VIRTUAL PATIENTS IN SECOND LIFE

David Burden
Daden Limited
About Daden

- Full service Virtual Worlds consultancy
- In Virtual Worlds since late 1990s, and Second Life since 2004
- Focus on Learning, Integration and Artificial Intelligence
- Member, Serious Games Institute
- Based in Birmingham UK, and Second Life
Client: Coventry University & St Georges (JISC funded)

Aim: Develop problem based learning tools for Second Life

Date: 1Q08 - 1Q09

World: Second Life

Duration: 12 months

Audience: Paramedic students

Professional care managers

Target Benefits:
Richer learning and assessment environment
Greater learner engagement
Better care decisions

Follow-up:
PIVOTE Open Source Project
People Skills Scenarios

- Care Professionals
- Robot Avatars as:
  - Actors in Machinima
  - Actors in eDrama
  - Scenario lead-ins
  - Scenario focus
- Open ended PBL scenarios
- Daden Discourse AI engine
Procedure Based Scenarios

- Patient assessment and treatment
- Using Medbiquitous Virtual Patient standard
- Fixed end PBL scenarios
- Student assessment, not training
- Daden MVP cross-world player

http://www.medbiq.org/
3 groups of 4 students simultaneously
Should have been through SL orientation
1 - 2hrs SL familiarisation with SGUL orientation
Test scenario
Rotate through 3 virtual patient cases
  2 “object based”
  1 “screen based”
Facilitators in SL and RL
Test text and voice chat, same and different rooms
Additional refinement/testing followed
Video and text chat capture & debrief
PREVIEW - Feedback

- Student
  - Saw as valid addition to actor-based patient
  - Wanted single user scenarios for revision
  - Screen-based scenario not liked

- Tutor
  - Good task focus
  - Mixed student ability
  - New team dynamics

- Technical – MVP model worked well
- Pedagogical – open nature of SL supported PBL
- Communications – voice best
The students seem to enjoy the scenarios and engaged in the scenarios well.

I found that students assessed the patient as they should. The students were able to talk about ways to assess the patient and discuss each step in detail before moving on.

Everyone had a good attitude throughout the day.

Sometimes too much going on if you were the clicker, and sometimes easy to get carried away. Would be something you'd get used to.

Scenarios much easier to use with voice to collaborate, more natural.

with text that you can go back and see what everyone has said.

Liked extra resources such as ECG. Would be useful to have more external resources e.g. JCAL guidelines to look up drug dosage.

Making decisions helped learning. Decisions would be better if affected scenario more.

Sometimes hard to realise what could and couldn't do. Quite impressed by functionality.

Good learning experience to mix trusts and look at other policies. Has potential to train for major incident.

With refinement the scenarios would be really good.
vLearning Issues

- **Tutors** need to focus on content and structure, not the nitty-gritty of Second Life (or other) virtual design.

- **Organisations** need to know that their content is protected, so it doesn't matter which virtual world they use, they can still use the lessons.

- **Students** would prefer the full immersive experience, but still need access to content if they don't have the computing power or bandwidth to access a full virtual world.
An exercise authoring system for virtual worlds which:

- Lets you write an exercise once, but play it in multiple virtual worlds, and on the web
- Clearly separates content, structure and appearance
- Allows you to create different user experiences for the same content based on levels of user expertise, and/or the session objective (e.g. novice, advanced, revision, assessment)
- Captures student performance data and allows export to a VLE
- Lets you exchange objects with other users and embed them in your own exercises
- Is based on an open XML standard (MVP) and is open-source
The PIVOTE System

SL Controller

SL Objects

Web User

Mobile User

PIVOTE Player

PIVOTE Manager

Exercise (defined in MVP XML)

Student Performance Data

SL

WEB

MVP/XML
PIVOTE Activity Map
The PIVOTE Flow

Object touched, generates hidden chat message containing Node ID to SL Controller

Controller relays Node ID to web-based player

Player looks up Node ID in exercise and gets response

Player builds web page with response for display, and sends data packet into SL with response

Object, if instructed, displays any text response, changes any internal state, and reflects in loc/appearance

Controller displays web page from URL, sends response data on hidden chat channel to object, and chats any text response on public chat

PIVOTE Exercise Definition
PIVOTE Node Model

Activity Nodes
- Initial Assessment

Check:
- Airway
- Breathing
- Circulation

Visual inspection

Data Availability Nodes
- Text & image available
- Text & audio available
- Image
  - Off - Wound
  - On - Suit

Text Asset
- "The patient is talking..."
- "The patient is taking 40 breaths per second."

Media Asset
MVP SL Player

Case: paramedic1   Node ID: start

Label: Start
Welcome to the start of the Paramedic training scenario. You are now on call. Please prepare to receive a dispatch call.

Call Information (a1)

Counters: Stage = 1
Heartbeat = c. 120bpm
Green choices = 0
Red choices = 0
Green choices = 0
Green choices = 0

Back
PIVOTE Scenario

Call Information

There has been an RTA involving a bike and a car. The biker is seriously injured. Please proceed immediately to the scene.

Options are available.
PIVOTE Controller

Call Information

There has been an RTA involving a bike and a car. The biker is seriously injured. Please proceed immediately to the scene.

Options are available.

1. Police (rr1)
2. Fire Brigade (rr2)
3. Medical Support (rr3)
PIVOTE Virtual Mannequin
PIVOTE Manager

PIVOTE Editor - Main Menu -

These are the cases which you have access to:

- Test simple case
- advanced_pivote
- dagen-paramedic-demo
- intro_to_pivote
- simple_test_case
- sophie
- virtual_patient_demo

Further Options:

- Test Cases on Web
- Create New Case
- Import New Case (create a blank and then import file)
- Show hidden cases
- Refresh List

PIVOTE Editor - Edit/Add Activity Node (More on objects) - advanced_pivote

ID

Label

Counters

Conditional Rule

Navigate Global

Availability Node

Select Node

Links

Save Save&Close Cancel Delete
## Session List: dagen-paramedic-demo

<table>
<thead>
<tr>
<th>Session ID</th>
<th>Case</th>
<th>DTG</th>
<th>Avatar</th>
<th>Controller</th>
<th>Tutor Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>s1279870323648.dat</td>
<td>dagen-paramedic-demo</td>
<td>Mon Jan 27 07:09:25 2009</td>
<td></td>
<td>dagenEdulinfo</td>
<td>TestGroup</td>
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<tr>
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<td>Mon Jan 27 07:09:25 2009</td>
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<td></td>
<td>dagenEdulinfo</td>
<td>TestGroup</td>
</tr>
</tbody>
</table>

### Session Detail: dagen-paramedic-demo - s125180036978.dat

<table>
<thead>
<tr>
<th>Main Menu</th>
<th>Case Menu</th>
<th>Session List</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Session</th>
<th>s125180036978.dat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>dagen-paramedic-demo</td>
</tr>
<tr>
<td>DTG</td>
<td>Sun Jan 26 18:00:36 2009</td>
</tr>
<tr>
<td>Controller</td>
<td>dagenEdulinfo</td>
</tr>
<tr>
<td>Tutor Group</td>
<td>TestGroup</td>
</tr>
</tbody>
</table>

**Node History**

- `start @ 18:00:36`
- `journey_a&@ 18:1:21`
- `journey_specialist @ 18:1:30`
- `journey_specialist @ 18:1:38`

**Counters**

- `stage = 1`
- `greens = 1`
- `ambers = 2`
- `reds = 0`
- `elapsedTime = 2400`
- `exposed = 0`
- `airwayinuse = 0`
- `breaths = 18`
- `pulse = 86`
- `pain = 2`
- `bm = 2.7`
- `spo2 = 98`
- `etco2 = 32`
- `bp = 148/67`
- `temp = 36.9`
- `flow = 400`
- `conscious = 1`
- `canwalk = 0`
PIVOTE Open Source

- JISC funded
- GPL v3 Licence (free use but share public changes)
- SL site for controller and objects copy and sharing
- Google code site for player download (source)
- Web site and Wiki for support and sharing exercises
- Other services from Daden (and others):
  - Player/Manager hosting
  - Training
  - Exercise creation/consultancy
  - Custom developments

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Second Life: Corro Moseley
Second Life sim: Daden Prime