

Energy Explorers



Season: All	Duration: 1 –1.5 hrs																							
<p>Overview: Become an Energy Explorer to find out the basics about energy; how do we use it, where does it come from, and what problems are associated with fossil fuels? Put your new knowledge into practice by hunting for wasted energy around the school and identifying ways to save energy. Follow up the energy audit with a hands-on challenge; making a renewable energy circuit from solar panels or wind turbines to power bulbs, buzzers and motors.</p>																								
<p>Learning Objectives:</p> <ul style="list-style-type: none"> To identify that there are different types of energy. To understand what we use electricity for at home and school. To gain a basic understanding of what electricity is and where it comes from. To identify problems associated with using fossil fuels to generate electricity. To identify renewable energy sources that can be used instead of fossil fuels (sun, wind, water etc). 	<p>Key Vocabulary:</p> <table border="0"> <tr> <td>energy</td> <td>non-renewable</td> </tr> <tr> <td>save</td> <td>renewable</td> </tr> <tr> <td>switch off</td> <td>wind turbine</td> </tr> <tr> <td>fossil fuels</td> <td>solar panel</td> </tr> <tr> <td>coal</td> <td>generator</td> </tr> <tr> <td>gas</td> <td>power station</td> </tr> <tr> <td>oil</td> <td>pollution</td> </tr> <tr> <td>wind power</td> <td>circuit</td> </tr> <tr> <td>solar power</td> <td>electricity</td> </tr> <tr> <td>wave power</td> <td>global warming</td> </tr> <tr> <td>climate change</td> <td></td> </tr> </table>		energy	non-renewable	save	renewable	switch off	wind turbine	fossil fuels	solar panel	coal	generator	gas	power station	oil	pollution	wind power	circuit	solar power	electricity	wave power	global warming	climate change	
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<p>National Curriculum Links:</p> <p>Geography: Key stage 1: Human and Physical Geography</p> <p>Design and Technology: Key stage 1: Make; Evaluate.</p> <p>Science: Year 1: Light</p>																								
<p>Resources to be provided by school:</p> <p>Interactive whiteboard or projector and screen Sunny outdoor area (weather permitting) for using solar panels Permission to monitor different areas of the school for energy use, including classrooms.</p>																								
<p>Outline of Activities with approximate timings: Please note: We can tailor activities to suit the abilities of your class and time available.</p> <p>Introduction (20 mins) Children will learn some basic energy facts to enhance their understanding: What is energy, how do we use it, and where does it come from? Followed by a discussion about the problems associated with fossil fuels, how we can save energy, and sustainable alternatives - renewable energy sources.</p> <p>Energy Audit (20-40 mins) The task is to survey different areas of the school building to find wasted energy: Divide into groups and give each group an area to explore . Each group should record the appliances that are switched on in their area and identify sources of wasted energy by recording which of these appliances are not being used despite being on. Groups will also record room temperature and any windows/doors left open etc. Groups then gat her as a class and compare results for each part of school, then discuss what action could be taken to reduce wasted energy.</p>																								

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Outline of Activities with approximate timings (continued):

Renewable energy circuits (minimum 20 mins)

Working in small groups children will be given a set of mini solar panels, wires with crocodile clips, a bulb, buzzer, and mini wind turbine and challenged to create a circuit powered by renewable energy: Can they generate electricity using the sun and wind today? Which form of energy is most effective today and why?

Eco– Schools Links:

Curriculum-linked activities and practical action on energy consumption in school could be used as evidence towards an Eco Schools Award. For more information visit:

<http://www.keepbritaintidy.org/ecoschools/>

Suggested follow-up activities:

- Make fun frames for your light-switches: cut cereal boxes into a frame shape that will fit over light switches and decorate to encourage people to switch off when they leave the room and save energy.
- Practice making electrical circuits with different components
- Organise a regular school energy audit to measure the school's energy consumption over a given period to identify a baseline of typical energy use. Follow up by establishing a group of school energy monitors to record areas where energy is wasted and run an energy awareness campaign to reduce consumption.

Useful websites:

http://www.create.org.uk/schools/teachers_resources.asp (various resources highlighting where energy can be embedded in the curriculum).

<http://www.carbontrust.co.uk/cut-carbon-reduce-costs/products-services/sector-advice/pages/schools-2.aspx> (advice for teachers managing energy use in your school)

<http://www.carbondetectiveseurope.org/StandardPage.aspx?intPageID=2>
(a full programme of activities and projects to cut carbon in your school).

<http://www.ashdenawards.org/schools> (guidance for sustainable energy use in schools, good examples of best practice from participating schools)