Metaversity Teaching: Investigations in Virtual Worlds

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Overview

The principal aim was to gain a greater understanding of the potential use of virtual worlds within teaching and learning contexts. Efforts were focused towards exploring the use of Linden Labs' Second Life[i] (SL) to establish potential benefits and drawbacks from three specific considerations:

(i) use of the system as a supporting environment for teaching and learning;
(ii) using programming capabilities within the software in relation to an undergraduate module focussed on multimedia;
(iii) generating case study materials for a postgraduate module on professional, ethical and legal issues.

Since neither of the modules was running during the period of investigation, efforts were largely focussed on developing the know-how required such that use could be attempted in a more convincing way with student cohorts during the Autumn. The Teaching with New Technologies programme provided an element of impetus to this effort, and the award has been used largely to support the activities of a small group of students in developing this understanding. An overview of explorations in Second Life was presented at the E-Learning Practitioners Workshop, 12 June 2008.

The virtual world in Second Life has been referred to as the Metaverse, hence a "Metaversity".

Background

Linden Labs' Second Life is provides a 3D environment, typically through installation on specific clients. The client communicates with servers at Linden Labs, each of which hosts one or more virtual islands that make up the "Grid". The virtual islands provide the locations for virtual buildings, on land, in the sky, and even in the sea, and the provision of activities within and around. Users register avatars, who become *residents* of the virtual world, and the user steers the avatar around this world. One of the top priorities for some users is to change the appearance of their avatar, which goes beyond merely changing clothing to affecting a kind of extreme digital plastic surgery.

The principal mechanism for travel is a relatively slow walk, though running and flying are also possibilities - for rapid "travel" between the islands, *teleport* exists. Second Life appears to act as one complete (virtual) world, though some transitions between these islands may be problematic without using teleport. Numerous virtual objects may be built and obtained, Second Life has an economy, based on the so-called Linden dollar (L$), which enables the buying of particular virtual goods and, through building activities, to sell their own developments. Those goods are usually relatively inexpensive and, in some cases, enable particular companies to showcase their latest product range in the hope of real world sales resulting.

The Second Life client enables the 3D environment to be explored with functionality including maps and search capabilities. It is possible to visit a variety of existing virtual locations within Second Life. During explorations, one might meet others who are either exploring or building, and text chat allows for discussion. For more private conversations, with friends and colleagues, Second Life also includes its own support for Instant Messaging (IM) and email. Second Life also includes its own Web Browser so that web addresses can be visited within the same software interface, and a variety of locations provide audio and video enhanced experiences. For those who feel the need for a greater challenge, it is possible to build your own 3D objects and, using the Linden Script programming language available within this environment, to give these 3D objects specific behaviours, for example, to make them react to specific cues such as proximity, text or "touch". Some have used Second Life as a teleconferencing tool, and attempts are being made elsewhere to co-host meetings through the incorporation of videoconferencing.

Numerous other virtual worlds exist, many of which can be generically referred to as Massively Multiplayer Online Games (MMOG), and alternatives could have been considered for this exploration. *World of Warcraft* appears to be the most populous, boasting over 10 million active subscribers, and

Runescape, Everquest, Lineage and Final Fantasy are popular, though less so. One limiting factor here is that these virtual worlds comprise specific fixed quests, missions and other goals that provide the strong basis for the world. Second Life does not have such fixed considerations – some may suggest it is *pointless* - though its residents may create specific fixed quests, missions or other goals or games – although the FBI has closed down gambling. Similar resident-built virtual worlds include Sony's Playstation 3 Home – "3D social networking" – amongst others, but generally have rather fewer residents and rather lower boasts by investors.

The Eduserv report[ii] suggests that 75% of UK Universities are now undertaking activities within Second Life, though mostly with groups of enthusiasts rather than top-down strategic efforts. Educational interest in Second Life comes from a variety of standard, and some perhaps unexpected, sources. Harvard, NYU, Stanford and Ohio all have presence and UK Universities include the University of Edinburgh's investment in the Virtual University of Edinburgh[iii], with presence for Alumni, Informatics and Management Schools, amongst others on their 9 virtual islands; the Universities of Oxford, Hertfordshire, Bedfordshire ("Bedfordia"), Portsmouth (through their CETL), Coventry and the OU, who have put efforts into developing student outreach, recruitment and, in particular, online learning in Second Life. An increasing number and variety of television news has featured clips of Second Life, and of potential interest to those is certain faculties at Surrey may be examples in relation to problem-based learning in clinical management, undertaken in the Coventry University based, JISC-funded, PREVIEW project[iv], and the Government's plan for so-called *polyclinics* as demonstrated, in part by the medical school at Imperial College, in *Second Health London*[v].wForthose with interests in crime and forensics may have been interested in the crime fighting drama CSI:NY constructing an entire episode around Second Life and producing a virtual experience alongside the episode; unfortunately, the latter of these has since been closed down.

Further considerations for virtual worlds may include the availability of (existing) useful components, the costs and time necessary to get started and to develop other such useful components, and whether the platform is stable enough or provides a satisfactory end user experience. A key message appears to be that one should not worry about replicating the real world, but think about how things would work best without physical world constraints. The general concern with such a system is likely to be that its effective use may eat time and resource without necessarily providing a satisfactory return on this investment. Since many others report various wins, and few losses, exploring these extant efforts across a wide range of university and industry activities can provide the kind of evidence that may prove beneficial. Some may love it, some may hate it, but for the time being at least it's here and doesn't yet seem to be going away. The principal motivation behind selection of Second Life for this exploration was the growing interest in both industry and academia, and as a result a growing literature base and opportunities for learning from experience elsewhere.

Getting Started in Second Life

You need an avatar, an installation of Second Life, and a good quality always-on network connection. You can, of course, undertake the installation without the need for the avatar, and this may be a consideration in relation to dealing with some of the potential pitfalls of installing the Second Life software on certain kinds of machines. It is likely best to test the installation before proceeding with obtaining an avatar. Annex A provides a list of potential considerations and some potential pitfalls in getting started.

Once the Second Life software has been installed, you should be able to use your avatar name and password to login. The software provides numerous menus, submenus, options, dialog boxes, checkboxes and even some capabilities hidden from general users. Fortunately, there is a printable list of keyboard shortcuts[vi] to help reduce reliance on memorising the locations of the various menu items and other functions. Cursor keys/arrow keys are generally used to manoeuvre the avatar, even in flying mode, to navigate around the virtual world. To get to various locations more rapidly, seek out the *teleport* button on the searchable World Map (CTRL+M) once you have found a place to visit.

Finding locations that are worth visiting is probably the next step, and here reference back to the web may be beneficial[vii]. Slurl.com provides a Google Map-like linking system enabling exploration of the geography of Second Life, and some limited configuration of Slurl.com links is possible[viii]. Some items of potential interest may include:

- religious groups and locations for Zoroastrians; Confucianists, Daoists, Jews, Buddhists and the Church of Elvis;
- the Titanic;
- technology companies including IBM, Microsoft, Cisco, Dell and Sun Microsystems;
- locations including Virtual Dublin, Camp Darfur, Hollywood, Paris, Amsterdam, St Paul's Cathedral and the Star Trek Museum;
- retailers including Adidas, Toyota, Nissan and Pontiac;
- discos and a variety of other forms of entertainment;
- Sedig – a place to experience virtual hallucinations and discover experiences of those with schizophrenia[ix].

Those who are building virtual places/experiences may be happy to discuss their activities, though discussing the operation of the virtual Wimbledon with an avatar based on the Predator films may act as an initial distraction. These interactions often enable discovery of what is to come, so a further discussion with the creator of the IEEE presence reveals:

> *"the main island of IEEE will house IEEE.tv Tower, a conference building, a HR Center, sandbox, and the Standards Associations tower [..] right now I am working on installing the sandbox and telehub".*

Academic Exemplars

Bedfordshire

At the HEA-ICS workshop on Second Life, 10 June 2008, Marc Conrad from the University of Bedfordshire (Bedfordia in SL) reported on student experiences and evaluation on relation to a BSc module in IT Project Management and an MSc module in Professional Project Management[x]. The intention in both is to make Second Life a central component to the efforts undertaken –making it impossible to avoid. A brief overview of the approach and feedback presented is provided in the remainder of this section:

For the BSc module in IT Project Management, Marc presented the following scenario:

> *"Your company has no previous experience with virtual worlds [..] BedTime Books has assigned you to a project team of 7 or 8 people. As the team members come from different locations (Thursday afternoon, Thursday evening, Friday) a group discussion board has been set up on BREO to enhance communication.*

with two specific goals:

> *"To form a coherent team that could actually start with building the branch in mid-December; To familiarize all team members with the virtual environment provided by Second Life, and in particular the island Bedfordia".*

In relation to Second Life specifically, students needed to demonstrate:

> *"Evidence of a virtual meeting in Second Life (e.g. screenshots) and identification of a suitable location for the virtual bookshop".*

For the Professional Project Management (MSc) module, a variety of outputs is required, again from a group-based approach, one of which is:

> *A Second Life showcase that would serve to raise the awareness of visitors of the virtual University of Bedfordshire to essential issues regarding your specialist area. This showcase will be presented to the Programme/Corporate Management (i.e. the module tutors) but should be designed and build in a way that it is accessible to the general public.*

with the added challenge that students would need to find their own way around Second Life – tutors would not be offering assistance with this.

Feedback is reported from around 90 students, with a few variations in how the implementation was undertaken and some of the considerations in both building (virtual space required and limits on numbers of objects) and thinking (any point in having chairs?).
Positive feedback included the ability to undertake project meetings regardless of geographical location, the potential for creativity and use of imagination, the contrast to other projects, and considerations over appearance including appropriate dress: "'Furies and animal avatars' are weird – people should be

dressed in their own gender". Some benefits were suggested in relation to an international audience: "If people from different cultures and background wanted to work together SL would provide an excellent tool. In RL you have to be able to understand others' accents etc. SL has text chat which makes this process easier"

In terms of negatives, students had difficulties with some typical Second Life efforts such as learning to build and upload objects and textures, object number limits on Bedfordia, and obtaining the local L$ currency. Use of Second Life does not avoid the familiar group project difficulties – motivating group members (to build), and trying to better understand the requirements of the project.

There are a number of improvements suggested in terms of improving the experience, though on the whole the efforts run at Bedfordia appear to have been well-received by the students – unfortunately, no comparison to pre-Second Life activities is provided.

Portsmouth[xi]

At the same HEA-ICS workshop Jonathan Crellin reported on feedback from students in relation to activities at Portsmouth relating to Human Computer Interaction (HCI), Educational Computing, Project Work, and Communication. In contrast to the approach taken at Bedfordshire, these efforts were largely treated as optional components of the modules. A brief overview of the approach and feedback presented is provided in the remainder of this section:

Feedback varied depending on what was attempted within each and how embedded the activity was. For HCI, only one third of the groups undertook efforts in Second Life, with some paper prototypes constructed prior to virtual building. Reported findings were varied: 25% of students really liked using SL, 25% really hated. Concerns over social norms were raised in relation to issues such as avatar nudity, and distraction due to some of the seedier elements of Second Life. Use of Second Life in this context appears to have no significant impact on marks. Final Year Projects involving constructing buildings using scripts, creating import and export tools and developing head-up-displays (HUDs) were reported as being popular with students, resulting in "reasonable marks" and some useful Second Life components. For Communication, with students in Malaysia, and Educational Computing, the level of uptake does not appear to provide for specific conclusions to be drawn, though the construction of "super hero changing rooms" may be of interest.

Other Academic Examples

Descriptions of a variety of exemplars can be found on Eduserv island, and further information regarding these may also be found in the Eduserv Report. The range and depth of activities varies, covering a variety of areas of subjects and the wider student experience. Table 1, below, provides a brief sample of such activities:

Institution/Organisation	**Example Activities**
Edinburgh (VUE[xii])	Provision for alumni; disability office; virtual Management School providing MBA recruitment video; Medicine & Veterinary Medicine and a host of other activities
Open University (Open Life)	Tutorial support for distance learning Schome Project on the Teen Grid[xiii] Cetlment Island A library, resource centre and disco.
Plymouth	A 'Sexual Health' public education and outreach sim in Second Life.
Staffordshire	Involving learners in pedagogic research within Second Life
Derby	Blended Learning Revisited - An Exploration of Undergraduate Experiential Learning in 3D Virtual Environments
City College Norwich	Augmented meetings
Greenwich	Developing material in a new environment
IBM*:*	Open Encounters of Z Virtual Kind[xiv] providing a variety of virtual tests in relation to education about their software and systems.

Table 1: Second Life activities relating to university activities from a range of organisations and institutions

An Industrial Example

One of the leading proponents of Second Life has been IBM, though other major technology-oriented companies such as Microsoft, Dell, Sony, Cisco and Reuters can also be found. IBM's involvement has included:

- a commitment to investing $100m over 2 years
- building and maintenance of virtual Wimbledon (see Figure 1) – with live data fed in from Centre Court's Hawkeye ball tracking system to demonstrate how shots were played
- construction of a number of learning examples for computing technologies where IBM has a strong presence
- identification of specific employees as so-called *Metaverse Evangelists*
- use of the virtual world for recruitment activities and alumni meetings
- considerations for the construction of private (secure) virtual islands and how avatars might move from the private to the public – or even to other virtual worlds.

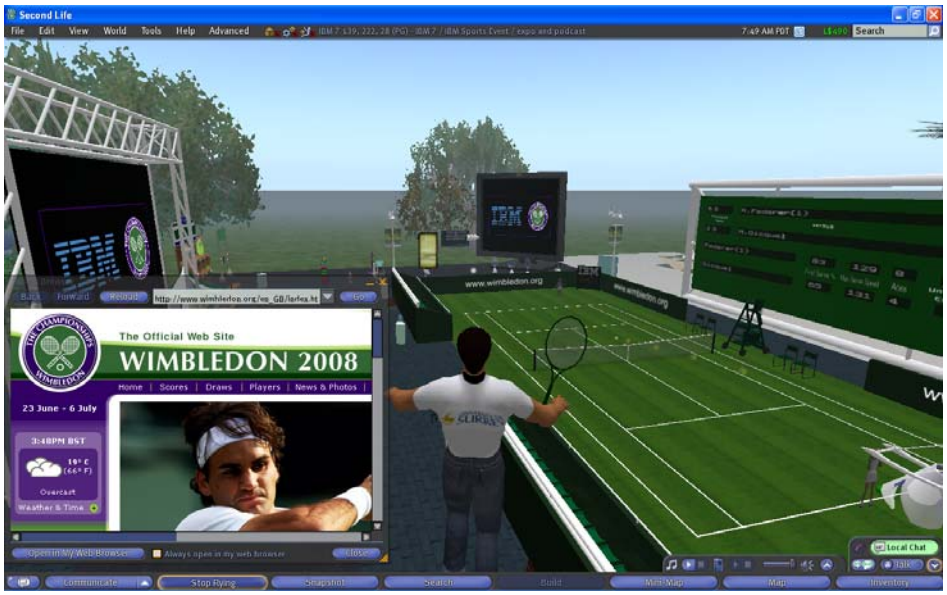

Figure 1: Wimbledon's virtual Centre Court

For IBM, Second Life is a strategic effort, such that even the Chief Executive has an avatar, which he also used to announce the scale of investment mentioned above. Whether universities will begin to embrace the environment in a similar manner remains to be seen.

Efforts relating to against Objectives

(i) use of the system as a supporting environment for teaching

Here the consideration is how a system like Second Life might be used alongside, or in combination with, existing software systems used to support teaching and learning. As such, the focus is on how Second Life has been, or might be, integrated with existing platforms for e-Learning.

To date, the most substantial example of using Second Life in combination with an e-Learning platform, appears to be the "mash-up" of the open source e-Learning platform, Moodle, and Second Life has been termed Sloodle (see Figure 1

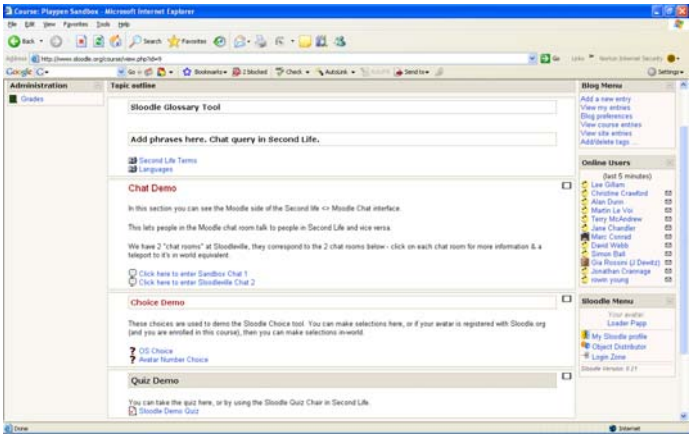

Figure 1: Sloodle

It is possible to try out Sloodle as a Guest, or by registering on the site[xv]. It is, of course, possible to commit to a full server-based installation of Sloodle, though some enthusiasts have produced a "farm" for testing the construction and configuration of a Sloodle instance[xvi] prior to such a commitment, and limited initial efforts have been made to explore this further[xvii].

Sloodle provides for a number of features that can be used across the web platform and the virtual world[xviii], including:

- Quizzes and tests can be constructed on the web system, and taken via a 3D quiz chair within Second Life with results recorded back on the web system;
- chat sessions can comprise participants on the website and participants within the virtual world in the same conversation (see Figure 2);
- an on-line glossary can be searched from within Second Life using a particular chat channel;
- a track of locations visited and comments about them can be made from the world to the website via a blogging component – an attachable head-up-display (HUD) that also provides access to typical classroom-like avatar gestures such as raising a hand, shaking the head, and falling asleep.

Figure 2: Chat between users on the website and those in Second Life identified by (SL)

Most considerations tend to involve creating classroom-like settings, constructing PowerPoint-like objects, and conveying messages through text chat.

Sloodle provides a good initial demonstration for some useful features available in the integration, but as one might expect with an early-stage application there are specific limiting factors: only multiple choice questions can really be used from the Moodle instance in Second Life; interaction with the glossary is via the chat channel; blog capability redirects any chat until the entry is produced; undertaking all other activities requires use of the Moodle instance anyway. This may hold promise for future integrations of functionality with other VLEs – particularly ULearn.

(ii) using programming capabilities within the software in relation to an undergraduate module focussed on multimedia;

The original intention was to produce an interactive 3D demonstration of what goes on behind the scenes to maintain the index of search engines such as Google and to support the functionality of searching. This demonstrator remains to be completed at the time of this report, though the design of such a demonstrator is now much clearer following focussed workshops undertaken with a small group of Masters students. The aim of one of these workshops was to introduce Linden Script, the programming language that can be used within Second Life to make 3D objects behave in specific ways[xix]. Linden Script is executed in the client, and provides for a variety of functions including moving objects around, communications, and finding out about the local environs including which avatars are nearby. Linden Script is used for controlling everything from the opening and closing of doors, to driving cars and riding on hot air balloon tours, to creating guns and firing bullets (where that behaviour is allowed).

In advance of this particular workshop, a few small demonstrators were experimented with, based on functionality and code in demonstrators elsewhere. These objects include: a rotating poster; a Surrey RSS feed reader; a Web Browser launcher; a WAV player; and a texture changing particle emitter. The workshop informally covered the principles of creating a slideshow involving 3 different 3D objects – one screen and two "buttons" for Next and Previous – the communication setup required within the scripts of each of these 3 objects so that each button told the screen what to do, and the placing of the slides as images inside the "inventory" of the screen object. This kind of inter-object communication will be key to producing the search engine demonstrator now due.

(iii) generating case study materials for a postgraduate module on professional, ethical and legal issues.

Second Life provides an ideal object of study for such a module due to the various issues that it raises – many of which tend to exist at the boundary with the real world and in the time it takes for the regulators and legal authorities to catch up. The transfer of money between real currencies and the virtual currency has meant considerations have been made over the risk of money laundering; the FBI has closed down virtual casinos due to the application of laws in the US and the Linden servers operating in this jurisdiction; there are various questions over legitimacy of brand names within the virtual world, and in particular since Linden Labs suggests that those developing and selling goods own the in-world intellectual property rights; and since an unregulated Second Life bank, Ginko Financial, collapsed, owing (real-world, US) $750,000. Matters such as the laws (terms and conditions) of virtual worlds, power-consumption and sustainability (so-called "Green IT"), and freedom of speech are also of interest.

The most significant exploration in relation to the above topics has been through supervising an MSc dissertation (Anna Vartapetiance Salmasi) into the EthiCasino, which involves research into providing a blueprint for ethical gambling in future virtual worlds. Gambling is variously (un)acceptable in different countries and at different ages. It also brings with it some potential issues of addictive behaviour, explored in relation to Gamble Aware, and in relating to risk aversion and loss aversion. The location of the servers and the location of the user may both be significant in determining whether online gambling, and indeed gambling in virtual worlds would be acceptable at a particular time; meanwhile, religious reasons may forbid gambling regardless of such geographical considerations. Anna's dissertation and demonstrator, soon to be completed, covers a range of ground necessary to begin to understand the international dimensions involved in such a problem and to suggest the sensitivities needed in dealing with other such issues. This work is expected to provide an excellent case study for the module, and will hopefully be presented in a forthcoming JISC conference in collaboration with Coventry, and is to be proposed as a chapter in a book on issues in virtual worlds.

The various demonstrators will be made available on Surrey Island[1] in due course.

Evaluation

[1] http://slurl.com/secondlife/Surrey%20Island/144/149/25

Given the exploratory nature to date, and the Autumn delivery of the modules involved, an extensive evaluation of the impact of using such a system within teaching was not originally proposed. This section can only provide the views of the students involved in the workshops to date.

When enthusiastic students first encounter such an environment, a fly-on-the-wall may capture reactions such as these noted in the first workshop provided: “Wow”; “Like Superman”; <Much very loud laughter>; “Don’t do that, you’ll be naked”; “It’s better not to kiss me, not to cuddle, or any of that stuff”.

The following feedback was obtained anonymously from the three students involved. It is worth noting that although these were students on degree programmes (Masters) in Computing, none had encountered Second Life before arriving at Surrey.

Table 2

	Quite Easy	Very Easy	Neither Easy or Hard	Quite Hard	Almost Impossible	Additional Comments
In general, what are your first impressions of Second Life?	2	1				“It’s a very nice place to meet people and to do interactive things. I am greatly amazed with SL , since we can do almost anything in that environment.”
How easy, overall, was it to get started in using Second Life?	2	1				
How easy, overall, was it to get started with building objects in Second Life?	1	1	1			“A magical world. Did not know it’s purpose, or what can be done”
How easy, overall, was it to get started with scripting in Second Life?			1	1	1	“OMG this is so real”

Table 3

	Definitely	Unsure	Definitely not	Additional Comments
Do you think you will continue to explore Second Life?	3			“it depends on the person- it can be very addictive”
Will you recommend Second Life to your friends?	2	1		

Table 4

Thinking about your studies here, can you suggest ways that Second Life can be incorporated?	Yes • in business management and marketing courses to simulate real world situations • for providing support and help in courses • providing opportunities for creativity There is no doubt that SL has lot of potential. I think instead of incorporating in studies as a separate subject, we can combine with other module to learn or to get expertise for that module e.g. web publishing or AI. Students could be given assignments for development of web pages in SL or they can be asked to try different things related to AI. Could be used in testing dissertations by maybe a provision of labs. Could provide students with counselling services.
If Second Life were incorporated as above, how do you think students would react to this, given your own reactions to Second Life?	• I think they will resist at first - I was trying to avoid it for a long time • Then they will like it • And after they start loving it, university has to provide RL counselling for virtual world addiction I am sure that most of students are definitely going to like this virtual environment. Since here we can experience things which may we can't see in reality so even if they are learning / doing coursework on SL they will not feel pain. They will really going to enjoy this thing. I think it would go down quite well
Please add any other comments you would like to make, in relation to Second Life here?	Like real world in takes you sometime until you start talking and walking but you can age quickly and take all advantages of it. Unlike RL, you don't have physical limitations for your imagination and creativity. If we know scripting in SL ,then we can actually play in SL. So it will better to teach scripting for SL from scratch.(it will be better for people like me who don't have any background of that script.) Creating awareness among students would help the promotion of Surrey Island in second life. If each student gets even a small part to play we could make our presence felt.

Conclusions and Future Work

Even from the small sample of feedback obtained from the students, two things are readily apparent: that Second Life could provide an interesting avenue for a number of explorations, and that using Linden Script will be a challenge to those wishing to get activities up and running within Second Life even when students may have backgrounds in Computing related subjects. The principal aim of this effort was to gain a greater understanding of the potential use of virtual worlds within teaching and learning contexts relating to use of the system as a supporting environment for teaching, programming capabilities in relation to an undergraduate module and case study materials for a postgraduate module. Efforts focussed on developing the know-how required for such use, and this may not otherwise have been prioritised without the focus provided by the Teaching with New Technologies programme. Content development, and background research, was assisted in part by a small group of enthusiastic Surrey students, who also provided the feedback presented.

The incorporation of material into these modules will be undertaken in due course, and in relation to the undergraduate module should produce excellent fit with other recently defined modules that focus on 3D rendering. A Final Year Project topic is now being offered, and a similar topic will also be offered for MSc students.

Further possibilities include a collaborative MSc dissertation topic (discussion with Trevor Adams, FHMS) relating to early diagnosis of dementia, with respect to the national dementia strategy, and here the outputs from Coventry's PREVIEW project, including problem-based learning scenarios may be customised and evaluated amongst healthcare students.

Finally, the wider University may be able to learn from experiences elsewhere and consider, for example, virtual Professional Training events; virtual Open Days with student guides (avatars) in Teen Second Life; virtual UCAS days, perhaps for the overseas market, and potential virtual Postgraduate Open Days; virtual collaborations between students at Surrey and Dongbei University of Finance and Economics; interactions with alumni; and related considerations for student outreach, recruitment and online learning.

Acknowledgements

The author gratefully acknowledges the contributions made to this effort by MSc students Anna Vartapetiance Salmasi, in a large variety of the activities outlined above, Parag Mahajan and Radhika Vinod. This work has benefited from the support and enthusiasm of Nicola Avery from the e-Learning team.

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[i] http://www.secondlife.com

[ii] "A Spring 2008 "snapshot" of UK Higher and Further Education Developments in Second Life", available at: http://www.eduserv.org.uk/upload/foundation/sl/uksnapshot052008/final.pdf

[iii] http://vue.ed.ac.uk/

[iv] For more information, visit: http://www.jisc.ac.uk/whatwedo/programmes/programme_users_and_innovation/preview.aspx and http://www.elu.sgul.ac.uk/preview/blog/

[vv] For more information about Second Health London, visit: http://secondhealth.wordpress.com/ - "Second Health is an experimental, innovative and efficient means of communicating complex healthcare messages as well as illustrating what healthcare of the future could look like. The design of the virtual hospital in Second Health is based on the principles and recommendations outlined in the recently published A Framework for Action". Visiting Second Health London reveals a building without any doctors or nurses, and the coffee machine did not appear to work – one may draw multiple opinions from such experiences.

[vi] http://hippasus.com/resources/secondlife/SL_Keyboard_Shortcuts.pdf

[vii] A number of potentially interesting resources is listed at http://www.computing.surrey.ac.uk/2L

[viii] We use the location of Surrey Island in the following examples. With Second Life installed, web-like links will be captured by the software, for example: secondlife://Surrey%20Island/144/149/25; as a SLURL without any adornments, this is presented as: http://slurl.com/secondlife/Surrey%20Island/144/149/25; to adorn this display with a Title, Image and Message, the following would become the link: http://slurl.com/secondlife/Surrey%20Island/144/149/25/?title=SCEPTRE,%20CoLab,%20Computing&img=http://www.surrey.ac.uk/assets/images/surreylogo.gif&msg=Click%20to%20visit%20Surrey%20Island

[ix] Voices tell you things like: "Get the gun. Get the gun out of the holster and shoot yourself. Do it. Do it now. Join us in the world of the dead. The world is coming to an end. We all have to make choices. You're nothing. You know this is not the real world. You don't even exist. You're dead. You're worthless. You're a worthless human being. Death is the answer"

[x] Available at: http://perisic.com/sl/MC_DP_StudentFeedback.ppt

[xi] Portsmouth's SL presence, UoP island, can be visited via http://slurl.com/secondlife/Teaching%202/282/76/23 and provides a "Toolshed" intended to get other staff members started with activities in-world.

[xii] See: http://vue.ed.ac.uk/ for a list of locations / SLURLs

[xiii] Second Life is limited to over-18s; Linden Labs have also catered for the under-18 market – see: http://teen.secondlife.com/

[xiv] http://www-304.ibm.com/jct09002c/university/students/contests/SecondLife/

[xv] https://www.sloodle.org/login/index.php

[xvi] http://moodlefarm.socialminds.jp/

[xvii] http://surtest.moodlefarm.socialminds.jp

[xviii] The combination of Moodle and Second Life makes use of typical web mechanisms for data transfer (HTTP GET and POST, processed by the Moodle PHP-based pages) and Second Life support for XML-RPC enabling items to be "pushed" into the virtual world. Avatars may be associated to "real" users, or be enrolled automatically without the need for any previous registration, and a number of freely distributable components can be set up to act as registration booths for specific course modules.

[xix] Unfortunately, the most complex data structure in Linden Script is a list and since a list cannot contain other lists, only *basic* data types such as integer and string, a variety of workarounds tend to be employed using communication amongst multiple objects.

Annex A: Getting Started in Second Life

Initial technical considerations: Transferring data for the 3D images requires a relatively robust network communication performance and reliable connectivity – ideally, the faster the better. Network speeds above 256k tend to offer better experiences; some wireless hardware may roam aggressively, usually exemplified by continuous reconnections to the network and it is best to fix this first. Like many such modern systems, Second Life is wholly reliant on network availability and, while it is possible, constructing a personal off-line equivalent requires substantial resource. The 3D requirement produces an additional demand on graphics, and even relatively capable computers may have graphics card problems: an IBM ThinkPad T61p irregularly switched itself off while running SL for no explicable reason; a Dell Optiplex GX745's Q965/Q963 Express Chipset is either insufficiently capable, or unsupported by the software. A variety of other hardware including a relatively entry-level Toshiba Satellite Pro A100 with a 1.73GHz Intel processor, 1GB memory, Mobile Intel 945GM Express Chipset, appear to support the software relatively well.

Installation: Typically, the Second Life software[xx] would be installed onto a specific computer. It is possible, however, to install the software onto a memory stick (USB) and run it from there. This can be helpful in both avoiding problems associated to user permissions, and in being able to test the ability of yet other machines to support the environment. In March 2008, for example, such a test demonstrated that machines in APLab 2 would be insufficient for hosting the client. Having located a machine upon which to use the software, and decided whether to install onto disk or on USB, it is vital to set aside a *good* period of time for exploration: this will pay dividends later.

Getting your avatar: This requires membership – "basic" membership is free[xxi] and this offers plenty of what will be required to get started. Membership involves giving your avatar a basic appearance, and providing a limited amount of registration information that includes the need to confirm that you are over 18 and are not a robot. Following email-borne confirmation, you will be offered the opportunity to download and install the client – if you have already considered the kind of installation, you are ready to being

[xx] Available at: http://secondlife.com/support/downloads.php
[xxi] See: http://secondlife.com/whatis/plans.php