engineering (McKagan et al, 2008; Muller R et al, 2002). My study will involve developing similar videos (in collaboration with MIT lecturers) with focus on the fundamentals of Quantum Mechanics.

Keywords: Concept vignettes, curriculum, active and interactive learning.

Preparing Students for Future Learning

Jasmine Cheng  
Sally Payne  
UTS:Insearch, Australia

Jennifer Banks  
UTS:Insearch, Australia

UTS:Insearch is the premium pathway provider to the University of Technology Sydney (UTS). With education increasingly moving towards technology enhanced delivery, we identified the need to appraise our teaching approaches to better prepare students for future learning. This proposal represents the Blended Learning Framework adopted for the process of designing and implementing blended learning within the academic subjects. We initiated a suite of strategies with the intention to create classroom environment where learning occurs through seamless integration of technology enhanced strategies and face-to-face activities, characterised by the best features of interaction within a subject, that will promote academic enhancement and innovation in learning and teaching. The ‘hands on’ strategies allowed teaching staff to experience first-hand how students could be engaged with content through the meaningful use of technologies. This has led to 76% of our subjects either well progressed or fully compliant with a blended learning approach within a year.

Keywords: technology enhanced, blended learning, engagement, innovation.
The use of rubrics for the assessment of digital products in language learning

Neil Cowie
Okayama University, Japan

Many language teachers incorporate the use of digital technology into their classrooms in a variety of forms such as videos, blogs and slideshares. However, both teachers and students need a new level of awareness in assessing such web-authored products. A possible way for both teachers and students to learn to assess such digital products is for both parties to get involved in the process of assessment, specifically in rubric construction. This poster presentation will investigate the process in which English as a Foreign Language (EFL) teachers and students in a Japanese university collaboratively negotiate the process of rubric construction and the use of such an assessment tool throughout one academic semester. The collaborative process highlights two challenges that the teachers and students face: 1) how to assess the combination of language use and digital products; and, 2) how to empower teachers and students in the digital age.

Keywords: language learning, digital products, assessment, rubrics, action research

Developing an online challenge-based learning platform

David Gibson
Curtin University

Katy Scott
Curtin University

Leah Irving
Curtin University

This poster provides an overview of the early development of a platform to facilitate online challenge-based learning that has potential for widespread global application. Challenge is a highly scalable platform that can personalise education for a massive global audience. Two challenges delivering learning activities and interactive content with gamified incentives to promote learner engagement have been developed and piloted. The primary concepts underpinning the student learning experience are individual and group-based problem solving, globally relevant challenges, personalisation and gamification of outcomes.

Keywords: challenge-based learning, gamification

Let’s Talk Learning Analytics and Student Retention

David Heath
Charles Darwin University

Deborah West
Charles Darwin University

Henk Huijser
Charles Darwin University

This poster presents a summary of an Australian Government Office for Learning and Teaching strategic commissioned project titled Learning Analytics: Assisting Universities with Student Retention. The project was descriptive and exploratory, with data collection occurring between July, 2014 and March, 2015. A mixed method design was employed. The project occurred at a time when many institutions were actively exploring their options so a primary focus was on highlighting crucial issues in relation to learning analytics implementation. Following the data collection phase, a framework and accompanying set of discussion questions were developed to emphasise the importance of systematic discussion in making sense of and harnessing the opportunities afforded by learning analytics for student retention purposes.

Keywords: Learning Analytics, Student Retention; Analytics Implementation

Experiential Learning in Accounting: Engaging a diverse student cohort through the use of role-plays

Rosemary Kerr
Curtin University

Ross Taplin
Curtin University

Alina Lee
Curtin University

Abhi Singh
Curtin University

Accounting is a client focused profession requiring interpersonal skills; however multiple offshore and onshore locations and large student numbers preclude all students experiencing work placements. This poster reports the outcomes of experiential learning activities, in the form of short role plays, designed to enhance accounting students’ communication skills, problem solving, ethical decision making and application of accounting knowledge. Online video, using YouTube, provided teacher training and student support in how to do role plays in tutorial classes. Online students were encouraged to participate through any electronic medium. Teachers and students from all locations reported the video was a vital resource for the class activity. Students and teachers enjoyed the role plays and perceived the activity was effective in building communication confidence. Online students did not engage with role plays and delivering role play activities to these cohorts presents challenges.

Keywords: Experiential learning, role plays, online video, multi-location course delivery
The CSU Online Learning model

Tim Klapdor
Charles Stuart University

One of the key components of the CSU Distance Education Strategy is the articulation of an Online Learning and Teaching Model consisting of a set of elements which are known to result in increased student engagement. Increasing student engagement and connectedness is an important goal because of its link to measures of teaching quality, retention and overall satisfaction. This poster is a visual representation of those key elements and provides a unique way contextualizing learning design, activity and technology that results in increased student engagement.

Keywords: online, engagement, online learning, elearning, e-learning, pedagogy, online pedagogies, practice,

MOOCs as spaces to innovate

Alison Lockley
Charles Darwin University

MOOCs have gained momentum in recent years and offer a new opportunity to interact with potential students to the university. While MOOCs have been seen as a disruptive force for higher education they have provided spaces to explore innovative approaches and emerging technology.

The poster will showcase CDU’s process and experiences in this innovative space.


• Classroom Capture
• Student Engagement
• Instructor Dashboards
• Student Behavioral Data
• Content Management
• Flipped Classroom

www.echo360.com
Mobile devices in an Interprofessional Community of Practice #NPF14LMD

Mandia Menti
Massey University

Wendy Holley-Boen
Massey University

The use of mobile devices shows promise in supporting practitioners to develop professional ePortfolios to document their ongoing learning and practice. This poster illustrates how practitioners within an interprofessional community of practice use mobile devices to develop professional identities. The affordances of mobile technology enable transformative ways of using multi-media in ePortfolios to showcase authentic practice and field-based learning in developing professional identities. The experiences of a practitioner focus group using mobile devices is analysed using a cultural historical activity theory (CHAT) framework to foreground changes in conceptions about Professional Learning and Identity Development (PLID).

Keywords: mobile devices, mLearning, ePortfolios, Interprofessional practice, professional identities

Technology for Learning: How Do Medical Students Use Technology for Education?

Michelle Moscova
Educational Development
University of Wollongong Graduate School of Medicine

David Bruce Porter
Educational Technology
University of Wollongong Graduate School of Medicine

Kate Schreiber
Educational Developer
University of Wollongong Graduate School of Medicine

To assist in the design/selection and implementation of educational technologies in a regional medical program, first-year students were surveyed to determine the technologies used for academic purposes and their technology usage habits. The perceived usefulness and usability of technologies have been noted as important factors in technology adoption, as well as student engagement with technology. To address these conditions, the researchers surveyed students regarding the technologies they used for specific educational tasks. While still in our early stages of research, the results suggest that smartphones and tablets, while popular with students, still have not displaced laptops as the preferred devices for most tasks.

Keyword: medical education, educational technology, adoption, usability, mobile devices, byod

‘STEP’ model to address huge MOOC dropout rates

Mrinal Musib
National University of Singapore

Massive Open Online Courses (MOOCs) are one of the education trends brought about by the advent in technology. From the initial concept developed by George Siemens and Stephen Downes, MOOCs have evolved over the last two decades or so and are currently available through various commercial platforms such as Udacity, Edx and Coursera, and are also offered by several leading educational institutions. Although MOOCs have generally been successful in attaining their initial objectives, the greatest concern limiting its success is to understand and address the low completion rates. In this project, I not only aim to consolidate and categorise the different reasons accounting for the huge MOOC attrition rates but also propose and discuss strategies and (STEP’s) that policy-makers and educators may consider when they develop their MOOCs with the intention of stemming MOOC dropout. The strategies comprise of four discrete steps; namely, ‘Support’, ‘Trend’, ‘Expenses’ and ‘Pay-Out’, summarised as ‘STEP’.

Keywords: MOOCs; distance learning; innovative teaching and learning; educational model; technology enabled pedagogy

The Flipped Teacher and the Flipped Learner Framework

Jorge Luis Reyna Zeballos
University of Technology Sydney

We propose an 11 step framework to support educators and students to teach and learn with the Flipped Classroom (FC) model. Based on principles of blended and student-centred learning, organisational appearance, universal design and evaluation, the framework acts as a conduit between theory and good practice. Elements of the framework include: (1) planning stage, why and what to flip; (2) storyboard and lesson plan; (3) timing for activities; (4) online, (pre or post classroom) activities; (5) classroom work; (6) organisation of content; (7) visual design; (8) usability and accessibility; (9) building, testing and deployment; (10) communication of the benefits of the flipped model to students; and (11) evaluation and improvement. This paper will present the evidence behind each of these elements in a practical way to guide teachers and students through a flipped model of teaching and learning.

Keywords: flipping the classroom, flipped learning, flipped classrooms, blended learning
Enhancing Workplace Learning through Mobile Technology: Designing the GPS for WPL

Franziska Trede  
The Education For Practice Institute  
Charles Sturt University

Peter Goodyear  
Centre for Research on Computer-Supported Learning and Cognition  
The University of Sydney

Lina Markauskaite  
Centre for Research on Computer-Supported Learning and Cognition  
The University of Sydney

Susie Macfarlane  
School of Exercise and Nutrition Sciences  
Deakin University

Celina McEwen  
The Education For Practice Institute  
Charles Sturt University

Freny Tayebjee  
Careers Unit  
University of Western Sydney

Technology-mediated learning (TML) and workplace learning (WPL) are major priorities for universities. TML is core to the dynamic growth and modernization of university education, and WPL is an essential strategy used by universities to prepare students for future work. In Australia, both are rapidly changing practices, providing new possibilities and challenges. Though these two areas have largely remained separate in educational literature and practice, the integration of TML and WPL can provide important opportunities to bridge university and the workplace as well as build students’ digital capacities and online professional identities. This poster presents a mobile resource for students, named the “GPS for WPL”, aimed at helping students, academics and workplace educators to improve professional learning experiences by making better use of mobile technology. This resource was designed as part of a project funded by the Office for Learning and Teaching, entitled “Enhancing Workplace Learning through Mobile Technology”.

Keywords: Mobile learning, mobile resource, workplace learning

Refocussing support on locally connected, digitally enabled communities of practice

Susan Tull  
University of Canterbury

Investigation of a new support model for professional development in the pedagogical use of technologies found that local communities of practice were preferred over a pan-university online community of practice. The support model was refocussed to digitally enable the development of locally connected communities of practice. This poster displays the two models, the research findings which supported their development, and recommendations for future developments.

Keywords: professional development, communities of practice, technology support

Global Learning Support works with some of the world’s leading education providers to enable better student engagement, retention and completion.

Visit us at asclite2015 at Booth 4 in the Exhibition hall to find out how.

Visit us for more information at GlobalLearningSupport.com.au
Enhancing Queensland Pre-service Teachers’ Self-efficacy to Teach STEM By the Use of Remote Access Laboratories: A Mixed Methods Study

Ting, Wu
University of Southern Queensland

Education for Science, Technology, Engineering, and Mathematics (STEM) is acknowledged as a priority around the world. However, many primary and secondary teachers are inadequately prepared for teaching STEM because of their limited exposure in their own schooling and teacher preparation. The Remote Access Laboratories for Fun, Innovation and Education (RALfie) project offer opportunities to provide a variety of STEM experiences available to students and teachers in schools, especially those in remote locations. They also have potential for influencing teachers’ self-efficacy to teach STEM by building up their capacities and capabilities to teach technologies. The mixed methods research is investigating how engagement with RALfie influence teachers’ self-efficacy for teaching STEM.

Keywords: Self-efficacy, Remote Access Laboratories, STEM
<table>
<thead>
<tr>
<th>Name</th>
<th>Page INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abraham, Catherine</td>
<td>31</td>
</tr>
<tr>
<td>Abu Askar, Reem</td>
<td>4, 42</td>
</tr>
<tr>
<td>Adachi, Chie</td>
<td>4, 26</td>
</tr>
<tr>
<td>Aggarwal, Rachna</td>
<td>42</td>
</tr>
<tr>
<td>Albion, Peter R</td>
<td>4, 25</td>
</tr>
<tr>
<td>Albrecht, Amie</td>
<td>39</td>
</tr>
<tr>
<td>Alhadad, Sakinah</td>
<td>4, 26</td>
</tr>
<tr>
<td>Al Harthi, Aisha</td>
<td>39</td>
</tr>
<tr>
<td>Allan, Peter</td>
<td>3, 4, 42</td>
</tr>
<tr>
<td>Al Nadabi, Zakiya</td>
<td>4, 26</td>
</tr>
<tr>
<td>Ambrose, Matthew</td>
<td>18</td>
</tr>
<tr>
<td>Anderson, Alan</td>
<td>21</td>
</tr>
<tr>
<td>Andreacchio, Jessica</td>
<td>16</td>
</tr>
<tr>
<td>Arguel, Amaël</td>
<td>27, 35</td>
</tr>
<tr>
<td>Aston, Rachel</td>
<td>19</td>
</tr>
<tr>
<td>Atif, Amara</td>
<td>20</td>
</tr>
<tr>
<td>Atkinson, Simon Paul</td>
<td>4, 26</td>
</tr>
<tr>
<td>Ayebi-Arthur, Kofi</td>
<td>4, 43</td>
</tr>
<tr>
<td>Bakharia, Aneesha</td>
<td>29</td>
</tr>
<tr>
<td>Banks, Jennifer</td>
<td>43</td>
</tr>
<tr>
<td>Barac, Karin</td>
<td>4, 16</td>
</tr>
<tr>
<td>Baughman, Frank</td>
<td>42</td>
</tr>
<tr>
<td>Benckendorff, Pierre</td>
<td>4, 27, 43</td>
</tr>
<tr>
<td>Billie, Ross</td>
<td>22</td>
</tr>
<tr>
<td>Birt, James</td>
<td>4, 29</td>
</tr>
<tr>
<td>Bjælde, Ole E</td>
<td>16</td>
</tr>
<tr>
<td>Blackley, Susan Ellen</td>
<td>37, 38</td>
</tr>
<tr>
<td>Blyth, Phil</td>
<td>18</td>
</tr>
<tr>
<td>Bolton, David</td>
<td>21</td>
</tr>
<tr>
<td>Borland, Rosy</td>
<td>28</td>
</tr>
<tr>
<td>Bradey, Scott</td>
<td>4, 16</td>
</tr>
<tr>
<td>Burcio-Martin, Victorio</td>
<td>17</td>
</tr>
<tr>
<td>Butler, Des</td>
<td>18</td>
</tr>
<tr>
<td>Cameron, Leanne</td>
<td>4, 11, 28</td>
</tr>
<tr>
<td>Campbell, Chris</td>
<td>3, 4, 28</td>
</tr>
<tr>
<td>Caspersen, Michael E</td>
<td>16</td>
</tr>
<tr>
<td>Chang, Vanessa</td>
<td>1, 3, 4, 23, 24</td>
</tr>
<tr>
<td>Chao, Shu-Hua</td>
<td>19</td>
</tr>
<tr>
<td>Chatterjee, Chandrima</td>
<td>43</td>
</tr>
<tr>
<td>Cheng, Jasmine</td>
<td>4, 43</td>
</tr>
<tr>
<td>Chew, Esyn</td>
<td>4, 28</td>
</tr>
<tr>
<td>Chua, Xin Ni</td>
<td>28</td>
</tr>
<tr>
<td>Clàrà, Marc</td>
<td>34</td>
</tr>
<tr>
<td>Clark, Colin</td>
<td>4, 5, 16, 33</td>
</tr>
<tr>
<td>Cochrane, Thomas</td>
<td>4, 17</td>
</tr>
<tr>
<td>Coleman, Kathryn</td>
<td>31</td>
</tr>
<tr>
<td>Copeland, Scott</td>
<td>29</td>
</tr>
<tr>
<td>Corder, Deborah</td>
<td>18</td>
</tr>
<tr>
<td>Corrin, Linda</td>
<td>4, 29</td>
</tr>
<tr>
<td>Cottman, Caroline</td>
<td>35</td>
</tr>
<tr>
<td>Cowie, Neil</td>
<td>44</td>
</tr>
<tr>
<td>Cowling, Michael</td>
<td>4, 29</td>
</tr>
<tr>
<td>Cox, Jacinta</td>
<td>31</td>
</tr>
<tr>
<td>Cox, Robert</td>
<td>18</td>
</tr>
<tr>
<td>Cunningham, Una</td>
<td>43</td>
</tr>
<tr>
<td>Cuthill, Michael</td>
<td>30</td>
</tr>
<tr>
<td>Czapinski, Iwona</td>
<td>4, 17</td>
</tr>
<tr>
<td>Dai, Kun</td>
<td>4, 29</td>
</tr>
<tr>
<td>Davis, Niki</td>
<td>43</td>
</tr>
<tr>
<td>Dawson, Shane</td>
<td>21, 29, 30</td>
</tr>
<tr>
<td>de Barba, Paula</td>
<td>29</td>
</tr>
<tr>
<td>de Freitas, Sarah</td>
<td>18</td>
</tr>
<tr>
<td>De La, Rod</td>
<td>33</td>
</tr>
<tr>
<td>DevVries, Irwin J</td>
<td>5, 17</td>
</tr>
<tr>
<td>Diesfeld, Kate</td>
<td>17</td>
</tr>
<tr>
<td>Dona, Kulari Lokej</td>
<td>6, 17</td>
</tr>
<tr>
<td>Douglas, Tracy</td>
<td>4, 5, 30, 37</td>
</tr>
<tr>
<td>Dove, Sharron</td>
<td>31</td>
</tr>
<tr>
<td>Doyle, Jo</td>
<td>18</td>
</tr>
<tr>
<td>Doyle, Joanne</td>
<td>30</td>
</tr>
<tr>
<td>Dunn, Louise</td>
<td>36</td>
</tr>
<tr>
<td>Duque, Samantha</td>
<td>24</td>
</tr>
<tr>
<td>Dyson, Laurel Evelyn</td>
<td>18</td>
</tr>
<tr>
<td>Earwaker, Louise</td>
<td>30</td>
</tr>
<tr>
<td>Eddles-Hirsch, Katrina</td>
<td>33</td>
</tr>
<tr>
<td>Ellis, David</td>
<td>18</td>
</tr>
<tr>
<td>Farley, Helen</td>
<td>5, 18, 31</td>
</tr>
<tr>
<td>Farrell Frey, Tracie</td>
<td>35</td>
</tr>
<tr>
<td>Ferns, Sonia</td>
<td>23</td>
</tr>
<tr>
<td>Finger, Glenn</td>
<td>19</td>
</tr>
<tr>
<td>Flintoff, Kim</td>
<td>5, 18</td>
</tr>
<tr>
<td>Frawley, Jessica</td>
<td>18</td>
</tr>
<tr>
<td>Froissard Jean-Christophe</td>
<td>20</td>
</tr>
<tr>
<td>Fyse, Sue</td>
<td>23</td>
</tr>
<tr>
<td>Galstaun, Vilma</td>
<td>33</td>
</tr>
<tr>
<td>Gardner, Matthew</td>
<td>18</td>
</tr>
<tr>
<td>Gasevic, Dragan</td>
<td>5, 29</td>
</tr>
<tr>
<td>Gaukrodger, Belma</td>
<td>5, 18</td>
</tr>
<tr>
<td>Gibbons, Belina</td>
<td>5, 27, 32</td>
</tr>
<tr>
<td>Gibson, David</td>
<td>1, 3, 5, 31, 44</td>
</tr>
<tr>
<td>Gibson, David Carroll</td>
<td>18</td>
</tr>
<tr>
<td>Godsk, Mikkel</td>
<td>16</td>
</tr>
<tr>
<td>Goodyear, Peter</td>
<td>47</td>
</tr>
<tr>
<td>Grant, Scott</td>
<td>18</td>
</tr>
<tr>
<td>Gregory, Brent</td>
<td>18, 31</td>
</tr>
<tr>
<td>Gregory, Janet</td>
<td>17</td>
</tr>
<tr>
<td>Gregory, Sue</td>
<td>3, 5, 18, 31, 32</td>
</tr>
<tr>
<td>Griffiths, Aaron</td>
<td>32</td>
</tr>
<tr>
<td>Grono, Steve</td>
<td>32</td>
</tr>
<tr>
<td>Hattingh, Laetitia</td>
<td>23</td>
</tr>
<tr>
<td>Hearns, Merle</td>
<td>18</td>
</tr>
<tr>
<td>Heath, David</td>
<td>24, 44</td>
</tr>
<tr>
<td>Heinrich, Eva</td>
<td>32</td>
</tr>
<tr>
<td>Henderson, Michael</td>
<td>5, 19</td>
</tr>
<tr>
<td>Hickmott, Dan</td>
<td>22</td>
</tr>
<tr>
<td>Hillier, Mathew</td>
<td>18, 19, 32</td>
</tr>
<tr>
<td>Holley-Boen, Wendy</td>
<td>46</td>
</tr>
<tr>
<td>Hopkins, Susan</td>
<td>31</td>
</tr>
<tr>
<td>Hougaard, Rikke F</td>
<td>16</td>
</tr>
<tr>
<td>Huijser, Henk</td>
<td>24, 44</td>
</tr>
<tr>
<td>Ifenthaler, Dirk</td>
<td>5, 13, 33</td>
</tr>
<tr>
<td>Irving, Leah</td>
<td>5, 18, 31, 44</td>
</tr>
<tr>
<td>Jacka, Lisa</td>
<td>18</td>
</tr>
<tr>
<td>James, Allison</td>
<td>4, 11, 16, 18, 29, 30</td>
</tr>
<tr>
<td>Jegathesan, Jay</td>
<td>18</td>
</tr>
<tr>
<td>Karimi, Arafah</td>
<td>28</td>
</tr>
<tr>
<td>Kearney, Alison</td>
<td>33</td>
</tr>
<tr>
<td>Kearney, Sean</td>
<td>33</td>
</tr>
<tr>
<td>Kelly, Jacqui</td>
<td>23</td>
</tr>
<tr>
<td>Kelly, Nick</td>
<td>34</td>
</tr>
<tr>
<td>Kennedy, Gregor</td>
<td>5, 20, 29, 33</td>
</tr>
<tr>
<td>Kennedy-Clark, Shannon</td>
<td>5, 33</td>
</tr>
<tr>
<td>Kerr, Rosemary</td>
<td>44</td>
</tr>
<tr>
<td>Kerr, Tom</td>
<td>18</td>
</tr>
<tr>
<td>Kist, Alexander</td>
<td>25</td>
</tr>
<tr>
<td>Klapdor, Tim</td>
<td>45</td>
</tr>
<tr>
<td>Kokkinaki, Alkaterini</td>
<td>34</td>
</tr>
<tr>
<td>Kusevskis-Hayes, Rita</td>
<td>16</td>
</tr>
<tr>
<td>Kwok, David</td>
<td>5, 19</td>
</tr>
<tr>
<td>Lamond, Heather</td>
<td>34</td>
</tr>
<tr>
<td>Lane, Rod</td>
<td>27</td>
</tr>
<tr>
<td>Larkin, Kevin</td>
<td>19</td>
</tr>
<tr>
<td>Lee, Alina</td>
<td>44</td>
</tr>
<tr>
<td>Lee, Chris</td>
<td>31</td>
</tr>
<tr>
<td>Lees, Amanda</td>
<td>17</td>
</tr>
<tr>
<td>Leppisaari, Irja</td>
<td>20</td>
</tr>
<tr>
<td>Lim, Siew Leng</td>
<td>42</td>
</tr>
<tr>
<td>Lindberg, Annika B</td>
<td>16</td>
</tr>
<tr>
<td>Linegar, Dale</td>
<td>18</td>
</tr>
<tr>
<td>Authors</td>
<td>Page Numbers</td>
</tr>
<tr>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>Liu, Cong</td>
<td>6, 20, 36</td>
</tr>
<tr>
<td>Lizzio, Alf</td>
<td>24</td>
</tr>
<tr>
<td>Loch, Birgit</td>
<td>28</td>
</tr>
<tr>
<td>Lockyer, Alison</td>
<td>29, 35</td>
</tr>
<tr>
<td>Lodge, Jason M</td>
<td>6, 20</td>
</tr>
<tr>
<td>Lohmann, Gui</td>
<td>43</td>
</tr>
<tr>
<td>Lounsbury, Lynnette</td>
<td>21</td>
</tr>
<tr>
<td>Lui, Danny</td>
<td>6, 20</td>
</tr>
<tr>
<td>Lui, Jessie</td>
<td>16</td>
</tr>
<tr>
<td>Macdonald, Hero</td>
<td>34</td>
</tr>
<tr>
<td>Macdonald, John</td>
<td>31</td>
</tr>
<tr>
<td>Macfarlane, Susie</td>
<td>6, 47</td>
</tr>
<tr>
<td>Mahoney, Kim</td>
<td>28</td>
</tr>
<tr>
<td>Maiti, Ananda</td>
<td>25</td>
</tr>
<tr>
<td>Manning, Catherine</td>
<td>34</td>
</tr>
<tr>
<td>Markauskaite, Lina</td>
<td>47</td>
</tr>
<tr>
<td>Masters, Yvonne</td>
<td>6, 18, 32</td>
</tr>
<tr>
<td>Mather, Carey</td>
<td>30</td>
</tr>
<tr>
<td>Matthews, Aaron</td>
<td>42</td>
</tr>
<tr>
<td>Maxwel, Andrew</td>
<td>25</td>
</tr>
<tr>
<td>McDonald, Lisa</td>
<td>30</td>
</tr>
<tr>
<td>McDonald, Marcu</td>
<td>18</td>
</tr>
<tr>
<td>McEwen, Celina</td>
<td>47</td>
</tr>
<tr>
<td>McManus, Liam</td>
<td>28</td>
</tr>
<tr>
<td>Mentiš, Mandia</td>
<td>33, 46</td>
</tr>
<tr>
<td>Mikroyannidis, Alexander</td>
<td>35</td>
</tr>
<tr>
<td>Mildenhall, Paula</td>
<td>21</td>
</tr>
<tr>
<td>Miles, Carol</td>
<td>6, 24</td>
</tr>
<tr>
<td>Miles, Carol A</td>
<td>21</td>
</tr>
<tr>
<td>Mitchell, Maxine</td>
<td>35</td>
</tr>
<tr>
<td>Moscova, Michelle</td>
<td>6, 46</td>
</tr>
<tr>
<td>Murray, Sandra</td>
<td>30</td>
</tr>
<tr>
<td>Musib, Mrinal</td>
<td>46</td>
</tr>
<tr>
<td>Narayan, Vickel</td>
<td>17</td>
</tr>
<tr>
<td>Nelson, Jonathan</td>
<td>4, 5, 18</td>
</tr>
<tr>
<td>Nicolettou, Angela</td>
<td>22</td>
</tr>
<tr>
<td>Nikolic, Sasha</td>
<td>18</td>
</tr>
<tr>
<td>Northcote, Maria</td>
<td>6, 21</td>
</tr>
<tr>
<td>O'Connell, Judy</td>
<td>18</td>
</tr>
<tr>
<td>O'Rourke, Mark</td>
<td>6, 26, 35</td>
</tr>
<tr>
<td>Orwin, Lindy</td>
<td>25</td>
</tr>
<tr>
<td>Pachman, Mariya</td>
<td>6, 35</td>
</tr>
<tr>
<td>Pardo, Abelardo</td>
<td>6, 25</td>
</tr>
<tr>
<td>Payne, Sally</td>
<td>43</td>
</tr>
<tr>
<td>Perry, Shauna</td>
<td>16</td>
</tr>
<tr>
<td>Pittaway, Jane</td>
<td>30</td>
</tr>
<tr>
<td>Poquet, Oleksandra</td>
<td>6, 21</td>
</tr>
<tr>
<td>Porter, David Bruce</td>
<td>6, 46</td>
</tr>
<tr>
<td>Pratt, Marlene</td>
<td>27, 34, 43</td>
</tr>
<tr>
<td>Quinn, Diana</td>
<td>39</td>
</tr>
<tr>
<td>Reedy, Alison</td>
<td>21</td>
</tr>
<tr>
<td>Reiners, Torsten</td>
<td>1, 3, 6, 18</td>
</tr>
<tr>
<td>Ren, Xiang</td>
<td>6, 22</td>
</tr>
<tr>
<td>Reyna Zeballos, Jorge Luis</td>
<td>46</td>
</tr>
<tr>
<td>Reynolds, Paul</td>
<td>43</td>
</tr>
<tr>
<td>Richards, Deborah</td>
<td>20</td>
</tr>
<tr>
<td>Robards, Brady</td>
<td>30, 31</td>
</tr>
<tr>
<td>Roberts, Brady</td>
<td>6, 42</td>
</tr>
<tr>
<td>Rodgers, Kate</td>
<td>23</td>
</tr>
<tr>
<td>Rowatt, Andrew John</td>
<td>6, 34</td>
</tr>
<tr>
<td>Russel, Carol</td>
<td>36</td>
</tr>
<tr>
<td>Salter, Susan</td>
<td>30</td>
</tr>
<tr>
<td>Sankey, Michael</td>
<td>6, 21, 36</td>
</tr>
<tr>
<td>Schier, Mark A</td>
<td>7, 36</td>
</tr>
<tr>
<td>Schrape, Judy</td>
<td>23, 24</td>
</tr>
<tr>
<td>Schreiber, Kate</td>
<td>46</td>
</tr>
<tr>
<td>Schutt, Stefan</td>
<td>18</td>
</tr>
<tr>
<td>Scott, Katy</td>
<td>4, 16, 18, 29, 44</td>
</tr>
<tr>
<td>Seow, Teck Keong</td>
<td>37</td>
</tr>
<tr>
<td>Sim, Jenny</td>
<td>18</td>
</tr>
<tr>
<td>Singh, Abhi</td>
<td>44</td>
</tr>
<tr>
<td>Smart, Vicky</td>
<td>19</td>
</tr>
<tr>
<td>Smith, Shamus P</td>
<td>22</td>
</tr>
<tr>
<td>Smith, Simon Douglas</td>
<td>7, 37</td>
</tr>
<tr>
<td>Soulis, Spiros</td>
<td>22</td>
</tr>
<tr>
<td>Southgate, Erica</td>
<td>7, 22</td>
</tr>
<tr>
<td>Stephens, Liz</td>
<td>22</td>
</tr>
<tr>
<td>Stokes-Thompson, Frederick</td>
<td>18</td>
</tr>
<tr>
<td>Stoner, Lee</td>
<td>7, 37</td>
</tr>
<tr>
<td>Strang, Kenneth David</td>
<td>7, 23</td>
</tr>
<tr>
<td>Strickland, Paul</td>
<td>43</td>
</tr>
<tr>
<td>Sukunesan, Suku</td>
<td>18</td>
</tr>
<tr>
<td>Tanti, Miriam</td>
<td>28</td>
</tr>
<tr>
<td>Taplin, Ross</td>
<td>44</td>
</tr>
<tr>
<td>Tayebjee, Freny</td>
<td>47</td>
</tr>
<tr>
<td>Taylor, Diana</td>
<td>23</td>
</tr>
<tr>
<td>Taylor, Ethan</td>
<td>16</td>
</tr>
<tr>
<td>Tee, Lisa B G</td>
<td>23</td>
</tr>
<tr>
<td>Teräs, Hanna</td>
<td>38</td>
</tr>
<tr>
<td>Teräs, Marko</td>
<td>38</td>
</tr>
<tr>
<td>Teychenne, Danielle</td>
<td>7, 38</td>
</tr>
<tr>
<td>Trede, Franziska</td>
<td>47</td>
</tr>
<tr>
<td>Tull, Susan</td>
<td>7, 47</td>
</tr>
<tr>
<td>Tyler, Jonathan</td>
<td>18</td>
</tr>
<tr>
<td>Uys, Philip</td>
<td>39</td>
</tr>
<tr>
<td>Vainio, Leena</td>
<td>20</td>
</tr>
<tr>
<td>Viteli, Jarmo</td>
<td>38</td>
</tr>
<tr>
<td>Wakefield, James</td>
<td>18</td>
</tr>
<tr>
<td>Walker, Rebecca Maria</td>
<td>38</td>
</tr>
<tr>
<td>Weaver, Debbi</td>
<td>7, 24</td>
</tr>
<tr>
<td>Webby, Brian</td>
<td>7</td>
</tr>
<tr>
<td>Welsh, Simon</td>
<td>7, 39</td>
</tr>
<tr>
<td>West, Deborah</td>
<td>21, 24, 44</td>
</tr>
<tr>
<td>Wheeler, Penny</td>
<td>33</td>
</tr>
<tr>
<td>White, Kevin</td>
<td>35, 39</td>
</tr>
<tr>
<td>Whitelaw, Paul</td>
<td>43</td>
</tr>
<tr>
<td>Whitsed, Rachel Anne</td>
<td>7, 39</td>
</tr>
<tr>
<td>Wilding, Karin</td>
<td>24</td>
</tr>
<tr>
<td>Williams, David</td>
<td>29, 30</td>
</tr>
<tr>
<td>Wood, Denise</td>
<td>7, 18</td>
</tr>
<tr>
<td>Wu, Ting</td>
<td>25, 48</td>
</tr>
<tr>
<td>Wysel, Matthew</td>
<td>31</td>
</tr>
<tr>
<td>Zhao, Yu</td>
<td>7, 25</td>
</tr>
</tbody>
</table>