3D virtual geology field trips

Conference or Workshop Item

How to cite:


For guidance on citations see FAQs.

© 2013 The Open University

Version: Version of Record

Link(s) to article on publisher’s website:
http://aquarobo.com/abyss/MIWoSE.htm

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online’s data policy on reuse of materials please consult the policies page.

oro.open.ac.uk
3D Virtual Geology Field Trip

Dr Shailey Minocha
email: shailey.minocha@open.ac.uk
Second Life: Shailey Garfield

Being in Second Life

• enjoyable
• sense of presence, co-presence
• sense of engagement
• collaborative learning
• contextual learning
Projects in Second Life

- socialisation
- team working in distributed teams
- design of 3D learning spaces
- navigation and wayfinding in 3D learning spaces

Institutional perspective

- software not owned by us
- control
- availability
- not perceived for education alone
Funding came through in 2012

- Chose virtual Geology trip as the candidate App for development
- Compared: Unity 3D, Open Sim, Second Life
- Chose Unity 3D as the platform
  - browser-based App
  - stand-alone App and not a part of a social world

3D Virtual Geology Fieldtrip

- scope to demonstrate interactivity, sense of being there
- realism and high degree of fidelity
- visual and spatial experience not constrained by a ‘flat’ 2D user interface
- helps internalise the sense of exploration
Field trips in our institution

• real field trips two or three times a year (tutor-led)
• DVD to facilitate reflection and activities
• DVD also helpful for students who are unable to go for real field trips

Lake District in the UK

• Skiddaw field area
• 6 sites (site 1 in Phase 1 of the project)
• Skiddaw group of rocks: sandstone, slates, granite
• Geological significance
  – how *metamorphism* varies in the Skiddaw group sedimentary rocks due to the intrusion of the Skiddaw granite
  – how the Skiddaw group rocks *deformed* during the mountain-building event
Video Part 1 (what to look for?)

- audio and textual guidance (tutor-led)
  - introduction
  - Geology of the area
  - instructions for learning activities
- choice of avatars
- choosing equipment for the field trip
- list of learning activities
- using the compass, sketch points and sketching

3D Virtual Geology Fieldtrip App

- Realism
  - design of the environment or landscape
    - LIDaR data
    - Photogrammetry data
    - 3D modeling to weave it together
  - learning activities (similar to a real field trip)
    - choosing the equipment, learning to use the compass, sketching rocks
Video Part 2 (what to look for?)

- student investigates grain composition of one rock
- overlaying maps on the landscape
  - ordnance survey map
  - Geology map
- cross-section of the mountains
  - showing the rocks (geology) underneath
- different views in each of the contexts
  - overhead, North-East, North-West, etc.

3D Virtual Geology Field Trip App

- Non-realism (things you can’t do in a real field trip)
  - microscopic views of rocks within the environment
  - draping maps on the landscape
  - cutaways into the mountainside to see the geology underneath
Opportunities for students and educators

- practice/training for real life field trips
- reflect on your experiences of real field trips
- fly across the landscape
- additional field trip to a real field trip
- could replace a real field trip if resources are limited

Limitations: student learning and experiences

- risk awareness skills
- challenges of being outdoors
- challenges posed by the weather
- challenges of using the equipment in real life
- bonding with other students
Challenges of 3D virtual field trips

- costs involved in design, development and evaluation
- multi-skilled team and specialist developers are required
- student training
- overcoming the (negative) perceptions that people have about virtual field trips
- how best to communicate that virtual field trips are not being proposed to replace real field trips

For further conversations

- Shailey Garfield (Second Life)
- Email: shailey.minocha@open.ac.uk
- Profile: http://uk.linkedin.com/in/shaileyminocha
- Publications: http://oro.open.ac.uk/view/person/sm577.html