Experience with virtual worlds for public engagement, science outreach and healthcare

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OECD
March 11th 2009
Summary

- Imperial College London – Dept of Biosurgery and Surgical Technology
- SciLands – Science and Technology Islands in Second Life
- Public engagement with Science (STEM) esp. young people
- Healthcare Applications of Virtual Worlds
  - Patients
  - Professionals
  - Policy and Public Engagement:
    ‘Second Health’ and NHS Review
  - Patient Safety and Information:
  - Social Inclusion
    eg. Gaining consent for marginalised groups
  - Design Innovation
  - Future Service Delivery
Imperial College London – Virtual Worlds

What we do

• Translational Research
• Events
• Communities
• Movies
• Software Engineering
• Simulations – Scenarios
• Shared low cost data visualisation

Why we do it

• To provide evidence base for clinical adoption of technologies
• Inter-disciplinary knowledge sharing, collaboration and Innovation
• Patient Information and Safety
• Design Innovation
• Professional Training
• Research into Healthcare Policy and Public Engagement
• Provide Future Healthcare Services

Department of Biosurgery and Surgical Technology
Applications in Healthcare ....
Imperial College is in the SciLands
- an open-ended International Interdisciplinary Education/Research Community

SciLands – founded Dec 06

**BERR (Future Focus)**
Nanotechnology (NPL)
**NASA, NOAA, CSIRO**
National Institutes of Health
Imperial College London
JPL, National Space Society
Mars Institute, Space Studies Institute
Caltech, EPA, DOE
SF Exploratorium
Tech Museum of Innovation
IYA2009
University of Denver
Elon University
Texas Wesleyan University
Memorial Sloane-Kettering Cancer Center
Princeton Institute of Advanced Research
Science Friday
Naked Scientists
University of Texas at San Antonio
Westchester University
ACM Supercomputing
Classroom of the Future
Navy Research Laboratories
North Michigan University
Provides imaginative settings and engaging presentations
Science meetings in SL - the new 'Royal Institution'

Come join us for Far Out Friday in Second Life (R) streamed live from the Adler Planetarium in Chicago!

http://slurl.com/secondlife/Astronomy%202009/50/200/31/

Friday March 6, 2009 5pm SLT
"The Galileo Wars: Thirty Years and Four Centuries"
Br. Guy Consolmagno — Astronomer, Vatican Observatory

Friday March 6, 2009 6:15pm SLT
"The Quest for Our Origins: The Search for Other Worlds and Life in the Universe"
Scott Gaudi — Prof of Astronomy, Ohio State University

Saturday, March 7 at noon SL

Seven composers will present original piano works, elicit audience responses to what is evoked by the music, and discuss their creative process. Discussion will be facilitated by Marly Milena, founder of the Octagon For Creative Exploration in Angelgate, which presents programs that combine art forms with personal exploration and sharing in community.
Collaborative Interdisciplinary Environments
Nuclear Power - for public engagement and training
Hazardous environments - training, education, public engagement
Elsewhere in SL - Second Nature: Darwin and the Beagle
Case Study: Schome Park in Teen SL

Project for National Academy for Gifted and Talented Youth, in conjunction with the Open University
Healthcare – Patients are there already

Patient groups in Second Life:

- Neurological Disorders
- Nutrition
- Obsessive Ambulatory Disorder
- Organ donors
- Polycystic Ovary Syndrome
- Chronic Pain
- Psychosis
- Prostate Cancer
- Self Harm
- Sexual Health
- Epilepsy
- Social Anxiety
- Spina Bifida
- Traumatic Brain Injury
- Sensory and Motor Disability
- Substance Misuse

- Mental Health
- Cluster Headache
- Counselling
- Crohns and Colitis
- Deaf community
- Dementia
- Depression
- Diabetes
- Disability
- Red Cross
- Endometrials
- Fibromyalgia
- Dissociative Identity Disorder
- Horses for healing
- Hospices

- Irritable Bowel Symptom
- Aging
- Leukemia and Lymphoma
- Facial Differences
- Loss, death and bereavement
- Manic depression
- Muscular Dystrophy
- Mobility Impaired
- Mental Health
- Multiple Sclerosis
- Multiple Personality Disorder
- Smoking

Sources: slhealthy.wetpaint.com and HealthInfo Island

Department of Biosurgery and Surgical Technology
Surgeons have held conferences there
International Virtual Association of Surgeons, Apr 2008

47 Delegates
8 Professors, 5 countries

Surgeons have held conferences in Second Life
Leong et al. BMJ.2008; 337: a683
NHS Managers have discussed strategy there
Medical Students are being trained there
Medical Students are being trained there ... accessible to patients too
Second Health – Public Engagement

- Future of health care provision in London
- Need for visualisation of strategy

Department of Biosurgery and Surgical Technology
<table>
<thead>
<tr>
<th>N</th>
<th>August 2007/August 2008</th>
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<tbody>
<tr>
<td>459</td>
<td>Respondents</td>
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<tr>
<td>459</td>
<td>25% Health or social care professionals</td>
</tr>
<tr>
<td>459</td>
<td>52% Members of the public</td>
</tr>
<tr>
<td>337</td>
<td>83% Would recommend to a friend or colleague</td>
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<tr>
<td>390</td>
<td>72% Easy to use</td>
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<tr>
<td>390</td>
<td>68% Informative</td>
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<tr>
<td>390</td>
<td>93% Worth the effort</td>
</tr>
<tr>
<td>109</td>
<td>76% Of those who found it difficult still thought it worthwhile</td>
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<tr>
<td>342</td>
<td>62% Toured alone</td>
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<tr>
<td>131</td>
<td>40% Of those who saw others interacted with them</td>
</tr>
<tr>
<td>52</td>
<td>52% Of those interactions were helpful</td>
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Inequalities in people's health

- Life expectancy varies across the country
- Lowest life expectancies are concentrated in London, Midlands, Yorkshire, North West and North East
- Partly due to unhealthy behaviours and societal factors.

Source: Office for National Statistics

Second Health: Public Engagement

Department of Biosurgery and Surgical Technology
Real simulated patient in a real simulated operating theatre
Methods - Virtual Operating Suite
Virtual Worlds Technology Enhances Medical Student Training In The Operating Room


n=33.

Virtual worlds group less stressed about visiting real world OR (P=<0.004)
Virtual Hospital - Simulated Patients

Department of Biosurgery and Surgical Technology
Virtual patient in a virtual theatre suite
- Rehearsal and Patient Safety

Project by Imperial College for Training Hub for Operative Technologies in Healthcare (THOTH)
Clinical Scenarios
Nurses Clinical Scenario - Results

The scenario was a realistic clinical situation.

The tasks performed in the scenario were similar to those in real life.

The virtual patient responded appropriately to interventions.

The medical device responded appropriately to interventions.

I would perform the same assessments and intervention in real life.

Participant agreement with statement (%):
Simulated Medical Devices
The Promise of Virtual Worlds

- Inter-disciplinary knowledge sharing and collaboration
- Public Engagement
- STEM Engagement for young people (and old!)
- Social Inclusion
- Social cohesion - families explore, learn and play together
- Patient Safety/Practice in a Safe Environment
- Professional Training/Hazardous Environments
- Role Play/ Service Design/ Inter-agency communication
- Provide future healthcare and other public services
- Contribution to Carbon Neutrality
http://www.nanodave.com
http://tinyurl.com/mmdl-icl
http://www.secondhealth.org

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