

Mapping 3D virtual worlds onto problem-based learning for forensics

FORREST
Conference
1 July 2009

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Thanks to UEL team

- Remy Olasoji, UELConnect
- Rose Heaney, UELConnect
- Dr Stephanie Henderson-Begg, Biosciences
- Gemma McLean (Coventry SL developer)*
- Dr David Rowley, Biosciences (£)
- Dr Julie Baldry-Currans, Director Learning & Teaching (££)
- BSc (Hons) Forensic science students

Forensics at UEL

- Stratford and Docklands Campuses, **East London UK**
- Diverse, Regional University with 20,000 students, 9 Schools
- School of Health and Bioscience validated BSc (Hons) Forensic Science offered Sept 2002
- Current focus on Molecular Biology and Toxicology
- Graduates in FSS, LGC Ltd, Forensic Tox Lab Charing X Hospital, Met Police, Barbados Govt DNA Lab, PhD at King's

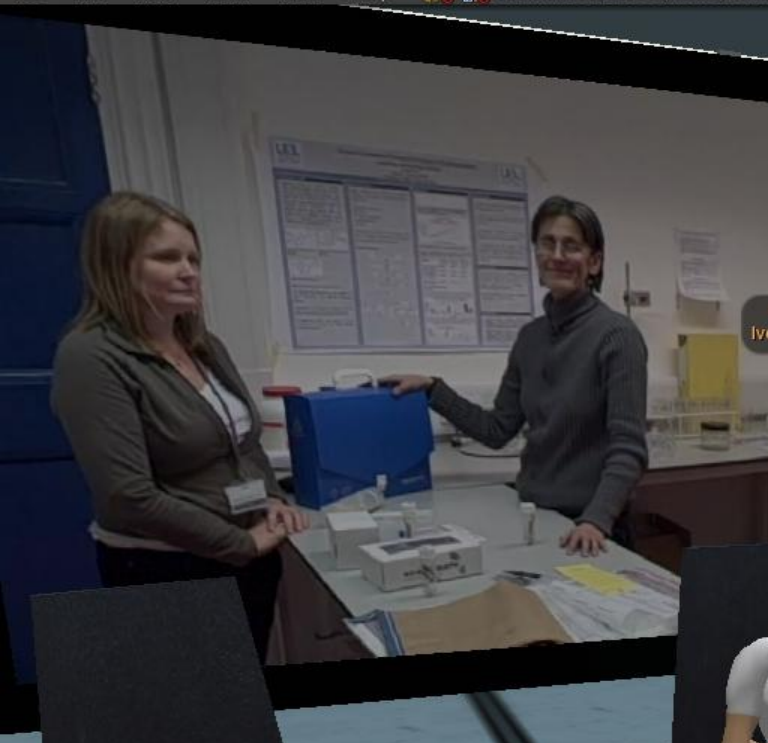
- Virtual worlds as immersive learning environments
 - Second Life *et al*
- Problem-Based Learning (PBL) in forensics
- Mapping the Virtual Crime Scene to Lab
 - Technological aspects – how do we do it?
 - Social networking – additional learning benefits
- Evaluation of learning & future plans

What is a 3D virtual world?

- Many and varied attempts to define Virtual Worlds (of which Second Life is but one)
- Struck by simplicity of Schroeder's (1996, 2008):
A computer-generated display that allows or compels the user (or users) to have a sense of being present in an environment other than the one they are actually in, and to interact with that environment

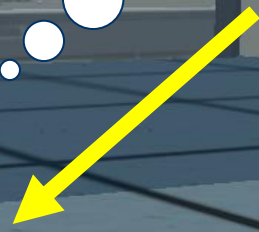
Schroeder, R. (1996). *Possible worlds: the social dynamic of virtual reality technologies*. Boulder: Westview Press.

Schroeder, R. (2008). Defining Virtual Worlds and Virtual Environments. *Journal of Virtual Worlds Research*, 1(1).



Member Iver Northolt

ME: January 2009
Why do I need a
Second Life?



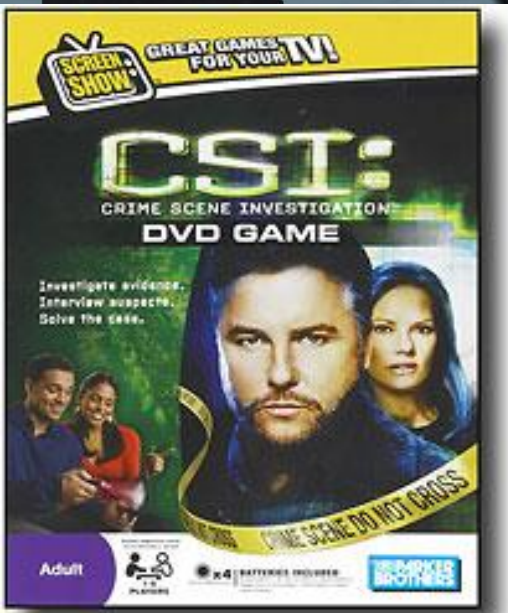
Inventory

File Create Sort

Type here to search

All Items Recent Items

- Body Parts
- Business Cards
- Business Card
- Casual tshirt
- Kit
- Y Hana
- Female Starter Kit - do not add to avatar
- Business casual
- trainer casual
- Gestures
- Landmarks
- Lost And Found
- Notecards
 - H&B Welcome
 - H&B Welcome
 - H&B Welcome
 - knife Label



Sit

Stand Up

Say Gestures

Snapshot Search Build Map Mini-Map Inventory

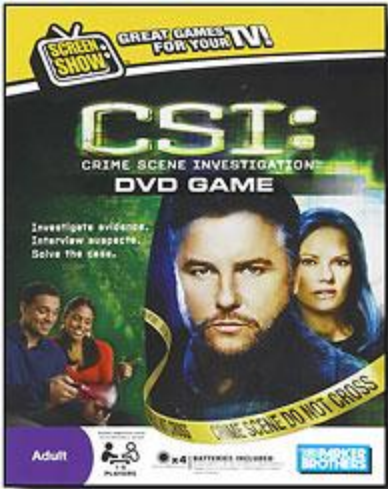
SL as an immersive learning environment?

“Second Life remains, by far, the ‘virtual world of choice’ for academics in UK universities and colleges.”

John Kirriemuir, Virtual World Watch

“It is evident that Second Life has moved from being an interesting oddity to a place where it is taken seriously by many educators.”

Liz Thackray, Associate Lecturer, Open University.



Problem-based learning in forensics?

- Student must learn roles and responsibilities from Crime Scene to Court
- What do the trainers need?
- Communication is a key skill
- Web 2.0 and plethora of e-learning tools
- Why consider virtual world as a learning tool?
- Re-usable, can log students and incorporate different scenarios that are not practical in RL

L2 BS2013 Biological evidence

Learning outcomes

Thinking skills

3. Analyse and interpret data relevant to the field.
4. Formulate hypotheses as to what has happened at the scene of the crime.

Subject-based practical skills

5. Demonstrate competence in the experimental techniques introduced during practical work and write accurate reports of experiments carried out using the techniques.
6. Collect, process, store and record biological samples that may be used as criminal evidence.

Developed 2 CSI scenarios

- Alleged overdose and alleged sexual assault
- Pre-brief with students in groups (5)
- Forensic orientation
- Health & safety procedural check
- Kit, evidence recovery
- correct packing and labelling
- documentation
- Individual student activity is logged
- De-brief



- How to create avatar, orientation
- Security and access
- Chatbot and server issues
- Stability of SL platform
- Costs (to students)
- quicker results from timetabled sessions
- IP...what the???*

additional learning benefits

- Social networking and co-operative learning
- Different cliques in class – anti-social, losing out on uni experience
- Varying levels of SL experience
- Became way of mentoring...
- Better class cohesion as a result
- It was fun....
- Beware of Distractions.....*clubbing* and Police Academy – training and virtual volunteering

PBL - PCR lab experiment

- Level 2 Molecular biology – 120 students
- Lab space restrictions
- Expensive reagents
- Limited opportunity to repeat experiments
- Lengthy, detailed procedure
- Students generally find them confusing

the experiment while it is in the processing cycle. You should
before beginning a new process.
to reset all processes. (For more
shooting item no. 1).

Note that DNA must be in

Camera controls:

Use the direction arrows, + (up) and - (down) to zoom in / out. If you want to reset the camera, click the Reset button in the menu to activate it (**View >> Camera Controls**). Note that you can also use **Mouselook** (**View >> Mouselook**), but there's a limit to what can do when in Mouselook.

001	002	005
010	020	050
100	200	500
Ignore		

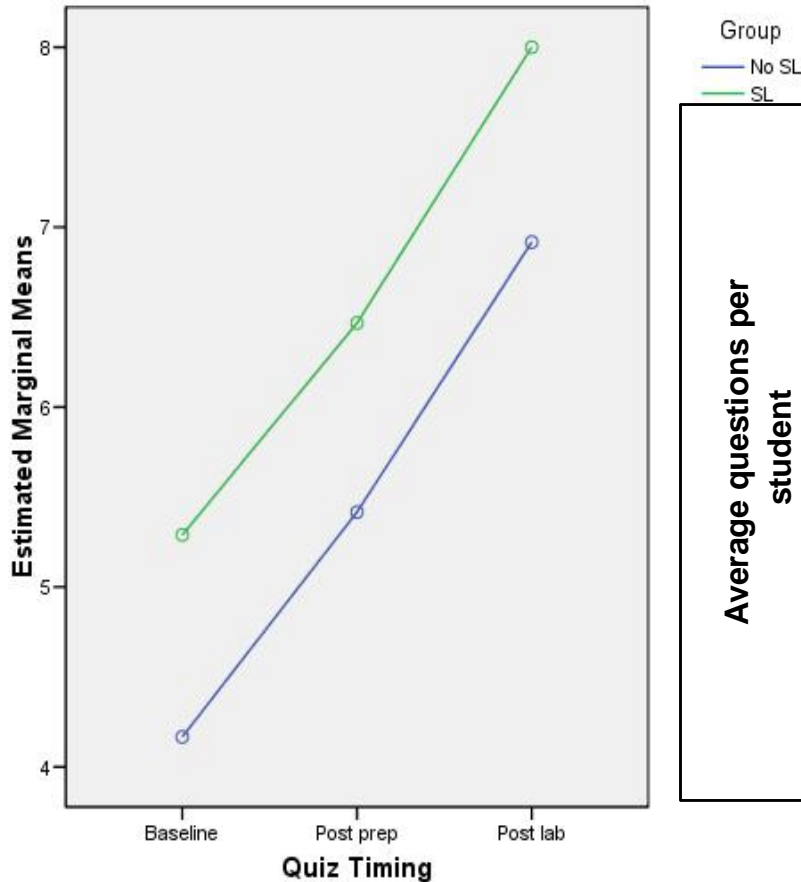


Tip changed. If still adding reagent(s), select the next reagent to add.
ers: Set P2 pipette to add 0.5µL of F Primer to the eppendorf.
ers: Touch Pipette to set volume (left-click on pipette).

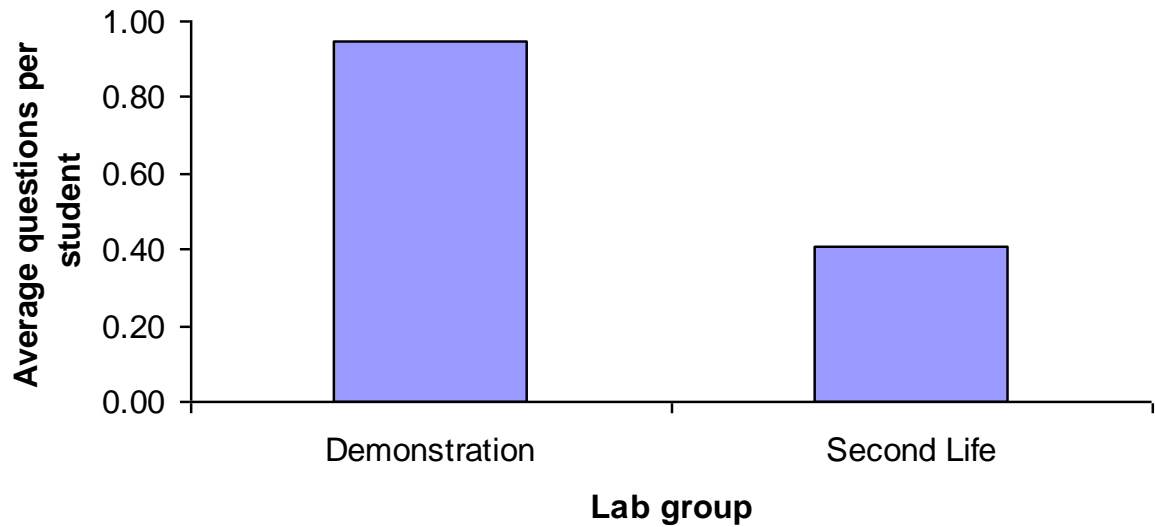


Learning gains?

Mean Quiz Scores for SL and Non-SL Groups



Rates of question asking in SL and real life lab



Perceived difference in time to perform practical and organisation.

Need a good rationale for using VW versus alternatives

- preliminary evaluative data suggests learning gains
- Student feedback: does not replace lectures, complements tutorials
- *For learning activities not practical in RL***
- Does activity need to be scalable – 1-by-1 CSI vs PCR classes (lag etc)
- Aids structuring of independent learning
- Improves class cohesion
- Evaluation of learning requires more research

Current research

- conferences
 - 4th International Blended Learning Conference, University of Hertfordshire, 17-18 June.
 - IADIS Conference, Portugal, 17-20 June.
 - Vancouver, September.
- papers
 - PCR lab is accepted for HEA Biosciences publication

Made possible by School & UEL L & T research funding

To: Olivia Corcoran

Cc:

Subject: RE: Virtual insa

Dear Olivia,

Great to hear from
Watched the link,

...from Hong Kong University

The infrastructure is certainly there for you to exploit. I wished I had that backup!!

There have been very few attempts at evaluating PBL videos and therefore you have the advantage of again being a pioneer!

However, the evaluation still evolves around the central question of learning and learning environment.

So, you need to establish that the learning objectives had been met; the links were easy and problem free; the flow was good and the students found it and easy to use. The latter bits are all technical in as far as your IT people would probably have a generic set you could pull questions from.

Re: the learning objectives; you need to prepare your own set and then ask the students to enter their own sets and make a comparison of their learning expectations of their learning.

Example:- That video of the scene kit. What had you hoped that the students would get from it? What did you want them to think about or learn from the top of my head:- the uses of all those things; what else is missing; what are the critical issues re: evidence collection at scenes?

Will be in Lisbon end of May for a Legal Medicine meeting – any chance you can get there? We can work on this a bit more if you like. Will also be in Antalya and doing a PBL workshop there, want to come?

Philip

From: Olivia Corcoran [mailto:O.Corcoran@uel.ac.uk]

Sent: Saturday, February 28, 2009 1:40 AM

To: Dr Philip Beh; Patricia O'Brien

Subject: Virtual insanity

Dear Philip,

Hope all is well, I have been inspired by your PBL materials you sent and we have now developed a virtual crime scene in Second Life. Scenario 1 a drug overdose and Senario 2 an alleged sexual assault. See the link below for the demo video. I will present an oral at FORREST (forensic teaching conference) in Liverpool in June.