we the curious

**Theme Day**

**On Shaky Ground** KS4 duration: 5 hours

Earthquakes are caused by the Earth's natural processes but have very human consequences. Each year around 10,000 people lose their lives in earthquakes, with many more losing homes and livelihoods. This exciting day shows how science and engineering can help solve these real-world problems - using demos, games and hands-on activities in an authentic civil engineering experience. Students build and test their own earthquake-resistant buildings – applying key design principles that can reduce damage to buildings and save lives. Natural seismic events are also compared with human-made ones. OSG has been developed as a collaboration between WTC education team, Bristol University Civil Engineering and Geophysics, and engineers from Mott MacDonald and development was funded by the Royal Academy of Engineering.


**Learning objectives** Recognise earthquakes have significant physical, human and economic consequences
Increase awareness of and enthusiasm for career opportunities in civil engineering and geophysics
The Earth’s layered structure and that its crust is made up of tectonic plates that have moved over time
Earthquakes are crustal movements resulting from a from a sudden release of energy
Recognise the damage to buildings typical in earthquakes and that engineering design can help reduce this
Understand the impact of design on daily life and the wider world
Work in small teams to apply engineering principles to design and build a model water tower
The properties of materials and performance of structural elements to achieve successful solutions
Test buildings for a range of simulated earthquakes on a purpose-built shaking table
Appreciate that risk is evaluated as a combination of probability and consequence

**Content:**
10:00am Arrival & introduction
10:15am Earthquakes, their consequences and how engineering can help
10:55am Break then building for Earthquakes: creating model buildings
12:30pm Lunch
1.10pm Measuring Earthquakes; equipment and scales.
1.25pm Human causes of seismicity & Risky business: using probability and consequence to make decisions
1:45pm Testing Buildings...to destruction!
2.30pm End of On Shaky Ground? activities, with more time to explore WTC (venue closes at 5pm)

**Curriculum Links:** **Science:** Explain everyday and technological applications of science
Evaluate risks in practical science and the wider societal context, including perception of risk in relation to data and consequences
Apply knowledge to select appropriate techniques and materials
Forces and their interactions, including contact force and friction
That stretching, bending or compressing an object requires more than one force to be applied
Longitudinal and transverse waves
Waves at material interfaces: applications in exploring structures

**Geography:** Apply geographical knowledge and understanding to real world contexts and to contemporary situations and issues
The use of digital material including the use of Geographical Information Systems (GIS), to obtain, illustrate, analyse and evaluate geographical information
Geomorphic processes and landscape – How geomorphic processes at different scales, operating in combination with geology, climate and human activity have influenced and continue to influence the UK

**Design and Technology:** Develop realistic design proposals based on exploration opportunities and needs
Develop a knowledge of materials, components and technologies and practical skills
Explore a range of real-world contexts, representing contemporary issues and concerns
How environmental, social and economic challenges create opportunities and constraints on designing and making

**Potential Hazards:** Burns from use of glue guns. Burn kit available in room.

Contact us: 0117 915 7777  education@wethecurious.org  Booking line opening hours: Mon - Fri 8.30am- 5pm term time and 10am - 2pm during school holidays