



Designing an educational sim environment: Critical success factors

Allan Ellis

School of Commerce and Management
Southern Cross University

Amanda Hassett

Top Dingo

Steve Rowe

School of Commerce and Management
Southern Cross University

Few educators ever have the chance to design and manage an online environment that replicates the educational, social, support and administrative elements of their University. Recent developments in virtual world platforms such as *Second Life* now makes this possible. Designing and building a virtual university demands knowledge of a new range of concepts, issues and skills specifically relevant to virtual environments and immersive learning settings. A case study of the vision, strategies and processes used to design, build and commence operation of a virtual campus is presented. A checklist of critical success factors is presented as a guide to others attempting to use this powerful technology to extend the reach and effectiveness of their university. The conference presentation will include an in-world tour of the features of the virtual campus and a demonstration of its interactive features.

Keywords: 3D virtual worlds, Second Life ®, immersive learning, virtual university campus.

Introduction

Why should university staff bother getting involved with 3D virtual world technologies? Nuthall (2008) comments:

Every decade or so along comes a technology that is so new, comprehensive, interesting and damned useful, that it changes the way that we learn, have fun and do business. Think commercial air travel, the mobile phone and the Internet. These were all what management experts like to call 'disruptive technologies' because they forced established educational and commercial institutions to change how they operated. Now another of these technologies-come-zeitgeists could be on the way – virtual worlds such as Second Life, Whyville and ActiveWorlds. The most popular of these is Second Life.

Virtual worlds have been a part of the computing scene for many decades. They started out as text-based worlds on small green screens – anyone recall playing “The Haunted House” on an Apple II? Only in the last five years or so have advances in computing technologies helped to significantly expand their appeal and user base. These advances include increased processing power, large high resolution colour screens and faster more widely available broadband connections. In mid 2009 this user base was estimated at close to 600 million (Virtual World News, 2009). This was up from under 200 million in early 2008 (Virtual World News, 2008).

The current generation of virtual worlds are defined as computer-based simulated environments intended for users to inhabit or reside and interact via avatars. These avatars are represented as user-created 3D graphical representations. Such worlds are defined by certain sets of rules such as real-time actions, gravity, topography, locomotion and communication, typically text chat and Voice over Internet Protocol (VoIP).

In 2007 this new generation of virtual worlds were identified as one of the six key "emerging technologies likely to have a large impact on teaching, learning, or creative expression within higher education" (Horizon Report, 2007: p3). The time-to-adoption horizon was listed as two to three years. The report went on to comment that virtual worlds can:

... mirror the real world - or diverge wildly from it - present the chance to collaborate, explore, role-play, and experience other situations in a safe but compelling way. These spaces offer opportunities for education that are almost limitless, bound only by our ability to imagine and create them. Campuses, businesses, and other organisations increasingly have a presence in the virtual world, and the trend is likely to take off in a way that will echo the rise of the web in the mid 1990s.

This surge in popular and business interest in virtual worlds is paralleled by activity in the higher education sector. For example, the UK based Eduserv Foundation produced "A July 2007 "snapshot" of UK Higher and Further Education Developments in Second Life" report. In 2008 a special issue of the ALT Journal - Research in Learning Technology on "Learning and Teaching in immersive Virtual Worlds" was produced and in July a new journal, the Journal of Virtual Worlds Research published its first issue.

Creating an educational sim

So what's involved in creating an educational sim (simulated environment or region)? Can an entire virtual university be created online? What features can it have? What's the timeframe to build? What's the cost? This sort of project is not just an "update" to some existing Learning Management System software, or simply an "add-on" or a "tweak" to an existing delivery option. It's much bigger in that it offers the opportunity to design a complete educational setting. The challenge is to create an immersive, media rich environment that can be dedicated to supporting the role of teachers and the learning tasks (knowledge, skills and attitudes) that students face. It can incorporate links (teleports) to the virtual environments of other universities or to other in-world workplaces or cultural environments that are not usually part of any traditional real world campus.

In attempting to define a new pedagogical approach for a networked society, McLoughlin and Lee (2008:p10) set out a new paradigm they call Pedagogy 2.0 where "...teaching and learning strategies can create greater engagement of learners in shaping the education they received through participatory choice, personal voice, and ultimately, co-production". They assert the three P's of this new pedagogy are: personalisation, participation and productivity. Since virtual environments provide a strong sense of "being there" and we know a sense of presence is one of the most powerful attributes of learning perhaps an additional P, "Presence" should be incorporated into this new paradigm.

While the promise of virtual world technology is enormous a word of caution is appropriate. Implementing any new educational technology will always involve confronting barriers, overcoming challenges and addressing concerns. Indeed the more powerful and revolutionary the technology the greater the barriers and challenges are likely to be. Thankfully, the rewards are often proportional to the effort, or as the popular saying goes "no pain, no gain".

Facing the challenges

So what are the challenges in setting up a virtual world educational environment? There are several including: a steep learning curve, a lack of expertise in knowing what questions to ask to make informed decisions, not knowing what skills and knowledge will be required, not having existing staff with the required skills and knowledge, and not having the experience to build teaching and learning settings in this type of environment.

To date the published literature on virtual world educational environments is small and tends to refer to very specific projects in a limited number of discipline areas. These articles tend to be pilot projects that explore specific aspects of the technology in a very focused teaching/learning situation. The detailed issues around construction of the virtual environment are not discussed. For example Zagami (2008) describes an Art Education Project and while pictures of some of the virtual learning spaces are provided their design and construction is not discussed.

The checklist presented below has been developed out of the experience of building an initial virtual island campus on the *Second Life* (SL) grid for Southern Cross University. The University is one of the small new generation regional universities with its main campus in Lismore, NSW and additional

campuses in Coffs Harbour, Tweed Heads and at Coolangatta on Queensland's Gold Coast. A major proportion of its programs are offered externally both nationally and internationally.

Interaction Island, the name given to the sim, will, when fully setup and operational, be able to provide many of the same services as the real Lismore campus: marketing, enrolments, teacher-student interaction, student-student interaction, social and recreation opportunities, sports activities, competitions, art exhibitions, music recitals and other performance events. In addition it will be able to link to many other in-world islands, regions and services from which the real campus is physically "isolated".

The project has been a collaboration between staff members of the university with backgrounds in educational computing and instructional design and Top Dingo, an Australian Second Life build team. The sim was delivered in May 2009, with an in-house opening (staff and selected students) was in August and a public launch is planned for December. The SLurl for Interaction Island is: <http://slurl.com/secondlife/Southern%20Cross%20University/147/168/26> A photographic history of the building of the island is on display in the exhibition space, "Art on the Rocks" on the island and includes a plan for other surrounding islands representing the other campuses of the university.

While this project uses the SL grid and tool set, many of the issues and principles discussed would apply to many of the other virtual world environments currently available or under development.

The checklist

The following checklist encompasses the entire process of conceptualising, designing and building a comprehensive representation of the Lismore campus of Southern Cross University. The checklist spans eight major areas of activity: initial set-up, main design concepts, model building, full scale building, information (content and communication), community building, activity management and evaluation.

A. Initial set-up

These following five points address set-up issues and management strategies.

1. Vision

Having a vision involves thinking about and planning the future with imagination and hopefully a touch of wisdom. Try to form a mental picture of what you want the visual environment of the sim to look like. What activities do you want to support? What functionality do you want the buildings and landscape to have? What degree of flexibility do you want to build onto your plan?

2. Land and location

The central unit of ownership for a sim or region can be "mainland" or "private region / island". Private region sims are favoured by many large organisations such as universities, as the "mainland" regions butting up against other organisations and users may potentially have conflicting objectives. Of course some organisations like to cluster and The New Media Consortium (<http://www.nmc.org/>), which is an international not-for-profit consortium of learning-focused organisations dedicated to the exploration and use of new media and new technologies, was designed to provide this sort of arrangement.

Each region is 65,563 square metres in area and has an allocation of 15,000 primitives (prims) - the individual building elements. Multiple regions can be joined to make a larger land mass or subdivided (and sold if necessary) to make smaller "parcels". By purchasing a new complete region or sim you have control over where the region is positioned on the SL grid. Essentially you can choose whether or not to have neighbours. Not having neighbours allows for future expansion and other people cannot build right next to you without your express permission.

3. Land purchase and ownership

Your land purchase fee actually buys account set-up, software and space on a server. The annual rental "tier" pays for the running and maintenance costs. There is a discount for education and not for profit organisations. The processing for discount status will take some time so order in advance. Rates are in US dollars so you need to be prepared for currency fluctuations. They are billed to the owner of the region. Once you are a sim owner, the region you own is called your "estate". This term is meaningful as many of the roles in the permissions system relate to "estate management". Estates can be just one sim, or can contain all of the regions owned by a single avatar.

4. Name / Identification of island

Choose your region's name carefully as you want it be located and visited. Consider your intended visitors and try to anticipate what search terms they are likely to use when looking for your location.

5. Management of Land, groups and estate management

Consider how you will manage your land and to whom you will delegate responsibility so that you can allow people to build or assist with the running of the estate, while maintaining the ultimate control of the estate and ability to control other roles. The Estate Manager is a very senior position, but it is not the only way to control who can build or perform other land related tasks. The most effective way to control permissions related to land is to create a *group* and set the land access to that group. Groups allow many levels of permissions and roles to be assigned. This can help you manage the roles of people who will use the land you have, and maintain the environment you create.

B. Main design concepts

The design of the island is critical to acceptance and use. The objectives of the project should be considered carefully and the design should support and enable the achievement of objectives and outcomes.

1. Audience and objectives

Consider the primary purpose of the sim: who will visit, for what reason, what do you want them to do, learn or find? How will you support these objectives in-world, and communicate them through design? It is helpful to start with a list of objectives and perhaps possible learning scenarios to refer to as you build. This helps give context and meaning to the development team and share common visions.

2. Branding and image

What image does the organisation already have? Do you want to reinforce this? Do you want to establish a presence in-world as a part of your promotion and marketing strategies? It is important to consider the effect your virtual presence will have on your existing real life brand and also keep public relations issues in mind as you build.

3. Recognition and ownership

It is useful to create a certain believability and familiarity as an aid to understanding and navigating in virtual space. Using real life cues assists in recognition of the space and can instil a sense of ownership. However, care needs to be taken not to provide too much detail as this can create overload complications for the server and use up precious construction "prims". Like the real world, a virtual world can be completely immersive, and you can really get a feeling of "presence" in the space. You can experience emotional responses from the visual and audio stimuli. Having a recognisable and quality space can assist in this immersion, engagement, ownership and responsibility for the actions of the avatars. The authenticity of these elements will facilitate learning.

4. Balancing real and virtual features

In virtual worlds buildings and structures need to be representations not replicas of the real world. They need to take into account that avatars can fly but cannot easily move around in the small spaces that people can. So buildings need to have features such as "landing spots", doors need to be wider and ceilings much higher than normal. With a bit of thought this "scaling for avatar use" can be made to look aesthetically pleasing.

5. The design of buildings

The successful design of buildings in SL is affected by many (but not all) of the same factors as a real life building plus some unique considerations and constraints. In SL, buildings benefit from aesthetic design and cues in the same way real buildings do. They benefit from being made to utilise the cues of a real life building which make it clear where you are and the purpose of the building, for example, doors, stairs, windows, signs, appropriate textures on walls and flooring. The design needs to be considered from an avatar's default camera position (behind their shoulders). When they enter the sim and walk around, the visual cues to help them should be evident. Doors and other navigational aids should be obvious and content for use should be at eye level.

To create a successful experience for visitors the virtual world needs to behave in (relatively) predictable ways. This enables them to use their normal frame of reference (real life) to make sense of this new paradigm. For example, in SL it is not necessary to have structure to make things stay up - they stay where you put them. But avatars represent people, and if you do not provide normal structural cues it can detract from the believability of the space they are entering. They might feel like the space is

unpredictable and think - will I fall through the floor? This can detract from their ability to then process the things that *are* important. Since there is no rain (unless you create it), you don't really need a roof, walls or doors. However but they give the illusion of privacy, stability, permanence, indeed all the other things one expects from buildings. They not only provide recognition and visual cues, they provide a frame to display the content or functions that are related to your primary objectives.

Where possible, if you are representing a real place the SL space should reflect the design of that real space; not a warts and all version with every detail including the gutters and emergency exits painfully recreated, but a pared down, functional space which borrows cues from real life. In doing this you need to identify which icons and cues really make your building identifiable, and strive to include these in the virtual build. They will give the SL space credibility and recognition as well as showcase the unique feel of the real building while still making it a purposeful and useable structure.

6. Size of buildings

The size of buildings in SL is normally considerably bigger than real life buildings. On average one and a half to twice the size of the actual space being portrayed is comfortable. Some factors affecting nominal building sizes are the amount of space needed around avatars for them to move, the effects of close objects on the ability to view and look around, and the default position of the camera behind the avatar not ending up behind walls and the like. The largest size of a building block ("prim") in SL is 10 square metres (sq m). This tends to be the default upper measurement for walls and ceiling heights, though many rooms have ceiling heights of 7m or 5m. Heights under this can make it awkward for avatar and camera movement. An office might therefore end up being 10x10x10m or thereabouts, and a public building (for example) 50x30x10m per story.

The 10m ceiling height might seem to distort the proportions in real life where ceilings tend to be short in relation to the wall length. In the case of a 10x10x10m office it "feels" more like a 5x5x3m space. Using a 10m ceiling height moves it out of view and out of the way, in the same way that unless you are looking up you do not really notice the ceilings in a real office.

7. Special features of virtual environments

Virtual environments are a completely controlled place. You can control day and night, and you can completely create an environment. But creation comes with a cost. If you make it everyone who joins the sim has to download it and their computer has to render it. Every prim, script, texture and property that you add to the virtual world you create has a render cost.

The more complex shapes, bigger images, "sculpty" maps, "flex" objects and certain types of scripts you use lengthen the time it takes for the server to load and send the scene and the longer it takes each client to render that scene. It is important to take this into account, so that while creating the environment you are aware of its impact on the users who will view it. There are a number of ways to keep the render cost of a building down.

- Use fewer prims
- Use as many small textures as you can get away with (ie 512 or 256 or 128 pixels rather than 1024)
- Use repeats as much as you can (eg a small sample repeated for carpets and walls)
- Reuse textures but add colour or shine or a different repeat for variation
- Apply the same rule to the plants and other objects, repeats take less time to render
- When sculptured shapes are used, try and use only 1 or 2 sculpt maps to reduce load time
- Transparent textures take longer to render - this includes glass, fences, trees etc
- Flex properties take even more time to render

Having said that you will find that lag is often created by the avatars themselves, but that is another topic and largely outside of the control of a sim designer.

8. Static and animated objects

Animating objects in SL can create some really effective simulations of movement, and can help with comprehension of concepts or add value to a presentation. There are several tools available for experienced avatars to build animated objects using the built-in scripts of the Linden Scripting Language (LSL). Objects can be scripted to trigger on command (touch or proximity) a change in colour, vector, size, texture or send commands to other objects. This very flexible scripting system can be used to develop scenarios, simulations and learning tools.

9. Audio

Audio is played in SL through several channels. There is ambient noise, scripted sounds, music, media and voice. In a situation where you want to hear voice, you will need to consider the type and level of scripted sounds (ie waves, birds or other sound making objects) you deploy in the vicinity. The voice channel carries for about 40m in-world. Scripted objects are often audible for the same sort of range, with a fall off at the outer edge of the range. If you have music or video media playing, people will need to turn on the channel to hear it in their client viewer, the same with voice. If you have many sound items playing together it can be difficult for inexperienced users to differentiate. This all needs to be considered when using sound and voice in-world.

10. Resources

Intellectual Property (IP) is a major issue in online environments. SL permission system controls the use of items uploaded so that you can then control who might use the content you have created. It is wise to consider fair use of virtual content such as music, artworks, and content designed particularly for SL. The components of a build: textures, prims, scripts, animations/poses etc are all creations and are covered by Digital Rights Management (DRM).

C. Model building

Model building is a well established practice in real world projects and it can play an equally important role in the design and planning of virtual worlds.

Why build a model?

- Navigation - Designing an environment that helps people find and use your content, and enjoy the experience.
- Eyeline - By building a model you can position mini avatars, say at a 10:1 scale, and investigate the viewpoints in the final build before it takes place. You can work on the finished height of different areas, the visual footprint of structures, the way that shapes in architecture and landscaping can facilitate understanding of a space and the intuitive navigation of your features.
- Allocation of space/proportion/balance - When you build a model you can preview the relative scale of buildings and other features in your new sim. Models inevitably lead to some tweaking of proportions as the relative importance of built features take physical form. The ability to envisage the final product often leads you to make new conclusions about the ideal placement of features or major landmarks. You can also explore the way that spaces connect to each other, paths, landscaping, the way the windows face and the views from different positions. New ideas and layers of functionality can be explored as a 3D model is developed and manipulated.
- Building up objects from the model scale – Building full scale is much easier when you have a model to work from. Work on textures, colours and placement is already advanced, meaning less reworking and time saved.

D. Full scale building

Building can either be done on-site or off-site. In the latter case basic building or parts of structures can be built and boxed off-site then moved and placed on their final site and finished off. Using this process also means you have a backup copy of the building.

E. Information, content, communication

Both synchronous and asynchronous options are available and can incorporate text, audio (voice and music) and video channels.

1. Commonly used methods of giving out information are:

- Notecards - plain text stored in an avatars server-side inventory.
- Display screens with slide shows built-in eg looping slide type of presentations.
- Display screens - linked to Web pages.
- Television screen - link and play eg YouTube videos.
- Information Packs such as conference packs - these are bundled sets of information and free items that relate to an event or a promotion. They may include items specific to a conference or event such as books, posters, t-shirts, hats, flags, notecards and Weblinks. If you had a demo made as an animation or model you could distribute it in such a pack. Similarly for structured courses prescribed or supporting materials could be included in a pack.
- Media streaming - videos and Websites.
- Email.
- Weblinks - which launch sites in a Web browser built into SL or the users Web browser.

2. Less common options are:

- Put information into picture books - these are pages that can be flicked through, or worn by an avatar so that they then take up a large proportion of the screen like an e-book to enable the user to read and turn the pages.
- Signs and billboards, including ones which have a number of rotating textures at a selected interval
- Recorded messages in sound or text.
- Really Simple Syndication (RSS) - reader boards that display text updated from the Internet.

3. For group use you also have:

- Group text chat - also termed Instant Messaging (IM) or synchronous chat, linking everyone in your group who is currently online. If you open an IM with your group everyone in the group will be able to read your chat. This is a very common community tool where people connect and discuss the current activity. If you are hosting an event it is not uncommon for a (broken) running commentary to be broadcast in group chat so that other group members know what is going on and are free to join at the point where it is interesting to them.
- Private or small group text chat – allows for one-to-one chat or a user can set up a selected conference chat with more than one user.
- Group notices - these are notices sent to everyone in your group whether they are online or not. Offline members will receive a notice when they next log in. It is a good way to share updates, to advertise events and to send out group landmarks, notecards, promotions and share information.

F. Community building

Be proactive in building your community. Promote activities that will attract users. Clearly define activities that are unacceptable.

1. Communities and standards

Communities in SL can be unpredictable, but generally form around a common idea or interest and can invoke strong loyalty behaviour and community expectations and standards. It is wise to consider and apply terms of service to your estate and use the publication and enforcement of these terms to maintain community standards.

2. Setting up a learning environment

SL structures can be built that can replicate the traditional lecture, tutorial or training room setting. SL can also be used to set up opportunities for active learning by presenting opportunities to learn using problem solving scenarios in a virtual setting (eg arguing a case in Moot Court). These learning designs leverage the situational awareness that normally only comes with real life experiences. Virtual worlds offer scope for exposure to professional and workplace practices by engaging industry experts in designing scenarios and participating in controlled simulations. You can involve industry in a very real way by simulating local conditions and matching the learning opportunities to common industry requirements.

3. Interactivity designing for areas of interaction

Interactivity needs to be considered in the context of the environment it is housed in, the objectives of the sim and specific area of learning and what benefits the activity will offer. There are many simple things you can do to engage visitors and provide avenues for them to explore. An important feature of most learning sims is a Sandpit (building area) which allows students and visitors to create and explore the building tools available in SL. Learning even the basics of building in SL is an important step towards accepting the virtual paradigm and being comfortable about communication and learning via your avatar.

4. Updating content

Develop a plan or roster for when and who updates notice boards, slide shows, or even simple posters.

5. Fun things

Use fun to drive exploration and discovery and to acquire skills. Fun things can involve prizes or some form of recognition for achievement. Prizes can be digital items that users keep in their inventory. Make use of voting tools, puzzles, interactive models, treasure hunts and scripted objects designed to respond in chat. Mastering these exercises will provide ideas for building formal learning and education and training scenarios at a later time.

G. Activity management

1. Security and risk management

The primary function of security in virtual worlds is to protect your estate and users from disruption and annoyance by other users. In SL such problem actions are termed “griefing”. Griefing can take many

shapes and forms from verbal abuse (either text based or through the use of in-world voice) to objects designed to offend others or inhibit the performance of a region. Many options are available to manage and reduce such risks. If you do not need to have public access to regions or parcels, you can limit the access to a group of individuals using the permissions system. If you do want to allow public access, you can delegate powers to allow nuisance individuals to be banned or ejected.

2. Training

There is a wealth of training information accessible via the SL Web site (<http://www.secondlife.com>) and via educational groups in SL (eg educators@lists.secondlife.com). Organisations such as the New Media Consortium (NMC, <http://www.nmc.org/>) or the International Society for Technology in Education (ISTE, <http://www.iste.org/>) that promote virtual world technologies as education and training tools also provide resources and stage in-world seminar and tours. Remember SL is a 24/7 global environment so help is literally on hand whenever you need it. You need not spend time writing your own training materials, instead drawing from what already exists. However, you might want to consider running in-world training sessions for your group and having experienced people nominate as contacts for new users who have questions or need one-on-one support in-world.

3. Marketing

Marketing is one of the activities most educational institutions will engage in as part of their virtual presence. The objectives might be to increase awareness of the university's offerings and facilities, to provide a meaningful connection to the content of the courses and the focus of the organisation. Another might be advertise individual course offerings directly using posters, branding, links to Website information, notes and perhaps even models or demonstrations of course content.

The promotion of the learning environment, both real life and supported online environment with associated impressions of accessibility, innovation, prestige, and other important qualities are all part of the mix when considering the marketing impact of a virtual presence on a university. A well built, useful and recognisable virtual university can enhance the image of the organisation as well as providing a significant new option to delivering programs to external students and providing professional and workplace experience.

4. Event Management

Event planning in SL is not dissimilar to real life. Gather your resources, eg for a music event it could be: people, music, venue, props, access to an audio stream and permission to broadcast. For a lecture it might be notes or slides and demo materials, ensuring you have permission to stream or voice on the parcel you are teaching in. Invite participants - send out a group notice, chat in group to follow up. If the group is connected in real life (eg a course) inform them using usual communication channels as well. Posters or an in-world calendar can also contain event details. Look at the limit of people you can handle on the region. Consider running multiple sessions across time zones to attract more participants. Before the event don't forget to test sound and media and any tools you are using eg slide projector, scripts or demos.

H. Evaluation

Measuring visits

The following is a brief overview of some options available.

- Linden Traffic Score - Every parcel in SL has a traffic score allocated to it by Linden Labs. The algorithm driving this traffic score is not available to the public, it is updated daily, and no historical data is kept.
- Free visitor counters - There are a number of free visitor counters available at various in-world locations. These are in-world only objects, and are limited by the scripting limitations within SL. Specifics will vary from creator to creator, but typically be limited to only counting up to about 250 avatars, and will have an effective range of 96m from where they are placed.
- Full sim scanners - Again the specifics will vary from creator to creator, and you will likely not be able to get a count of unique avatars, but it will tell you the number of visits to your site, and the overall average visit duration.
- Of-world solutions - Using servers outside of SL to store and manipulate databases that are fed data from objects in-world. Prices can vary wildly and will have ongoing expenses to cover the costs associated with maintaining the servers required for the data storage and manipulation. Expect data on unique visitors, return visitors, visit duration, geolocation of visitors, popular areas within your region, automated statistics emails. For more details on such products visit <http://www.metaverse-business.com/>

- Defining and measuring success for your project - Clearly set out what you want to achieve and how you will measure if it has been achieved. Will evaluation be formative or summative? Sound and comprehensive evaluation data can be important as a factor in securing ongoing funds.

Case study

The checklist just presented was developed and used to guide a project that aimed to provide the first virtual campus environment for the staff and students of Southern Cross University. In every sense the island that has been constructed is a “boot camp” for the virtual world. The island is appropriately named Interaction Island.

The approach used in the construction was guided by the following principles. The island should

- appear realistic
- use local geographic features, plants and animals.
- use representations (no exact replicas) of the local features of the Lismore campus. There is a draft plan to add extra land on which to build the other campuses of the University.
- provide opportunities of all university staff (academic and administrative) and students to explore and learn.

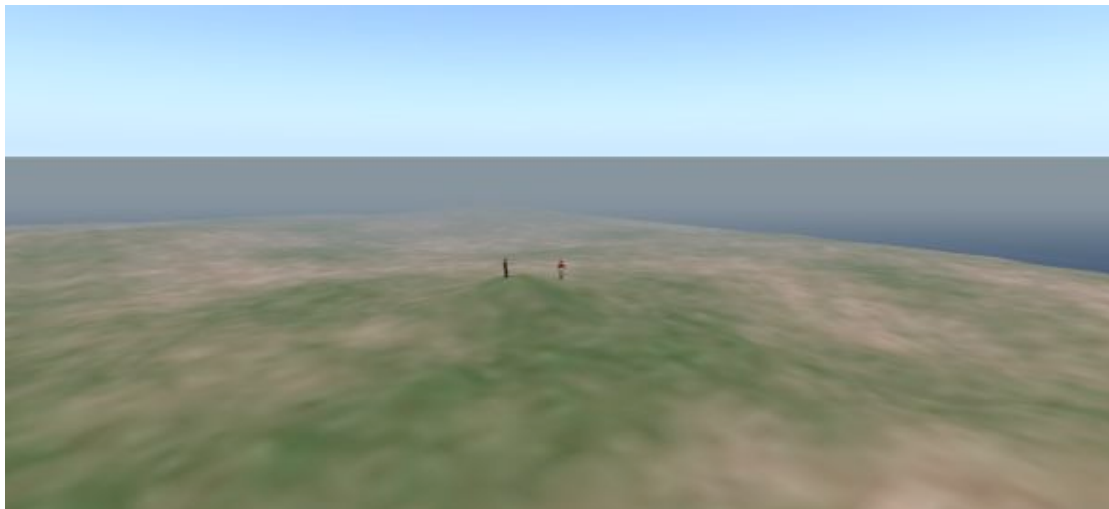


Figure 1: The region (island) as delivered and prior to terraforming.

The vision for the complete island is that it will

- provide an attractive, realistic, interesting and safe environment for staff and students to learn about virtual worlds and “train” their avatar to function in them (Stage 1).
- encourage staff to consider the role of virtual worlds and simulations in their teaching and where appropriate to integrate them in to their units and courses (Stage 2).
- produce graduates that are better equipped to enter the workforce and society (Stage 3).

Linden Labs deliver the land as an almost flat featureless island. Walking your avatar over the 6.5ha expanse prior to terraforming is a somewhat daunting experience as you consider the job ahead.

After many sketches, terraforming model building, and full-scale in-world construction that involved the placement of some 10,542 prims you have the product, Interaction Island (Figure 2).

Conclusions

Will virtual worlds become online learning ecosystems? They have the potential to achieve this as they provide a rich environment for interaction and learning via a range of media. They provide the user, through their avatar, with a sense of presence and realism not found via other educational technologies.

Virtual world technologies have the potential to transform the experience of external students. Recall that it was only a few decades ago all that external students received were packages of print material through the mail. Perhaps the only other communication they had was a phone call to remind them an assignment

was due or a reminder to attend a residential school. Studying externally was a lonely task for most students. A decade ago the Internet and the Web opened up alternative ways to access learning resources including print as well as audio, images and video. In the last few years audiographics technologies such as Elluminate Live! now provide students with the opportunity to join in synchronous tutorial sessions, to listen and to present. They can also join less formal student only sessions.



Figure 2. Interaction Island sim with the virtual campus build complete.

Are virtual world technologies the next big major computer-based technology that universities need to adopt? If so there is certainly a need to develop new skills and knowledge to inform the efficient and effective building and management of virtual world environments. Perhaps virtual world technologies such as SL will make it possible to develop full-service online virtual university environments.

References

- Eduserv Foundation (2007). A July 2007 “snapshot” of UK Higher and Further Education Developments in Second Life. <http://www.eduserv.org.uk/upload/foundation/sl/uksnapshot072007/final.pdf> [Accessed 20/6/09]
- McLoughlin, C. & Lee, M. W. J. (2008). The three P’s of pedagogy for the networked society: Personalization, participation, and productivity. *International Journal of Teaching and Learning in Higher Education*, 20(1), 10-27.
- Nuttell, K. (2008). US: A disruptive technology arrives. *World University News*, Issue 12, Aug. <http://www.universityworldnews.com/article.php?story=20080117162121373> [Accessed 20/6/09]
- Virtual World News* (2008). 173.61 M Registered Virtual World Users, January. <http://www.virtualworldsnews.com/2008/01/17361m-register.html> [Accessed 20/6/09]
- Virtual World News* (2009). Virtual Worlds Popularity Spikes, July. <http://www.virtualworldsnews.com/2009/07/virtual-world-popularity-spikes.html> [Accessed 1/8/09]
- The Horizon Report* (2007). New Media Consortium Horizon and Educause Learning Initiative. http://www.nmc.org/pdf/2007_Horizon_Report.pdf [Accessed 20/6/09]
- Zamagi, J. (2008). Second Life as an arts education environment. In M. Docherty & D. Risin (Eds), *Proceedings for the CreateWorld 2008 Conference*, 7-10 Dec, Brisbane, Griffith University. ISBN: 978-0-947209-37-7.

Authors: Allan Ellis, School of Commerce and Management, Southern Cross University.
Email: allan.ellis@scu.edu.au
Amanda Hassett, Top Dingo
Steve Rowe, School of Commerce and Management, Southern Cross University.

Please cite as: Ellis, A., Hassett, A. & Rowe, S. (2009). Designing an educational sim environment: Critical success factors. In *Same places, different spaces. Proceedings ascilite Auckland 2009*. <https://doi.org/10.14742/apubs.2009.2215>

Copyright © 2009 Allan Ellis, Amanda Hassett and Steve Rowe

The authors assign to ascilite and educational non-profit institutions, a non-exclusive licence to use this document for personal use and in courses of instruction, provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to ascilite to publish this document on the ascilite Web site and in other formats for the Proceedings ascilite Auckland 2009. Any other use is prohibited without the express permission of the authors.