



Our Place 2020

Sustainable Communities - Links to the National Curriculum and Useful weblinks

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COUNTY DURHAM BUSINESS & LEARNING PARTNERSHIP

Education for Sustainable Development in the National Curriculum

ESD enables people to develop the knowledge, values and skills to participate in decisions about the way that we do things individually and collectively, both locally and globally, that will improve the quality of life now without damaging the planet for the future.'

The National Curriculum, 1999

1992: Education for sustainable development was first described by Chapter 36 of Agenda 21. It has developed from a mixture of environmental and development education ideas.

1998: The Government Sustainable Development Education Panel (SDEP) was formed to consider how schools could best actively promote ESD to ensure young people obtain the knowledge and skills to be 'active citizens for the new millennium'.

2000: The revision of the National Curriculum recognised the work of the panel and the profile of ESD increased. ESD was made a statutory requirement in the subjects of geography, science, design and technology and citizenship, and opportunities were also identified in subjects across the curriculum. Schools were asked to promote sustainable development ensuring students develop an 'awareness and understanding of, and respect for, the environments in which they live, and secure their commitment to sustainable development on a personal, national and global level'.

In order for the complex underlying theory of ESD to be understood by both teachers and students it was broken down in to seven identifiable key interrelated concepts as proposed by the Government Sustainable Development Education Panel. These are:

- Interdependence
- Citizenship and stewardship
- Needs and rights of future generations
- Diversity
- Quality of life
- Sustainable change
- Uncertainty and precaution

2002: The Qualifications and Curriculum Authority (QCA) started to produce curriculum guidance for schools where each of these key concepts was explained. This can be viewed online at <http://www.nc.uk.net/esd/gq2.htm>

2003: The government set out its long term aims for ESD in Learning to Last which was the culmination of the SDEP's work to date. The strategy covers all aspects of education. The key objective with relation to the statutory education system is to ensure schools have 'the professional capacity and the resources to develop knowledge, skills and aptitudes that enable all citizens to engage in the achievement of sustainable development'.

The Office for Standards in Education (Ofsted) published a report summarising findings from the inspection of a number of schools specifically focussing on ESD.

The report, Taking the first step forward: towards an education for sustainable development, used the seven key concepts identified by the SDEP as its focus and highlighted examples of good practice observed during inspections over an eleven month period (April 2002 to March 2003). The full report can be accessed at: <http://www.ofsted.gov.uk/publications/docs/3389.doc>

2005 to 2015: Has been declared the Decade of Education for Sustainable Development by the United Nations (UN).

Useful links for teachers

Department for Education and Skills (DfES)

<http://www.dfes.gov.uk/sd>

The DfES sustainable development home page. Contains a wide range of information and resources for those stakeholders involved in education at all levels.

National Curriculum online

<http://www.nc.uk.net/>

This site links every National Curriculum programme of study requirement to resources on the Curriculum Online

Qualifications and Curriculum Authority

<http://www.nc.uk.net/esd/index.htm>

A series of web pages dedicated to explaining education for sustainable development, why and where it is embedded in the national curriculum and the importance of the subject in the today's society.

Office for Standards in Education (Ofsted)

<http://www.ofsted.gov.uk/>

Ofsted is a non-ministerial government department, whose main aim is to help improve the quality and standards of education and childcare through independent inspection and regulation.

Taking the first step forward...towards an education for sustainable development (full report)

<http://www.ofsted.gov.uk/publications/docs/3389.doc>

A 'good practice report on the positive contributions a number of primary and secondary schools have made to tackle a mixture of environmental and sustainable development issues within the curriculum'.

Teachernet

<http://www.teachernet.gov.uk/wholeschool/sd/>

Developed by DfES as a resource to support the teaching profession the sustainable development pages contain a multitude of information and resources available to teachers to assist with sustainable development education.

Development Education Project (DEP)

<http://www.dep.org.uk/cities/index.htm>

The DEP is a registered charity which works with teachers to raise the awareness of global issues in, and through, the National Curriculum. It provides support, resources, information, project work, best practice frameworks and training.

Education for Sustainable Development Toolkit

<http://www.esdtoolkit.org/default.htm>

This highly informative website contains a multitude of interesting, useful and up to date information specifically focused on education for sustainable development (ESD).

It provides practical advice to individuals and organisations from both the education and community sectors on how to deliver successful ESD and advocates the need for cooperation between educational system and communities in achieving sustainability goals.

Relating Eco and Carbon Footprints to the Curricula of Geography, Science, DT and Citizenship

As has been pointed out many times before the teaching of ESD fits most comfortably with Geography and Citizenship. Geography has had a substantial emphasis on development education for many years and ESD clearly prepares students to become more active citizens. However Science and Design and Technology are both underrated when it comes to delivery of ESD and eco and carbon footprints work especially well with elements embedded in the curriculum and specifications at all Key Stages for each subject. What is outlined below is how best to use the eco and carbon footprint calculators base on current (2004) specifications and QCA/DfES schemes of work.

Geography

As the QCA ESC website so succinctly states “Geography is a focus within the curriculum for understanding and resolving issues about the environment and sustainable development. It can inspire pupils to think about their own place in the world, their values, and their rights and responsibilities to other people and the environment.” Eco and carbon footprint calculators are an excellent way of introducing those responsibilities.

Enquiry skills are encouraged at all Key Stages in Geography. Both types of footprint calculators give students the chance to set up their own enquiry, pose questions and discuss potential solutions.

Using footprints also helps to meet NC/5:

Knowledge and understanding of environmental change and sustainable development

a) recognise how people can improve the environment [for example by reclaiming derelict land] or damage it [for example, by polluting a river], and how decisions about places and environment affect the future quality of people's lives.

b) recognise how and why people may seek to manage environments sustainably, and to identify opportunities for their own involvement.

Two units within the QCA/DfES schemes of work would also benefit from including footprint calculators, namely Unit 14 Can the earth cope? Ecosystems, population and resources and Unit 23 Local action, global effects.

Specifications vary at GCSE and A Level but footprint calculators would be useful within People and Environment units at GCSE as the concept of carrying capacity is well illustrated. Also at GCSE the transport, waste and homes

elements of the eco footprint can be used to illustrate concepts and ideas in Places and People and Managing Natural Resources units.

At A Level eco and carbon footprints can be used within the following units: People and Climate, Economic Activity and Change, Energy Resources, The Changing Natural Environment and Population and Economic Development.

Citizenship

Participation and responsible action is encouraged throughout the Key Stages in Citizenship. Eco and carbon footprint calculators are participatory in nature and lead students to examine the impact their individual actions have on the environment.

One example given on the QCA ESD website states:

“ KS3/3c

Developing skills of participation and responsible action

c) reflect on the process of participating

Pupils might canvass and share ideas about how their community could become more sustainable. The pupils might prepare a display at the local council buildings, or design a consultation process to involve local people, including young people, businesses and other groups (e.g. through meetings in the town hall and interviews).

As part of this, pupils might ask about how different people are usually consulted, or make their views known to the local authority, and how this process might be improved. Pupils might then present their ideas for improving participation, perhaps involving the use of ICT.”

At KS3 one unit in the QCA/DfES scheme of work would benefit from using the eco and carbon footprints to spark discussion; Unit 10 Debating a global issue. At KS4 Unit 9 Consumer rights and responsibilities can use the footprints to illustrate the impact of consumer behaviour on other people - locally, nationally and globally. Unit 12 Global issues, local action can use footprints to help students understand how to contribute to local decisions that will influence quality of life and the environment in the future.

Science

Key concepts in science, such as diversity and interdependence, are also key concepts in ESD. Any work at any Key Stage which emphasises these concepts would benefit from using the eco and carbon footprint calculators. Clearly also work on energy would benefit from using the carbon calculator as outlined below.

In the National Curriculum at KS3 and 4 the following parts of the programme of study can be illustrated by using the calculators:

KS 3/Sc2/5a

Living things in their environment

a) about ways in which living things and the environment can be protected, and the importance of sustainable development

KS3/Sc3/2i

Materials and their properties, Changing materials

i) possible effects of burning fossil fuels on the environment [for example, production of acid rain, carbon dioxide and solid particles]

KS3/Sc4/5a

Energy resources

a) about the variety of energy resources, including oil, gas, biomass, food, wind, waves and batteries, and the distinction between renewable and non-renewable resources

KS4/Sc2/4b, c

Living things in their environment

b) how the impact of humans on the environment depends on social and economic factors, including population size, industrial processes and levels of consumption and waste

c) about the importance of sustainable development

KS4/Sc4/4b

Energy resources and energy transfer

b) about the efficient use of energy, the need for economical use of energy resources, and the environmental implications of generating energy

Within the QCA/DfES schemes of work two units would benefit from students using the carbon footprint calculators, namely, Unit 7I Energy resources and Unit 8I Heating and cooling.

Although specifications vary at GCSE and A Level there are many units which would benefit from the inclusion of work on eco and carbon footprints especially as the concept of carrying capacity is so well illustrated by using these tools. At GCSE the units which lend themselves to work using the footprint calculators are The Environment, Exploring Energy, Managing Energy and Science and Society. A Level Biology and Chemistry have more opportunities than Physics to use the footprint calculators, especially units on Ecology and Chemistry and the Quality of Life.

Design and Technology

Despite common misconceptions ESD is at the heart of teaching and learning in Design and Technology. As the QCA ESD website states, “At each key stage, design and technology prepares pupils to participate in tomorrow's rapidly changing technologies. They learn to think and intervene creatively to improve quality of life [developing understanding of the principles of sustainable design and production systems]. At key stage 4 specifically, pupils consider how technology affects society and their own lives, and learn that new technologies have both advantages and disadvantages.”

All units within the QCA/DfES schemes of work could actually be prefaced with a statement such as, “At all times pupils should be asked to consider the environmental, economic and social implications of the resources used. They should take these into account before using or considering the use of particular materials. They should be prepared to justify such use, including instances where it may be appropriate to use materials or practices that are not sustainable (e.g. intensively produced food may be much cheaper and therefore affordable). Pupils should also consider the impact of the final product, including its potential for recycling or reuse where appropriate.” (Source

http://www.nc.uk.net/esd/teaching/dandt/schemes_of_work.htm)

At GCSE all the statements above apply even though specifications vary. Also units on Manufacturing Food would benefit from using the eco footprint to examine food miles.

Quick Links Page

Ecological Footprint Calculators (12)

1. Environment Agency

<http://www.environment-agency.gov.uk/fun/370863>

2. Earth Day Ecological footprint Quiz

<http://www.earthday.net/footprint/index.asp#>

3. Global Footprints

<http://www.globalfootprints.org/issues/kidsquiz/kidsquiz1.htm>

4. Powerhouse Museum – Bigfoot

<http://www.phm.gov.au/ecologic/games.htm>

5. New Scientist

<http://www.newscientist.com/hottopics/environment/quiz2.jsp>

6. Eco Foot

<http://www.demesta.com/ecofoot/eng/engframe.htm>

7. Mountain Equipment Co-op – Ecological Footprint Calculator

<http://www.mec.ca/Apps/ecoCalc/ecoCalc.jsp>

8. LEAD International

<http://www.lead.org/leadnet/footprint/food.cfm>

9. Ecology Fund

http://ecologyfund.com/ecology/res_bestfoot.html

10. Ecological Footprint Lifestyle Calculator

<http://www.bestfootforward.com/footprintlife.htm>

11. The Personal Environmental Impact Calculator

<http://ans.ep.wisc.edu/~eic/personal.impact.html>

12. Redefining Progress

<http://www.rprogress.org/programs/sustainabilityindicators/ef/Footpdist>

Carbon Footprint Calculators (10)

1. Best Foot Forward

<http://www.bestfootforward.com/carbonlife.htm>

2. The National Energy Foundation – Energy to Carbon Dioxide Converter

<http://www.natenergy.org.uk/convert.htm>

3. Global Action Plan

<http://www.carboncalculator.org>

4. Future Forests

http://www.futureforests.com/acatalog/index_world_calculator.asp

5. International Council for Local Environmental initiatives (ICLEI) – Personal Carbon Dioxide Calculator

<http://www3.iclei.org/co2/co2calc.htm>

6. Centre for Alternative Technology (CAT) – Carbon Gym

<http://www.cat.org.uk/carbongym/carbongym.tpml?section=reception>

7. Safe Climate – Carbon Footprint Calculator

<http://www.safeclimate.net/individual.php>

8. Travel Calculator

<http://www.travelcalculator.org>

9. Choose Climate

<http://www.chooseclimate.org/flying/mapcalc.html>

10. Climate Care

<http://www.climatecare.org/calculator/index.cfm>

Related sites

Worldometers

<http://www.osearth.com/resources/worldometers>

New Scientist – How do you measure up?

<http://www.newscientist.com/hottopics/environment/quiz1a.jsp>

Best Foot Forward (BFF)

<http://www.bestfootforward.com>

Redefining Progress (RP)

[http://www.rprogress.orgSustainable Development](http://www.rprogress.orgSustainable%20Development)

UK Sustainable Development Commission

<http://www.sd-commission.gov.uk>

Sustainable Development – The UK Government's approach

<http://www.sustainable-development.gov.uk>

Encyclopaedia of Sustainable Development

<http://www.doc.mmu.ac.uk/eric/esd/index.html>

ESD in the National Curriculum

Department for Education and Skills (DfES)

<http://www.dfes.gov.uk/sd>

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Teachernet

<http://www.teachernet.gov.uk/wholeschool/sd/>

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Introducing Ecological and Carbon Footprints

The ecological and carbon footprints place emphasis on the environmental dimension of sustainable development, rather than the economic or social dimensions. This reduces complexity and in doing so provides a useful tool for communicating sustainable development to a diverse audience with varying degrees of sustainability awareness. Once there is a fundamental realisation that personal lifestyle choices have an impact on the natural environment, the wider aspects of the concept can begin to be explained and the interdependence of the three dimensions explored.

Ecological Footprint

The ecological footprint is a calculation of the area of biologically productive land and water required for a given population to exist at a given consumption level. Web-based footprint calculators typically focus upon consumption patterns of the individual lifestyle.

Data is input in answer to a series of questions relating to individual lifestyle choices, focusing upon issues such as food procurement, transportation, energy use and waste production. The output is a figure, usually in hectares, that is the amount of land required to maintain that given lifestyle. To assess how the individual compares with his or her peers, the individual output value is frequently compared to one or more of the following:

- The average footprint of the population of the given country to which the calculator is calibrated;
- The global amount on average of biologically productive land and water available to each person on the planet; and
- The number of planets required if everybody on earth chose to follow the lifestyle of the given individual.

The simplicity of the tool and the tangible outputs it produces make it highly effective at communicating sustainable development to a range of audiences with varying degrees of sustainability awareness

By focusing on a number of elements of consumption in everyday life, the ecological footprint increases individual understanding of important environmental issues. It also enables people to recognise and translate the impact of their lifestyle choices to a global scale; a link that remains enigmatic and remote for many.

The ecological footprint is a participative education tool. It offers the opportunity of building upon students' experiences in the real world and of stimulating debate about the issues, the measurements, and the solutions.

Carbon Footprint

Carbon footprints represent the effect of human activities on the climate in terms of the quantity of greenhouse gases generated through individual lifestyle choices.

Web based carbon footprint calculators typically focus questions upon energy and transportation related carbon dioxide (CO₂) emissions. The output is an overall figure for a given individual in units of carbon dioxide produced per year (usually kilograms) - their carbon footprint.

Such calculations provide an indication of the climatic impact of specific aspects of individual lifestyles and help to identify those areas where more sustainable choices could be made.