

Carbon Control – what can you do?

Background

This task engages learners in considering their influence on climate change. It uses a new carbon calculator to encourage them to explore how they live and how their personal choices can limit their carbon footprint. This task is an introductory way to participate in a national school's competition for children between 7-14 years of age. By being involved they will be able to see the impact of all their individual efforts on limiting climate change.

The RSA have been funded by the Department of Environment, Food and Rural Affairs (DEFRA), as part of their Climate Challenge Fund, to develop the curriculum-linked interactive carbon footprint calculator, specifically designed for children aged 7-14. This development culminates in a national 4 week competition in the Summer term of 2007.

About the competition and this task

The RSA, together with Tesco Plc, are launching the Carbon Control Competition for children aged 7-14. This task provides teachers, parents and carers with an ideal way of engaging their youngsters in the debate around Climate Change and what they can do to make a difference.

The task is presented as a thinking and doing activity, where there is opportunity for pupils to work with others to consider what they think and feel about this issue, and how they can change their behaviour and practice to limit their carbon footprint.

Pupils are required to consider how they will influence their peers, their school and their community to also make a change for the better. They will need to suggest creative forms of persuasion to campaign for and communicate their thinking.

Using the resource

This task ideally should be used to initiate activity for entry in the competition, more details of which can be found on the website www.carboncontrol.org.uk

However, it can also be used as a stand-alone classroom or club activity.

Curriculum links

These activities provide opportunities for a wide range of learning. Much depends on the time given to the work. Key learning intentions have been highlighted in bold in the following table.

Children will have opportunity for:

	Citizenship	Geography	Science
Key Stage 2 (7-11 years)	<p>Developing confidence and responsibility and making the most of their abilities</p> <p>(1a) talking and writing about their opinions, and explaining their views, on issues that affect themselves and society</p> <p>Preparing to play an active role as citizens</p> <p>(2a) researching, discussing and debating topical issues, problems and events</p> <p>(2k) exploring how the media present information</p> <p>Breadth of Study: Pupils will be taught these skills through opportunities to:</p> <p>(5a) take responsibility</p> <p>(5c) participate</p> <p>(5d) make real choices and decisions</p> <p>(5e) meet and talk with people</p> <p>(5h) find information and advice</p> <p>(5i) prepare for change.</p> <p>‘Taking Part’ QCA Scheme of Work Unit for Years 1-6 (4-11 year olds)</p>	<p>Developing knowledge and understanding of patterns and processes</p> <p>(4a) – recognising and explaining patterns made by individual physical and human features in the environment</p> <p>(4b) – recognising some physical and human processes and explain how these can cause changes in places and environments</p> <p>Knowledge and understanding of environmental change and sustainable development</p> <p>(5a) – recognising how people can improve the environment or damage it, and how decisions about places and environments affect the quality of people’s lives</p> <p>(5b) – recognising how and why people may seek to manage environments sustainably, and identifying opportunities for their own involvement.</p> <p>‘Improving the Environment’ QCA Scheme of Work Unit for Year 4 (8-9 year olds).</p>	<p>Ideas & Evidence (1a) – thinking creatively to try to explain how living and non-living things work, and establishing links between causes and effects.</p> <p>Investigative Skills (1b) – considering what sources of information, including first-hand experience and a range of other sources, they will use to answer questions.</p> <p>Breadth of Study: Pupils will be taught these skills through a range of domestic and environmental contexts that are familiar and of interest to them.</p>
Key Stage 3 (11-14)	<p>Developing skills of enquiry and communication</p>	<p>Geographical enquiry and skills</p> <p>(1a) asking geographical</p>	<p>Living Things in their environment</p> <p>(5a) understanding</p>

<p>years)</p>	<p>(2a) thinking about topical political, spiritual, moral, social and cultural issues, problems and events by analysing information and its sources, including ICT-based sources (2b) justifying orally and in writing a personal opinion about such issues, problems or events (2c) contribute to group and exploratory class discussions, and take part in debates.</p> <p>Developing skills of participation and responsible action (3b) negotiating, deciding and taking part responsibly in both school and community based activities.</p>	<p>questions and identifying issues (1c) collecting and presenting evidence (1d) analysing and evaluating evidence and drawing and justifying conclusions (1e) appreciating how people's values and attitudes affect contemporary social, environmental, economic and political issues (1f) communicating in ways appropriate to the task and audience</p> <p>Knowledge and understanding of places (3d) explaining how and why changes happen in places, and the issues that arise from these places</p> <p>Knowledge and understanding of patterns and processes (4b) identifying, describing and explaining physical and human processes, and their impact on places and environments</p> <p>Knowledge and understanding of environmental change and sustainable development (5a) describing and explaining environmental change and recognising different ways of managing it</p>	<p>ways in which living things and the environment can be protected and the importance of sustainable development</p> <p>Energy resources and energy transfer (5a) understanding the variety of energy resources and the distinction between renewable and non-renewable resources</p>
---------------	---	---	--

RSA Competence Curriculum objectives

Learners engaging in these activities will be challenged to:

Competences for Learning	Competences for Citizenship	Competencies for Relating to People	Competencies for Managing Information
explore and reach an understanding of their own creative talents, and how best to make use of them	understand the social implications of technology	<ul style="list-style-type: none"> - understand how to operate in teams, and their own capacities for fulfilling different roles - develop a range of techniques for communicating by different means 	<ul style="list-style-type: none"> - develop a range of techniques for accessing, evaluating and differentiating information and have learned how to analyse, synthesise and apply it - understand the importance of reflecting and applying critical judgement

Key Learning objectives

Pupils will:

- Understand some of the consequences of climate change
- Understand how, through their own actions, they can limit their carbon footprint
- Be able to share ideas on how to control their carbon footprint.

Running the activity

Stimulus Page 1

Provide the pupils with **page 1** or display as a whiteboard image. (A powerpoint file is provided with the photographic images to supplement this introductory discussion).

Encourage the pupils to look at and consider what the images and notes are showing.	
<p>For 7-11 year olds Explain that the images relate to the way our world is changing because of global warming and climate change.</p> <p>Provide some background information about the possible causes of climate change, e.g. burning fossil fuels, such as coal and gas, cutting down forests.</p> <p>http://www.climatechallenge.gov.uk/ provides useful background information.</p>	<p>For 11-14 year olds Encourage the pupils to consider what the images are suggesting.</p> <p>If necessary explain that the images relate to the way the world is changing as a result of global warming and climate change.</p>
<p>Select from the following questions (depending on the age and knowledge of your pupils) to stimulate discussion.</p> <p>Use the think-pair-share approach to discussions if appropriate.</p> <ul style="list-style-type: none"> • What are the photos showing us? • Do you think climate change is something we should be very worried about, or is it something that could be good for some people and not so good for others? <p>Explain that the images are showing two different types of effects – some which may be thought to be ‘good’ effects, e.g. better weather in some parts of England, better opportunities for farmers, e.g. Kent farmers who are selling off land to French champagne makers.</p> <ul style="list-style-type: none"> • Is climate change affecting you? • Does how you live make climate change better or worse? • Do you think you can <i>really</i> help to stop climate change getting any worse? 	

Stimulus Page 2

Provide or display **page 2**.

Explain to the pupils that the challenge is to consider how they live so that they can explore ways of limiting the part they play in making climate change worse.

Explain how their suggestions and ideas will be put forward as part of the Carbon Control Competition. (Further information about the Competition can be found on the RSA website www.carboncontrol.org.uk)

Describe how the carbon calculator (named the ‘Carbonator’) can help them find out what effect they currently have, and is useful when deciding how they can help limit their effects on climate change.

Explain the key term: ‘carbon footprint’

A way of showing the effect human activities have on the climate in terms of the amount of greenhouse gases we each produce (measured in units of carbon dioxide).

Model the use of the carbonator as a class, then in smaller groups, or as individuals. (Further information about the Carbonator can be found on the website www.carboncontrol.org.uk)

Use the Thinking Frame to encourage pairs or groups of pupils to brainstorm suggestions as to what they can do to limit their carbon footprint. All ideas should initially be taken and written on sticky labels and attached around the outer edge of the frame. Encourage the pupils to be creative with their thoughts and suggestions and to ‘think outside the box’.



After initial discussions, encourage access to various information sources, e.g. internet sites, books, leaflets to explore and build on their initial ideas and to scope others.

Encourage the pupils to select ideas they feel are based on stronger evidence or that they can justify well, e.g. those ideas which show greater benefits when tested through the calculator. These ideas should be moved into the middle rim of the thinking frame - ‘Ideas based on stronger evidence’.

Eventually, ask the pupils to decide as a group which are their top ideas in answer to the question **What can you do to limit your carbon footprint?** Pupils should be able to justify their choices with knowledge and understanding that they have gained, or by using the carbonator to illustrate the effect their proposed change could make. The level of detail will relate to the amount of time and scope the teacher sets for the task, and the age group of the pupils. Top ideas should be moved into the central area of the thinking frame.

Stimulus Page 3

By this stage pupils will have made their choices as to what change is important to them. The aim now is to give the pupils a range of ways to communicate their choices to other people (e.g. peers, family and local community), explaining what the implications and benefits will be. Pupils will draw on information they have gathered, scientific and technological understanding they have gained and outcomes from carbonator calculations. The **How to share your ideas** activity sheet 3 sets out a series of different ways that pupils can share their ideas to a wider audience from which they should engage in a discussion with their peers, teams or class as to which method they would most like to use.

Once a format has been chosen, provide time for them to gather and edit the relevant information. **Top Tips Sheets 1, 2, 3 and 4** should be used to support pupils in making either a podcast, web page, poster design or a presentation. Teachers may select which methods are feasible or simply allow pupils to have the freedom of choice themselves. Note: Pupils may need access to a range of practical materials e.g. paper, coloured pens, paints, colour printers etc. and resources e.g. digital cameras, sound recorders, computers, graphics software packages such as Publisher, to enable them to demonstrate and share their creative flair.

As an extension, to uploading their outcomes on the RSA website, all that may be left to do is to consider how the pupils could share their work within or beyond school in the form of a public display board or as part of an open evening.

Web links

For teachers:

<http://www.eco-schools.org.uk/why/school-environment.htm>

The page on the Eco-schools website that lists activities to improve the environment footprint in schools. A resource for teacher/parent/carer information.

http://www.adviceguide.org.uk/index/family_parent/housing/energy_efficiency.htm

The Citizens Advice Bureau guide to household energy saving. A resource for secondary pupils, teachers, parents and carers.

A useful guide for secondary aged children can be downloaded via

<http://www.climatechallenge.gov.uk/multimedia/guide.html>

<http://climatechange.wmnet.org.uk>

This site provides information about climate change, waste, recycling, energy, travel etc. Enables children to 'ask the expert' and provides useful links and references for teachers. Mainly a site for secondary aged children and adults.

<http://news.bbc.co.uk/1/hi/sci/tech/6324029.stm>

Some background information relating to the probable effects of climate change.

<http://www.upd8.org.uk/>

Science UPD8 translates the latest breakthroughs from topical science, into inspiring activities and publishes them online. Quality and ease of use mean that teachers simply "download and go". There are several stimulating activities related to climate change available.

<http://www.suschool.org.uk/>

A good site on sustainable development issues.

For pupils:

<http://www.environment-agency.gov.uk/fun/>

A fun part of the Environment Agency's website that is aimed at educating upper primary and secondary children on different aspects of the environment, e.g. air, energy, water, climate change. Includes animations, games and fact pages.

<http://www.recyclezone.org.uk/>

This is a website focused on reduce, reuse and recycle. It is aimed at children of both primary and secondary age groups, and has activities and waste related games.

<http://www.recycool.org/>

A site that has a specific focus on recycling printer cartridges and mobile phones. A well designed site that is attractive to both primary and secondary children, providing novel suggestions and ideas.

<http://www.wightgreencentre.demon.co.uk/energy.html>

A website with lots of energy saving ideas for children.

<http://www.managenergy.net/kidscorner/brightideas.html>

A European Commission website that highlights a variety of activities designed to stimulate children's enthusiasm for energy saving, renewable energy and sustainable mobility. A useful site for both primary and secondary children.

<http://www.suschool.org.uk/>

A good site on sustainable development issues.

Production

This resource was produced by the Centre for Science Education, Sheffield Hallam University for the Royal Society of Arts.

Design: Linda Knight (Design by Knight)