Simulation Training; Allowing Students to Fail Safely

Janet Campbell, Andy Reid, Amela Bogdanovic & Brad Benhart
- Lorry
- Cabin
- Shuttering
- Site Manager
- M & E
- Whinging
- Sacked
- Twiddly Bits

- Truck
- Job Trailer
- Formwork
- Superintendent
- MEP
- Bitch & Moan
- Fired / Let Go
- Pointless Stuff architects add
Visiting Scholar
Key Activities

- Sim Centre
- Teaching in the British System - Masters Capstone
- ERASMUS Grant - EU partnership
- Miscellaneous
  - K-12 Outreach
  - Construction Technologies
  - Considerate Constructor
Faculty of Engineering, Environment, and Computing

School of Energy, Construction & Environment
Energy Construction and Environment

► Three distinct areas
  • Energy
  • Oil & Gas
  • Construction
  • Civil Engineering & Building
  • Environment
  • Geography & Disaster Management
  • Humanitarian Engineering

► Approx. 2000 students

► 100 academic staff
  • 5 Profs/Readers,
  • 70 Principal, Senior & Lecturers,
  • 8 Assistant Lecturers.
  • 8 Technical Support Staff
Simulation

- Aircraft
- Military
- Medical
- Marine
Simulation Centers

- 4D
- Interactive
- Immersive
- Dynamic
- Flexible
- Able to create a real-world situation
- Role Playing
- Virtual Technology
Coventry University Simulation Centre
Sim Centres
Coventry University

https://www.youtube.com/watch?v=Ti6HEE1eroM
CU Simulation Centre

- 10m Curved Screen
- 8 standard rooms
- 1 meeting room
- Observation room
Multi Sector

- Construction
- Emergency Services
- Oil and gas
- Retail
- Utilities
- Automotive
Fail Safely

- You won’t lose your job
- The money isn’t real
- No one can get killed
Creating a Scenario

<table>
<thead>
<tr>
<th>Simulation</th>
<th>Date</th>
<th>Site Hut</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6/4/17</td>
<td>2</td>
<td>Moh</td>
</tr>
</tbody>
</table>

### Scenario: Drug paraphernalia found in plot

<table>
<thead>
<tr>
<th>Possible Outcomes</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does not believe operative - needs to see it for him/herself</td>
<td>Sits by door</td>
</tr>
<tr>
<td>2. Blames neighbours/operatives - begins random drug testing</td>
<td>Stands</td>
</tr>
<tr>
<td>3. Police become involved</td>
<td>Introduces himself</td>
</tr>
<tr>
<td>4. Phones for help</td>
<td>Asks name &amp; where you work</td>
</tr>
<tr>
<td>5. Other</td>
<td>How big crew? working there?</td>
</tr>
<tr>
<td></td>
<td>I’ll look into it</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Possible Actions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No action at all</td>
<td></td>
</tr>
<tr>
<td>2. Tells operative to make the area secure - no access</td>
<td></td>
</tr>
<tr>
<td>3. Tells operative to clear it up</td>
<td></td>
</tr>
<tr>
<td>4. Stays calm.</td>
<td></td>
</tr>
<tr>
<td>5. Informs Contract Manager and H&amp;S Manager or Police</td>
<td></td>
</tr>
<tr>
<td>6. Asks relevant questions.</td>
<td></td>
</tr>
<tr>
<td>7. Gives clear instructions</td>
<td></td>
</tr>
<tr>
<td>8. Other</td>
<td></td>
</tr>
</tbody>
</table>
Assessment

- Actor Feedback
- Instructor Feedback
- Peer Feedback
- Self - Reflection
Immediate Feedback
Peer Feedback
Instructor Feedback
Lessons Learned - Feedback
2 most important Keys

1. The video reflection for a student is the key - It builds self-awareness
2. Feedback from instructors, actors, and peers

How often have we each seen ourselves in a professional situation?
Lessons Learned

- The screen
- People to people simulation
- Actors - They were impressive in action
Student Testimonies

- “I got more out of the simulation than a whole semester course.”
- “The simulation centre provides a good opportunity to apply learning and get used to real life scenarios.”
- “The simulation centre day is a very good, healthy shock to the system of the reality of the business and discipline.”
- “Ability to think quickly and make decisions has improved after this particular module.”
Other Uses for the Sim Center

- Integrated BIM models
- OIL (On-line International Learning)
- Disaster Management
- Virtual Field Trips
- Environment Assessment
Next Steps / Future

- Pre and Post Assessment
- Continued OIL projects
- Integration across other disciplines
Sim Centre
Theory

Kolb

Gibbs, Scaffold of learning (ZPD)

Johari

Learner retention
Practice

- Learning outcomes
- Scenario and injects
- Feedback
- Observers
Key Related Areas

- Civil Engineering
- Architectural Technology (versus traditional Architecture)
- Building Services Engineering
- Building Surveying
- Construction Management
- Quantity Surveying

Other Areas

- Environmental Engineering
- Geography
- Disaster Management and Emergency Planning (this is in the sense of police / fire / red cross)
Agenda

Today

• Tour of the simulation centre - ‘live’
• XVR Demonstration
• Outline of Coventry University courses

Tomorrow

• Tour of Science Health Building
• Working across the University
• Learning Outcomes, Scenarios and Feedback
Coventry University

- Gold for outstanding teaching and learning
  Teaching Excellence Framework (TEF)
- 2nd in UK for Teaching Excellence (TEF)
  Times Higher Education metrics ranking 2017
- Top 6 for Student Experience
  The Times and Sunday Times Good University Guide 2018
- Ranked No.12 UK University
  Guardian University Guide 2018
- 97% of graduates employed or in further study
  DLHE survey 2015/16 - six months after graduating
- Queen’s Award for Enterprise
  International Trade 2015
Simulations = Medical & Flight
Experiential Learning

- Immersive
- Safe
- Feedback
- Reflection