

How on Earth can we help geography teachers?

David Bailey, British Geological Survey

If you work in geography or earth science education, you may know that the British Geological Survey has been producing geological maps and books since 1835. But did you know that we also have a broadly based educational outreach programme?

BGS has a broadly based expertise across the earth sciences. Our research covers hazards such as earthquakes and tsunami, volcanic eruptions, landslides, mud flows, subsidence and radon gas; resources such as hydrocarbons, aggregates, minerals, and building stone; environmental concerns such as climate change, clean water supplies, contaminated soils, protection of seabed habitats; and applied IT skills encompassing GIS, 3D modelling and computer animation.

Ambassadors

So how can teachers benefit from this expertise? Well, the simplest thing to do is get in touch with the schools liaison contact at one of our offices (see below). One of the most direct ways we can help is through our Science and Engineering Ambassadors. The SEA scheme is supported by the DTI and DFES and provides a framework for vetted, practising scientists to act as role models for careers in science. The scheme is administered by SETNET and there are more details on their website. BGS currently has over 60 Ambassadors available to visit schools and other centres with a remit to inspire students at all educational levels through hands-on learning experiences, role-play, and careers workshops.

Secondary schools can visit our headquarters near Nottingham to learn more about how we apply technology to earth science and environmental problems, or to find out about career opportunities. These visits are administered on our behalf by the Industrial Trust as part of a wider programme of school visits.

Volcano activity

One of our most popular 'enterprise' activities is based on real-life events leading up to the eruption of the Soufrière Hills Volcano on Montserrat in 1995. The children take on the roles of the local population, senior politicians, the emergency and security services as well as geoscientists and decide how to respond to this dramatic and life-threatening hazard. The Ambassadors who lead this activity have been closely involved in monitoring the volcano over many years and are able to bring the activity to life through their personal experience of working in a Caribbean setting that, while many ways idyllic, can also be very challenging. The volcano continues to rumble on and the continuing effect on the island's population and tourism to the area provides plenty of material for discussion.

Events

Our Ambassadors also take a prominent role in events for students at our own research centres and 'on the road'. For instance, we hold an annual 'Fossil and Rock Show' at our headquarters near Nottingham for up to 1000 primary school children and their teachers. In recent years this has been supplemented by a family event held jointly with Rockwatch, the club for young geologists. Both of these events are held in celebration of National Science and Engineering Week in March. Similarly, our

Edinburgh office holds an Open Day and Schools Week every autumn. Our other offices also join in with their own events and we attend many special festivals and exhibitions aimed at young people across the UK.

Special projects

Ambassadors are also involved in special projects that enhance and extend the curriculum. A recent example is the 'Celebrity Rock Idol' project at Richard Bonington Primary School in north Nottingham. The aim of the project was to enthuse children about rocks using a format similar to a well-known TV programme and encourage the children to work collaboratively and creatively. We were able to help the school win a Royal Society Partnership Grant which was used to buy microscopes for them to carry out their own investigations. Each team of children chose a 'celebrity' rock to champion with the support of a BGS Ambassador. Some of the grant paid for the children to travel to our research centre where they were able to use state-of-the-art analytical equipment, such as the scanning electron microscope, to complete their research. Six groups of children made it to the final where they presented the case for their particular 'Rock Idol' in front of a 'celebrity' panel of judges and — the final arbiters — their class-mates.

Another initiative supported by BGS, due to be launched in early summer 2007, is the Schools Seismology project. This project, largely funded by NESTA, will allow schools in the UK operating their own simple seismometers to record large earthquakes from anywhere in the world. A suitable seismometer is currently being designed and tested by SEP (The Science Enhancement Programme) and BGS are supporting the development of some supporting classroom activities and a training course for teachers. During a typical week there are three earthquakes bigger than magnitude 6.0 in the world which the schools stand a reasonable chance of recording. As a part of the project, BGS will launch a website where schools can exchange data that they have recorded on their seismometers and find useful teaching resources.

Training for teachers

Perhaps the best way to enthuse students about a subject is to inspire their teachers! An ambitious aim, maybe, but we have taken the first step with our professional development workshop on 'Mapping Hazards' arranged through the Education Business Partnership. The workshop provides an update for secondary teachers in key areas relevant to the geography curriculum, including recent research on earthquake hazards, the Indian Ocean tsunami, geophysical techniques, landslide mapping, GIS products and remote sensing techniques. It features a hands-on 'real world' exercise using the resources of the National Geological Records Centre, and a visit to our very own 3D 'cinema' where delegates can immerse themselves in three-dimensional virtual reality landscapes. The first workshop, held in 2006 was very well received — "An excellent day. One of the best courses I have been on in a long time" and "Very useful...Great examples. Great for coursework"; there will be three more this year.

Web-based resources

Of course, not everyone is close enough to one of our offices for us to help in person, but our website offers a wealth of resources. It has been highly recommended by Schoolzone and last year the Popular Geology was one of the Yahoo! 'Educational Finds of the Year'. Visitors are invited to 'Ask-about-Geology' using our free enquiry service for schools. Other resources include 'Make-A'Map', a simplified, interactive

geological map of the British Isles which can be customised online or downloaded and projected on to the classroom whiteboard. For the advanced student 'Britain Beneath Our Feet' comprises dozens of thematic maps showing the location of hazards, resources and other geological phenomena within the UK, while the GIS-based 'Geology of Britain' application provides more detailed geological information, including earthquake locations. For the seismologically minded there are links to our continually updated database of British earthquakes and alerts for major events worldwide. And there is information, much of it in convenient downloadable versions, on fossils, the history of life on Earth, the Montserrat volcano and more. Our own magazine, *Earthwise*, is also available online and as downloads.

All our publications can be purchased via the online shop, but educational customers can enjoy a special discount by writing to the Sales department. Two of our most popular maps, the 1:625 000 scale geological maps of the northern and southern parts of the UK will be published in new editions in May this year. For the first time, a companion booklet to each map will be available to explain how the map has been constructed and describe some of the major units, formations and groups that are shown on it. The maps and booklets together provide a succinct history of the geology of UK.

Digital geological map data

Since November 2006 our vector geological map dataset, DiGMapGB, at the 1:50 000, 1:250 000 and 1:625 000 scales has been available to subscribing university departments for teaching and non-commercial research use at very substantially discounted rates under an agreement with the Higher Education Funding Council for England and Wales (HEFCE). For departments who do not subscribe to the HEFCE service, there is a parallel scheme under which the same datasets are offered at very similar discount rates. For NERC-supported research the data use charges are waived entirely.

We plan to make the new DiGMapGB-625 dataset, upon which the 1:625 000 scale maps and booklets mentioned above are based, and the 1:1M scale 3D geological model of the UK available as free downloads from the BGS website for non-commercial use.

If you would like to find out more about BGS's educational programme, why not visit our website or get in touch with one of our schools liaison contacts for more information.

Schools liaison contacts

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Main BGS website: www.bgs.ac.uk

Popular Geology and Education: www.bgs.ac.uk/education

Ask-about-Geology: www.bgs.ac.uk/ask

Earthwise magazine: www.bgs.ac.uk/earthwise

Online shop: www.geologyshop.com

SETNET: www.setnet.org.uk

Selection of images

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Celebrity Rock Idol (photos by Bel Brown):

- Children from Richard Bonington Primary School sorting microfossil samples under the microscope (DSCF0787.JPG)
- Children from Richard Bonington Primary School viewing their 'Celebrity' rock sample on the BGS's scanning electron microscope (DSCF0788.JPG)
- Pupil from Richard Bonington Primary School preparing final presentation on her 'Celebrity' rock (DSCF0816a.JPG)

Detail of BGS map from popular publication aimed at hill-walkers (Snowdon map.jpg)

CPD training on Hazard Mapping

Secondary geography teachers take part in a hands-on exercise in the BGS's National Geological Records Centre (P2130001.JPG and P2130004.JPG)

Murchison Open Day/Schools Week

Gold panning at the BGS Edinburgh Open Day (P640834.jpg)

School party in the 3D visualisation suite during BGS Edinburgh Schools Week (P640834.jpg)

National Science and Engineering Week

Visitor to BGS 'Fossil and Rock Show' gets to grips with a mammoth bone (PlumtreeSchl_NSW2007_54.JPG)

Visitor to BGS 'Fossil and Rock Show' examining gold grains under the microscope (P591372_S2_NSW.jpg)

Images from website:

Make-A-Map application

Geological Timeline