



Contents

Editorial 28(3): Preface to the Special issue - Virtual worlds in tertiary education: An Australasian perspective	iii-viii
<i>Mark J. W. Lee, Barney Dalgarno and Helen Farley</i>	
Second Life machinima enhancing the learning of law: Lessons from successful endeavours	383-399
<i>Des Butler</i>	
The impact of Chinese language lessons in a virtual world on university students' self-efficacy beliefs	400-419
<i>Michael Henderson, Hui Huang, Scott Grant and Lyn Henderson</i>	
Real thinking with virtual hats: A role-playing activity for pre-service teachers in <i>Second Life</i>	420-440
<i>Sue Gregory and Yvonne Masters</i>	
In search of a method to assess dispositional behaviours: The case of Otago Virtual Hospital	441-458
<i>Swee-Kin Loke, Phil Blyth and Judith Swan</i>	
Responding to the widening participation agenda through improved access to and within 3D virtual learning environments	459-479
<i>Denise Wood and Julie Willems</i>	
On the MUVE or in decline: Reflecting on the sustainability of the Virtual Birth Centre developed in <i>Second Life</i>	480-503
<i>Sarah Stewart and Deborah Davis</i>	
Developing a virtual physics world	504-521
<i>Margaret Wegener, Timothy J. McIntyre, Dominic McGrath, Craig M. Savage and Michael Williamson</i>	
Unpacking frames of reference to inform the design of virtual world learning in higher education	522-545
<i>Katherine Wimpenny, Maggi Savin-Baden, Matt Mawer, Nicole Steils and Gemma Tombs</i>	

The *Australasian Journal of Educational Technology* (AJET) is a refereed research journal published 8 times per year by the Australasian Society for Computers in Learning in Tertiary Education (ascilite). AJET retired its printed version (ISSN 1449-3098) at the end of Volume 23, 2007, and from Volume 24, 2008, the journal is open access, online only (ISSN 1449-5554), and does not have paid subscriptions.

© 2012 Authors retain copyright in their individual articles, whilst copyright in AJET as a compilation is retained by the publisher. Except for authors reproducing their own articles, no part of this journal may be reprinted or reproduced without permission. For further details, and for details on submission of manuscripts and open access to all issues of AJET published since the journal's foundation in 1985, please see <http://www.ascilite.org.au/ajet/>

For editorial inquiries, contact the Editor (retirement pending), Assoc Prof Catherine McLoughlin, School of Education (ACT), Australian Catholic University, PO Box 256, Dickson ACT 2602, Australia. Email: Catherine.McLoughlin@acu.edu.au, Tel: +61 2 6209 1100 Fax +61 2 6209 1185.

For review process, production, website and business matters, contact the Production Editor (retirement pending), Dr Roger Atkinson, 5/202 Coode Street, Como WA 6152, Australia. Email: rjatkinson@bigpond.com, Tel: +61 8 9367 1133. Desktop publishing (PDF versions) and HTML by Roger Atkinson.

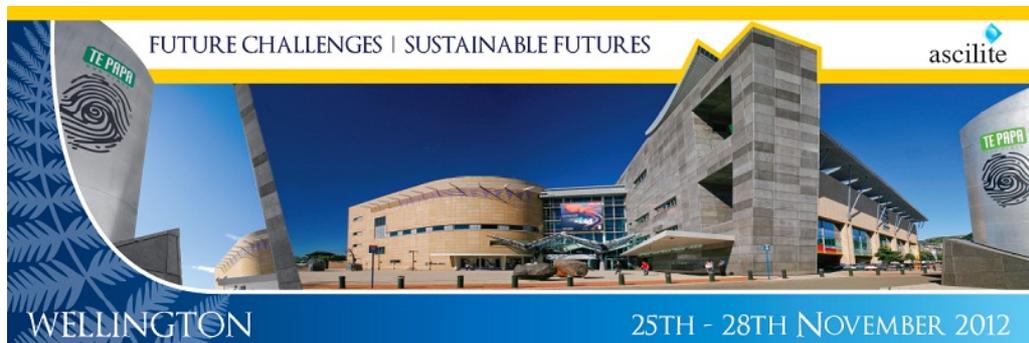
AJET is managed by a Committee comprising ASCILITE Executive nominees, the convenors or nominees from previous ascilite Conferences, and AJET's previous editors and current senior editorial staff (to be reconstituted in 2012-13). The current 2012 Management Committee members are:

Dr Caroline Steel, The University of Queensland, ASCILITE President
 Dr Iain Doherty, The University of Hong Kong, ASCILITE Executive
 Professor Geoffrey Crisp, RMIT University, ASCILITE 2003 Convenor
 Dr Rob Phillips, Murdoch University, ASCILITE 2004 Convenor
 Professor Peter Goodyear, University of Sydney, ASCILITE 2006 Convenor
 Dr Dale Holt, Deakin University, ASCILITE 2008 Convenor
 Professor Ron Oliver, Edith Cowan University, AJET Editor 1997-2001
 Assoc Prof Catherine McLoughlin (Editor - retirement pending), Australian Catholic Uni
 Dr Roger Atkinson (Production Editor - retirement pending)

AJET's Editorial Board (see <http://www.ascilite.org.au/ajet/about/editorial-board.html>) reflects the journal's commitment to academic excellence in educational technology and related areas of research and professional practice, our vision of an international journal with an Australasian regional emphasis, and our origins as a professional and learned society publication.



Australasian Society for Computers
 in Learning in Tertiary Education
<http://www.ascilite.org.au/>



<http://www.ascilite.org.au/index.php?p=conference>

Editorial 28(3): Preface to the Special issue

Mark J. W. Lee,
Charles Sturt University and University of New England

Barney Dalgarno
Charles Sturt University

Helen Farley
University of Southern Queensland

Editors, Special issue - Virtual worlds in tertiary education: An Australasian perspective

Virtual worlds (referred to by some as multi-user virtual environments or MUVes) have generated much attention and interest among tertiary education practitioners and researchers in recent years, with many universities and colleges making use of commercial platforms like *Second Life* or building customised platforms using open tools and resources to suit the particular needs of their staff and students. While a number of other journals have published special issues centred around the topic of virtual worlds in education (e.g. Bell, Savin-Baden & Ward, 2008; Chandler, Collinson, Crellin & Duke-Williams, 2009; de Freitas & Veletsianos, 2010; Hunsinger & Krotoski, 2010; Rea, 2009; Salmon & Hawkridge, 2009; Steinkuehler & Squire, 2009; Twining, 2010), a noticeable majority of the articles published in those issues have emanated from the United Kingdom and United States. In recognition of the considerable innovation, experimentation and dialogue that has been taking place in the virtual worlds arena across the tertiary education sector in Australasia (see Dalgarno, Lee, Carlson, Gregory & Tynan, 2011 for a snapshot), this special issue called for contributions from within the Australasian region, as well as from those farther afield able to position their work against the Australasian context. Articles were requested that addressed theory, research and practical issues related to the use of the technology in both higher and vocational education.

The following definition of a 'virtual world' was adopted for the purposes of this special issue:

A computer-based, simulated environment in which users are able to immerse themselves, and within which they are able to, through their avatars (computer-based representations of themselves or alternative selves), experience, manipulate, interact with and/or create virtual objects and places that are graphically depicted in three dimensions. The objects and places within a virtual world may be modelled according to those in the real world or may be fantasy based. Most current virtual world applications allow for multiple users and include facilities that enable users to communicate and interact with one another within the virtual environment. (Lee, 2010, cited in Dalgarno et al., 2011, p. 2)

The articles that have been selected for publication in this issue include reports of empirical studies as well as conceptual articles that engage deeply and thoughtfully with pertinent questions and issues from a pedagogical, socio-cultural or philosophical standpoint. Some of the articles describe evaluations of innovative applications of virtual worlds designed to solve pedagogical problems within particular discipline contexts, some focus on more widely applicable pedagogical

issues, while still others highlight even broader issues that need to be considered when evaluating, adopting, implementing and using virtual worlds for tertiary education purposes.

The two opening articles focus on the ways in which virtual worlds have been able to be used to achieve pedagogical goals within specific discipline contexts. The first of these, by Des Butler of the Queensland University of Technology (Australia), describes the way in which case studies incorporating narrated machinima generated from *Second Life* environments were used to supply authentic contexts and anchors upon which to base student learning of legal ethics and professional responsibility. Results of evaluations presented within the article attest to the effectiveness of such approaches as an alternative to traditional instructional approaches commonly seen in the discipline of law.

The second article, by Michael Henderson, Hui Huang and Scott Grant of Monash University (Australia) and Lyn Henderson of James Cook University (also in Australia), reports on the results of research exploring the degree to which lessons in *Second Life* were able to improve Chinese language learners' beliefs about their efficacy in the language. The studied lessons involved students undertaking collaborative tasks in a simulated Chinese restaurant setting. The results are indicative of a strong positive impact on student self-efficacy beliefs, and moreover suggest that virtual world experiences can be particularly valuable when they address gaps in students' real-world experiences.

The next three articles deal with pedagogical and design issues applicable in a range of discipline contexts. Sue Gregory and Yvonne Masters from the University of New England (Australia) present results from trials of the use of face to face and virtual world-based role-plays with on campus and distance education cohorts of teacher education students. Comparisons of results across the two versions of the activity suggest that the virtual world-based role-plays were comparable to the face-to-face role-plays on a number of engagement measures, and that the virtual world-based role-plays were particularly well received by distance students for whom they provided learning opportunities not normally afforded.

The article by Swee-Kin Loke, Phil Blyth and Judith Swan of the University of Otago (New Zealand) tells of how Otago School of Medicine students collaboratively resolved open-ended clinical cases within the context of scenarios explored through an *OpenSim*-based virtual hospital environment. Analysis of data captured in-world demonstrates the degree to which certain dispositions - specifically, compassion and open-mindedness - are evident in the students' discourse and behaviour. The conceptual framework and methodological approach proposed by Loke et al. are likely to be usable in many practice-based education contexts where there is a need to assess student performance in realistic scenarios situated in a virtual world.

Next, Denise Wood of the University of South Australia and Julie Willems of Monash University (again, from Australia) report on a study that aimed to identify the accessibility-related shortcomings in existing virtual world client programs

(viewers), and then to design and develop a new viewer addressing those shortcomings. In their article, they detail the process used to arrive at a set of 15 design guidelines for accessible virtual world viewers, and provide descriptions and illustrations of the features of *Phoenix*, the prototype viewer developed, along with the results of initial formative evaluations. They conclude with guidelines for educators in terms of strategies for increasing participation of learners with disabilities in virtual world activities. This work is especially relevant against the backdrop of the current policy landscape, in which widening participation is high on the agendas of many governments, including those of Australia and New Zealand.

The remaining three articles 'zoom out' to bigger-picture issues related to the use of virtual worlds in tertiary education, namely the development process, sustainability of developed worlds, and 'frames of reference' to take into account when attempting to understand virtual world adoption and use by students and staff. The first of these is by Sarah Stewart of Otago Polytechnic (New Zealand) and Deborah Davis of the University of Canberra (Australia), who, in their article, provide coverage of the issues involved in ensuring that virtual world educational initiatives are sustainable. In the article, the authors reflect on their involvement in the *Second Life Education in New Zealand* (SLENZ) project, in particular their experience with the SLENZ midwifery education initiative that gave rise to the widely publicised and well-known Virtual Birth Centre (VBC) environment in *Second Life*. The VBC is used as a case study of a project and environment that, despite being backed by positive evaluation data supporting its value, has now ceased operation at its two host institutions. The reasons for this are examined in terms of a particular sustainability framework.

The article by Margaret Wegener, Timothy McIntyre and Dominic McGrath of The University of Queensland (Australia) and Craig Savage and Michael Williamson of The Australian National University describes the process used to design, develop and evaluate a 3D virtual physics environment to aid student understanding of special relativity. Perhaps the biggest take-home message from this article is the importance of allowing for multiple iterations of evaluation and refinement of the environment and associated learning activities within the project plan, with evidence presented of noticeable improvements in evaluation results across each iteration.

The final article, by Katherine Wimpenny, Maggi Savin-Baden, Matt Mawer, Nicole Steils and Gemma Tombs from Coventry University (UK), draws on data from three British studies exploring the adoption of virtual worlds in higher education - encompassing projects spanning eight disciplines - to derive, through a process termed 'grounded synthesis', three distinct frames of reference through which to understand the adoption process. The three frames of reference, 'understandings of games and gaming media', 'disciplinary learning' and 'institutional space and ownership', along with the issues emerging within each, are likely to be helpful in better understanding higher educators' virtual world learning design decisions. Throughout their article, the authors present their findings in relation to UK and European perspectives at large, comparing and contrasting as they go with those originating from Australasia and the wider Asia Pacific.

It is hoped that the eight articles that comprise this special issue collectively make a worthwhile contribution to research knowledge about the ways in which virtual worlds can be used effectively for tertiary teaching and learning, and that they will add to the scholarly discourse as well as serve as a driver for further studies on the topic in the Australasian region and beyond. In addition, it is hoped that tertiary educators will find the collection of articles useful in their quest to successfully navigate the virtual world terrain, and as they strive to find new and creative ways to use the technology to target needs emerging within their own institutions and disciplines.

References

- Bell, F., Savin-Baden, M. & Ward, R. (Eds) (2008). Learning and teaching in immersive virtual worlds [Special issue]. *ALT-J, Research in Learning Technology*, 16(3).
<http://www.informaworld.com/smpp/title~db=all~content=g906960349>
- Chandler, J., Collinson, T., Crellin, J. & Duke-Williams, E. (2009). Using virtual worlds for teaching and learning [Special issue]. *ITALICS*, 8(3).
<http://www.ics.heacademy.ac.uk/italics/vol8iss3.htm>
- Dalgarno, B., Lee, M. J. W., Carlson, L., Gregory, S. & Tynan, B. (2011). An Australian and New Zealand scoping study on the use of 3D immersive virtual worlds in higher education. *Australasian Journal of Educational Technology*, 27(1), 1-15.
<http://www.ascilite.org.au/ajet/ajet27/dalgarno.html>
- de Freitas, S. & Veletsianos, G. (Eds) (2010). Crossing boundaries: Learning and teaching in virtual worlds [Special issue]. *British Journal of Educational Technology*, 41(1).
<http://onlinelibrary.wiley.com/doi/10.1111/bjet.2010.41.issue-1/issuetoc>
- Hunsinger, J. & Krotoski, A. (Eds) (2010). Learning and researching in virtual worlds [Special issue]. *Learning, Media and Technology*, 35(2).
<http://www.informaworld.com/smpp/title~db=all~content=g926174999>
- Rea, A. (Ed.) (2009). The impacts of Web 2.0 and virtual world technologies on IS education [Special issue]. *Journal of Information Systems Education*, 2(2).
<http://www.jise.org/Contents/Volume%2020/Contents-20-2.htm>
- Salmon, G. & Hawkrigde, D. (Eds) (2009). 3-D MUVES [Special issue]. *British Journal of Educational Technology*, 40(3).
<http://onlinelibrary.wiley.com/doi/10.1111/bjet.2009.40.issue-3/issuetoc>
- Steinkuehler, C. & Squire, K. (Eds) (2009). Virtual worlds and learning [Special issue]. *On the Horizon*, 17(1). <http://www.emeraldinsight.com/journals.htm?issn=1074-8121&volume=17&issue=1>
- Twining, P. (Ed.) (2010). Virtual worlds and education [Special issue]. *Educational Research*, 52(2). <http://www.informaworld.com/smpp/title~db=all~content=g922240462>

Editors, Special issue: Mark J.W. Lee
 Adjunct Senior Lecturer, School of Education, Charles Sturt University
 Locked Bag 588, Wagga Wagga, NSW 2678, Australia
 Email: malee@csu.edu.au Web: <http://csusap.csu.edu.au/~malee/>

Mark has extensive teaching, management and consulting experience in both the higher education and vocational education sectors. He has published widely in the fields of educational technology, e-learning and pedagogical innovation, with close to 60 refereed publications to his name. His book, *Web 2.0-based e-learning: Applying social informatics for tertiary teaching*, co-edited with Catherine McLoughlin, was published by Information Science Reference in July 2010. With Barney and colleagues from other universities, Mark is currently working on a Distance Education Hub (DEHub)-funded scoping study on the use of virtual worlds for learning and teaching in Australian and

New Zealand higher education institutions, as well as an Australian Learning and Teaching Council (ALTC)-funded project on the use of media-rich synchronous technologies (including but not limited to virtual worlds) for involving on-campus and distributed students in real-time collaborative learning activities. Among his other research interests are teacher beliefs about learning, teaching and technology, digital games and simulations for learning, and educational uses of mobile and ubiquitous computing tools. Mark is Editor of the *MERLOT Journal of Online Learning and Teaching* (JOLT) and an Associate Editor of both the *IEEE Transactions on Education* and the *International Journal of Games and Computer-Mediated Simulations*. He also serves on the editorial boards of 15 other international journals.

Associate Professor Barney Dalgarno, Sub-Dean, Learning and Teaching
Faculty of Education, Charles Sturt University
Locked Bag 588, Wagga Wagga NSW 2678, Australia
Email: bdalgarno@csu.edu.au Web: <http://csusap.csu.edu.au/~bdalgarn/>

Barney's PhD research (completed in 2004 at the University of Wollongong) examined the characteristics of 3D environments and their potential contributions to spatial learning. His current interests include the educational affordances of 3D virtual learning environments as well as the application of constructivist theories to technology-facilitated learning design, critical exploration of the impact of generational changes on learners, learning and learning technologies, and the use of functional brain imaging to explore interactivity and cognition. On top of being honoured with a number of research and teaching grants, he has received national recognition through awards for innovative teaching and learning design using leading-edge technologies. Barney is leading the DEHub scoping study on virtual worlds in Australian and New Zealand higher education and is also part of two ALTC-funded virtual worlds-related projects, one of which is the aforementioned project with Mark on the use of media-rich synchronous technologies. Barney is an editorial board member of *Distance Education* (the official journal of ODLAA, the Open and Distance Learning Association of Australia) and previously served on the ascilite Executive.

Dr Helen Farley, Senior Lecturer and Mission Leader (Mobility)
Australian Digital Futures Institute (ADFI), University of Southern Queensland
West Street, Toowoomba QLD 4350, Australia
Email: helen.farley@usq.edu.au Web: <http://apps.usq.edu.au/StaffSearch/default.aspx?staffsearchaction=showdetails&staffsearchrecordid=3362>

Helen is an interdisciplinary research academic with significant experience in diverse fields, including architecture, veterinary science, journalism, philosophy and studies in religion. She has practical experience in curriculum design, teaching large classes in innovative learning and teaching spaces, and enhancing the first-year university experience. Before taking up her current position, her title at ADFI was Lecturer (Virtual Worlds), and before that she worked as a Research Fellow in the Centre for Educational Innovation and Technology (CEIT) at the University of Queensland (UQ) and a Lecturer in Higher Education with UQ's Teaching and Educational Development Institute (TEDI). Helen is a pioneer in the use of virtual worlds in the Australian education context - her *Second Life* project, UQ Religion Bazaar, has been nominated for many awards and has attracted significant national and international media attention. Other than *Second Life*, Helen has worked with *Twinity*, *OpenSim* and *Open Wonderland*, and she is also investigating the use of haptic interfaces and the facilitation of authentic 3D movement in virtual environments. In her current role, she is responsible for both research and academic staff development with regard to the use of virtual worlds and other educational technologies.

The Special issue Editors are members of the Australian and New Zealand Virtual Worlds Working Group (<http://www.virtualworldsworkinggroup.wikispaces.com/>). In February 2010, they delivered an online seminar entitled *What 'Avatar' can teach us about immersion and presence in virtual worlds* as part of the ascilite Webinar Series. Members of ascilite can view an archive of the webinar in the ascilite Community Hub (<http://hub.ascilite.org.au/>).

Please cite as: Lee, M. J. W., Dalgarno, B. & Farley, H. (2012). Editorial 28(3): Preface to the Special issue. In M. J. W. Lee, B. Dalgarno & H. Farley (Eds), *Virtual worlds in tertiary education: An Australasian perspective*. *Australasian Journal of Educational Technology*, 28(Special issue, 3), iii-viii.
<http://www.ascilite.org.au/ajet/ajet28/editorial28-3.html>