

Geospatial technologies in distance teaching and learning in Science

Tom Argles, Sarah Davies

AIMS OF PROJECT

- We will gather the views of Open University students and tutors on:
 - How **effective** GIS-based teaching is in existing OU Science modules
 - How **easy** geospatial technology is to adopt and use
 - How geospatial technologies **compare** with traditional paper maps for distance learning
 - Whether GIS-based materials help students grasp '**threshold concepts**' such as 3D visualization
- We will identify the **strengths** and **benefits** of GIS-enabled distance teaching
- We will pinpoint **problems** with the GIS approach to distance teaching, and suggest possible **solutions** (e.g. technological, pedagogical, or logistical)
- We will **modify** the S276 Geology Blog (Fig. 1) based on initial findings for re-launch in late 2011

METHODOLOGY

Questionnaire: tutors

Eliciting ALs' **opinions**, prior GIS experience, and examples

Questionnaire: students

Assessing **prior GIS experience**, views on geospatial technology in the module, examples of specific **benefits** and **problems**

Face-to-face interviews

Collecting more detailed information on GIS-based aspects of S276 and S288 from students and tutors

Statistical analysis

Collation of IET data from end-of-module reports, and requesting additional data relevant to the **student experience** of GIS technologies (e.g. demographic, educational background, region, IT experience/facilities, ethnicity, career, mobile ownership)

We will focus our evaluation on 2 modules (**S276 Geology** and **S288 Practical Science**):

S276: Nov 2010 – Jul 2011, and Oct 2011 – Jun 2012

S288: Feb – Sept 2012; Feb – Sept 2013

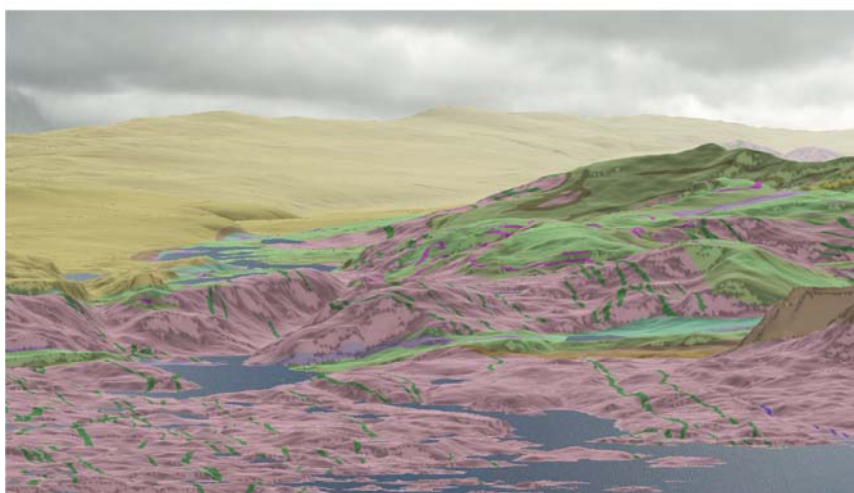
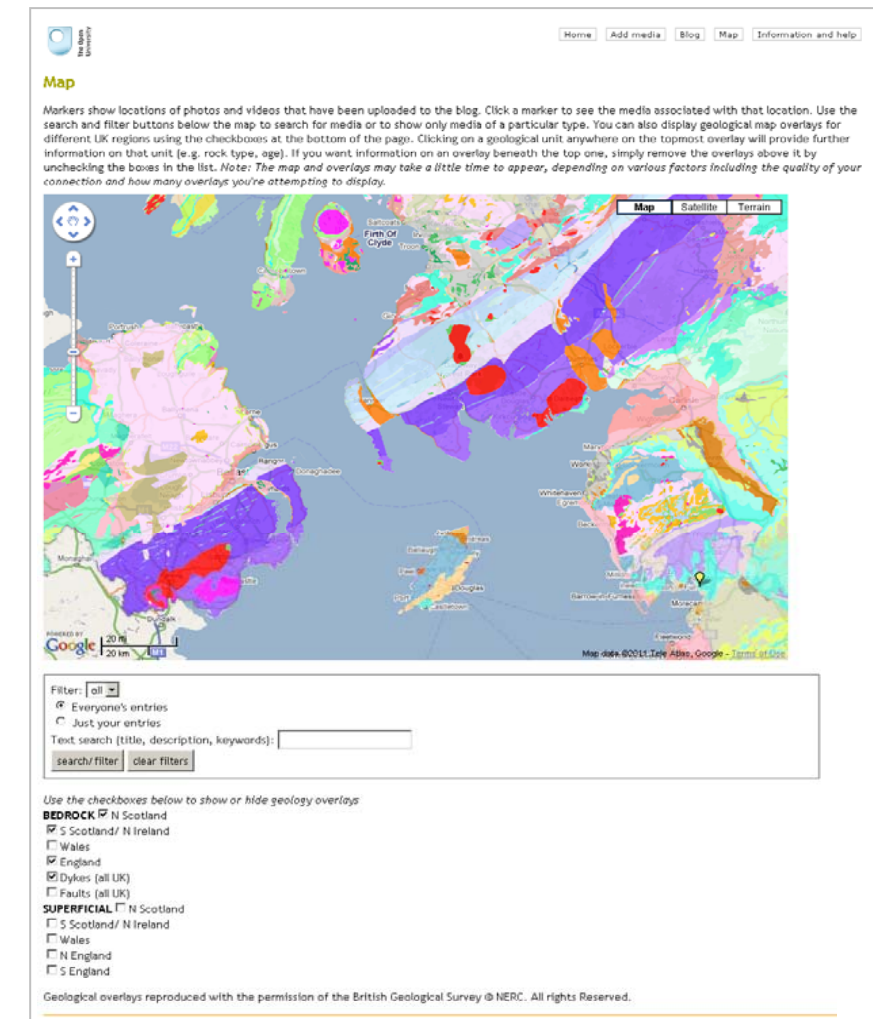


Figure 2 3D model of bedrock geology, Assynt

ANTICIPATED OUTCOMES

1. Identifying particular **problems** – and **benefits** – associated with GIS software and materials in a distance learning context. *How can we maximize the advantages of using GIS in distance teaching?*
2. Documenting **solutions** to GIS-related problems in module production and presentation. *What can be done to alleviate student, tutor and production team difficulties in using GIS?*
3. **Improving** S276 Geology Blog and S288 presentation (esp. Remote Observation unit). *What specific modifications can we make to benefit the students on these modules?*
4. Identifying **issues** involved in geolocation (photos, videos, data) for distance learners. *Are students comfortable engaging with GIS technology in this way?*
5. **Dissemination** of results via: (i) at least 1 peer-reviewed manuscript; (ii) conference papers; (iii) series of internal papers on using GIS materials/software in distance teaching; (iv) podcasts on using open-source GIS software; (v) internal workshops/seminars connecting different communities using GIS at the OU.

eSTEeM

Open to challenges

Exploring the frontiers of STEM education