

# DESIGNING FOR LEARNING IN 3-D VIRTUAL WORLDS: THE UNIVERSITY OF PLYMOUTH SEXUAL HEALTH SIM EXPERIENCE IN SECOND LIFE

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## ABSTRACT

Second Life (<http://secondlife.com/>) represents a relatively new 3-D virtual learning environment that has not been fully tested yet, and in which there is enormous potential for the development of creative and dynamic educational experiences. This paper introduces the University of Plymouth Sexual Health SIM in Second Life (out-world URL: <http://sl-sexualhealth.org.uk/> - in-world SLurl: <http://slurl.com/secondlife/Education%20UK/33/63/22>) and provides some reflections on its design and underpinning pedagogy, as well as some details about the planned evaluation of the project. We hope our work will stimulate and inspire other medical/health educators to follow in.

## KEYWORDS

Second Life, 3-D Virtual Worlds, Sexual Health

## 1. INTRODUCTION

Second Life (<http://secondlife.com/>) represents a relatively new and untested three dimensional (3-D) virtual learning environment, in which there is enormous potential for the development of creative and dynamic educational experiences. Second Life has affordances that are similar to those observed within already established online environments, including synchronous text chat, visual representation, situated learning and most recently, voice enabled synchronous audio communication. Second Life also has several unique affordances which can be evaluated within the context of education and training delivery. These include interaction through pseudo-physical contact, manipulation of digital learning objects, simulation of physical movement within the learning environment, and positioning of self and objects within 3-D virtual space. Most significantly, Second Life affords for the course provider the capability to create, manage and maintain unique virtual learning spaces (e.g., 'Islands' and simulators or SIMs) which can be designed as dedicated or purpose built resources and within which learners can explore a number of simulations and participate within events, many of which are realistic, some hazardous and others improbable, or impossible within the real world (Kamel Boulos *et al.*, 2007).

Late teens and young adults are still not properly served in the UK when it comes to sexual health education. There are serious problems and continually rising figures of Sexually Transmitted Infections (STIs) among them (see <http://tinyurl.com/2fuaea> and <http://tinyurl.com/27vnhy>). The median age of Second

Life residents on the main grid is 33 (i.e., half of Second Life main grid residents are 18-33; figure revealed by Linden Lab at the latest Eduserv Symposium 2007—<http://tinyurl.com/2lvrzp>). Second Life is also known for its large and growing population (1,574,518 Residents Logged-In During Last 60 Days as at 30 August 2007—see <http://tinyurl.com/yotg3y>) and for the relatively large numbers of adult/pornographic places/businesses in it, which are among the most popular places in the virtual world and were also built by residents (reflecting, in part, the population demographics and behaviour). Thus Second Life seems to be an excellent medium to deliver a ‘sexual health’ education programme and to reach out to potentially tens of thousands of people in the most critical target age groups for such programmes.

This paper introduces the University of Plymouth Sexual Health SIM in Second Life (out-world URL: <http://sl-sexualhealth.org.uk/> - in-world SLurl: <http://slurl.com/secondlife/Education%20UK/33/63/22>) and provides some reflections on its design, as well as some details about the planned evaluation of the project. The project, officially entitled “A ‘Sexual Health’ Public Education and Outreach SIM in Second Life”, was made possible by a free land grant (July 07 – July 08) from Education UK Island in Second Life (<http://sleducationuk.net/?q=node/14>).

## 2. A QUICK OVERVIEW OF THE UNIVERSITY OF PLYMOUTH SEXUAL HEALTH SIM

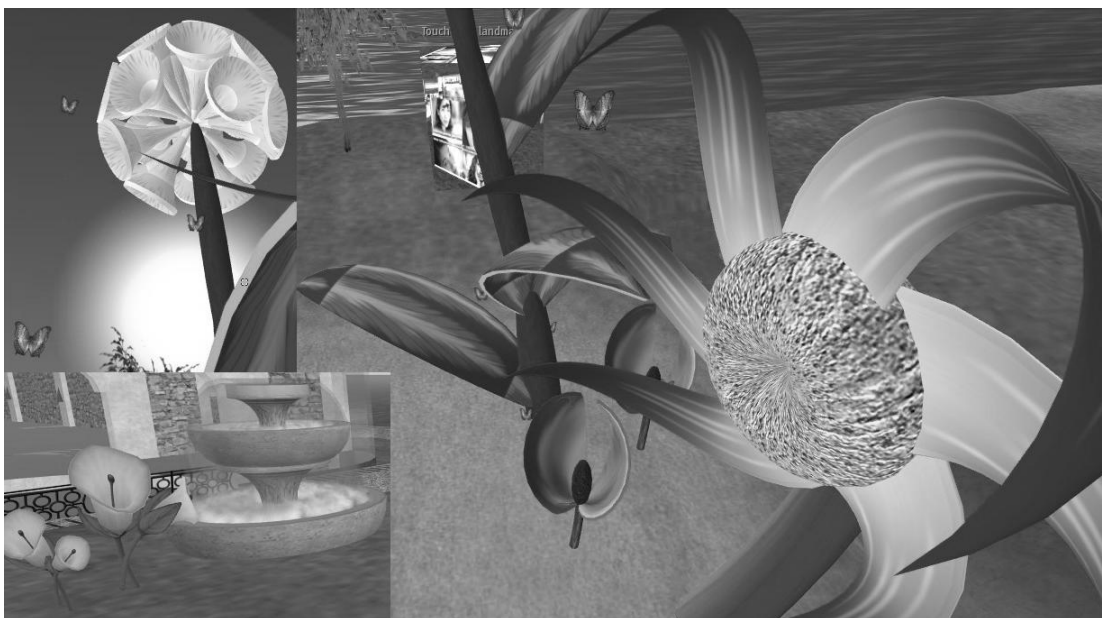


Figure 1. The giant flowers at University of Plymouth Sexual Health SIM in Second Life. A gallery of SIM snapshots is available at <http://www.sl-sexualhealth.org.uk/gallery/thumbnails.php?album=1>

The University of Plymouth Sexual Health SIM provides sexual health education in a relaxing, playful setting alongside the ocean, with giant flowers and soaring butterflies (Figure 1). Visitors to the SIM are offered a wide range of 3-D scripted objects and games to explore and interact with, including a virtual condom-dispensing machine (see <http://sl-sexualhealth.org.uk/?p=14>). They can also chat with the resident chatterbot, ‘Alice’ to find out simple facts about contraception and STIs (see <http://sl-sexualhealth.org.uk/?p=24>). An interactive kiosk provides an atlas illustrating sexually transmitted infections and ways to prevent them, and enables visitors to listen to associated voice narration or access related Web media such as a PowerPoint quiz game or Web page. An interactive 3-D Earth globe offers access to current STIs/HIV/AIDS statistics and information from 53 European region countries. Visitors can also access a selection of premier international resources from leading organisations, including, among others, the World Health Organization, the National Health Service (NHS) in England, the Society of Obstetricians and Gynaecologists of Canada, and from the USA, the Centers for Disease Control and Prevention (CDC) and RESOLVE, the National Infertility Association. Media formats include streaming video/audio, podcasts, an

in-world custom Intute search engine retrieving quality sexual health results from the UK Intute database (<http://www.intute.ac.uk/>), and a newsstand that refreshes every 10 minutes to display the top two sexual health headlines on Yahoo! News. The SIM also affords opportunities to test knowledge of sexual health by participating in quiz games and other fun experiences (see <http://sl-sexualhealth.org.uk/?p=11>).

Designing a proper 3-D virtual world service in Second Life presents a social engineering challenge. As Kemp (2007) stresses, this is not (just) one of ‘technology and scripting’ but of ‘community scaffolds’. Second Life is part of the Web 2.0 movement, which is all about *people* and online communities/social networks (Kamel Boulos *et al.*, 2007; Wheeler and Kamel Boulos, 2007). To maximise their social experience, visitors to the University of Plymouth Sexual Health SIM can join a public group in-world, which facilitates opportunities for communication and social networking. Also overlooking the ocean is an open air seminar space where people can participate in live in-world voice-enabled sexual health events and seminars and watch slide shows and presentations by sexual health experts on a variety of topics, including STIs, contraception, and domestic violence (see <http://sl-sexualhealth.org.uk/?p=57> and Figure 2). If human help is still needed, visitors can contact SIM personnel and transport to a skybox where they can receive one to one counselling in a private setting.



Figure 2. Avatars attending a seminar about domestic violence that was held on 12 September 2007 at the University of Plymouth Sexual Health SIM in Second Life

## 2.1 Evaluation plan

Through a combination of qualitative and quantitative data analysis, we hope to determine how Second Life can best be modelled as a 3-D virtual learning environment where best practice pedagogy is developed specifically for medical and health-related education and training.

Before leaving the SIM, visitors are invited to provide feedback about the overall experience and specific features of the SIM via a questionnaire that is fully administered in-world and automatically e-mailed to SIM personnel (Table 1).

We also collect statistics on overall usage of the SIM, including logging of attendance at learning events and text and audio interactions/transcripts during them, as well as monitoring of traffic to our SIM. We have an advanced visitor counter installed in our land for this purpose that can track repeat, as well as unique/new visitors, and provide us with useful statistics and daily reports via e-mail, including visitors per day, peak visitors (peak concurrency), and total visitor-minutes spent on our land (owner's minutes/visits are not counted/monitored). The latter statistic ('total time visiting') can serve as a rough measure of visitors' interest

in/perceived utility of our SIM (see this related news item: Havenstein, 2007), besides directly corresponding to the official Linden Lab daily traffic figures for our parcel.

Table 1. The University of Plymouth Sexual Health SIM in-world questionnaire questions. Respondents can skip any question(s) they don't want to answer

Question (Possible Answers)
Is this your first visit? (Yes No)
How useful was this place/session for you? (Very Fairly Not useful)
Did you learn anything that was new to you? (Yes No Unsure)
Do you think what you learnt will change your behaviour? (Definitely Possibly Not at all)
Will you be visiting us again? (Yes No Not sure)
Would you recommend this place to your friends? (Yes No Not sure)
What did you like the most? (answer in free text)
What did you like the least? (answer in free text)
Please make any comments you would like to leave for us here (answer in free text)

Our in-world public group launched on 10 August 2007 now has 57 Members as at 13 September 2007 (up from 25 members on 12 August 2007). Also as at 13 September 2007 (end of the day, SLT time), our SIM received more than 590 unique visitors/avatars since our initial launch on 12 July 2007, up from about 210 unique visitors on 11 August 2007 (12 Jul 07 - 11 Aug 07) — the corresponding figures with repeat visitors would be much higher.

All questionnaire and tracking data will be analysed and published at the end of the one-year land grant in July 2008 in fully anonymised, aggregated form to fully preserve participants' privacy.

### 3. REFLECTIONS ON THE DESIGN OF THE UNIVERSITY OF PLYMOUTH SEXUAL HEALTH SIM

#### 3.1 Design rationales

The ultimate goal of our SIM is to help young adults make well informed sexual health choices of their own. We provide strong messages and education about STIs and the dangers of unprotected sex. Our in-world objects provide information about both condoms and abstinence, so our presentation is not biased towards one camp or the other, nor imposing any particular direction/method on our visitors.

Learning can and should be fun! Our giant and colourful, butterfly-emitting flowers (Figure 1) are a good example of how we designed our SIM to be a truly immersive world in which reality (Real Life—RL) and fantasy are seamlessly mixed in a carefully balanced way that is warmly-inviting, youthful, cheerful, enjoyable, practical and functional, and aesthetically pleasing, all at the same time. We avoided the replication of a boring and often intimidating RL institutional or classroom environment in Second Life (SL), but at the same time maintained solid and familiar links with RL (Mosely, 2007; see also <http://tinyurl.com/yswpqy>).

Our in-world objects are not too abstract (like, for example, this Second Life place: <http://slurl.com/secondlife/The%20Port/238/77/26>), thus reducing learners' cognitive load (Sweller, 1988) – even if over-sized or presented on purpose in some other “odd” way, they remain in essence familiar RL objects that visitors can easily relate to, without being at the same time boring exact replicas of the RL objects they represent. (But faithful replicas of RL objects and buildings in SL are sometimes necessary and to be encouraged depending on context/application, e.g., virtual tourism (as in this virtual city of Torino in Second Life: <http://slurl.com/secondlife/Piemonte/154/200/396/>), history and architectural modelling of RL buildings in SL for various RL planning/testing, simulation, training and marketing purposes. On the other hand, very abstract creations also have a place as forms of art in SL.) Realistic sound effects can also greatly enhance the ambience and immersiveness of educational SIMs. (Visitors to our SIM can relax by the water in a beautiful setting, with spatialised ambient sounds of the ocean and birds (see <http://sl-sexualhealth.org.uk/?p=15>), and also listen to soothing music streamed through the SIM's audio (radio) channel.)

But too much fun and fantasy ('bells and whistles' not directly reinforcing the educational message) might also negatively affect the learning process by acting as distracters. So again a good balance is needed.

We hope this approach will positively effect our young visitors' learning experience and retention, and also encourage longer visits and more exploration of, and interaction with, our SIM's educational objects, as well as more repeat visits and 'teleport offers' to friends.

### **3.2 Developers and educators' learning curve**

Like all first-time developers/educators in Second Life, we had to learn and acquire some new skills (see Education UK's Second Life Core Competency Framework at <http://www.sleducationuk.net/?q=node/3>), but this was also greatly eased by the fact that many ('prefab') objects can be acquired in the virtual world, which can be reused unchanged or modified, remixed and repurposed in many creative ways in the immersive, vast 3-D wiki that is Second Life, much *à la* Web 2.0 (subject to the object having its Second Life DRM—Digital Rights Management properties set to allow reuse/modification).

### **3.3 Live meetings in 3-D virtual worlds vs. conventional interactive webcasting/Web videoconferencing**

For those attending in-world, 3-D virtual worlds like Second Life add emotion/pseudo-body language communication (thanks to sophisticated avatars—closer to face-to-face contacts, but less “threatening”/with more “protection” for those needing this) and a shared pseudo-physical 3-D space. (These features are lost when watching a live Second Life broadcast, e.g., on SLCN—Second Life Cable Network <http://slcn.tv/>.) A 3-D virtual world offers a shared virtual space, enabling students and tutors to feel more naturally, closely and strongly together because of the shared spatial dimension, which can also have other educational uses during a voice conferencing session, including scenarios involving avatars and various in-world objects. You don't get the same shared pseudo-physical spatial dimension in conventional flat text (and emoticons) chatting and voice/video conferencing and over the Web (e.g., in Paltalk <http://www.paltalk.com/>—Boulos *et al.*, 2005).

### **3.4 Will 3-D virtual worlds replace the flat (2-D) Web?**

Comparing the 2-D Web to 3-D multi-user, immersive virtual worlds can be tricky, and some might consider it like comparing apples with oranges or comparing the experience of reading an online health information leaflet to that of having a face-to-face meeting with a clinician. The affordances of both media are different; they are also not mutually exclusive or a substitute for one another, but rather very complementary and synergistic in many ways.

Educators need to especially identify and focus/capitalise on what 3-D virtual worlds are best at—those (useful) things/scenarios that can only be effectively carried out in virtual worlds and not via any other 'e' medium (as effectively), and also determine the optimal formulae for blended approaches that combine 2-D and 3-D media.

Online leaflets and static information materials have no social component—even those materials offering single-user interactivity or asynchronous, multi-user (predominantly textual) interactivity remain seriously lacking in this respect. Second Life, on the other hand, is about 3-D social networking *par excellence*; it has this unique 'human touch' and is instantaneous, something not found (in a similar way) in 2-D social networking sites like MySpace and Facebook or in instant messaging/voice chatting services like Paltalk. Second Life is closer in many respects to face-to-face/social encounters, but also adds to them many exciting new dimensions, fantasy, and virtually endless possibilities—you name it and you will find it. And let's not forget that Second Life is a collaborative 3-D wiki and an immersive audio-visual spatial experience that users can edit, experiment with, and see the changes in real time!

People also have different tastes/preferences and learning approaches, and currently the audiences of the 2-D Web and the 3-D Web/Second Life are overlapping but still different (the reader is kindly referred to the US CDC arguments about this: “*going where people are ... yet another opportunity to learn and teach about public health*” (<http://www.cdc.gov/about/stateofcdc/everywhere/secondLife.htm>) and Bain, 2007).

Furthermore, and in support of the above mentioned potential complementarity and synergy between both



media, we are starting to see the 2-D and 3-D Webs gradually converge and merge; see, for example, the Flux project (<http://www.mediamachines.com/>), this example of Web 2.0/Flickr—Second Life integration/mashup (<http://www.hackdiary.com/archives/000085.html>), and the ‘SpaceTime 3D’ Web browsing application (<http://www.spacetime.com/>).

3-D virtual worlds are here to stay and will eventually become one with/tightly and seamlessly integrated with the 2-D Web over the coming months and years (rather than replace the flat Web) (Kamel Boulos *et al.*, 2007). Indeed, a recent futuristic/visionary American report entitled ‘VISIONS 2020—Transforming Education and Training Through Advanced Technologies’ (<http://www.technology.gov/reports/TechPolicy/2020Visions.pdf>) suggests that by 2020 (or before) we will see new jobs like “simulation and virtual environments engineers who build and maintain the components for synthetic environments, including specialised scientific software, e.g., a digital human that can be used for a variety of learning situations; specialists in building the components of simulated towns, instruments, landscapes, biological systems, or physical phenomena”.

## 4. CONCLUSION

Second Life is a unique and rich 3-D social networking experience. It allows people from all over the world to meet, share objects and collaborate in many novel ways, using a comprehensive and well-integrated suite of asynchronous and synchronous multimodal communication tools. Second Life can also be seen as a vast collaborative 3-D wiki and an immersive audio-visual spatial experience that users can experiment with, edit, and see the changes in real time!

In this paper we have presented a quick tour of the work carried so far in our Second Life project entitled “A ‘Sexual Health’ Public Education and Outreach SIM in Second Life” and our pedagogy-driven approach to designing our SIM.

We hope by the end of initial one-year land grant to deliver key data in an accessible style that will enable designers of future virtual 3-D learning environments to create effective and appropriate learning materials and experiences. The data, in both quantitative and qualitative forms, will inform health professionals about the attitudes and preferences of Second Life users and enable them to plan for future provision of health education within this nascent and so far uncharted, yet rapidly expanding social phenomenon.

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