

- Renewable Energy Investigations
- Critical thinking & persuasive writing

**KS2 and KS3 Science and cross-curricular**

<p><b>Learning Objectives During this Day Course pupils should learn:</b></p>
<p><b>Workshop A</b></p> <ul style="list-style-type: none"> <li>✓ To understand more about the impact of human activities on the environment and climate change.</li> <li>✓ To use persuasive language.</li> <li>✓ To develop critical thinking skills.</li> <li>✓ To practice speaking and listening.</li> </ul>
<p><b>Workshop B and C</b></p> <ul style="list-style-type: none"> <li>✓ To practise scientific enquiry skills.</li> <li>✓ To evaluate experimental materials and processes.</li> <li>✓ To investigate ways of using renewable energy.</li> <li>✓ To apply numerical and literacy skills to experiments.</li> </ul>
<p><b>Pupils will also:</b></p> <ul style="list-style-type: none"> <li>✓ Learn safely including the safe use of equipment</li> <li>✓ Learn about ways in which people can improve their environment</li> </ul>

<p><b>Workshop programmes</b></p> <p>All workshops begin with an introduction and end with a plenary. Teachers should enter their choices for school-based workshops on the workshop booking form. Timings vary, but as a guide, two workshops in one day is ideal. Where there are 3 classes involved then three slightly shorter workshops may be arranged. (For those who are also booking an Energy Works visit to Coldham Wind Farm, please note that any of the workshops below may be selected for the afternoon session at Coldham.)</p>
<p><b>Workshop A: CLIMATE CHANGE and CRITICAL THINKING</b></p> <p>Topical issues such as climate change are explored using critical thinking techniques to develop understanding and pupils' own opinions of the issue. This can lead into persuasive writing or speaking and listening activities during the session and/or as follow up.</p>
<p><b>Workshops B and C: INVESTIGATING RENEWABLE ENERGY</b></p> <p><b>B: Solar Energy</b> Using solar energy mini-kits, working in small groups pupils will investigate the generation of heat and electricity using two types of mini solar panels. They will consider how to generate the most energy by choosing suitable places to locate the panels.</p> <p><b>C: Wind Energy</b> An open investigation using model wind turbine mini-kits will look at the construction of wind turbines and give pupils working in small groups the opportunity to discover the optimum conditions for electricity generation.</p>
<p><b>Note:</b> The actual programme may vary depending on number and needs of pupils and length of workshop.</p>

<p><b>Adult : Pupil ratios</b></p> <p>For this workshop CEES' recommended ratio for safety is <b>1 : 15</b> excluding the CEES teacher.</p> <p>Additional adults may be needed with classes where individual pupils need 1 : 1 support.</p>
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<b>Relevant extracts from CEES risk assessments</b>	
<b>Hazard</b>	<b>Control measures</b>
Extreme weather conditions	<ul style="list-style-type: none"> <li>• CEES staff are aware of daily weather forecast.</li> <li>• Alternative activities are substituted if weather conditions are particularly unfavourable.</li> <li>• In extreme cases, where guidance notes on clothing have not been complied with pupils may be excluded from activities.</li> </ul>
Using scientific equipment	<ul style="list-style-type: none"> <li>• Pupils are instructed in the safe use of equipment indoors and outdoors, for example taking great care not to touch lamps and fans.</li> </ul>
Pupils' pre-existing conditions	<ul style="list-style-type: none"> <li>• School staff are required to notify the CEES teacher of any pupils with physical, medical or behavioural conditions which may affect the safe conduct of the workshop.</li> </ul>