

Unit Three: Carbon Footprints

CURRICULUM LINKS

SOC 2-08A: I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally-responsible way **SOC 3-08A:** I can identify the possible consequences of an environmental issue and make informed suggestions about ways to manage the impact.

TIME

Ideal: 3 x 45 mins. Minimum: 1 hour

QUICK LINKS Refer to Quick links sheet on DVD

RESOURCES

Reward map Photocards 17-20 Activity Sheet 4 Paper, coloured pencils Scissors Electrical appliances Watt-meter

KEYWORDS:

Π

OBJECTIVES Most pupils will:

- Earth Carbon footprint Greenhouse effect Carbon dioxide
- identify applicances that run on electricity;
- have an increased understanding of what their carbon footprint is and name five ways they can change their behaviour at home to reduce it;
- name three actions that can be taken to reduce energy use at school;
- take action to involve the rest of the school in saving energy.

PRE-UNIT KNOWLEDGE

Pupils need to have kept some form of energy diary to feed into this lesson.

STIMULUS

Hold up Photocard 17 showing the earth. Ask a pupil to hold this at the front of the class. Explain that we only have one earth, and we need to look after it and to share the resources we have between everyone.



Hold up Photocard 18 showing 2 ½ earths. Explain that if everyone in the world lived the lifestyle we have in the UK, this is the number of earths we would need to sustain us and keep us alive. Add to this that if everyone lived the way they do in the USA, we would need 4 ½ earths!

Finally, hold up Photocard 19 showing one third of an earth. Explain that if everyone in the world lived the lifestyle of someone from Bangladesh, this is the earth we would need. Discuss using questions below.

Is this fair?

What have we learnt from this activity?

What has this got to do with climate change? *These different lifestyles also affect the differing amounts of greenhouse gases we produce.*

What is a carbon footprint?

Show Photocard 20 depicting the countries of the world and their size relative to the amount of carbon dioxide they produce. Note the difference between North America and countries in Africa. Explain that the amount of carbon dioxide and other greenhouse gases produced by an individual, an organisation or a country is called their carbon footprint. Referring back to the earth demonstration, which country do you think has a bigger carbon footprint, the USA or the UK? How about the UK or Bangladesh?





Unit Three: Carbon Footprints

Activity 1: What energy do we use at home and in the classroom?

Explain that to understand the size of our carbon footprint, we first need to know how much energy we use. Show pupils the watt-meter and explain it shows the amount of energy appliances use. Allow pupils to attach the watt-meter to some common appliances to see the amount of energy that is used by each one. Used carefully, kettles and hairdryers are very effective for demonstration. Explain that any item that uses electricity to create heat (kettle, toaster, electric hobs, fan heaters etc.) requires a large amount of energy. Next, record the differences between appliances on stand-by and turned off at the wall e.g. computer, projector. See Activity Sheet 4 for a related maths extension. [note: if you do not have a watt-meter, visit Quick link 3.1 for useful data.]

Refer to the pupils' energy diary they kept at home from the previous unit. Discuss what the main uses of energy were. **How does the number of appliances compare with their parents' or grandparents'?** Brainstorm a list of the things which use energy at school. Ensure heating and cooking are included. Ideally, a full energy audit of the school could take place during this unit, dependent on your school: see the action box below for more details.

Activity 2: How can we reduce the amount of energy we use?

Use the interactive online game at Quick link 3.2 which allows pupils to decide on energy saving actions in the home. Ask pupils to draw round their foot and write a pledge inside the print, giving five energy-saving actions they will try to follow at home. Pupils take this home to share with their families.

Extension: pupils could investigate the carbon footprint of things they use or the food they eat.

Plenary

Use 'Think, Pair, Share' to come up with ideas for possible energy-saving actions in school. Link this to the sunny sections in the yellow box below. Look on your Sunny Schools DVD for more information on schools that have successfully saved a lot of energy.

NOW LET'S TAKE SOME ACTION!

Allow pupils to select an action from below. When it is completed they should colour in one of the continents on their reward map.

Sunny Make posters informing and teaching others to 'switch off', or to follow another related energy-saving action.

Sunnier Continue the footprint pledge activity using another footprint for saving energy at school. You could use the feet to make a display of a 'pledge tree' outside the classroom.

Sunniest Plan and carry out a full survey of energy use at school. The Carbon Detectives website has a comprehensive and detailed survey which can be followed; see <u>Quick link 3.3</u> for further information. If your school has already done a survey, complete a follow-up survey to see if energy wastage has improved.

If everyone in the UK installed just one energy-saving light bulb, we'd save enough CO₂ to fill the Albert Hall 1,200 times.



www.solar-aid.org/sunnyschools © SolarAid. These materials may be reproduced for educational purposes.

Activity Sheet 3

What is your family's attitude to energy?

	YES	SOMETIMES	NO
Do you usually walk or cycle to school?			
Do you turn off the lights when you leave a room?			
Do you take more showers than baths?			
Do you recycle as much as you can?			
Do you use any energy saving light bulbs in the house?			
Do you wait for a full load before running the washing machine?			
Do you turn off the TV when you are not using it?			
Do you turn off the computer when you are not using it?			
Do you watch TV or play computer games for less than 1 hour a day?			
Do you only boil the amount of water you need in the kettle?			
Do you unplug your mobile phone chargers when you are not using them?			
Do you switch appliances off at the wall instead of leaving them on stand-by?			
Do you try to walk to the shops when you buy food?			
When it is cold, do you put on a jumper instead of turning the heating up?			
Do you go on holiday in the UK instead of abroad?			
Do you use green energy at home? e.g. solar, biomass			

If you ticked mostly YES and SOMETIMES then you are already doing brilliantly at saving energy. Can you think of any new ways to reduce your energy use even more?

If you ticked mostly SOMETIMES or a mix of YES and NO then you are already doing quite well. As a family, are there things you can change so you can start to answer yes to more questions?

If you ticked mostly NO then perhaps you could think of some ways to start saving energy now. There are some simple and easy ways of changing your behaviour slightly that will have a big effect on your energy use – and your energy bills! Try pledging 5 small changes you can make as a family.

If you would like to calculate your carbon footprint at home, you could try using these websites: http://www.planet-positive.org/how_2_kidscalc.php (for kids) http://carboncalculator.direct.gov.uk/index.html (more difficult, ask an adult to help)