Developing the Media Zoo in Second Life

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Abstract

Second Life (SL), an immersive virtual environment, is increasingly being adopted in education for both formal and informal teaching and learning uses. This paper addresses the process of developing a demonstrator presence in SL, the potential of the system for formal teaching and some practical ideas on how to successfully integrate such emerging technologies into practice.

Introduction

The Media Zoo, based at the University of Leicester, is an attraction for members of staff from the university and beyond to experience, interact and understand the potential educational applications of learning technologies. There are three versions of the Media Zoo: the physical version (a laboratory on-campus), another version available on the Internet and the third, accessible in a virtual form in Second Life (SL). This paper explains and discusses the virtual version of the Zoo in SL, how it was developed and how it has been used to demonstrate the potential of SL for teaching and learning (Figure 1).

Development of the virtual Media Zoo started in July 2007 with the purchase of some virtual real estate in the immersive virtual world (IVW) SL. The virtual real estate was purchased personally by Prof. Salmon on behalf of the Beyond Distance Research Alliance. A partnership with TwoFour Learning, a media company based in Plymouth, was soon established to help design and develop a first-class demonstrator to highlight the educational potential of IVWs, otherwise known as 3-D MUVEs. By coincidence the development process started at about the same time as Second Environment Advanced Learning, a project at the university that aimed to create and research interactive events with communities of learners, teachers, technologists and creative partners with the intention of eliciting viable and preferred futures for learning in formal education.

The SL environment and building tools enable users to design and develop innovative virtual presences that would otherwise be expensive or impossible in real life. Many
virtual presences in SL are simple replications of existing buildings and infrastructures which do not take advantage of the opportunities on offer within an environment like SL. As with many early web-based presences that paid minimal attention to multimedia design principles, SL is awash with content better suited to other media. The Leicester team’s intention was to avoid having a Media Zoo filled with such content, but to look for opportunities to demonstrate the more advanced features the IVW technology offers.

Before any development of the virtual Media Zoo could take place a design blueprint was required to encompass design ideas and to evaluate the strengths of each team member. The collaborative and interactive nature of SL provided the perfect setting to conduct a feasibility study with the geographically dispersed project team located in Leicester and Plymouth. The virtual Media Zoo design is based on ideas in ‘The E-Learning Island’ (a talk Professor Salmon has given on a number of occasions—see Figure 3), and the institutional e-learning strategy that underpins the Media Zoo concept at the University of Leicester. With an agreed design vision each team member took responsibility for his or her own area of the project, and development began.

**Developments**

Like in new building developments in real life, it is important in SL developments to secure the real estate against thieves and to protect the early infrastructure until the virtual presence is established. Therefore the starting point of any development has to be the ‘locking down’ of the SL Island. The landowner can restrict access through giving permission to enter to selected avatar usernames. The names selected can be changed an unlimited number of times during the development process.

Once the Island is secure the initial task is to shape and texture the land by adding contours. In SL this is known as terraforming, although many islands in SL remain the
flat barren landscapes provided as the default by SL’s creators, Linden Labs. Throughout the development of our island, the terraforming exercise has had to be repeated to open up new areas of land as the role and usage of the virtual space has changed (see Figure 2). As the virtual landscape is formed textures can applied to bring the scenery to life. To follow the zoo metaphor, the texturing of the virtual Media Zoo resembles leaf litter and various varieties of trees have also been planted to bring a level of reality to the otherwise plain presence.

The virtual Media Zoo consists of a warm water lagoon with a boat house and pontoons (similar in structure to Professor Salmon’s idea of a digital landing pontoon for digital immigrants). The two flat areas surrounded by trees that form the body of the island resemble the ‘Springs of Innovation’ and ‘Dot.com Marsh’, which are clearly divided by the ‘Early Adoption River’. To the north of the Island is the more mountainous region, symbolic of the ‘Peaks of Duty’ and ‘Research Heights’ as depicted in the E-Learning Island (Figure 3).

**Structures**

With the landscape formed, we could start to erect the first buildings; and where better to start than the entrance point for all visitors to the virtual Media Zoo—the digital landing area, otherwise known as the Boat House (see Figure 4). The Boat House introduces visitors to the Island’s context and the background to the collaboration between TwoFour Learning and the University of Leicester. It also introduces them to some of the basic skills required to make best use of their time while visiting the virtual Media Zoo.

Inland, away from the Boat House, we made available two large flat areas either side of the river for construction. The process of adding usable structures to the Island could begin. It was important to utilise the capability of the technology to its full extent, but
it was also important to refer visitors to the four-quadrant strategic framework (see Figure 5) that underpins the whole Media Zoo concept. Therefore visitors can explore the four quadrants of the virtual Media Zoo just as they would in real life or online.

The first structure on the island is a large bio-dome (see Figure 6) housing the Pets’ Corner (the upper left quadrant in Figure 5). We encourage visitors to this area of the
Media Zoo to identify and target areas of their own work where there is potential for growth, rapid improvement in quality or efficiency gains through using existing technologies and pedagogies. The work we are doing inside Pets’ Corner is aimed at enhancing and promoting campus-based and distance learning through innovation, research, development and sharing of good practices. The focus is on embedding existing technologies and pedagogies into teaching and learning processes and on using them for more and more purposes.

Adjacent to Pets’ Corner is the second major structure on the Island, another bio-dome, known as the Safari Park (the lower left quadrant in Figure 5). We ask visitors to this

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**Figure 5:** Quadrants of the Media Zoo, based on the e-learning and pedagogical innovation strategic framework (Salmon, 2005)

**Figure 6:** Dome during development
area of the Media Zoo (see Figure 7) to reflect on how to utilise existing learning technologies, in order to address new markets, missions, levels and disciplines of teaching and learning that have not been previously addressed by these ‘core’ technologies.

If the Safari Park is accessible to more people there is an opportunity for more visitors to go on and use core web-based technologies such as Virtual Learning Environments (VLE) to join up e-resources across the whole Higher Education (HE) community, thus enabling students to make stronger and easier connections between subject areas they study and the services they have access to.

Across the ‘Early Adoption River’ (Figure 8) are a further two bio-domes, each of which has a smaller teaching bio-dome attached; the first of which is the Breeding Area (the upper right quadrant in Figure 5). Here we introduce visitors to student-facing pedagogies with technologies not originally intended for learning; sometimes these are known as ‘edutainment’ devices (Egeneldt-Nielsen, 2005). Many of these technologies such as iPods, Global Positioning Systems and smart phones have not been developed for learning and academics require a good understanding of potential teaching applications if the technologies are to be successfully used in this new context. These technologies are currently considered peripheral; some, however, may become core, even essential, in the near future.

New technologies are appropriate for off-campus use, as combinations and blends (Fill 2006), for dynamic delivery of content, for human intervention and for supporting learning. Many of these technologies can be channelled through the university’s VLE.

Finally, the last large structure is the Exotics House (lower right quadrant in Figure 6), which encourages visitors to scan the external environments (academic or commercial)
and look for signals that might offer new approaches to meeting students’ learning needs and expectations now or, perhaps more importantly, in the future. This area of the Media Zoo is the most challenging and risky for visitors but potentially the most rewarding. It is this area of the Media Zoo, on the ground and online as well as in SL (Figure 9), that has the greatest potential for success in putting the University of Leicester on the e-learning map (Salmon, 2005).
The workshops, seminars and demonstration activities within all versions of the Media Zoo are underpinned by current innovative research undertaken within the University’s Beyond Distance Research Alliance (BDRA). The four-quadrant framework enables the Media Zoo to propagate knowledge and experience gained through the research to a wider academic community.

The Media Zoo engages visitors with an e-learning strategy that ensures the following are taken into account:

- An innovative pedagogy aligned directly to learning technologies;
- Awareness of both core and peripheral learning technologies;
- A realistic approach to marketing and market development both for distance and blended learning, especially in terms of student numbers and support;
- An embedding of the university’s overall aspirations identified mainly through its existing formal plans and strategies but interpreted through informal discussions;
- An explicit statement of the purpose of pedagogical innovation and the objectives of the scaling up of e-learning;
- An opportunity to surface existing values in the university in a way that best utilises resources, projects and motivations.

**Objects**

With the major structures in place to house the objects that provide the rich immersive content for virtual worlds, the team needed a development strategy. Our first instinct was to populate the vast space with information. We could use other technologies, such as PowerPoint presentations, audio and video files and plain text note cards, all of which add value to the environment, but the virtual world’s tools offer much more.

After we had displayed the different research project information in more traditional forms around each relevant dome, we developed the first scripted (or programmed) object, which is known as the ‘Teaching Monkey’ (Figure 10). A simple but effective question and answer script applied to a 3-D graphical monkey enables visitors to each area of the virtual Media Zoo to interact with the Teaching Monkey and ultimately each will be awarded a series of certificates to keep in his or her inventory as a bit of fun.

The Teaching Monkey object works by asking five predefined questions on subjects relating the research specific to that area of the Media Zoo. Visitors have 30 seconds to respond to each question; if the answer is incorrect there are multiple opportunities to attempt the question again. The answers are single-word and can be found by engaging with the information and presentations nearby. These scripts can be applied to almost any object for almost any use.

The virtual Media Zoo also has its own Airship (Figure 11), which is scripted to take visitors on a virtual tour of the Media Zoo Island and to explain briefly the different areas of the zoo and the strategy that underpins it (see Figure 5). The Airship starts and
finishes its journey at the Boat House and follows a set course around the Media Zoo by following beacons embedded within other 3-D objects that make up the Media Zoo Island.

Visitors can board the Airship and activate the engines themselves and then enjoy the virtual sights from above and around the Media Zoo. As visitors pass over other embedded beacons text-based information appears on their screen. The major difference between the virtual Media Zoo environment and the physical space in Leicester is you do not need a ‘real-life’ Zoo Keeper to conduct these tours.

Visitors who are new to virtual worlds, and perhaps to a certain extent new to all the versions of the Media Zoo, feel more comfortable when they receive a personal touch.
and individualised support. New visitors to the virtual Media Zoo are met by the ‘Greeting Parrot’ when they arrive at the Boat House on the ‘Pontoon’. The parrot provides information about the virtual Media Zoo collaboration and a ‘Landmark’ for visitors to save in their inventory, which is like a SL personal storage system. The landmark provides them with an easy teleport option should they leave the island to explore other virtual islands but wish to return in the near future.

Another scripted animal-related object that is also available from within the Boat House is affectionately known as ‘Birdie’ and provides visitors with a virtual tour (Figure 12). In a similar way to the Airship, Birdie reacts to beacons embedded within the Island and provides pop-up information as these beacons are triggered. Birdie flies at a safe distance behind the visitor’s avatar and is another fun addition to avatars.

Use of such scripts requires visitors to attach the objects to their avatars in a process known as ‘rezzing’ (which means to make the objects appear). To help protect the virtual Media Zoo infrastructure and to limit the possibility of other inappropriate objects being rezzed and left in the Media Zoo, visitors can only use such scripts if they join the Media Zoo group within SL. Therefore we provided a mechanism to manage and restrict any behaviour that is not appropriate for an educational environment.

Movement within any virtual world is one of the hardest skills to master, but is one of the most important if users are to be confident enough in social situations without bumping into other people’s avatars or disappearing from their tutors’ view. Unlike people in real life, avatars in SL are not restricted to just walking, running and jumping. Avatars can fly, both over land and under water. The controls for all these movements are the same (the arrow keys on the keyboard), but the opportunities and effects add something new to our uses of technologies and learning opportunities.
On other islands within SL various controllable objects have been developed, which work along similar lines to the avatar movements. There are cars, bikes and planes replicated from real-life examples and a few more futuristic machines which need some imagination on the user’s part. Visitors to the Media Zoo Island have the opportunity to take a gentle sail around the lagoon and develop confidence in their movement skills at the same time as enjoying the scenery. Like many other objects on the Media Zoo Island, the boats (Figure 13) have been scripted to automatically return to their moorings next to the Boat House. The purpose of this scripting is to keep the island clean and to make the attractions accessible to as many visitors as possible.

The Media Zoo Island is an interesting demonstrator of the capabilities of virtual worlds because objects are not restricted to movement, information givers (note cards) or interactive scripts. By changing the lighting effects within the SL system visitors will notice the beautiful array of fireworks scripted to be set off at various times in the day—in SL there are the equivalent of 48 hours to our 24 hours in real-life (Figure 14).

Despite the Media Zoo being a metaphor and a colourful way to describe the pedagogic research from BDRA, no zoo would feel right without animals. Every BDRA research project is represented in animal form in the virtual Media Zoo and many more interesting animals have been included to help tie the metaphor and research together. In fact the visitor statistics show that some of the Media Zoo visitors are actually coming just to look at the animals; as one avatar explained, ‘I had heard of the Media Zoo as I’m an educator in Australia, the animals were so fun I had to log in again and share my experience with my children who thought the monkeys were very mischievous!’.

One of the most popular objects on the Media Zoo Island is also one of the most difficult to find as it requires teleportation (the mechanism of travelling large distances in a snap second) and is known as the Virtual Reality Cinema (VRR) (Figure 15). After teleporting, avatars appear in what appears to be a basic box until the series of .jpg images load.
The images load to form a 3-D panoramic landscape immersing the avatar at the centre of the landscape. By moving the camera controls users can zoom in and out from the 3-D landscape and from side to side. As more course teams at Leicester understand the potential of SL more images can be added. For example, existing images taken from previous geographical field trips could be uploaded and then made available to students before and after the trip as preparation and revision materials.

Having these objects available on the Media Zoo Island for experimentation allows visitors to start to imagine the possibilities for the future in each of their specialist subject areas. The opportunity to immerse learners in situations that would otherwise be expensive or simply not logistically possible could add value to the learning experi-

Figure 14: Environmental effects

Figure 15: Virtual reality cinema
ence. Many institutions and organisations have gone to great expense to develop 3-D virtual reality cinemas or laboratories in real-life—maybe the future lies in more ‘virtual’ technologies?

Objects can be developed specifically for teaching and learning, both synchronously as a module group or for more informal individualised learning situations. Throughout the development of the Media Zoo Island it has been evident that the immersive aspect of virtual worlds could add real value to teachers’ and learners’ experiences, in any subject or discipline.

A specific subject-related activity that has benefited from the immersive experience has been carried out by the Archaeology students taking part in one of BDRA’s research projects, MOOSE (Modelling of SL environments). To make the students’ experience as real as possible, accurate artefacts based on archaeological findings were developed on the Media Zoo Island. The Saami Tent (Figure 16) is a structure used as a temporary dwelling by nomadic reindeer herders of northern Scandinavia for the last 2500 years. Saami tents are divided into social spaces, access to which depends upon an individual’s age, gender and social status in the group. The purpose of the SL Saami tent is to familiarise learners (through their avatars) with the concept of social space and social constructions (see Edirisingha, Nie, Pluciennik & Young, 2009 in this issue).

Before the SL intervention the social constructs associated with the Saami tent were taught in 2-D on printed A4 paper with the different areas of the tent highlighted by lines and a basic description. There is now a replica of a real Saami Tent on the Media Zoo Island. The immersive experience does not stop there. To give students something as close as possible to a real-life experience, permissions were added to the land underneath the tent based on the social constructs of the Saami people, thus adding a level of authenticity to the experience. Social constructs could then be changed based around status or gender very quickly by changing the permissions associated with each
student’s avatar, thereby altering experiences and making the students reflect on their feelings, frustrations and experiences.

Another creation developed in the virtual Media Zoo for the Archaeology course team uses the valleys towards the north of the Media Zoo Island and is a representation of a Kalasha Village (Figure 17). The Kalasha are an ethnic group from the Hindu Kush Mountains in the north-west of Pakistan. The Kalasha also have social constructs according to gender—males being pure and females classed as impure.

In a similar way to the Saami tent, permissions were added to the land around the village structures.

**Events/visitors**

Since the launch of the virtual Media Zoo in December 2007 there have been over 1700 unique visitors to the SL Media Zoo, engaging in different workshops, meetings or just wandering around looking at the artefacts on display (see Figure 18). The launch event was organised to run simultaneously in SL and real-life. A total of 70 avatars attended the presentation for the launch with a peak of 42 at the same time. This was the first time any member of the BDRA team had participated in or hosted an event in SL.

To raise awareness of the Media Zoo’s virtual presence in SL a series of staff and student training sessions were organised between January 2007 and May 2008 to coincide with the funding of the MOOSE research project. A clear and simple approach was needed for the training programme to cover the essential technical skills required by all for an easier teaching and learning experience. Our starting point was the production of two guides; one for students who would be engaging in learning activities within the virtual Media Zoo setting and one for tutors who would be delivering the learning activities. These tutors have been given the title of ’SL-Moderators’, derived from the term e-moderators for tutors working in e-learning (Salmon, 2004).
The development of the training guides utilised existing YouTube videos on how to use SL, providing an enhanced visual component to help explain the core technical skills which include setting up SL accounts, creating and changing the avatar’s appearance, moving around SL and engaging in in-world events. All of these skills were designed to prepare the staff and students for the group learning activities in SL and provide a foundation to the actual real-time virtual training that followed (Wheeler & Salmon, 2008a, b).

The student training programme for Leicester’s School of Archaeology and Ancient History began in May 2008. All the students were abroad, studying at a distance. None had used SL before, although one had previous experience of the immersive virtual world game, *World of Warcraft*. We distributed the training materials 1 week before the pre-arranged virtual meeting in-world. The students were required to set up their accounts, download the SL client and begin exploring the different islands. The minimum requirement was to have completed the Orientation Island (the basic training island developed by SL developers Linden Labs to help new users quickly learn the essential skills to operate in SL), before starting our training.

The training programme was very successful with very few technical difficulties, both prior to the one hour training session and during subsequent learning activities. It was evident from observations and our experiences that the students’ confidence grew by the minute as they learnt new skills which made their virtual existence more rewarding.

Communication was mainly through the text-based chat and the instant messaging facility offered in SL. This process was manageable but quite time consuming. We used the text-based chat rather than the available audio; this choice was made on the basis of learners’ skills, their technical access and the fact that chat logs could be downloaded and made available to the students after training to be used as revision notes. The
transcripts, and questions raised within them, have also enabled the training sessions to be upgraded for future events.

**Conclusion**

Throughout development of the virtual Media Zoo and the initial teaching and learning activities undertaken in SL there have been technical issues and academic-related hurdles to be overcome in order to make the whole experience a success; these are listed in the Table 1, with the approach taken at Leicester.

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<th>Issue</th>
<th>Approach</th>
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<td>Development time</td>
<td>Developing a first-class demonstrator from scratch with no prior Second Life (SL) skills should not be undertaken lightly. The Media Zoo took 3 months from planning to launch. This included design, development and testing. The development resource was one developer (programmer) full-time for the 3 months and one learning technologist part-time for 3 months. Since the launch (December 2007) we have put in over 80 hours of ongoing maintenance time to update and revive the look and feel of the Media Zoo in SL.</td>
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<tr>
<td>Client versioning</td>
<td>Until recently the developers of SL (Linden Labs) updated the SL client regularly. All users need to download and install updates on their machines, to run SL, due to technical problems with old client versions. On a standard broadband connection the downloading and installing of each new client could take up to 30 minutes every time this process was repeated.</td>
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<tr>
<td>Preparing suitable activities (SL-tivities)</td>
<td>We trained the SL-moderators in how to use the SL system so they were confident in their skills before teaching. It is important the tutors understand the potential of the system so they can prepare their SL teaching activities (SL-tivities) for learner to engage in. We looked for opportunities to utilise the capabilities of the SL system to do something that we could offer in real life. We did not try and replicate real life.</td>
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<tr>
<td>Communication mechanisms</td>
<td>We thought carefully about communication mechanisms for deliver the learning experience: group text is easy to use but can be time consuming whilst audio is quicker but adds another level of complexity for both staff and students. We decided to use text for novices. In using text for communication we started with a pre-written script to enable easy cutting and pasting into the chat field, reducing the amount of time in composing and correcting typographical mistakes online. To manage participants’ questions during activities, and to limit the disruption of the flow of text, we requested the students to compose their responses but wait for an indication of when it was their turn to speak. We offered summarising, weaving and feedback—ie, we used key moderating skills.</td>
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The future for the Media Zoo concept is looking bright as it continues to attract internal and external interest: it received sponsorship from Toshiba in September 2008. For 2009–2010 it is important for the Media Zoo to continue to build up its reputation nationally and internationally; its presence in SL will certainly help promote, disseminate and develop further an already successful concept.

The next series of Media Zoo workshops will be aimed at maximising the potential usage of the Pets’ Corner offerings. It is estimated that 80% of the University of Leicester’s academics use only 60% of the Blackboard VLE system’s capabilities. Therefore the work that the Media Zoo is undertaking with more risky and peripheral technologies like 3-D MUVEs will become increasingly more difficult to implement and integrate if more established technologies are not maximised first. The divide between established and emerging technologies will grow exponentially during the next 5 years making adoption of Pets’ Corner technologies a critical action point for Leicester academics.

However, it is important to look further into the future. The Exotics House part of the Media Zoo, with futuristic ideas developed from the research, will be important in keeping the university at the cutting edge of teaching and learning. We hope to continue to establish the role and presence of the Media Zoo so that higher education can have a hand in shaping the technological developments of the future.

References

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