

Lesson Plans



Title of the lesson	<h2 style="color: blue;">Quake and Shake Workshop</h2>	
Duration	60 mins	
List of resources supplied by NMI	Laptop, map of the earth's plates, earth transections, slinkies, Newton's cradle, bench seismometer	
Aims	<p>To explain where and why earthquakes occur</p> <p>Investigate the Earth and its layers</p> <p>To examine why scientists predict Earthquakes</p> <p>The effects of earthquakes on human environments</p> <p>Demonstrate how seismometers work</p>	
Keywords	Earthquake, seismic, seismometer, seismograph, Robert Mallet, crust, mantle, outer core, inner core, magma, volcano, lava, tremor, foreshock, main shock, after shock, motion, force, kinetic, Newton's Cradle, S wave, P wave, Richter Scale, Chile, Haiti, news media.	
List of objectives	<i>Behavioural objectives</i>	<i>Knowledge objectives</i>
	<p>Demonstrate a P and a S wave on a slinky</p> <p>How to read a seismograph</p>	<p>Know the different layers of the earth</p> <p>Know what causes an earthquake</p> <p>Know how earthquakes effect us</p> <p>What to do during an earthquake</p> <p>How a seismometer works</p>
Instructional input	<p>Workshop:</p> <p><i>What is an Earthquake?</i></p> <p>Earth's structure- plate tectonics</p> <p>Earthquake vs. tremor</p> <p>Physics behind Earthquakes- forces and motion, kinetic energy, Newton's Third Law</p> <p>Seismic waves</p> <p>Robert Mallet's Killiney Beach experiment</p> <p><i>Types of Earthquakes</i></p> <p>How they differ</p>	

Instructional input cont.	<p>After effects of earthquakes (aftershocks, triggering other earthquakes, landslides, tsunamis) Richter Scale Why people die in earthquakes (including Japan, Haiti and Chile earthquakes & media attention)</p> <p><i>Seismology and Earthquake prediction</i> Early Seismometers- Zhang Heng's Houfeng Didong Yi Basic Working principle of modern seismometers Building and testing a British Geological Survey bench seismometer Reading a seismograph</p>	
Independent practice	<p>Exercise:</p> <p><i>Practical exercises:</i> Forces and friction- rubbing hands together, Newton's Cradle</p> <p>Making P and S waves with a Slinky</p> <p>Aid in seismometer building demo</p>	
Curriculum ties:		
Subject	Strand	Strand Unit
Science	Investigating and experimenting	Collect information and data from a variety of sources (practical element of workshop)
	Energy and forces	Light, Sound, Heat, Forces
	Materials	Properties and characteristics of materials Materials and change
	Environmental awareness and care	Science and the environment
Geography	Skills and concepts development	Using pictures, maps and models (practical element)
	Human environments	People and other lands Trade and development issues
	Natural environments	The local natural environment Physical features of Europe and the world Rocks and soil Planet Earth in space
	Environmental awareness and care	Environmental awareness
SPHE	Myself and the wider world	Developing citizenship Media education