

Lesson	Items covered	National Curriculum Links (pub. 2007)
<p>1 Why Renewable Energy?</p>	<p>What is renewable energy?</p> <p>Why is renewable energy important?</p> <ul style="list-style-type: none"> - Economic issues - Political issues - Environmental issues <p>LogiCity climate change game</p>	<p>Geog 2c, (To use atlases and globes and maps at different scales) 5a,5b (knowledge and understanding of environmental change and sustainable development)</p> <p>Sc1 (scientific enquiry)1a,2f (planning and obtaining evidence)</p> <p>ESD (knowledge and understanding of sustainable development)</p> <p>PSHE 2a (preparing to play a role as a citizen)</p> <p>En2 (Reading)</p> <p>D&T 1b,3a (Develop planning and communicating ideas, evaluating process and products)</p> <p>Ma4 1c-e 2e (Handling data, problem solving)</p> <p>Ma2 3k (using and applying number)</p> <p>ICT (Finding things out)</p>
<p>2 Introduction to Wind Power</p>	<p>Experiment with the Wind Turbine Kit.</p> <p>Connect the wind turbine to motor, fan or LED modules.</p> <p>Connect the wind turbine to a voltmeter and measure the output.</p>	<p>Sc1, (scientific enquiry)1b,2a,2c,2f,2l(planning and obtaining evidence)</p> <p>D&T 2d,5b(working with tools, equipment, materials and components to make quality products)</p> <p>Ma3 1g (shape space and measures)</p> <p>En1 (speaking and listening)</p>
<p>3 Number of Blades</p>	<p>Experiment with different numbers of blades on the wind turbine and measure the voltage.</p> <p>Discuss why 3 blades are typically used on large commercial wind turbines</p>	<p>Sc1 (scientific enquiry)1a,1b,2a-d, 2e-h,2i-m(planning and obtaining evidence)</p> <p>Sc4 1a (electricity)</p>

		<p>Ma 4 1a-h, 2c,f (Handling data, problem solving, communicating, reasoning)</p> <p>En1(speaking and listening),En2 (reading)</p> <p>ICT 2a</p>
4 Blade Pitch	<p>Experiment with different blade angles on the wind turbine and measure the voltage</p>	<p>Sc1, (scientific enquiry) 1a,1b,2a-d,2e-h,2i-m(planning and obtaining evidence)</p> <p>Ma 4 1a-h,2c,f(Handling data, problem solving, communicating, reasoning)</p> <p>En1(speaking and listening),En2 (reading)</p>
5 Gearing	<p>Introduction to gearing. Demonstration of Derailleur gears on a bicycle</p> <p>Experiment with different gear options on the wind turbine and measure the voltage</p> <p>The students will discover size of cogs (gear ratio) affect the wind turbine's output</p>	<p>Sc1, (scientific enquiry) Sc2, Sc4 2d,(Forces and motion)</p> <p>Ma2 (number) 1c,1f, 1k (problem solving, communicating and reasoning)</p> <p>En1(speaking and listening),3a,3b</p> <p>En1 (speaking and listening)6a</p>
6 Wind Speed and Direction	<p>Use the wind turbine kit to measure the voltage at different wind speeds and different directions.</p> <p>Observe how the wind turbine changes direction to face into the wind, should the wind direction change.</p>	<p>Sc1, (scientific enquiry)1a,1b,2a-d,2e-h,2i-m(planning and obtaining evidence)Ma3,(shape space and measure)1a (problem solving),3a (understanding properties of position and movement) 4a,b (understanding measures)Ma4 1a(Handling data, problem solving)</p> <p>En1(speaking and listening)</p> <p>Geog 1a-e (geographical enquiry and skills)</p> <p>D&T1b 3a (develop planning and communicating ideas, evaluating process and products)</p>

<p>7 Introduction to Solar Photovoltaics (PV)</p>	<p>What is solar photovoltaic technology?</p> <p>Discuss applications of photovoltaic technology.</p> <p>Discuss the advantages and disadvantages of photovoltaic power.</p> <p>Design an electrical appliance powered by PV.</p>	<p>En1 (speaking and listening)</p> <p>Sc1 (scientific enquiry) 1a, 1b, 2a-d, 2e-h, 2i-m (planning and obtaining evidence)</p> <p>Sc4 (physical processes) 1a, b, c (electricity)</p> <p>D&T 4a, 1d (knowledge and understanding of materials and components)</p> <p>ICT 1a, 1b, 1c (finding things out)</p>
<p>8 Solar Photovoltaics (PV) Uses and Applications</p>	<p>Experiment with the Photovoltaic Kit.</p> <p>Connect the PV cell to motor, fan or LED modules.</p> <p>Connect the PV to a voltmeter and measure the output. Experiment by covering varying proportions of the PV cell's surface and record results.</p>	<p>Sc1 (scientific enquiry) 1a, 1b, 2a-d, 2e-h, 2i-m (planning and obtaining evidence)</p> <p>Sc4 (physical processes) 1a, b, c (electricity)</p> <p>D&T 4a, 1d (knowledge and understanding of materials and components)</p> <p>Geog 3a-d (Knowledge and understanding of places)</p> <p>Geog 5a, b (knowledge and understanding of environmental change and sustainable development)</p> <p>En1 2a, 2b (listening)</p> <p>En2 3a (reading for information)</p> <p>ICT 1a, 1b, 1c (finding things out)</p> <p>PSHE 2a (preparing to play a role as a citizen)</p>
<p>9 Introduction to Solar Thermal Heating</p>	<p>What is solar thermal heating?</p> <p>Experiment with the Solar Water Heater Kit.</p> <p>Observe how the sun's energy can be used to heat water.</p>	<p>Sc1 (scientific enquiry) 1a, 1b, 2a-d, 2e-h, 2i-m (planning and obtaining evidence)</p> <p>Sc3 (materials and their properties) 1b, 2c, 2d, grouping and classifying materials and</p>

		<p>changing materials)</p> <p>Ma4 2c,2f (Handling data, processing representing and interpreting data)</p> <p>En1a 1b (speaking for different audiences)</p>
<p>10 Solar Thermal Insulation</p>	<p>Experiment with the Solar Water Heater Kit.</p> <p>Observe what effect the foam insulation block has on the efficiency of solar thermal water heating.</p>	<p>En 1a 1b(speaking for different audiences)</p> <p>Ma41f-h(Handling data, communicating, reasoning)</p> <p>Sc1 (scientific enquiry)1 a, 1b,2a-d,2e-h,2i-m(planning and obtaining evidence)</p> <p>Sc3 (materials and their properties)1 b, 2c,2d,(grouping and classifying materials)</p>
<p>11 Solar Thermal Cover</p>	<p>Experiment with the Solar Water Heater Kit.</p> <p>Observe what effect opening or closing the plastic case has on the efficiency of solar thermal water heating.</p>	<p>En1(Speaking and listening)</p> <p>Sc1 2i-m(planning and obtaining evidence)</p> <p>Geog 2c,2d,2g,(geographical enquiry and skills) 5a,5b (knowledge and understanding of environmental change and sustainable development)</p>
<p>12 What have you learnt?</p>	<p>Synopsis of previous lessons.</p> <p>Revise and summarise all aspects of renewable energy and energy conservation.</p> <p>Discuss experiments with the renewable energy kits, and the results of the school energy monitoring.</p> <p>Produce a poster, poem or rap promoting renewable energy and energy conservation. Present to the group.</p>	<p>Ma1.1b, (communicating maths effectively)1.4a and b (critical understanding)</p> <p>D&T1.1b, (apply knowledge to design products)</p> <p>PSHE 1.4a(economic understanding)</p> <p>En1.1d,1.1e (competence)</p> <p>1.4a,1.4c (critical understanding)</p> <p>2.1a and b (speaking and listening)</p> <p>Sc1.1 (scientific thinking)</p> <p>Sc1.2 (applications and</p>

KS2 Scheme of Work

		implications of science) Sc2.1 (practical enquiry)
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