

## Researching Learning in Virtual Environments – ReLIVE08

### PROGRAMME

Day 1 – Thursday 20<sup>th</sup> November 2008

Time	Session	Venue
9:00 – 10:15	Registration and coffee	Old Lecture Theatre Common Room
10:15 – 10:30	Welcome address	Old Lecture Theatre
10:30 – 11:15	<p><b>Keynote Presentation - Edward Castronova</b></p> <p>I study synthetic worlds: online environments where thousands or even millions of users share a persistent, fabricated geographic space at the same time. These places, billed and sold as games, actually seem to be offering something more than mere entertainment. They act as a fantastical alternative to ordinary life, and as such they pose a significant challenge to business-as-usual in ordinary society: markets, public policy, politics, law, romance. In the area of economics, for example, one pressing issue involves the extent to which <a href="#">people are paying real money to buy items for their game characters</a>, thus blurring the distinction between the game economy and the real one. And this is not the only way in which synthetic worlds threaten the lines we have drawn between fantasy and reality. As a parent and a gamer, I am both excited and concerned about these developments. The objective of my work is to increase our understanding of this technology.</p>	Old Lecture Theatre
11:30 – 13:00	Workshops & Parallel sessions	
Parallel session A		Oak Training Room, 1 <sup>st</sup> Floor, Wilson C Block
<p><b>Workshop</b></p> <p>Getting Going in Second Life.</p>	<p>This workshop is aimed at delegates who have had little or no practical experience in a virtual world and will be facilitated by workshop leaders with extensive experience of both introducing people to Second Life and of mentoring new users. Participants will be split into two groups. Those delegates with little or no previous experience</p>	

Jane Chandler, Emma Duke-Williams and Jonathan Crellin	in a virtual world will be given a hands-on introduction to Second Life, whilst delegates with some experience of Second Life will be provided with guided support to explore a range of tools and resources for learning and teaching in Second Life.	
<b>Parallel session B</b> <b>Chair: Shri Footring</b>		<b>CETL Meeting Room 8, 1<sup>st</sup> Floor, East Perry</b>
<b>Paper 1</b>  Towards the Adoption of Massively Multiplayer Educational Gaming.  Leonie Ramondt	In 2007, the New Horizons report stated that the time to adoption for Massively Multiplayer Educational Gaming was Four to Five Years. It is difficult to see however, how educators can integrate these environments into their curriculum. Unless of course, key elements that might assist their adoption can be identified. This paper seeks to a) outline theory regarding what make these environments so engaging, b) identify and review existing relevant educational approaches and practices and c) explore how educators and learners might be scaffolded in the adoption and appropriation of these environments. The literature includes Csikzenthmihaly's (1975) Flow theory, Heathcote's Mantle of the expert (Wagner,J, 1976), Rieber's (1996) Endogenous Game design, Seely Brown's (2007) Learning by being, Gee's (2005) Learning by designing, as well as a glimpse at quest design.	
<b>Paper 2</b>  The Second Life Researcher Toolkit – An Exploration of In-World Tools, Methods and Approaches for Researching and Evaluating Educational Projects in Second Life.  Elena Moschini	Academics are beginning to explore the educational potential of Second Life by setting up in-world educational activities and projects. Given the relative novelty of the use of metaverse environments in higher education many of such projects are often still at pilot stage. However the initial pilot and experimentation stage will have to be followed by a rigorous evaluation process as for more traditional teaching projects. The article addresses issues about research tools and research methods that enable academics to assess and evaluate learning activities in Second Life. The paper introduces a “researcher toolkit” that includes: the various stages in the evaluation of Second Life educational projects; an outline of the in-world tools that can be utilised or customised for academic research purposes; a review of methods for collecting feedback from participants and of the main ethical issues involved in researching metaverse environments; a discussion on the technical skills required to operate a research project in Second Life. The paper also offers an indication of the in-world and “real world” opportunities for the dissemination of Second Life research findings.	
<b>Paper 3</b>  Using Non-Player Characters as Tutors in Virtual Environments.  Clinton Jeffery	Massively multiuser online games such as World of Warcraft employ computer controlled non-player characters and quest activities extensively in training/tutoring capacities. This approach is very effective and popular, incorporating active learning, incremental progress, and creative repetition. This paper explores ways to exploit this model in educational virtual environments. Non-player characters in such environments require a knowledge model, a dialogue model, and a user performance model, in addition to any physical and behavioral traits necessary to make them interesting and credible members of the environment.	

	<p>A first experiment with these ideas is an explicit attempt to embed a World of Warcraft-like tutoring non-player character in Second Life. Second Life supports virtual objects with scripting, but this facility is not particularly tailored to non-player characters or to education. With care, compatibly formatted web-based content, exercises, and quizzes are imported into Second Life, reducing the effort needed to create content.</p> <p>A second experiment with these ideas is to ask: What should non-player character construction by end user educators look like? A set of tools and libraries designed to reduce the effort required to construct educational non-player characters within a custom educational virtual environment is described. The same educational content format is used in the first and second experiments. The tools or underlying ideas may be profitably adapted by other educational virtual environment construction systems.</p>	
<p><b>Parallel session C</b>  <b>Chair: Shailey Minocha</b></p>		<p><b>Library Presentation Room,  Ground Floor, Library</b></p>
<p><b>Paper 1</b></p> <p>Mathematics in a Virtual World: How the Immersive Environment of Second Life Can Facilitate the Learning of Mathematics and Other Subjects.</p> <p>Breen Sweeney</p>	<p>This paper examines specific aspects of learning in multi-user virtual environments, with particular relation to the teaching of mathematics. The author held several one-hour tutorials in the virtual social world Second Life, with students studying an Open University course in pure mathematics. The tutorials occurred in 2008 and took place in a variety of virtual settings. Telephone interviews and log analysis were used during the research. Eye tracking hardware was used in a pilot study to investigate how volunteers were immersed in Second Life, by comparing it with the role playing game RuneScape.</p> <p>The research addressed whether such learning is effective, what an efficient student-to-facilitator ratio might be, and whether the virtual environments affected learning. The eye tracking study gave quantitative results which allowed comparison of how immersive the experience was for the different worlds.</p> <p>The results suggested that Second Life is a valid mechanism for learning, a low student-to-facilitator ratio is desirable, and that the environment does have a noticeable effect. It was found that RuneScape was a more immersive experience than Second Life, and that eye tracking might be a valid method of quantitatively measuring immersion.</p>	
<p><b>Paper 2</b></p> <p>Dialoguing in Virtual Environments: Constraints and Opportunities.</p> <p>Caroline Coffin</p>	<p>This paper considers the challenge of using virtual environments in educational contexts, primarily from the perspective of the types of educational dialogue they both facilitate and constrain. Working within a functional linguistic tradition I examine two increasingly pervasive learning environments and associated communicative practices – electronic discussion forums (or message boards) and avatar-based 3D virtual worlds (such as Second Life). Focusing on the way in which these environments are used as spaces for the exchange of different ideas and perspectives (argumentation) and applying an analytical framework that looks at the exchange structure of asynchronous and synchronous discussions I will explore the following questions:</p>	

	<ul style="list-style-type: none"> <li>• What are the opportunities and constraints for effective academic discussion in virtual learning environments?</li> <li>• To what extent does access to new multimodal resources enrich the exchanges that take place in discussion forums and on educational islands in Second Life?</li> <li>• What are the challenges and problems for linguistic and multimodal analysis when investigating the interactions that take place in virtual learning environments?</li> <li>• Based on the findings so far what might linguists have to offer educational professionals, including programmers and designers?</li> </ul> <p>The discussion will be supported by empirical evidence from two funded research projects investigating the use of electronic discussion for a and from ongoing pilot work investigating the learning potential of Second Life.</p>	
<p><b>Paper 3</b></p> <p>Exploring the Virtual Learning Cycle in Staff Development Through the Lens of Experimental Design</p> <p>Steph Broadribb and Chris Carter</p>	<p>We are aiming to focus the presentation around our interest in looking at how virtual development activities relate to the learning cycle and learning styles methodologies, how we've set about exploring this in practice, what we've found so far, and what going to do next to explore this in more detail. We'll also draw on our experience in putting together methodologies for evaluating this and the practicalities of gathering this data, and (hopefully) draw on the expertise within the room for input on further design to support our work.</p>	
<p><b>Parallel session D</b> <b>Chair: Anne Adams</b></p>		<p><b>KMi Podium, Level 4, Berrill Building</b></p>
<p><b>Paper 1</b></p> <p>First Reflections, Second Life, Third Place: Community Building in Virtual Worlds.</p> <p>Anna Peachey</p>	<p>The Open University supports a thriving informal learning community within its presence on the Second Life virtual world platform. This paper outlines the development of that community over a two year period and demonstrates how it currently maps to the place-driven community concept of Third Place, as defined by the urban sociologist Ray Oldenburg (1989). In the field of community building, Third Place is used to describe a social environment that is distinct from the first and second place norms of home and workplace, for example a regularly frequented coffee shop. Oldenburg argues that a Third Place, "...hosts the regular, voluntary, informal, and happily anticipated gatherings of individuals beyond the realms of home and work" and is necessary for civil society, democracy, civic engagement and establishing an authentic sense of place within a community.</p> <p>This paper proposes that real world concepts of community and Third Place are exhibited in a virtual world, and that there are equivalent benefits in the sense of support and belonging to a virtual world community</p>	
<p><b>Paper 2</b></p> <p>Mixed-Methods and Mixed-Worlds;</p>	<p>At first glance, the goal of the SLOODLE (Simulation Linked Object Oriented Dynamic Learning Environment) project is to develop educational technology – specifically, software for integrating web-based virtual learning environments and 3D multi-user virtual worlds being</p>	

<p>Engaging Globally Distributed User Groups for Extended Evaluation Studies.</p> <p>Daniel Livingstone</p>	<p>used for educational purposes. However, a second goal is to research how such integration might best be achieved – and to understand what users might want from such technology. And both goals rely in part on a third – to develop an active and involved community around the project. This paper reviews the mixed-methods approach that have been employed to support research as the project principals have been working to engage with users world-wide through a range of activities held in the virtual world of Second Life, on the world-wide web and at demonstration workshops conducted in-person.</p>	
<p><b>Paper 3</b></p> <p>Students' Experiences of Learning in Immersive World Environments.</p> <p>Maggi Savin-Baden</p>	<p>Much of the recent research into learning in immersive worlds centres around games and gaming and is largely underpinned by cognitive learning theories that focus on linearity, problem-solving and the importance of attaining the 'right answer' or game plan. Most research to date has been undertaken into students' experiences of virtual learning environments, discussion forums and perspectives about what and how online learning has been implemented. For example, there have been a series of studies funded by the JISC in the UK that have explored students' perspectives of e-learning, namely Sharpe <i>et al</i>, (2005); Creanor <i>et al</i>, (2006) and Conole <i>et al</i>, (2006). These studies, although using relatively small data sets, would seem to indicate students' experiences of e-learning are more complex and wide-ranging than many university tutors realise. Research by Ferreday <i>et al</i>, (2006) would seem to suggest that identity and identity construction in virtual worlds occurs through dialogic learning rather than gaming.</p> <p>To date, learning in immersive worlds, particularly areas such as inquiry and problem-based learning, is under researched and the extensive possibilities for its use need to be better understood in order to.</p>	
<p><b>13:00 – 14:00</b></p>	<p><b>Lunch &amp; poster display</b></p>	<p><b>Old Lecture Theatre</b></p>

<b>14:15 – 15:45</b>	<b>Workshops &amp; Parallel sessions</b>	
<b>Parallel session E</b>		<b>Oak Training Room, 1<sup>st</sup> Floor, Wilson C Block</b>
<p><b>Workshop</b></p> <p>Creative Tinkering: Interfacing the Real and Virtual Worlds of Museums and Cultural Heritage.</p> <p>Lars Wieneke and Jos Boys</p>	<p>Museums and galleries are increasingly interested in working in virtual worlds like Second Life because this allows for a far more productive engagement than the – necessary – "please-do-not-touch"-policy of real world artefacts. However, whilst museums can rely on a large potential audience, we still need to know more about how to engage them effectively in virtual environments.</p> <p>Virtual worlds not only provide fora for communicating information but also an arena for creativity, action and exchange. This is particularly relevant in enabling participation/invention with object-based collections and cultural heritage. So how can paths into virtual worlds be offered that pave the way for willing users to positively contribute, and which might lead some to more substantial contribution in environments with complex authoring tools?</p> <p>As an ongoing research project, Questalicious explores this route. It acts as an interface between real and virtual worlds through enabling the setting, sharing and assessment of creative tasks. This application and the supporting research raises many interesting questions. These are, first, about critically evaluating the processes the application posits for supporting engagement – for example, generation of activities, filtering of contributions and organisation of levels so to appeal to both new entrants and virtual world natives. Second, it raises issues of content, motivation and value – of what participants are learning and why. Finally, it leads to bigger questions about what constitutes learning itself, by being sited at the intersections between such different arenas as the museum sector, higher education and computer gaming.</p> <p>In this workshop, participants will first play with the task-developing and sharing structure of Questalicious, using the tool as a means of exploring and evolving different strategies for interconnecting virtual worlds and real world learning situations. This will be followed by group activities which enable debate about each of the questions outlined above. The workshop will be of interest to delegates involved in teaching and learning creative subjects, to those incorporating learning activities in virtual environments, and to those with an interest in new interactive learning tools which interface between virtual worlds and other image and text-based materials.</p>	
<b>Parallel session F</b>		<b>Christodoulou Meeting Room 1 (CMR1)</b>
<p><b>Workshop</b></p> <p>16 Ways to Use Second Life in Your Classroom: Pedagogical Applications of Second Life.</p> <p>Michele Ryan</p>	<p>The focus of this session is aimed at the practical application of Second Life. How to use it in conjunction with a specific course and what to do once you get everyone in-world. This workshop is a hands on instructional planning session. Participants should come away with a specific course in mind. The facilitator will briefly explain 16 ways to apply the technology, based on her in-world research. These pedagogies can be adapted to nearly any subject and offer a range of options for educators from all side of ontological spectrum. Second Life course planning materials and other resources will be provided. Participants will work in groups base don general subject area of their chosen courses. The group will consider, expand on, and brainstorm specific</p>	

	details of the implementation using the provided framework. The desired goal of this workshop is for participants to leave with a self-designed, detailed instructional plan that can be implemented immediately.	
<b>Parallel session G – Chair: Daniel Livingstone</b>		<b>KMi Podium, Level 4, Berrill Building</b>
<b>Symposium</b>  The Schome Park Programme  Shri Footring, Becca Wilson, Rebecca Ferguson, Julia Gillen, Chris Pim, Britta Pollmuller , Kieron Sheehy and Anna Peachey	The Schome Park Programme set out to extend thinking about what the education system for the learning age (schoke) should be like. The first three phases of the programme spanned 13 months and involved hundreds of 13 to 17 year olds and around 50 adults. This symposium includes three presentations: <ul style="list-style-type: none"> <li>• An overview of the Schome Park Programme which highlights some important dimensions of practice emerging from the data</li> <li>• An account of the experiences of developing the Schome Park team’s entry to the National Space Competition.</li> <li>• Reflections of adults working on the Schome Park Programme about their experiences and research foci</li> </ul>	
<b>Parallel session H Chair: Liz Thackray</b>		<b>CETL Meeting Room 8 1<sup>st</sup> Floor, East Perry</b>
<b>Paper 1</b>  Second Life as a Holistic Learning Environment for Problem Based Learning and Transferable Skills.  Elaine Brown and Mike Hobbs	This paper seeks to demonstrate the affordances of Second Life for a multifaceted approach to learning. Our experience is that it supports the development of wider transferable skills while delivering subject specific content. Our most recent experience of using Second Life in teaching has been to embed a problem based element of learning within a conventionally taught module. We used a machinima based assessment where students worked in groups to create short video clips from their activities in Second Life. The conventional elements of the module introduce students to a range of media creation and manipulation tools that they can use to develop their final assessment. Although the assessment has some core criteria, the content, style, narrative and working pattern are all decided by the student groups. We believe that this approach provides a useful stepping stone between content driven and problem based teaching techniques. Initial results (from questionnaires, interviews and student reporting) seem to indicate that students have brought in learning from other areas that enhance their transferable skills in group work, project management and problem based learning.	

<p><b>Paper 2</b></p> <p>Technical Infrastructure and initial Findings in the Design and Delivery of Game-Based Learning for Virtual Patients in Second Life.</p> <p>Maria Toro-Troconis</p>	<p>Online multi-user virtual environments (MUVES) offer rich interactive 3D collaborative spaces where users can meet and interact. One example of such an environment is Second Life (<a href="http://www.secondlife.com">http://www.secondlife.com</a>).</p> <p>Second Life marks a paradigm shift in the possibilities open to those wishing to adopt game-based approaches. The Faculty of Medicine at Imperial College London has developed a region in Second Life (<a href="http://slurl.com/secondlife/Imperial%20College%20London/150/86/27/">http://slurl.com/secondlife/Imperial%20College%20London/150/86/27/</a>) that aims to deliver game-based learning activities for delivery of virtual patients that can drive experiential, diagnostic and role-play learning activities within the 3D world, thereby supporting learning about patients' diagnoses, investigations and treatment. 'Virtual patients' is one of the models developed to support the delivery of clinical teaching; it offers opportunities for 'game-informed learning' using experiential and problem-based learning approaches as prime pedagogic drivers. The game-based learning activities developed for virtual patients were based on the four-dimensional framework developed by De Freitas and Martin, as well as other design considerations that look at emergent narratives and modes of representation. This paper will present the interaction and call-management structure implemented between the Second Life virtual world environment and the web world environment. This model accommodates the delivery of a one-to-many relationship between the user or student and several virtual patients. This paper will also present an overview of the different virtual patient components implemented following the MedBiquitous Virtual Patients Model. Finally, an overview of a recent trial will be provided. This trial aimed to explore gender-related differences and attitude towards two e-learning delivery methods including the delivery of game-based learning for virtual patients in Second Life.</p>	
<p><b>Paper 3</b></p> <p>Creating a Virtual Patient Player in Second Life.</p> <p>David Burden , Luke Woodham, Maggi Savin-Baden</p>	<p>The JISC-funded PREVIEW project aims to develop problem-based learning (PBL) scenarios in Second Life (SL) for distance-learning healthcare students. One of the target courses - a Paramedic course run by the joint faculty of St George's University of London and Kingston University – uses PBL that is based upon a 'virtual patient' model. In order to keep scenarios as sustainable and portable as possible we adopted the MedBiquitous VP Standard – or MVP – designed for any virtual patient player or authoring system. For this project an MVP player capable of operating within Second Life was created. This allows the same case to be played both within Second Life and on the web. The PBL scenarios were tested with small groups of Paramedic students with some limited experimentation with different collaboration models. Feedback from students and tutors was generally positive. Further adaptation and testing of the scenarios will be carried out over the coming months, before the scenarios are embedded as PBL exercises within the Paramedic curricula in the next Academic year.</p>	

Parallel session I Chair: Paul Hollins		Library Presentation Room, Ground Floor
<p><b>Paper 1</b></p> <p>Learning to Walk Before you Know your Name. Pre-Second Life Scaffolding for Noobs.</p> <p>Ian Truelove and Graham Hibbert</p>	<p>Induction into Second Life is often a traumatic and bewildering experience for new users. Through the course of many inductions over the last two years, the authors have observed the difficulties that students have experienced when asked to simultaneously take on board issues of identity, appearance, role play, technical skills, forced communication with complete strangers, economics and etiquette, to name a few. As part of the JISC funded Open Habitat project, the authors have piloted an alternative approach to inductions into Second Life, with the overall aim of providing pre-Second Life scaffolding through real life workshop activities and the use of OpenSim.</p> <p>OpenSim is an open source, reverse engineered implementation of the server software that provides the land for the Second Life client to access. The standalone version of OpenSim provides the opportunity for educators to give each of their students their own private island to play on before signing up to Second Life. OpenSim allows educators to delay the inevitable focus on identity forced by name choosing when signing up to Second Life, and to draw students' attention to more fundamental competencies such as walking and, in the case of art and design students, building. The initial outcomes from the first pilot study indicate that OpenSim inducted students subsequently engage more meaningfully and effectively with Second Life.</p> <p>This paper also reviews other challenges and opportunities that were examined in the first pilot study, including a 'quest' based learning approach drawn from previous research into World of Warcraft, the blended approach to learning in virtual worlds, identity scaffolding, collaborative working and the concept of the virtual art studio.</p>	
<p><b>Paper 2</b></p> <p>Get Real – This isn't Real, This is Second Life: Teaching ESL in a Virtual World.</p> <p>Margaret de Jong Derrington</p>	<p>This paper was written following a year spent in teaching English as a second language through the medium of English to groups of students from all over the world (ESL) on-line in Skype and Second Life (SL). Further investigation of the teaching and learning process in SL included learning Japanese and taking classes and courses in scripting and building and an eight-week instructor program at one of the SL building schools. This hands-on approach offered great opportunities to observe and examine the emerging pedagogy of SL tuition as practised not only in ESL but also in the in-world schools of building and scripting and to see it develop following the introduction of voice and the emergence of innovations which belong not to real life but only to the magical environment of a virtual world.</p> <p>The greatest benefits for ESL learning were observed where creative teachers, unhampered by too close an attachment to reality, were able to harness the full potential of the virtual environment.</p>	
<p><b>Paper 3</b></p> <p>Fearing your Avatar? Exploring</p>	<p>Glasgow Caledonian University are currently, like many H.E institutions, developing an island in Linden Lab's "Second Life" for a variety of reasons (Kirriemuir 2008). GCU's initial top-down push comes from a marketing and recruitment perspective, but will be closely followed by uptake for</p>	

<p>the Scary Journey to the 3<sup>rd</sup> Dimension.</p> <p>Kathryn R. Trinder</p>	<p>teaching &amp; learning activity and student support.</p> <p>Recent staff induction has shown up some rather intriguing outcomes - new technologies have always had their enthusiasts and sceptics but our current experience shows that the 3.D Internet appears to polarise this normal state to extremes, potentially causing engagement, development, and uptake to be particularly problematic. We're finding that many people are initially rather 'scared', unsure, negative about this as a technology. Personalisation of an 'avatar' can be troublesome (Warburton, 2007), or the concept of a 3D world difficult to grasp.</p> <p>This paper reports on early stages of enquiry into the experience of staff who have recently embarked upon exploring 'Second Life'. The study aims to capture initial experiences (of both person and 'avatar'), followed by later data collection as participants progress through stages of early exploration, personalisation, understanding, and eventual engagement or rejection of the technology.</p> <p>The research design adopts a holistic approach where participants are perceived as experts in their own experiences. It aims to capture the participants' "lived experience". Through allowing participants themselves to highlight issues, problems, and fears pertinent to them (Sharpe et al, 2005) the study will develop an evolving conceptual framework that allows their stories to determine which issues emerge as significant.</p>	
<p><b>15:45 – 16:15</b></p>	<p><b>Afternoon tea</b></p>	<p><b>Berrill Café</b></p>
<p><b>16:15 – 17:45</b></p>	<p><b>Workshops &amp; Parallel sessions</b></p>	
<p><b>Parallel session J</b></p>		<p><b>Oak Training Room, 1<sup>st</sup> Floor, Wilson C Block</b></p>
<p><b>Workshop</b></p> <p>Learning Together and Learning Alone in Second Life.</p> <p>Liz Falconer and Manuel Frutos-Perez</p>	<p>A common complaint about virtual worlds is that when one visits them there is no one there and nothing to do. Virtual worlds offer interesting potential for collaborative learning events, but it is less obvious how they can enhance individual learning activities. Our project (the Research Observatory in Second Life) is concentrating upon enabling both collaborative and lone learning opportunities. The Research Observatory (RO) is a web-based teaching and learning resource for research methods students and the Second Life development is the next step in creating a more socially and physically active resource for students studying research methods of enquiry at all levels in the university. The RO website is at <a href="http://ro.uwe.ac.uk">http://ro.uwe.ac.uk</a>.</p> <p>We have been working in SL since July 2007 and have constructed a RO structure to accommodate our research methods learners. The design of the RO structure has been built upon the winning entries of a design competition we held for our first year architecture students (see the blog at <a href="http://researchobs2.edublogs.org">http://researchobs2.edublogs.org</a>). The lone learning opportunities use dynamic logic activities, where the user physically interacts with the learning process, e.g. being transported around interactive learning activities such as online exercises and discussions with chat bots. The user is moved to the next appropriate learning interaction depending upon their response to the previous one. These activities can also be used by groups of learners, individually or at the same time, as the seed for discussions in the chat and collaboration areas</p>	

	<p>of the building.</p> <p>The presentation part of the workshop will concentrate upon reporting our research findings so far regarding the design and operation of the learning activities and, in particular, will focus upon the integration of lone and collaborative learning to accommodate different learning preferences and abilities. These include tendencies towards systemization and autistic tendencies such as low empathy and inhibited socialising skills. The major part of the workshop will enable attendees to participate in the lone learning exercises in SL and to discuss the integration of lone and collaborative learning in virtual worlds for students with learning preferences that may inhibit socialisation in the real world.</p>	
<p><b>Parallel session K</b> <b>Chair: James Abraham</b></p>		<p><b>CETL Meeting Room 8</b> <b>1<sup>st</sup> Floor, East Perry</b></p>
<p><b>Paper 1</b></p> <p>Socialisation and Collaborative Learning of Distance Learners in 3D Virtual Worlds.</p> <p>Shailey Minocha and Rita Tingle</p>	<p>Socialisation or 'knowing one another' is a key element of online learning and knowledge construction. Socialisation needs to be integrated and sustained in the collaboration process through the design of activities which ensure to reduce social distance amongst online learners. Virtual ice breakers early on in collaboration may not be sufficient to develop and maintain shared understanding, mutual trust and social presence. Inadequate early socialisation is a key obstacle in conducting collaborative activities at a distance, as investigated in our research with blogs, wikis and forums, and elsewhere.</p> <p>Socialisation in distributed environments can be enhanced through synchronous technologies such as instant messaging, phone, conference call, video-conferencing, web-conferencing, and so on. In this paper, we will present a review of our recent research which uncovered obstacles in student-collaboration due to inadequate socialisation with tools such as blogs and wikis. We will report the theoretical underpinnings for the pedagogical rationale for adopting 3-D virtual worlds such as Second Life for socialisation and knowledge creation in distance-education. Based on literature review and empirical investigations, we will discuss sample Second Life activities which aid socialisation.</p>	
<p><b>Paper 2</b></p> <p>Education and Social Interaction in Virtual Worlds: Science and Language Education in Second life.</p> <p>Wan-Ying Tay and Ralph Schroeder</p>	<p>Education in online virtual worlds has often been heralded as holding great promise. Reality has not lived up to this hype, with many pilot and demonstration projects abandoned and few, if any, day-to-day successful implementations. Many spaces in SL for education and for supporting scientific research are underutilised, even though considerable effort has gone into their design and implementation. This paper will assess this shortcoming from two perspectives: the first is a meta-analysis of the successful and unsuccessful features of shared virtual environments (SVEs) based on published research; the second is a project collecting data on educational projects in Second Life (SL), particularly focusing on areas for language and science education.</p> <p>Among the successful features of SVEs are object-focused tasks and environments which allow people to present forms of interpersonal expression which they find difficult in face-toface settings. Brown and Bell (2006) have shown that objects can facilitate communication in online worlds. While joint manipulation of objects in desktop-based SVEs remains difficult, some shared</p>	

	<p>object-oriented tasks can be done just as well as face-to-face settings. In terms of interpersonal tasks, it has been shown that for overcoming fear in public speaking or acting rehearsals for difficult scenes, SVEs can play a useful role with skills that are transferable to the real world (Slater &amp; Steed, 2002). One key problem in SVEs is organizational: even with two persons, it is much more difficult to coordinate certain types of activities and these problems increase geometrically as systems scale. Also, little is known about how different communication modalities – voice versus text – work in terms of their usefulness for education in SVEs. This paper will present data from a research project being done during the summer of 2008 that is studying science and language education in Second Life. The project involves several stages. First, the scope and frequency of these activities in SL are being thoroughly documented. Second, the content of events and objects related to language and science education is being collected and analyzed using standard content analysis techniques, including the creation of a codebook and tests of inter-coder reliability. Next, this content analysis will inform the creation of an interview schedule which will be used to interview purposively sampled content providers, consumers, and event participants in SL (target n=25). This project is exploratory because little is known about science and language education in SL, so it is necessary to establish a baseline before more targeted, hypothesis driven research is possible. We do, however, suspect that education in online SVEs like SL would do well to concentrate on VE's strengths: user-generated content, the creation of certain kinds of objects and spaces, and forms of interpersonal encounters that benefit from users being free to express a part of their personality that they might not otherwise reveal. We also suspect that larger-scale meetings are unlikely to work unless they allow for self-organization of tasks around common foci of attention. We will examine these ideas in light of the data gathered for this study.</p>	
<p><b>Paper 3</b></p> <p>Literacy Practices in Schome Park; A Virtual Literacy Ethnography.</p> <p>Julia Gillen</p>	<p>In this paper I deploy a synthesis of methods I term virtual literacy ethnography to investigate the diverse literacy practices of the project Schome Park. This project, directed by Peter Twining of the Open University, involving other Open University colleagues, has worked with teenagers on the first European 'closed' (ie. protected) island in the 3D virtual world Teen Second Life. I analyse evidence from the three main communicative domains of the project: 'in-world' chat logs and instant messaging; project wiki and the asynchronous forum. I demonstrate how I bring a perspective of studying situated literacy practices into virtual ethnography. In his discussion paper for the rethinking of the English curriculum for the QCA Kress (2005) draws attention to 'radically changing forms and functions of texts, which go beyond traditional conceptions of what literacy is and has been'. Contemporary digital technologies are associated with new blends of semiotic resources, especially presented online. But what is crucial about the so-called 'post-typographic' era is not only affordances of digital technologies, but associated new opportunities for collaborative meaning-making, rapid dialogues in diverse formats and potentialities for communicating across what previously might have acted as obstacles to access,. I show how the diverse multimodal affordances of the communicative domains are imaginatively exploited by the students. Using methods of corpus linguistics I am able to provide evidence of</p>	

	<p>the students' learning orientations during the early phase of the project. Later, I turn to an analysis of a student-initiated 'dictionary' activity on the wiki to demonstrate aspects of the community's collaborative literacy practices. The traditional distinction between 'reading' and 'writing' becomes permeable in interesting ways as new discourses, some specific to the community, emerged.</p> <p>I conclude that virtual literacy ethnography, as I have proposed it here, is fruitful in exploring the complexity and creativity of the students' literacy practices. I offer support for Kress's (2005) claim that changes in writing practices amount to a 'revolution in the world of communication.'</p>	
<p><b>Parallel session L</b> <b>Chair: Helen Yanacopulos</b></p>		<p><b>Library Presentation Room, Ground Floor</b></p>
<p><b>Paper 1</b></p> <p>The "Dusk" Experiment - Economic Experimentation in Second Life.</p> <p>Mark W. Bell</p>	<p>According to the research of Castronova's Synthetic Worlds Initiative (a think tank at Indiana University), virtual worlds are not only places that can be studied, but virtual worlds may be environments that can act as locations for social science experimentation. Virtual worlds offer the ability to create experimental controlled environments with robust data collection and reliability. This presentation covers the previous work in this area by the Synthetic World Initiative (Castronova, 2006; Castronova et al., 2008) and new work (Castronova et al., in press). These projects include Arden I, Arden II and a new project called "dusk". The "dusk" environment is being built in Second Life to test the quantity theory of money within a game. In these past, these games have been limited to face-to-face settings (Berg &amp; McCabe, 1995) but now can be expanded in virtual worlds to allow 24 hour automated experimentation in a multi-user environment.</p> <p>Players of the game will interact with different minigames and buy and sell prizes in an auction setting. The "dusk" environment tests the effect that the amount of money in a controlled system has on the prices in the system. The presentation will cover the creation of the experiment including the methodological choices, limitations, and subject motivations. Results of the experiment will be shared and plans for future experiments will be covered. The goal of the experiment is to advance the quantity theory of money and show virtual worlds as a viable experimentation apparatus. Finally, the future of virtual worlds as a location of further experiments and the larger ramifications for online virtual world research will be discussed.</p>	
<p><b>Paper 2</b></p> <p>Exploring Community Safety in a Virtual Community: Using Second Life to Enhance Structured Creative Learning.</p> <p>Paul W. Grove and Graham</p>	<p>This paper introduces an online virtual community that represents an interactive model of a typical dysfunctional neighbourhood. This model has been developed for use by second year Criminology students on a module called Community Safety and the Environment. The virtual community in Second Life integrates both social and physical environments and allows students to map in social and physical problems, which they analyse, try out and evaluate in terms of practical and theoretical applications of existing and new knowledge with regard to community safety, crime prevention and community policing.</p> <p>The critical engagement with key concepts of 'community' and 'citizenship' and theoretical issues, such as individualisation and moral minimalism for example, enable students to</p>	

Steventon	interrogate the general assumptions that underpin much social policy on crime management and control in community settings. Whilst developing students' awareness of the powers and responsibilities of the various agencies (police, local authorities, social services, health and mental health professionals, youth offending teams, drugs projects), the virtual community also highlights the challenges of inter-professional collaboration as seen from the different viewpoints. The development of purpose based theory, social climate learning (SCL) and use of the 5 stage model ensures that students remain on track to meet the module learning outcomes without sacrificing their ability to play, explore, generate and test out ideas.	
<p><b>Paper 3</b></p> <p>The Educational Affordances of Multi-User Virtual Environments (MUVE).</p> <p>Paul Hollins and Sarah Robbins-Bell</p>	<p>The emergence of the synthetic world or Multi User Virtual Environment (MUVE) offers educators not only an exciting new tool with which to interact with their students but moreover; a tool which could be part of a much wider challenge to the established pedagogic practice existing in formal education. In order to understand the potential of these tools the authors have developed a conceptual model identifying educational affordances.</p> <p>The author's observations of the application of MUVE in educational settings indicate that they could support, effectively, a full and diverse variety range of pedagogic approaches. Undertaking qualitative research, grounded in their empirical experience, as tutors, researchers, long term residents of Second Life and players of other massive multiplayer online role playing games (MMPORPG); the authors present a coherent view of identified educational affordances. The affordances of identity, space, activity, tools and community are presented in the context of examples of current educational activities being undertaken in MUVE.</p> <p>The authors argue that the pedagogic affordances of MUVE provide educators with an opportunity to challenge existing pedagogic practice and through exploiting these affordances the opportunity to develop new pedagogies aligned to the preferences of students who may be accustomed to using these kinds of digital technologies.</p>	
<p><b>Parallel session M</b>  <b>Chair: Sarah Walshe</b></p>		<p><b>KMi Podium, Level 4,  Berrill Building</b></p>
<p><b>Paper 1</b></p> <p>Social Communication Skills of People Diagnosed with Autism and Asperger's in 3D Multi-User Virtual Worlds.</p> <p>Simon Bignell</p>	<p>People with Autism can have considerable communication difficulties in face-to-face social situations. Their higher-level language skills, such as inferring intentions or mental states from others, are often impaired. In particular, their comprehension of figurative or pragmatic language is often poor, such that they can find it difficult to see beyond the non-literal interpretations most people take for granted. For example, language that utilises multiple meanings such as, "It's raining cats and dogs", can seem incomprehensible for people with Autism. Additional time is required to use contextual cues and tease apart the intended meanings of the speaker and this can lead to disruption in the high-speed flow of conversational exchange of everyday discourse. Coupled with social exclusion and difficulties in making and forming lasting friendships, people with Asperger's and high-functioning Autism often choose to communicate in ways that allow them to slow down the communication process such as email, text, and internet messaging; approximately ten times slower than face-to-face communication. However, little empirical</p>	

	<p>investigation has been conducted about their use of multi-user 3D virtual worlds. These environments provide high levels of social interactivity but without the complex linguistic and social-behavioural processing necessary for face-to-face conversations. This link may explain why, anecdotally, many people with Autism are reported to find 3D virtual worlds rewarding and assist in their real-world social functioning. If the relationship, between the symptoms of Autism and the communicative advantages of 3D virtual worlds is found to be beneficial, the implications for provision of cost-effective virtual interventions for people with Autism are considerable. Building on existing experience from evaluating learning and teaching in virtual worlds, mixed methods research was used to assess how 3D virtual worlds might facilitate communicative ability in these populations. Using appropriate ethical guidelines three adult groups were recruited from Second Life (Autism, ADHD, Neurotypical) using well-subscribed in-world discussion groups developed by the author. To provide additional validation of diagnosis brief web-administered assessments of these disorders was given.</p>	
<p><b>Paper 2</b></p> <p>Virtual Environments: Issues and Opportunities for Developing Inclusive Educational Practices.</p> <p>Kieron Sheehy</p>	<p>Virtual environments offer new research areas for those concerned with inclusive education. This paper considers the affordances offered by virtual environments for the development of inclusive educational pedagogies. It considers the relationship between specific features of inclusive pedagogy, derived from an international systematic literature review, and the affordances of different virtual environments. Examples are drawn from research in Second Life, virtual tutors and augmented reality. In doing this the paper challenges a simplistic notion of the virtual environment and indicates opportunities for researching and developing inclusive educational practice.</p>	
<p><b>Paper 3</b></p> <p>The Impact of the Characteristics of a Virtual Environment on Performance: Concepts, Constraints and Complications</p> <p>Mark Childs and Joff Chafer</p>	<p>In April and May, 2008, two scenes from Hamlet were performed live in a recreation of the Globe Theatre in SecondLife (R) to an inworld audience, by a troupe of performers known as the SL Shakespeare Company.</p> <p>The performance was mediated through voice, through the representation of the avatars, through gestures and through the positioning of the avatars within the stage space. All of these have links to other forms of performance, particularly masked performances and puppetry.</p> <p>Barriers to performance included the lag between lines being delivered and being heard. This was compensated for by the performers and the support mechanisms that were put in place.</p> <p>The role of technology in telematic and virtual performances is similar, in that performances that explore the nature of the technological platform are more successful than when technology is intended to be an imperceptible mediator of performance.</p> <p>One of the elements that was lacking to convey a sense of realism in the performance was individuation and subtlety in gestures. Part of the elements that convey realism within an environment is imperfection and small variation. Further work will explore the creation of choral gestures inworld with small differentiation between each performer.</p>	

<b>17:45 – 19:00</b>	<b>Free Time</b>	
<b>19:00</b>	<b>Pre-dinner drinks</b>	<b>The Hilton Hotel</b>
<b>20:00</b>	<b>Conference gala reception and dinner After Dinner Speaker – Terry Waite CBE</b>	<b>The Hilton Hotel</b>

## Day 2 – Friday 21<sup>st</sup> November 2008

8:30 – 9:00	Coffee	Berrill Café
9:00 – 10:30	Chaired debate	Berrill Lecture Theatre
10:30 – 10:45	Morning Coffee break	Berrill Café
10:45 – 12:15	Workshop & Parallel sessions	
Parallel session N		Oak Training Room, 1 <sup>st</sup> Floor, Wilson C Block
<p><b>Workshop</b></p> <p>Moodle Plus Second Life – An Introduction to Sloodle.</p> <p>Daniel Livingstone</p>	<p>This synchronous event will provide a basic background to the Sloodle project, and include a live demonstration of some of ways in which Sloodle bridges the divide between the web-base Moodle virtual learning environment and the rich 3D virtual world of Second Life. Additional discussion during this one hour event will present some of the background and the pedagogical principles behind the development of Sloodle which have shaped its evolution from an attempt to represent a Moodle course as a 3D classroom into a more flexible collection of tools including a more learner-centric toolbar. Further discussion will touch on future development objectives for the Sloodle project.</p> <p>Finally, two case-studies will be briefly mentioned. The first highlights successful integration of Sloodle into a blended-learning class, and provides a useful 'best-practice' exemplar. The second, less successful example, emphasises the need for instructors to consider carefully how students will be able to best benefit from the addition of Sloodle tools to a Second Life based class.</p>	
Parallel session O		CETL Meeting Room 8 1 <sup>st</sup> Floor, East Perry
<p><b>Workshop</b></p> <p>Conversational Latin Via Second Life.</p> <p>Andrew Reinhard</p>	<p>One recent trend in Latin-language pedagogy is the inclusion of oral Latin in-class participation, as well as homework recorded by the student and then uploaded to an instructor's course management system. In keeping with this new tradition, I have created a space in Second Life in which students can practice their conversational Latin skills. My villa is part of the established Roma simulation administered by Torin Golding, in the Roman Subura (suburbs). Students and their teacher/moderator schedule a time to teleport to the villa, at which point the moderator presents his/her students with a topic of discussion. Students have fifteen minutes to talk via Ventrilio (if they are have speakers/headphones and a microphone), or can make use of Second Life's native chat feature to converse via typing. These conversations are recorded for review and coaching purposes, and are part of each student's class participation grade.</p> <p>For the Research Learning in Virtual Environments 2008 conference, I propose hosting an inworld event where conference delegates with Second Life accounts can observe one of these conversational Latin sessions live and in real-time. The session should last approximately 40 minutes and include an introduction, 15 minutes of real-time Latin spoken by a group of five</p>	

	<p>students and one moderator, followed by a 15-minute discussion period between the students, moderator, and delegates (in English). Conference participants should feel free to join in the Latin discussion, but no specialized skill in Second Life is needed other than the knowledge of how to follow a SLURL, or teleport to a given location.</p>	
<p><b>Parallel session P</b> <b>Chair: Julia Gillen</b></p>		<p><b>Library Seminar Rooms</b> <b>1-2, 2<sup>nd</sup> Floor, Library</b></p>
<p><b>Paper 1</b></p> <p>Learning Scenarios and Workspaces with Virtual Worlds: Inclusion Benefits and Barriers of 'Once-Removed' Participation.</p> <p>Simon Ball and Rob Pearce</p>	<p>“As with any other technology applied in the support of education we need to be careful to make use of the opportunities that virtual worlds afford in ways that align with our, and our students’, learning objectives, rather than deploying the technologies for their own sakes. But along with the inevitable mistakes there would seem to be considerable potential.” (Macleod, 2007) Many higher education educators are embracing Virtual or Immersive Worlds such as Second Life® (SL), keen to explore and harness the potential for teaching and learning (Kirriemuir, 2008). Despite some obvious access requirements (a powerful computer, institutional access permission and a certain degree of visual acuity, for instance) there are emerging a range of potential benefits associated with adding this tool to the teacher's palette.</p> <p>Virtual worlds may provide the opportunity to deliver to students scenarios which would be impossible or extremely costly to simulate in real life. For example, the testing of trauma nurses' decision-making processes cannot be effectively simulated in the real world other than by text-based 'role-play-scenarios'. (Dev et al., 2007). The Ann Myers Medical Centre in SL is one of many examples where a hospital accident and emergency department is represented, and the nurses respond to a mass casualty incident (Mesko, 2007). Virtual Worlds are also being used to help students with autism, who can find change highly stressful, by using virtual simulations that will then prepare them for changes they will find in the real world (Saidi, 2008). Further research undertaken with young people with autism suggests more benefits with theory-of-mind impairments (Moore et al., 2005). Conversely, Virtual Worlds may offer a more manageable route into experiences for particular individuals. One simulation in SL demonstrates the sometimes harrowing world of a schizophrenic (Yellowlees and Burrage, 2005). The army is using scenarios constructed in Virtual Worlds to assist personnel with managing post-traumatic stress (Rizzo, 2006). The 'persona-once-removed' that individuals use as their avatar may be sufficiently distant from a user's own personality as to provide a buffer as they begin to deal with traumatic and distressing issues. Potentially the greatest benefit of employing virtual world scenarios in higher education teaching and learning is that for most users it provides a degree of levelling. Although users who do not have vision or quick typing skills will be excluded (Carter and Corona, 2008), control over attributes such as skin colour, gender, disability and so on provides an opportunity to interact without prejudice, and hence may have knock-on liberating effects on the user in their real life, although there are many issues regarding adopting particular real life traits in Second Life (Stevens, 2007). On a more cautious note, it would be easy to overlook, for instance, Ethics Committee approval when employing 'non-real' scenarios. How will you ensure that students with mental health or other difficulties are supported (and appropriately counselled if appropriate)? This paper draws together some of the potential opportunities and challenges of using virtual worlds in teaching and learning,</p>	

	<p>in particular the use of virtual worlds to replicate scenarios which some or all users could not access in an equal manner in real life.</p>	
<p><b>Paper 2</b></p> <p>Embodiment in 3D Virtual Retail Environments: Evolving the Perceptions of Collaborative Art and Design Research as Avatars.</p> <p>Andrew Taylor and Rosemary Varley</p>	<p>Being a fashion design lecturer and a fashion retail marketing lecturer, we were, until recently working on the same courses, in the same open plan office. Academically we had also been distinctly, yet independently aware of the debate surrounding the hyper un-realistic and non-sensory interface of online 2D shopping for clothes spanning the last decade. Until the advent of Web 2.0 interactivity, the customer's inability to actualise, and communicate with both the product and the brand had been the main inhibitor to online shopping.</p> <p>Following a paper presented to the subject area research forum about 3D fashion design research in Second Life. The authors met and chatted for the first time over coffee. We discussed the cultural and digital convergence happening within design and retail business. We acknowledged that in our polarised module delivery of design/retail content on the supply chain, we were missing out on the opportunity of teleporting into online 3D virtual worlds to do new research as a team.</p> <p>From this basis we agreed to create space and collaborate. By applying an experiential, exploratory and real-time approach to research methods we began investigating Second Life in collaboration. We aimed to explore main fashion brands with established virtual 3D stores, and intend that this research will support next stage collaborative teaching integrating both design and retail marketing. In conclusion the paper provides a context for collaboration amongst art and design academics. The research is an attempt to inspire 'non virtual' lecturers into working together to translate the tacit qualities of the physical into virtual design, making, buying and merchandising experiences for increasingly virtually tech- confident undergraduate art and design learners in 2008/09 and beyond.</p>	
<p><b>Paper 3</b></p> <p>Immersed in Learning: Virtual Worlds and Creative Practice.</p> <p>Denise Doyle</p>	<p>The Immersed in Learning Project began in 2007 to evaluate the use of 3-D virtual worlds as a teaching and learning tool in undergraduate programmes in Digital Media at the University of Wolverhampton. A question that the research set out to explore was what were the benefits of integrating 3D immersive learning with face-to-face learning for students who could be considered to be 'digital natives'?</p> <p>The purchase and development of Kriti Island on the Second Life grid saw the online virtual space rapidly assumed a sense of real presence, and become a focus for collaboration, nationally and internationally. The successful submission of 'Kritical Works in SL' project to the International Symposium for Electronic Arts in Singapore 2008 means that Kriti Island hosted ten international artists work produced in and for Second Life.</p> <p>With the ongoing research new questions have emerged. There is now a deeper focus on the use of the Second Life platform for creative practice and the exploration of concepts that are impossible in real life. This paper reflects on the development of an island for research and to support creative practice and creative collaboration and comments on its current and future use in the School of Art and Design.</p>	
<p><b>Parallel session Q</b> <b>Chair: Anne Adams</b></p>		<p><b>KMi Podium, Level 4, Berrill Building</b></p>

<p><b>Paper 1</b></p> <p>Difficult, Dangerous, Impossible.</p> <p>Liz Thackray</p>	<p>The use of Immersive Virtual Worlds (IVWs) for teaching and learning has been attracting increasing attention recently, and a number of universities already have a virtual presence in environments such as Second Life. Given the newness of the endeavour, there is little guidance on how to best make use of the affordances of virtual worlds, however, a number of educators are experimenting with these environments and beginning to share their experiences.</p> <p>In this paper, we describe our own use of Second Life in a course designed to teach students about the creation of interactive learning environments. In our case, Second Life was used in conjunction with real life sessions as both a vehicle for teaching and learning, and also an environment in which our students could create learning experiences for others.</p> <p>Moving into teaching and learning in Second Life requires crossing a number of boundaries in addition to the obvious boundary between the real and the virtual. In discussing this experience, we describe the boundaries encountered, and the opportunities they presented.</p> <p>Finally, we analyse this experience from the perspective of the “Diffusion of Innovation” model and its extensions to educational contexts. Our analysis suggests that students and staff have different profiles in terms of their attitude to risk, and their focus on learning products or process, and that part of the learning experience involves helping students become aware of these characteristics, and allowing them to experiment with situations of greater risk.</p>	
<p><b>Paper 2</b></p> <p>MMORPG, MUVE...What’s the Difference? Examining the Communication Facets of Virtual Worlds.</p> <p>Sarah Robbins-Bell</p>	<p>There are dozens of virtual worlds attracting millions of users. Virtual worlds such as Second Life, World of Warcraft, and Hello Kitty Online have all earned mention in the popular press. Over a hundred scholarly articles have been published in the last year which focus on some element of how virtual worlds function, how users experience them, and how the technology impacts society and culture. However, even with all of this attention, scholars and pundits still have no agreed upon definition of what a virtual world is and what features distinguish one from another. The rapid development of new platforms and the palpable impact of these spaces on our culture necessitate that we develop a taxonomy of the features of these spaces to form a foundation for future work.</p> <p>This paper will share the results of a faceted classification study of over thirty virtual worlds, the important mechanics that emerge from the study, and the implications of these facets. This analysis yields more than just the differences between game and non-game spaces. Rather, important descriptive trends will be demonstrated that will not only aid in the discussion of these spaces, but also function as a tool to predict what types of mechanics may spur future innovation and adoption.</p> <p>Faceted classification, as a research method, has never been applied to virtual worlds. Computer Mediated Communication (CMC) scholar, Dr. Susan C. Herring, introduces the Faceted Classification method in a 2007 article in which the approach is drawn from early work in text classification done by library scientist Ranganathan (1933). Ranganathan’s classification approach later developed into the Colon Classification system, a library system influential in the development of the Library of Congress classification system. Herring explains the strengths of the faceted classification approach:</p> <p>“Ranganatham described the faceted classification method as analytico-</p>	

	<p>synthetic: A subject domain is first analyzed into component facets, and relevant facets are then synthesized into combinations to characterize items of interest...The flexibility of faceted classification lies in its ability to describe a large number of items with the subject domain, including novel items, on the basis of a relatively economical, pre-defined set of facets and terms.” (6)</p> <p>Thus, faceted classification allows us to take a large number of objects with varied attributes, analyze them, and then put them into a classification scheme that not only presents those characteristics in a more orderly scheme, but also allows for easy, meaningful comparison of objects.</p> <p>Rather than analyzing these virtual spaces as cultural texts as others have done (Gee, Jenkins, Rheingold, Turkle, Yee, Steinkuhler etc.), I propose that we look at the “mechanics” and “tools” in the environments that facilitate communication and community. The research presented here, using structural analysis and a faceted classification scheme suggests a taxonomy and a new method with which to categorize and deconstruct the functions within these environments to better study the forms of communication taking place within them.</p>	
<p><b>Paper 3</b></p> <p>Inquiry and Information Behaviour in Second Life.</p> <p>Sheila Webber</p>	<p>The aims of this paper are</p> <ul style="list-style-type: none"> <li>- to describe and review an inquiry-based intervention involving first year undergraduate students, and;</li> <li>- to reflect on the extent to which research into information behaviour of students and teachers may illuminate and foster effective pedagogy in Second Life (SL).</li> </ul> <p>The intervention took place with a cohort (c. 20 students) studying BSc Information Management (IM) at the University of Sheffield. An assignment for a core Semester 1 Level 1 module, <i>Information Literacy</i>, required students to undertake two critical incident interviews within SL, asking interviewees to remember a time when they needed information for a SL activity. Students reflected on the interview process and analysed transcripts in relation to Real Life (RL) research models of information behaviour. This task was supported by induction activities in SL, practice interviewing in RL and a problem-based exercise in which students identified possible dangers of SL. The intervention was reviewed through analysis of: interviews with the tutor (the author of this paper), the tutor’s e-portfolio, the students’ academic work, a student questionnaire and other evidence such as chatlogs.</p> <p>This intervention is part of revision to the BSc IM curriculum, supported by the Centre for Inquiry Based Learning in the Arts and Social Sciences. We are putting greater emphasis on Inquiry Based Learning (IBL), to increase students’ engagement with the discipline and to improve research skills. From this perspective, the Second Life intervention achieved some success, as students carried out interviews in a genuinely novel research area, reflected on the nature of SL Interviews, and produced reasonable to excellent analyses.</p> <p>Further issues are raised by the content of the interviews themselves. Since informed consent was only requested for use for the students’ assignments, the data has not been formally analysed by the author. However, having read through the transcripts as part of the marking process, she observes that:</p>	

	<p>- people were using a wide variety of information sources / channels, inworld and offworld;</p> <p>- behaviours could be matched to RL models, but seemed to have more in common with “everyday” (rather than academic) information behaviour (e.g. in terms of use of personal sources, browsing behaviour etc.);</p> <p>- some specific SL strategies emerged (e.g. use of information in objects and profiles);</p> <p>- those interviewees who were students tended to have a narrower range of information strategies (e.g. using their tutor or their tutor’s notes as their point of reference).</p> <p>This has implications for IBL, and for other forms of learning in SL, since it may indicate that being information literate in carrying out activities in SL requires some of the same skills as in RL, but also new skills in handling forms of information (e.g. information embodied in people and objects). These skills may be particularly unfamiliar to incoming students if their course of study is focused mainly on one format of information, e.g. textual.</p> <p>The author will reflect on how engaging students in researching their own information behaviour could encourage more effective engagement in SL learning task</p>	
<b>Parallel session R</b> <b>Chair: Mark Childs</b>		<b>Robert Hook Seminar Room, Ground Floor</b>
<p><b>Paper 1</b></p> <p>Design of Learning Spaces in 3D Virtual Environments.</p> <p>Shailey Minocha and Karen Kear</p>	<p>3D virtual environments have considerable potential for learning. However there is a lack of research into how such environments should be designed to maximise this potential. This paper introduces a project to carry out research into two aspects of the design of 3D learning spaces: the degree of realism; and the degree of immersion. In order to investigate the realism aspect, the project will compare students’ experiences of learning spaces within Second Life which have different degrees of realism. To investigate immersion, the project will compare students’ experiences in an existing virtual reality environment and an environment built within Second Life. In all cases students will carry out learning activities suited to their course of study. The investigation of realism will involve students from a range of courses at the Open University, UK undertaking activities within Second Life. The investigation of immersion will involve UK’s Nottingham University Geography students working with two models of an actual physical environment: one in a virtual reality system and one in Second Life. The findings of this project will contribute to an improved understanding of how the aspects of realism and immersion influence students’ learning in 3D virtual environments.</p>	
<p><b>Paper 2</b></p> <p>Reflections on the Use of Project Wonderland as a Mixed Reality Environment for Teaching and Learning.</p>	<p>This paper reflects on the lessons learnt from MiRTLE—a collaborative research project to create a ‘mixed reality teaching and learning environment’ that enables teachers and students participating in real-time mixed and online classes to interact with avatar representations of each other. The key hypothesis of the project is that avatar representations of teachers and students can help create a sense of shared presence, engendering a greater sense of community and improving student engagement in online lessons. This paper explores the technology that underpins such environments by presenting work on the use of a massively multi-user game server, based on</p>	

<p>Michael Gardner, Bernard Horan</p>	<p>Sun's Project Darkstar and Project Wonderland tools, to create a shared teaching environment, illustrating the process by describing the creation of a virtual classroom. It is planned that the MiRTLE platform will be used in several trial applications – which are described in the paper. These example applications are then used to explore some of the research issues arising from the use of virtual environments within an education environment. The research discussion initially focuses on the plans to assess this within the MiRTLE project. This includes some of the issues of designing virtual environments for teaching and learning, and how supporting pedagogical and social theories can inform this process.</p>	
<p><b>Paper 3</b></p> <p>The Use of Three Dimensional Interface Within Virtual Learning Environment and the Impact on Knowledge Creation.</p> <p>Brian Burton</p>	<p>The purpose of this study was to determine whether collaboration occurred within 3D virtual learning environments. Furthermore, if collaboration occurred were the elements of Nonaka and Takeuchi's (1995) knowledge spiral present as well? By creating a 3D didactic constructivist virtual environment, conversations were observed for collaborative elements. Data for this mixed-design study were gathered through three sources, the 3D virtual environment, a survey created by the researchers, and follow-up interviews. Findings revealed that the five (5) forms of collaboration: Elementary Clarification, In-Depth Clarification, Inference, Judgment, and Application, amplified the knowledge creation process and indeed occur with virtual learning environments. It was also determined that all four (4) requirements for a knowledge spiral: socialization, externalization, combination, and internalization, did occur during the period of this research within the 3D environment. Thus the creation of new knowledge as knowledge passed from tacit to explicit and explicit to tacit (Nonaka &amp; Takeuchi, 1995) within this 3D virtual learning environment. Qualitative results further suggested that after a period of adaptation by the user, most participants were less likely to get off-topic and focused more on the project given to them.</p>	
<p><b>12:15 – 13:15</b></p>	<p><b>Lunch</b></p>	<p><b>Michael Young Building, Rooms 1-4</b></p>
<p><b>13:30 – 15:00</b></p>	<p><b>Workshops &amp; Parallel sessions</b></p>	
<p><b>Parallel session S</b></p>		<p><b>Oak Training Room, 1<sup>st</sup> Floor, Wilson C Block</b></p>
<p><b>Workshop</b></p> <p>Scaffolding Action Inquiry into Second Life With a Simple Online Template.</p> <p>Leoni Ramondt</p>	<p>This workshop will introduce participants to the use of a simple online template tool to scaffold just-in-time reflections as action inquiry into the implementation of Second life for learning and teaching. The workshop will start with a quick resumé of action inquiry and communities of inquiry followed by a brief overview of current implementation of the process at Anglia Ruskin University. Participants will then be asked to log on and achieve a simple task in Second Life and to use the tool to capture their reflections on this process. Participants will then be shown how they can easily set up their own action inquiry online journals in a hands-on tutorial. Finally participants will be asked for suggestions for improving the tool or process and asked whether and how a community</p>	

	<p>of action inquiry might support their own practice. (Torbert, B. and associates, 2004)</p> <p>This workshop is suited to participants who struggle to find the time to reflect on their practice. Basic computer literacy is a requirement. The workshop will need to be delivered in a computer lab with sufficient computers for each participant and with a web browser, online access and Second Life installed. Basic skill levels in Second Life is sufficient.</p>	
<p><b>Parallel session T</b> <b>Chair: Anne Adams</b></p>		<p><b>CETL Meeting Room 8, 1<sup>st</sup> Floor, East Perry</b></p>
<p><b>Paper 1</b></p> <p>Learning, Teaching and Ambiguity in Virtual Worlds</p> <p>Diane Carr and Martin Oliver</p>	<p>What follows is the description of a research project in which learning practices in online worlds were investigated, and the implications of such practices for online pedagogy were explored through teaching in Second Life. Working within an action research framework, the researchers employed a range of methods to investigate how members of online communities define the worlds they encounter, negotiate the terms of participation, and manage the incremental complexity of game worlds. It is argued that the variable nature of online worlds results in ambiguity that impacts on social practices, and has significant implications for online teaching and learning.</p>	
<p><b>Paper 2</b></p> <p>SLAVE – Second Life Assistant in a Virtual Environment.</p> <p>Matthew Montebello</p>	<p>Virtual worlds, in particular Second Life, have recently been gaining more momentum in emerging trends within the educational research dimension due to their dynamic, flexible and accessible nature. One problem which educators are facing is that of having an aesthetically appealing display which at times learners cannot exploit at will unless a pre-planned event has been scheduled. Residents often complain that educational lands are often void of life, and show a marked lack of presence. SLAVE aims to provide a solution to this problem. The innovation which came along with Second Life denotes an aspect where limitations are only posed by one's creativity offering not only the tools which lead to more flexibility, more activity, and less formality but also those which can exploit the Web 2.0 concept. SLAVE aims to create an environment which is inhabited by intelligent assistants presenting Second Life, not as static entertainment but as an environment which has a scope. This scope will be fulfilled by 'adding life to Second Life' and applying artificial intelligence to resident agents leading to an outcome which is richer, more 'colourful' and has more to offer to the learners experiencing it. Second Life thus becomes a 'learnscape' where residents are guided towards more experimentation and more practice with the aid of artificial avatars, accompanying them across their mission to learn.</p>	
<p><b>Paper 3</b></p> <p>How Can Massive Multi-User Virtual Environments and Virtual Role Play Enhance and Embed with Traditional</p>	<p>There are now many educational sites in Second Life (SL), but they are, in general, more formal and less interactive than the most popular social sites. Many educational sites have been built in the image of existing buildings, but they are often deserted spaces. Some, more adventurous, sites include scripted objects that allow an individual to interact with a simulation, but too often these do not compare favourably with simulations found outside SL. This may indicate that recreating what can be provided in real life, or even in traditional simulations, is not effective. Massive Multi-User</p>	

<p>Teaching Practice?</p> <p>Angela Addison and Liam O'Hare</p>	<p>Virtual Environment's (MMUVE) provide an opportunity to extend the learning environment to take advantage of social learning opportunities. The social sites show us the immersive potential, and the potential for groups to interact, and this is the key to this project.</p> <p>We are developing problem-based learning in SL using group work, co-operation, and role-play. The project seeks to utilise these principles to encourage and develop the cognitive transition of professionals from classroom taught theory to application in the work place. This is done with the intention of developing skills, confidence and a professional approach. The first development centres on the use of a food factory to allow regulators to undertake an immersive role play. In this learning opportunity, they are able to take the role of a regulatory officer visiting an unfamiliar factory to question production staff on a working line, company managers and other members of the workforce. These other roles may be taken by scripted robots (who may offer little helpful information), by their fellow students, by staff, or by potential employers. In this application, SL is being used as it offers two significant advantages. Compared with traditional role play, SL offers more immersive sets. Students find it easier to take the role seriously, and to detach themselves from the classroom environment. This is aided by distractions during the role-play, for example moving forklifts and factory noise. At the same time the experience is more engaging and open-ended than watching interviews recorded in real factories.</p>	
<p><b>Parallel session U</b> <b>Chair: Liz Thackray</b></p>		<p><b>KMi Podium, Level 4, Berrill Building</b></p>
<p><b>Paper 1</b></p> <p>Developing Sustainable Library Services Within the Context of a Parallel Universe?</p> <p>Non Scantlebury</p>	<p>This paper presents a case study of how library services collaborated with other stakeholders within The Open University to develop sustainable services to students accessing the Open University's "Open Life", Second Life environment and more specifically for students registered on the new MPhil course. The paper examines a generic model for library specific service delivery and learner support which were developed in collaboration with key stakeholders. User requirements were gathered by the use of a wiki, face to face meetings and focus group activity.</p> <p>The paper outlines the attempts made by the team to overcome the existing constraints put in place by current publishing and licensing models restricting the distribution, delivery, presentation and reconfiguration of licensed and authenticated content for students Particularly those operating beyond the traditional 'walled garden' of the institutional Library. The paper details the strategies employed by the team to move beyond the traditional library metaphors largely employed by other library services operating in Second Life, in order to attempt more innovative approaches to supporting students in their quest to develop higher level research and information literacy skills. The case study outlines the iterative process undertaken to develop four library zones established to support student learning. These included a "meet and greet" zone, a "playback" zone for kinaesthetic learners, an "explore" zone where students were given the chance to experiment with a range of specialist search tools and engage in 3D searching, and a "swap-shop" zone for knowledge management and resource sharing.</p>	

<p><b>Paper 2</b></p> <p>In Betweenness or in Two Places at Once.</p> <p>Ronald Macintyre</p>	<p>This paper is informed by experiences and observations made while participating in the Open University Second Life Teen Grid education project (Schoke), and reflections on observations made on the various educational islands facilities on Second Life Main Grid. The paper explores the role of participant observation as a research tool within Second Life. It acknowledges that Second Life is a knowable social reality with customs and norms that should interest the ethnographer. However, the researcher is increasingly uncertain about the applicability of ethnographic concerns of 'authentic experience', 'dwelling', or 'going native'. One is always aware of a sense of 'betweenness', always drawn back to a body and a keyboard, in a room on your own. The physical and embodied experience of being in between worlds is considered as a challenge and an opportunity for ethnographers.</p> <p>The paper concludes by acknowledging that the authors sense of betweenness is a function of his personal attachment to the concept of embodied experience.</p>	
<p><b>Paper 3</b></p> <p>The Skinningrove Jetty Project.</p> <p>Steve Thompson</p>	<p>Can Virtual Worlds support real life community engagement and development? At the time of writing I have embarked upon and I'm engaged in developing a project working with a community, two schools and a local MP. The Skinningrove Jetty project sets out to rebuild the disused jetty in Second Life (teen and Main grid used) and to combine an in-world and real life event to promote the re-development of the actual jetty. More here <a href="http://www.neukol.org.uk/docs/sgrovejetty.pdf">http://www.neukol.org.uk/docs/sgrovejetty.pdf</a>.</p> <p>The culmination of this project will come with a combination of an in-world and real-world event during the Skinningrove Bonfire celebrations which is an arts event attracting 1000's of visitors. I hope to present the outcomes, the successes, possible failings and lessons learned at this conference.</p>	
<p><b>Parallel session V</b> <b>Chair: Shailey Minocha</b></p>		<p><b>Robert Hook Seminar Room, Ground Floor</b></p>
<p><b>Paper 1</b></p> <p>Factors that Hinder and Assist Learning in Virtual Environments: An Empirical Study.</p> <p>Trevor Barker</p>	<p>Working, playing and learning in virtual environments will become increasingly important in the future. Such spaces, it is claimed, allow for realistic social interaction and present opportunities for providing motivational learning environments. For example the School of Computer Science at the University of Hertfordshire have recently established an online campus within Second Life. In this paper we present part of a four year research programme into some of the problems and issues inherent in studying and working in non-immersive virtual environments such as Second Life. We found that many learners experience difficulty with navigation in such spaces and that this may significantly affect task performance and attitude. In the first of a series of studies, important variables that affect navigation in such spaces were identified and their effects on task performance, ability to recall information and attitude to the environments were measured and are presented. In the final part of the paper we discuss how our findings are applicable to learning in virtual spaces such as Second Life.</p>	

<p><b>Paper 2</b></p> <p>Defining a Framework for Teaching Practices Inside Virtual Immersive Environments: the Tension Between Control and Pedagogical Approach.</p> <p>Steven Warburton and Margarita Pérez Garcia</p>	<p>The following paper describes an empirical research study that analyses learning and teaching practices related to the design and implementation of 'hands-on workshops' within the Multi-User Virtual World (MUVE) known as Second Life. The analysis leads the authors to a mapping of existing practices and to the elaboration of a taxonomy that covers four main processes and 26 criteria in the design and implementation of these workshops: a) planning and preparation of instruction; b) delivery of instruction; c) follow up and evaluation; and d) the activities for recalling and transferring learning. 20 in-world workshops have been analysed. All of them were centred around the development of specific competencies in building and/or scripting objects in-world. Each workshop ran for a minimum duration of one hour and the majority were organised by non formal learning providers and targeted at the general public in Second Life. Data was collected using a participant observation methodology and the observations were supported by a set of semi-structured interviews with 10 experienced teachers and completed by an analysis of commentaries within secondary literature sources. Once designed, the taxonomic grid for the analysis of workshops was validated through a new round of selective participant observations and against a new panel of teachers.</p> <p>The taxonomic grid derived from this analysis provides an understanding of the wide range of practices and tools that relate to the design and implementation of hands-on workshops within Second Life. It highlights those that appear to have the highest impact on the quality of the learning experience measured by the level of student satisfaction in the successful completion of the tasks and objectives assigned. Two key scales were identified in relation to impact: <b>control of the environment</b> - ranging from completely unstructured to highly structured and <b>pedagogical approach</b> - ranging from directive instruction and results based learning to process based and reflective learning. These two polarities when plotted against one another differentiate four main profiles or scenarios for teaching in-world. They also suggest the definition of a fifth scenario, one for change where weaknesses identified in the three first quadrants of the polarities graph are addressed in order to produce an appropriate level of structured design in the learning and teaching environment <i>and</i> to promote process based learning approaches.</p> <p>Finally, if the grid can be used as a tool for the description of current teaching practices, it has proven its utility also for self-assessment, evaluation and designing instruction as it shows the possibilities that are available to the teacher when designing a MUVE based learning: it is a tool to assist the teacher such that informed decisions can be taken in the design and delivery of in-world teaching activities.</p>	
<p><b>Poster presentation</b></p> <p>Experiential Learning – How Does Second Life Virtually Compare with First Life Reality?</p>	<p>Whilst it is commonly accepted that different methods of learning suit different learning styles, experiential development activities are widely regarded as a valid method of learning especially when framed within a multimethod blended offering. Within the workshops delivered by Human Resources Development across the University this experiential component is usually provided through group discussion as there has been a general reluctance and disengagement with roleplay activities. The question we now pose is can inworld virtual roleplay provide us with another viable alternative?</p>	

<p>Steph Broadribb, Francine Westrapp and Chris Carter</p>	<p>We will explore whether participating in an experiential learning experience in world results in similar outcomes for the individual as more traditional experiential learning experiences in 'first world'. Furthermore, can a virtual learning experience enable those individuals who disengage from traditional role play activities to engage and interact more confidently? We propose a matched samples design, whereby each participant experiences the same initial training session but are subsequently split off into one of three groups for a learning embedding activity: paper based (a textual description), 'traditional' (real life group environment) and virtual based (the MUVE of Second Life). Participants will be matched based upon their extraversion / introversion domain scores, achieved through completion of a short 'Big Five' based personality measure prior to the role play activity. Other measures used will include established self report indicators of satisfaction and engagement. We shall be gathering both quantitative and qualitative data in this respect.</p> <p>Learning outcome shall be measured using one to one situational interviews at two time points: before and after the role play activity. We anticipate that the sample size to be small to moderate and consisting of Open University employees. We hypothesise that satisfaction and engagement ratings will differ with respect to levels of extraversion / introversion. Furthermore, level of learning is anticipated to differ in each of the role play Scenarios conducted.</p>	
<p><b>Poster presentation</b></p> <p>Enhancing Second Life as an Educational Tool: Resolving Tensions Between Anonymity and Trust</p> <p>Graham Roberts</p>	<p>Second Life (SL) is an active world using 3D graphics and social networking communication tools of voice and text chat, by and between avatars – manipulated representations of people, known as residents. Avatars have permanent registered names that are not the same name as the individuals they represent in real life (RL). This conveys anonymity "in world", highly desirable to most SL residents. However, anonymity raises significant issues of trust. In education, knowing who is a member of staff and who is a student is usually necessary, and sometimes vital.</p> <p>My proposal for registration is a novel technological augmentation to readily and easily identify staff and students via tags. An important facet of the proposed system is that a person nominates their own avatar and it is transparently validated against the institution's database, resolving the tension between anonymity and trust in world. In this way SL is enhanced as an educational tool.</p> <p>With tension resolved, use of SL by students across institutions can be widened out, up scaled and deployed to enhance RL learning by in-world secure social networking, more diverse curriculum and more subtle pedagogic approaches.</p> <p>Unresolved tensions may limit to dozens what could be hundreds of students benefiting from in-world education opportunities; they doubtless brake on development and use.</p>	

	<p>Equality of opportunity is not just laudable but essential as summative assessments are considered based on virtual world experience.</p> <p>Examples of alternative approaches and issues arising will be presented.</p> <p>My current doctoral research studies mentoring by peers in-world among overseas Chinese degree students attempting to improve their English in order to complete their third year in Britain. They need to trust each other and recognise staff. Some observations from an Initial Study completed in August 2008 will be shared.</p>	
<p><b>Parallel session W</b> <b>Chair: Sarah Robbins</b></p>		<p><b>Berrill Lecture Theatre</b></p>
<p><b>Symposium</b></p> <p>Virtual Worlds Crossing the Digital Divide.</p> <p>Paul Hollins, Daniel Livingstone and Anna Peachey</p>	<p>Graphical 3D virtual worlds (most notably Second Life) are being increasingly adopted and adapted for use in higher education – recent reports indicating that over 50 UK HEIs are exploring the use of Second Life in teaching. Can virtual worlds be used to better reach-out to students disengaged with formal education or do they simply create newer and more challenging barriers, locking more students out? Will the use of 3D virtual environments in education become a divisive technology, with alternative 'equivalent' learning experiences for those excluded, or can they be made inclusive?</p> <p>Ideas to be explored: Some claim that virtual worlds can provide richer experiences and greater engagement and participation in blended or distance learning. But complex graphical user-interfaces and challenging orientation experiences can also dissuade students - and exclude some altogether. Requirements for more powerful hardware and for high-speed internet connections may also entrench existing digital divides, questioning their use in education. How can virtual worlds be employed to gain the maximum benefits of improved participation and what is best practice for employing virtual worlds in education? Can development of '3D web' standards or integration with existing text based technologies help?</p> <p>Structure of session and activities: A brief introduction will outline some of the challenges presented by virtual worlds and note that solutions will require innovation in pedagogy and learning, the creation of suitable standards and in integration with existing learning technologies. Facilitators will then take turns to briefly outline their own position and invite debate. Additional issues, notes and key points which arise will be recorded live into the presentation materials, for electronic distribution and to seed continued debate after the conference. The material generated during the symposium will complement pre-prepared position statements including resources relating to issues addressed. A pre-prepared resource collection will be available online during the symposium, and will invite further comment and contributions – enabling all participants to actively contribute to a shared</p>	

	understanding of the issues, challenges and opportunities.	
<b>15:00 – 15:30</b>	<b>Afternoon tea</b>	<b>Berrill Café</b>
<b>15:30 – 16:15</b>	<p><b>Keynote Presentation - Roo Reynolds</b></p> <p>Roo Reynolds has offered to not pre-prepare any slides for his closing keynote, but instead create a short presentation on the fly during the other sessions. Drawing on the notes and photographs taken during the conference, he'll act as a virtual cheat-sheet for the event.</p> <p>He'll share his notes, including what he found most interesting and what he'll take away from it, wrapping up the two days by distilling any key themes and considering what we've learned about learning. Perhaps he can pull the threads together into something which will make sense. It makes predicting what he's going to say particularly tricky, but it could be fun.</p>	<b>Berrill Lecture Theatre</b>
<b>16:15</b>	<b>Close</b>	