Virtual arts: visual arts education in the virtual world of Second Life

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VIRTUAL ARTS – VISUAL ARTS EDUCATION IN THE VIRTUAL WORLD OF SECOND LIFE

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Abstract  
Virtual worlds are emerging as the new frontier in the use of ICTs for the engagement of students in primary, secondary and tertiary education. In 2010 the use of the virtual world, Second Life, was trialled as a pedagogical tool in the training of Visual Art Education students studying at Southern Cross University. The students, physically located at three regional campuses, spent time in-world discussing concepts, visiting art sites, creating 2D and 3D art work and designing an exhibition space. This case study makes a comparison between traditional and mixed mode delivery and recommendations are proposed in relation to strategies for implementing the use of virtual worlds in Visual Arts teacher training and Secondary School Art Education.

Background  
Southern Cross University (SCU) (2010) is a regional university that offers a range of degree programs over a number of campuses. The Graduate Diploma of Education (Secondary) in Visual Arts is available to students on three campuses with the highest percentage on the Lismore campus. The University has been developing ways to maximise delivery for all students with the premise being that

“….. a student should have a range of pedagogically sound study options to best suit their learning preferences and their work and life demands. This vision would see all students, whether geographically in close proximity to a campus or not, provided with equitable learning opportunities through a single enrolment mode.” (New Directions for Delivery at Southern Cross University, 2007, p. 3)

As part of the new directions for delivery the Curriculum Specialisation Unit in Visual Arts was offered through tutorials and consultations in the virtual world, Second Life (SL).

Late in 2009 SCU developed a presence in SL with Interaction Island as “the first step by the University to encourage staff to explore the next phase of the Internet-based information and communications technology revolution - virtual worlds.” (Discover SCU, Sept 2009). Ellis, Hassett and Rowe (2009) and Ellis, Jacobson and Rowe (2010) describe the design, building and management of the island that aims to provide an environment in which students and staff can build their skills and develop ways to enhance teaching and learning using virtual worlds.
The student cohort was studying to be Visual Arts teachers within secondary schools in NSW. The unit in which the virtual world was being used is the first of two units that they undertake in preparation for teaching Visual Arts. The students previous experience in the use of virtual worlds and their expectations was ascertained from a survey taken at the beginning of the semester. This was the first time that the students had encountered the use of a virtual world in their higher education studies. In training to be visual artists they were working in an artist's studio framework that tends to be individualistic and physically situated in a real world space. There are opportunities in using a virtual world to assist the students in their transition between different modes of teaching and learning which Calongne and Hiles (2007, p.16) refer to as the creation of an "opportunity to leverage the benefits of a multisensory learning environment where students can be part of the system that is being studied." In the case of using a virtual world as part of a Visual Arts unit the students are engaging in an experience that is highly visual.

**What is a Virtual World?**

Virtual worlds provide a simulated environment in which participants can interact with objects, their surroundings and each other using both asynchronous and synchronous communication media. They are used for gaming, education, socialising, medical, entertainment and creative pursuits. There are many virtual worlds available through online interfaces including the popular Multi User Virtual Environment (MUVE) game, World of Warcraft and Linden Lab’s SL. The latter is a 3D simulated environment in which participants have 24hr access to the online environment in which to inhabit and interact. Educational institutions have primarily been using SL because it is not a traditional game environment, that is, there are no defined goals or levels to achieve, participants or “residents” as they prefer to be called, can create any in-world environment they can imagine and then build with the available tools. Basic membership is free and a small annual premium membership is required for those avatars who want to own and develop land. Within SL educational institutions have built campuses for the delivery of courses, undertaking of research and promoting themselves to prospective students. There are over 1,000 educational institutions using SL (Gregory, 2009). The Australian based Virtual Worlds Working Group (2010) has over 50 members

In order to experience and operate in SL, students must first open an account and create an avatar that is a 3D representation of their desired in-world appearance. It may be in the image of a person or as a creature or other type of imagined being. Most students chose to be represented as similar to themselves in gender and skin colour although perhaps taller or thinner. The students must also download the SL viewer that is a client application that allows connection to virtual world servers in an analogous way similar to how a Web browser is a client application that allows connection to the Web. Most students are able to run the SL viewer on a broadband connection with a Mac or Windows operating system. The places that they visit often simulate real world environments such as shopping centres, nightclubs, cities or universities. The students are able to visit art museums, talk to artists, build 3D sculptures and architecture, import 2D artwork for display and interact with other avatars created by users from all over the world.
Literature

Using virtual worlds in the education of Visual Arts teacher’s and in the classroom for Visual Art’s students is an area that is beginning to be explored (Zagami, 2008; Grenfell, 2008). Deakin University has developed an in-world learning space specifically for teaching the Creative Arts to primary pre-service teachers. Griffith University has been using virtual worlds to teach Art and Technology to primary pre-service teachers. Zagami (2010) has published research that found that students using the virtual world were able to articulate their understanding of the Queensland Essential Learnings in the Arts equally and sometimes better than those that had not experienced the virtual world. Grenfell’s Postcards from Second Life (2008 & 2010) promote the authentic learning that occurs when students across disciplines, such as Visual Art and Public Relations, collaborate. Lu (2008 a & b, 2009), has conducted research on virtual worlds, art and education and created a space in SL called Art Café where students can meet and exhibit their work. The International Art Education Association (INAEA) (2010) meets regularly in SL bringing together around 190 members across all art forms. This association has been founded as “a group dedicated to shortening the distance between people who love art, education, and art education around the world through the web” (INAEA, 2009). Penn State University is using the virtual world throughout their courses related to Visual Culture and Art in collaboration with North Illinois University to establish links between the makers of the art and those that critique it (Liao and Wang, 2010) but not directly focussed on students studying to be teachers. There is an increasing body of research emerging as virtual worlds are being explored for use in education. A recently published report commissioned through the Australian Learning and Teaching Council (ALTC) found that there was widespread interest in the use of virtual worlds in education but that 4

The Case Study - Course Redesign

Prior to 2010 the Visual Art specialisation unit at SCU was delivered in face-to-face weekly tutorials across three campuses over ten weeks. The revised unit was developed with a belief that the students would be encountering a virtual world as an educational tool for the first time. Because of this, the level of compulsory interaction in the virtual world was restricted to four tutorial sessions and a number of informal sessions designated as similar to consultation times in real life. The students were required to meet on SCU Interaction Island at the same time regardless of their physical location thus bringing together students from three separate campuses. Students were free to meet at other times in world and some choose to use the virtual world environment on weekends and after hours. In hindsight the use of this technology on a more regular basis such as in each week may have assisted in the uptake as the students who used the virtual world at times other than those assigned as class times developed skills and familiarity with the virtual world at a faster pace.

Virtual World Tutorial One

Prior to the first tutorial the students were sent an email with instructions about how to open an account and make an avatar and were asked to create one before coming to the lab for the first tutorial. This was the only time that students from all three campuses would meet in Real Life (RL) as they were required to attend an on campus intensive in week one. They were offered the opportunity to explore the virtual world before
they came to the first tutorial but were advised that this was not compulsory, as they would be stepped through the process during the tutorial. Over half of the students successfully created an avatar before coming to class and a third had accessed the virtual world. Only one student had prior experience in virtual worlds as a game player but not in SL.

During the tutorial the students were given access to SCU Interaction Island in SL and were asked to explore independently. There were two expert users available to assist the students in RL and in the virtual world and much of the time was spent helping the students to access audio and develop control of their avatar. The students who had previously visited the virtual world felt able to explore other islands and started to interact with avatars from other places. After a period of independent exploration the students were directed to an introductory space outside of the SCU Interaction Island that is designed to step new users through basic skills in using the virtual world. A number of these exist such as Help Island, Orientation Island and Ivory Tower.

**Virtual World Tutorial Two**

The second virtual world tutorial was designed to be in a more traditional format. The idea was to use the virtual world as a way to bring the student cohort together from all three campuses but to retain the type of delivery of content that was familiar to the students. This tutorial took place in the SCU ‘sandbox’ (a place where anyone can build virtual objects - in other parts of the virtual world only the owners of that island can position or build things). The sandbox was used because I could control the resources that I used without relying on the island owner to upload slides into one of the predesignated lecture spaces. The “sandbox” area on SCU Interaction island is a simulation of a grassy playing field.

The sandbox space provided me with a degree of control in relation to my resources but it is an unfamiliar and somewhat surreal space for delivering and receiving a lecture. I found it difficult to get used to standing in front of the class and reading my slides while situated on a grassy oval. I had transferred six slides from a previous Powerpoint presentation and created a number of prims (objects) that were placed on to the sandbox to display them (fig 1). This was my first attempt at delivering content to a large group in a virtual world. For me it felt awkward and perhaps a bit distracting from the actual teaching. The feedback from the students was that it made it more engaging as they were situated somewhere other than a lecture theatre. It was difficult to gauge the students’ interest or engagement during the teacher directed parts of the virtual world sessions as they were mostly silent and unable to display some of the nuances that we become accustomed to in a face-to-face teaching situation.
fig 1. As part of a tutorial in SL pre-service teachers observe a Powerpoint slide placed on a prim on the SCU sandbox.

Following the teacher directed talk based on the slides we moved to the art space on the island where we interacted with a sculpture. From here I lead a discussion with the students about the Art Frames as per the NSW years 7-10 syllabus in relation to the sculpture. We had an insightful conversation that then transcended into some avatar dance moves being displayed by one student and shared amongst the others. While this seemed to be off task it actually lightened the mood in a way that felt acceptable and signalled to me the point at which the students had had enough ‘theory’. We then teleported to the Vassar Island to explore the virtual Sistine Chapel (2010). While we didn’t spend any time relating the visit to the syllabus content the students acknowledged the value for their classroom in being able to visit a simulation like this.

The whole tutorial took approximately an hour and a half and presented a rich and varied experience that in the previous delivery of the unit would have been presented in a mostly teacher directed lecture with some discussion and perhaps some resources linked from the Internet. In the virtual world students are able to interact with each other by typing to each other or having individual conversations without distracting the rest of the group or the main speaker. This is potentially a valuable exchange, both in terms of social interaction and also the sharing of ideas, particularly for students on small campuses and can also help to establish a cohesive peer network across the three campuses.

Repeat Virtual World Tutorial Two

Some students had been unable to attend tutorial two due to limited on campus access so I ran a repeat tutorial. I took this as an opportunity to try the same content but in a different space. I used one of the specifically designed tutorial rooms on the SCU Interaction Island (fig 2).
fig 2. Students’ avatars sitting in the tutorial room on SCU Interaction Island as lis Ruby conducts a teacher directed tutorial in relation to the NSW Visual Arts yr 7-10 syllabus.

This room looks like a lecture theatre with a data projector, screen, lectern and seats in rows. I felt more comfortable in this space as I had also now worked out how to change the camera controls without moving my avatar around. I could read the screen, see the students and change the slides. There was less interaction between the students as they observed from a stationary seat with the lecturer delivering content while standing behind a lectern.

**Virtual World Tutorial Three**

I was beginning to feel that we had progressed beyond our initial introduction to the virtual world and how it works. I held another formal tutorial in which I was available both in RL, in the computer lab, and in the virtual world. Only two of the students attended in the lab with most students now showing a preference for accessing the virtual world from home. For the tutorial I had designed some activities based around the think, pair, share strategy that is commonly used in face-to-face classrooms. I posted a note card to the group that provided the initial instructions and would facilitate their engagement in the task without them needing to all arrive in the virtual world at the same time. I set up four painting easels at different parts of the sandbox so that each allocated group could congregate at different specified points. When clicked on, the easels then provided two inventory items – a note card with instructions and a note card with a step-by-step ‘how to’. The note cards take on the same role as a hand out or worksheet in the face-to-face classroom. The students were asked to create a note card that outlined the lesson ideas they had been developing as part of their first assessment task. They were then asked to talk to each other and share their
lesson plan ideas. The final step was to make their own group note card with all of the lesson ideas on. It was a simple replication of what we would do in a face-to-face setting in relation to sharing ideas.

As the facilitator in the virtual world it was difficult to maintain the same level of apparent control as you might expect in the face-to-face setting. When the students were making note cards it was occurring on their side of the computer interface so it may appear from within the virtual world that they are not doing anything. It was also problematic in that expectations of how to behave in a virtual world tutorial was an unknown to all participants. The students' avatars often appear to be just standing around and not engaged and this would normally be of concern to a teacher.

We were also still encountering technical issues with some students becoming concerned that they were missing out if they couldn't hear or if they felt unable to move in the right way. One of students commented after the tutorial that

“.... this was the first time I managed to attend, so interesting. A lot of time spent on technical difficulties, particularly hearing properly, which causes a bit of chaos. Is it the world, the connection or me causing the problem? Potentially this is a great way to attend tutes and learn computer skills as well as teaching art skills. Could your words come up on a black/whiteboard as you speak so that when sound cuts out one still knows what's going on?” (Student feedback via email)

**Virtual World Tutorial Four**

This session was designed to be similar to a practical face-to-face session with the use of the virtual world for creating art works. The students based at the Lismore campus were asked to attend in the computer lab to replicate how they might use a lab in their own teaching in a secondary school. The students at the other two campuses joined us in the virtual world. As with the previous tutorial the students were given instructions via a note card that they obtained when they logged on for the tutorial. The instructions asked them to import an image they had created and to place it on a flat surface. They were then asked to create an exhibition space that they could display their work in. The students who had been visiting the virtual world in their own time were at a stage that they could competently complete the tasks and develop ways to improve their building skills including interactive possibilities of the virtual world objects. The students were actively assisting each other and offering assistance and advice. As the facilitator of the group I was able to assist students at the Lismore Campus in RL in a way that was familiar to me and worked well to improve the student’s skills in relation to trouble shooting particular issues such as sound and avatar manoeuvrability.

**Virtual Field Trips**

Students were given the opportunity to develop their own teaching practice and to explore the application of virtual worlds for the secondary school art classroom through the assessment tasks in the unit. The first assessment was a series of lesson plans based on any area of the syllabus relevant to years 7-10. Two of the students chose to highlight the use of a virtual world as part of this task by incorporating the virtual art work
creation possibilities as one of the outcomes that a student might engage in. The second assessment offered three choices: plan an excursion, implement an information literacy task or develop a resource. Two students choose to develop a virtual excursion or field trip using SL.

The use of the virtual world to undertake field trips demonstrates easy access, multimodal representation, autonomy, interaction, interactivity, and resources as discussed by Lu (2008 a & b) as significant attributes of virtual worlds. It is of particular importance to tertiary and secondary students who live in regional areas as they are often unable to access art institutions as readily as their city counterparts. It also offers opportunities outside of cost restriction and personal inhibitions about interacting in a space such as an art gallery. Excursions may also include trips to places to gather material for use in art works or to explore architecture such as the beach, rainforest, city and in the case of the virtual world, Van Gogh’s home, Ancient Rome or Frank Lloyd Wright’s architecture. When visiting these locations photographs (screen shots) can be taken and used in RL reporting on the excursion.

One student created a virtual field trip that explored the Aeonia Art Gallery (2010) in SL. Following the previous tutorial model she used note cards that the students would collect as they entered the world giving them instructions to follow (fig 3).

![Fig 3: Note cards produced by one of the pre-service teachers as part of an assignment. The note cards would be given to high school students to facilitate a virtual excursion in SL.](image)

The activities she asked the students to do included talking to the artist who is available in the virtual world in the form of her avatar. They were also directed to look at a number of pieces of artwork and to have discussions with their peers and the teacher. After they had done this they would be making their own
piece of work and writing a proposal to exhibit at the Aeonia Art Gallery. These activities are not dissimilar to what we might ask a student to do in a RL classroom. By using the virtual world we overcome many of the issues associated with organising a trip to a gallery, a talk with an artist and organising an exhibition. In the virtual world a student may visit the gallery on numerous occasions, talk to a variety of artists and have the real opportunity of exhibiting in a public place.

Another student created a different type of experience for his students. His excursion into the virtual world was based around five different experiences that he called Art Trails. The students were asked to work in groups and follow a set of given instructions. The first Art Trail involved visiting the Printings Museum (2010) where students were asked to locate a number of art works. Each of the art works in the Printings Museum is based on actual artworks such as: The Death of Marat, The Space Elephant and The Physical Impossibility of Death in the Mind of Someone Living. These works have been recreated so that an avatar can interact with them as in the Death of Marat where the avatar can actually lie in the bath (fig 4).

fig 4. The Death of Marat at the Printings Museum in SL. One of the pre-service teachers experiences what it is like to be Marat in the bath by interacting with this primting (SL construction).

The second Art Trail asked the students to visit VeGeTa PLaNeT (2010) and to identify three different digital works and answer a series of questions similar to an analysis that might be done using artworks in a book or in a gallery. The third Art Trail required students to visit Utopia Island 4 (2010) where they had to answer questions that were designed to activate thinking about the subjective frame as per the NSW Visual Art Syllabus. The fourth Art Trail was a game where students were required to get to the top of a tower on Utopia Island 1 (2010). The fifth and final Art Trail was designed to develop the students' building skills as they are asked to work in a team situation to build a sculpture on SCU Interaction Island (2010). By doing
these last two Art Trails the students were being asked to explore the virtual world and answer questions about whether this in itself might be considered art.

Reflection

Since trialling the use of virtual worlds in the curriculum specialisation unit for Visual Arts various new features have become available in SL with the introduction of a new client viewer. I would now be able to integrate many of the technologies that the students are familiar within a face-to-face classroom. Some of these include; displaying a Web page on a prim; working with multi user whiteboards and video links via smart phones to RL. Feedback from the students also indicated that they would like a home space with an art gallery and studio. This is planned for the next island as we continue to develop effective ways to facilitate the use of virtual worlds in art education.

The Efficacy of Virtual Worlds in Education

There are many ways that virtual worlds can be used in education. Ryan (2008) outlines 16 ways to use virtual worlds in the classroom. They include: adding a visual element, as an interactive library, a connection device, role playing device, simulation device, games for learning, soft skill development, research, virtual tourism and field trips, social device, to create anonymity, machinima, recruitment, build awareness and/or promote an event, building for the sake of learning how to build and as an open learning environment. One of the key questions is how do we teach in virtual worlds? What new strategies do we need to be able to present the relevant content and to engage our learners? When you first use a virtual world as either a teacher or student you are presented with something very unfamiliar. It is by default that we try to replicate the way that we are most comfortable with in trying to develop quality experiences for our students. Research is emerging that advocates that we should be looking for new models of teaching and learning in virtual world environments (Ryan, 2008; Peachey, 2010; Knapp and O’Driscoll, 2010).

In conducting the series of tutorials outlined above, I began to question the teaching strategies that I was using in the virtual world and have sought to compare the previous model of teaching in this unit using Killen’s (2007) list of teaching strategies (Table 1). The left hand column lists Killen’s teaching strategies and the second and third column describe elements of the Unit taught in the previous delivery mode and in the 2010 virtual world delivery mode relevant to Killen’s strategies.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Prior Delivery of the Unit</th>
<th>Virtual World Delivery of the Unit</th>
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<tbody>
<tr>
<td>Direct Instruction</td>
<td>Weekly Powerpoints delivering content in a lecture style.</td>
<td>Instructions given via note cards. Delivery of lecture style content in the sandbox and in a tutorial room.</td>
</tr>
<tr>
<td>Discussion</td>
<td>Tutorial discussion initiated by the lecturer generally preceding the powerpoint delivery.</td>
<td>Group and individual discussion promoted as an informal interaction between students from remote locations. This occurred while they</td>
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</table>
Small Group Work | Think, Pair, Share based around key concepts such as the Frames and Conceptual Framework in the NSW syllabus. | Think, Pair, Share activity designed to discuss lesson plan ideas. Small groups were encouraged to help in the building of an exhibition space Small group discussions while visiting gallery spaces.

Co-operative Learning | Students were not required to undertake any task in depth in a co-operative learning model. All assessment tasks were individual. | Students needed to work with each other as they developed skills. The removal of the teacher as the central figure placed more emphasis on the individuals within the group.

Problem Solving | The assessment tasks were designed as authentic problem based tasks. | Constant problem solving in relation to technology that often required students to sort out their own difficulties with their home equipment/computer. The tasks they were asked to do required high levels of problem solving as they negotiated the virtual world environment and the skills to complete these tasks.

Students Research | Required for assessment tasks. | The students that researched ways to work in the virtual world found that they extended their capabilities.

Role Play | None | Students asked to take on the role of the teacher and the artist.

Writing | Required for assessment tasks and some in class tasks. | Required to write note cards to convey information to the teacher and each other.

| Table 1 - Teaching Strategies (from Killen 2007) |

Table 1 highlights a number of parallels between teaching strategies used in RL and virtual world environments. However, there are some important differences that need to be considered. A key question is: What can the virtual world provide that the real world can’t? The virtual world as a teaching and learning environment is immersive and this is currently a novel experience for many students that can be highly motivating. Virtual worlds have the potential for developing greater use of more complex teaching strategies such as active learning, co-operative learning and problem solving. These strategies fit well with the virtual environment while more traditional strategies such as direct instruction and discussion are less effective in the virtual classroom. Activities such as role-play and simulation are well suited to the virtual
world but due to the limited skills of the students over the four sessions these strategies were untested in this unit.

A major implication for the use of virtual worlds in education is the application in distance education. The Visual Arts specialisation unit is offered on three campuses and previously would be delivered simultaneously at each of the campuses by three different tutors. The students would ordinarily have no contact with each other across campuses and would be limited to the peer group of as few as three other students. The implementation of the virtual world in this unit brought the cohort together and created a degree of cohesion across all campuses. Students were able to interact, discuss and create regardless of location. Some students chose to attend the in-world sessions from home rather than travelling to a RL campus.

Shared experience is a valued part of teacher training as it disperses some of the insecurity of the unfamiliar experience of the teacher in the classroom. Isolation is a key issue in the lives of beginning teachers especially when posted to a remote location or without peer support (Gordon, 2000). Using virtual worlds as a social networking tool may help to alleviate this problem. The requirement for 100 hours of professional development that is mandatory for continued registration with the NSW Institute of Teachers (2010) could be enhanced and facilitated by a community of Art Educators within the virtual world. The virtual world environment allows for the sharing of ideas and hence lesson plans and resources that may be left for others to retrieve or discuss without the need to travel to a central, often city based, location.

There are currently limitations to the use of the SL grid in secondary schools with the creation of avatars on the main grid restricted to persons over 18. By the end of 2010 the SL teen grid will be closed and students aged over 16 will be able to join the main grid. It is also anticipated that students between 13-16 will be able to access islands on the main grid that they are directly affiliated with. There are a number of virtual worlds that allow students to build in 3D and work collaboratively and initiatives such as Skoolaborate have developed their own spaces in SL where students collaborate from around the world on projects within the Skoolaborate site. This technology is changing rapidly and Gartner (2010) has predicted the availability of public grids for virtual worlds within the next 2 to 5 years. Couple this with the prediction that the Internet is likely to be transformed into a 3D space as predicted by Robinson (as cited in Smith, 2010) and we have an imperative to be training our teachers to be cognisant of virtual worlds. I have encouraged pre-service teachers to develop ideas in ways that they can use virtual worlds in their teaching with the knowledge that this technology will become more common place and accepted within the primary and secondary education system in the years to come.

**Conclusion**

The experience of the initial utilisation of this educational technology confirms that virtual worlds have a role in Visual Arts Education. There are a number of important and powerful aspects of virtual worlds that
are motivators for further developing their use. Firstly, virtual worlds are entirely created using all of the visual art elements and principles that underpin the visual arts curriculum. Secondly, students are able to continue using SL once they leave the University including all of their inventory and the teaching resources that they have developed in-world. Thirdly, working in a virtual world that has a large number of users and a healthy economy, that includes prebuilt objects, the student can quickly develop environments and learning tools with little previous knowledge of building and scripting in a virtual world. Finally, through the use of the virtual world the secondary school teacher is endeavouring to link in with the experience of the young person who is already likely to be using virtual worlds as part of their play and social interaction.

The current demographic of pre-service teachers are students who may not have the inherent aptitude for the technology as do the current generation of teenagers, however, given the pace of technological development this is rapidly changing. It is our role to assist the art teachers to take advantage of the technology and to integrate it into art instruction. Unfortunately as Lu (2009) has suggested many do not know how to do this.

This one unit in Visual Arts Education touched on a few of the possibilities for the use of virtual worlds in higher education pre-service teacher training and the continuing professional development of Visual Arts teachers. The experience has raised many questions and brought about a number of points of reflection. The teaching within the virtual world was at times challenging for the teacher and the students due to both the novelty of the virtual world environment and the various technological hurdles, nevertheless it proved to be potentially enriching for all in the outcomes. Future research into the use of virtual worlds could follow the path of enhanced teaching strategies such as: role-play and simulation; finding ways to bridge the gap between distance education students; creating a support network for beginning teachers; and work, social and educational implications for a university campus that is open 24/7 from any location.

References:


Printings Museum in SL ([http://world.secondlife.com/region/49dced4a-a5fc-4b36-b80a-4e2bcd54372b](http://world.secondlife.com/region/49dced4a-a5fc-4b36-b80a-4e2bcd54372b))


