



The mobile GeoBus outreach project: hands-on Earth and Mars activities for secondary schools in the UK

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GeoBus (www.geobus.org.uk) is an educational outreach project that was developed in 2012 by the Department of Earth and Environmental Sciences at the University of St Andrews, and it is sponsored jointly by industry and the UK Research Councils (NERC and EPSRC). The aims of GeoBus are to support the teaching of Earth Science in secondary schools by providing teaching resources that are not readily available to educators, to inspire young learners by incorporating new science research outcomes in teaching activities, and to provide a bridge between industry, higher education institutions, research councils and schools. Since its launch, GeoBus has visited over 160 different schools across the length and breadth of Scotland. Just under 35,000 pupils have been involved in practical hands-on Earth science learning activities since the project began in 2012, including many in remote and disadvantaged regions. The resources that GeoBus brings to schools include all the materials and equipment needed to run 50 - 80 minute workshops, and half- or whole-day Enterprise Challenges and field excursions. Workshops are aimed at a class of up to 30 pupils and topics include minerals, rocks, fossils, geological time, natural resources, climate change, volcanoes, earthquakes, and geological mapping. As with all GeoBus activities, the inclusion of equipment and technology otherwise unavailable to schools substantially increases the engagement of pupils in workshops. Field excursions are increasingly popular, as many teachers have little or no field training and feel unable to lead this type of activity. The excursions comprise half or full day sessions for up to 30 pupils and are tailored to cover the local geology or geomorphology.

Enterprise Challenge are half or full day sessions for up to 100 pupils. Topics include "Journey to Mars", "Scotland's Rocks", "Drilling for Oil", and "Renewable Energy". Both of the energy Enterprise Challenges were designed to incorporate ideas and datasets from Maersk Oil Ltd, Centrica Upstream Research and Shell. Pupils are assigned roles (geologists, geophysicists and engineers) and work in teams on the datasets provided. Journey to Mars involves pupils learning about remote sensing techniques, the technology that the Mars Science Laboratory carries, and use NASA data to explore how we search for signs of water and life on Mars. These challenges develop geological and research skills, team working, spatial (3D) and mathematical skills, and provide insight on career opportunities in Earth and space sciences. In order to keep all GeoBus materials as current and engaging as possible, university academics from different disciplines, students and industry professionals are all involved in developing its resources.