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ENVIRONMENTAL EDUCATION FORUM

THE CHANGING CLIMATE OF THE CURRICULUM

CLIMATE CHANGE

Welcome to the latest supplement to accompany the LEEF Newsletter. It has been produced by the Environmental Education Forum to help teachers learn about the issue of Climate Change and, through the medium of the revised Curriculum help make pupils more aware of what it is, how it will impact upon us locally and globally and what we can all do to help combat it.

It has been designed to give you ideas on projects that the school can become engaged in and can be used in a range of learning areas across all four key stages. Please feel free to photocopy this resource and pass it on to a colleague who may also be able to make use of it.

Climate change and the revised curriculum

The aim of the new revised Northern Ireland curriculum is **to empower young people to achieve their potential and to make informed and responsible decisions throughout their lives**. Three curriculum objectives amplify this aim. They are to develop young people:

- as individuals
- as contributors to society; and
- as contributors to the economy and the environment

One of the biggest challenges that has ever faced our society is addressing the issue of climate change in a way that avoids the worst consequences for ourselves and those living in other parts of the world. Climate change and its related issues of renewable energy and sustainability are covered within both primary and post-primary curriculum's and can help pupils increase knowledge, develop skills, raise awareness, engage young people and empower them to take action.

How Will This Supplement Help Me?

This supplement will provide you as a teacher with connected and tangible ways to use the topic of climate change to teach a range of learning areas. It details case studies of projects being run in Northern Ireland, and provides links to resources that can be downloaded or ordered online. It also gives ideas on practical projects that can be run in the classroom, awards and schemes that your class and school can be become involved with and details links to external agencies and organisations that can help teach the topic in and out of class.

Inside you will find:

- **Information on RSPB's Climate action awards and Eco-Schools awards**
- **Information on how to be more energy efficient at school and at home**
- **A climate case study on Dunseverick Primary School, Co. Antrim**
- **Resources and worksheets to use in the classroom (Action Renewables)**
- **Links to websites and further reading on the subject**

PLEASE MAKE SURE THAT WHEN YOU HAVE FINISHED READING THIS NEWSLETTER YOU PASS IT ON TO WORK COLLEAGUES, FRIENDS OR INTERESTED GROUPS AND INDIVIDUALS WHO MAY ENJOY READING IT.

REDUCE, RE-USE, RECYCLE!

Climate Action Awards!



Now you can do your bit to help combat climate change. That's what our Climate Action Awards are all about. So why not send off for your free copy of the Climate Action Award Booklet and get started today by e-mailing: education@rspb.org.uk with your name, address and postcode. The booklet is full of fun ideas for helping to save the planet. You need to do six out of 11 activities (four if you are under eight years old), then tell us which ones you did by filling in one of the entry forms and sending it to us using the address on the form. We will send you some cool stickers and a certificate. The best bit is that you can then pass on your booklet to a friend to use as well! **It's true - just one little action makes a world of difference.**

About Climate Change

What's the problem?

For many years, people have gathered information about the weather in different places. This tells us what to expect at different times of year, and we call this pattern of weather the **climate**. In the past, the climate has often changed; over periods of thousands of years, large areas of the Earth have even been covered in thick ice. At other times, all the ice has melted. For the last 10,000 years in the UK, we have been somewhere in-between - some snow and ice in the winter and none at all in the summer. But today the Earth's climate is changing much more quickly than usual, and scientists agree that people are causing this.

What is the 'greenhouse effect'?

In a greenhouse, sunlight comes in through the glass and warms up the inside. The glass keeps the air inside warm, so the greenhouse stays warmer than the air outside it. Some gases in the atmosphere, such as carbon dioxide, behave just like the glass of a greenhouse. The more of these gases we pump out from car exhausts and from power stations and factories, the warmer the planet gets.

How will climate change affect me?

As the climate changes, we are likely to have more storms, water shortages and floods. We expect that some species of animals and plants will be able to survive, but that many of our old favourites may be in trouble.

Please visit our website at www.rspb.org.uk for further details on the above awards programmes

Eco-Schools Programme

Eco-Schools is a recognised award scheme, rewarding and accrediting schools who have made a commitment to continuously improving their environmental performance. The aim of the Eco-Schools programme is to make environmental awareness and action an intrinsic part of the life and ethos of the school -both for pupils and for staff.

The Eco-Schools programme addresses the following topics within schools:

Biodiversity	Water
Litter	Transport
Waste Minimisation	Healthy Living
Energy	School Grounds

There are three levels of award. Bronze, Silver, and Green Flag. The Bronze and Silver awards are based on school self-assessment and can only be applied for through the Eco-Schools website: www.eco-schools.org.uk

Primary School Information

Energy is important. We use it everyday and our lifestyles and societies rely on its constant supply. What about the impact on the environment? How will we produce energy in the future? Is there anything you can do?

Climate Change

How we live is affecting the environment. We live in a beautiful world and it is experiencing changes. Through the burning of fossil fuels to run cars and to produce electricity in power stations, greenhouse gases are being released into the atmosphere. These gases are causing Global Warming. Global Warming means that it is getting warmer, causing a change in the climate. Climate Change is happening and its effects are predicted to become more obvious globally through more extreme weather, more droughts, rising in sea levels and some crops not being able to grow where they use to! We need to work to reduce our CO₂ emissions.

Resource Sustainability

Resource sustainability means using resources so that they will last into the future. The energy we use to power our TVs and lights is mainly produced by non-renewable fuels, which include coal, gas and oil – these resources will not last forever. If we continue to use these resources at the current rate we have 200 years left of coal, 60 years left of gas and 40 years left of oil. We need to plan for the future be more sustainable.

Energy Security

At present our energy sources are all imported from many different parts of the world. Our oil comes from the Middle East, coal from Europe and South America and gas from Russia, Norway and Scotland. Northern Ireland is very dependent on other countries for our energy resources. We need to become more independent in order to maintain a secure energy supply.

Renewable Energy provides a solution to these energy issues. Renewable energy is pollution free, combats climate change, locally sourced and will not run out

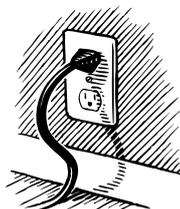
Wasting Energy

Over 30% of the energy consumed in the UK is wasted! Given the implications of climate change and the increasing cost of fuel it is amazing that we continue to waste so much energy. What's more, very simple measures could save you 20% of your energy costs so there is really no excuse not to start saving today.

What can YOU do?

Take action. You have the power to change the future – a small action, makes a difference.

- Wise up to renewable energy! Become informed about energy issues and the solutions we have for now and the future.
- Think about the energy you use and try to reduce wasting energy by becoming more energy efficient, e.g. turn lights off when you are not in the room, fill the kettle only with the amount of water you need and turn off the TV off when it is not being used.
- What about your house? Talk to your parents/guardians to encourage them to make your house more energy efficient, e.g. good insulation, to use Eco-Energy (green electricity supplied by NIE) and/or install a renewable technology, e.g. wood-pellet boiler.
- What about your school? Talk to your friends and come up with a proposal with your teachers to encourage action to be taken to make your school more energy efficient, to use Eco-Energy and to install a renewable technology.



Dunseverick: A Climate Case Study

Dunseverick Primary school is located near the causeway coast in Bushmills County Antrim. The school has 137 pupils, mainly from farming backgrounds, who have all become dedicated to protecting the environment. The school has recently been named the Best Kept School in NI, chosen from a shortlist of 15 and also has achieved permanent Green Flag status on the Eco schools programme since May 2006. The school has its own wildlife walk and organic vegetable garden and is dedicated to recycling not only paper and cardboard, but also ink cartridges, mobile phones and toner cartridges.

CLIMATE CHANGE TACKLED

More recently the school has become involved with the issue of climate change, rather than recycling alone. In early 2006 the school entered a competition run by EnCams which asked schools to compile a case study about their own climate in order to win a wind turbine. With the help of the teachers, pupils, local community and even politicians, the school won the competition. In May 2007 the wind turbine was installed and turned on. The installation of the turbine, and the drive to win the competition placed much greater focus on the climate change issue. The school has established links with Bryson House who promote energy efficiency, as well as the University of Ulster who provide the school with weather information. Using this information the children have produced maps charting climate change. Dunseverick has even established its own motto **"Keep our school clean and the world green."** The teaching of climate change within the school does not simply focus on local issues, but teaches the children about global consequences. Principal Peter Henry is hoping to move the electricity metre out into the hall so that all the students can see the amount of energy produced by the wind turbine. Presently, the metre is not able to be viewed by all, but students do calculate the energy generated and the energy saved.



ESD IN ACTION

Dunseverick is a model example of ESD in Northern Ireland. Climate change and environmental issues are incorporated into every part of the curriculum. Art and design has particularly focused on environmental issues by making murals and pieces from recycled materials. One particular mural is made from entirely recycled materials and focuses on climate change. Geography is one of the more obvious subjects within the curriculum to be enhanced by the schools drive towards sustainability. Mathematics has also benefited particularly from the new equipment with pupils using the data from the wind turbine as well as the weather statistics to produce graphs and calculate energy use. Science has focused on recycling helps to aid identification of materials, and the school also enlisted the help of an expert on lignite mining to help the children understand the local and global impact of sourcing materials. Individual classes focus on one topic each year. For example, P1 focus on birds and have their own bird table where they can feed and identify birds. P3 study water, the water cycle and water conservation. P5 study climates and climate change, with their country of focus being India and the dry climate there. P7's focus on the rainforest which incorporates many different subjects and topics. The school also believes that the focus on environmental issues has promoted stewardship and citizenships, promoting the belief that children have a responsibility not only to their local area, but to the world.

The local community has offered an incredible amount of support. The parents have helped with planting trees, tending the vegetable garden and drawing up the plans for the wind turbine. The outside environment of the school is largely managed by the parents. Parents also showed great support when they filled out surveys about the schools energy saving initiatives stating that many of them have learnt so much from what their children have been taught in school and are consequently bringing home. The support of the local community has been extremely important and it is with this continued support that Dunseverick will continue to be a key eco school. The school currently has plans to establish an animal enclosure containing lambs and also hopes to construct a greenhouse in order to plant their own seeds.

Action Renewables Education Programme Key Stage 3 Resources



Action Renewables Education Programme exists to raise awareness and inspire young people to become informed, engaged and to take action now and in the future.

- ♦ www.wiseuptorenewables.com is an educational website, it includes up-to-date, relevant information, teaching resources and the innovative 'Renewable Robbie' game.
- ♦ We give presentations about renewable energy and its related issues. We tailor our workshops to each group and can include drama, kite-making, decision-making activities and investigations using model wind turbines and solar panels.

Curriculum Links for Post-Primary Schools

Education for Sustainable Development: *Thinking Skills, Capabilities, Knowledge and Understanding for KS3*

The new Northern Ireland curriculum emphasises the empowerment of young people to achieve their full potential and make informed and responsible decisions by developing pupils' Thinking Skills and Personal Capabilities as well as developing pupils' Knowledge, Understanding and Skills in the field of Sustainable Development. **Action Renewables'** Education Programme can help you plan for these exciting new challenges in the curriculum by offering advice and information as well as providing talks and presentations tailored to your schools needs. Below is a worked example of a Thematic unit exercise using the theme of **Solar Power**.

WORKSHEET1: Using Solar Energy

Learning Outcomes: Managing Information

Pupils can use the Action Renewables Education website to find a wide range of information and worksheets as well as the innovative "Renewable Robbie" game. Go to www.wiseuptorenewables.com/keystage3. Scroll down to 'Solar.' Pupils should read this information before continuing to the worksheets.

The Solar worksheet contains a number of both comprehensive and mathematical exercises suitable for allocation to **Learning for Life and Work, Science and Geography** lessons, and includes both the management of information and developing a practical understanding of renewable issues.

A class discussion should follow this exercise to allow for accurate assessment for learning and pupils should compare and contrast the efficiency answers they have come up with, justifying how they arrived at a particular answer, and be prompted by additional questioning by the teacher, which may include:

What practical problems might people have accessing solar energy?

- *Roof area may not belong to the homeowner (i.e. an apartment or rented accommodation)*
- *May not face the correct direction (South)*
- *May not be suitable for installing solar panels (i.e. not flat)*
- *Will a solar panel suit the building (old buildings look strange with new solar panels).*

What advantages does a PV panel have over a hot water system?

- *Electrical panels don't have to worry about complex pipes and plumbing*
- *They are maintenance free and can be installed just about anywhere!*
- *The energy produced will only be accessible during the day unless stored in expensive batteries, or sold to the electricity company*



WORKSHEET 2: Solar Challenge

Learning Outcomes: Thinking, Problem-Solving and Decision-Making

Pupils must decide if a solar panel would actually make a difference in heating water for a school using a real example of heating system costs and giving a range of possible solutions. This project challenges students to show how solar heating is useful to the environment, the school and themselves, while appreciating the current technical limits and cost involved in what appears to be a simple decision.

Pupils must use basic mathematics to weigh up the different economic arguments, and explore a number of different options. Students must then make comparisons and weigh up both economic and non-economic benefits of different systems for heating water.

Once students have made their decision, they must justify their methods, opinions and conclusions using PowerPoint in a presentation to school governors to include graphs and charts from the Excel (or similar) program.

The teacher has the opportunity to monitor students' progress against curriculum national standards for **Communication**, use of **Mathematics** and **Financial Capability** and **ICT**.

There is potential within this unit to invite various non-teaching staff including caretakers and cleaning staff to express their concerns and integrate this into the decision making process.

WORKSHEET 3: Build a Solar Charger

Learning Outcomes; Being Creative,

For the full worksheet please visit www.wiseuptorenewables.com/keystage3. and scroll down to 'Solar.'

This project is intended for use in either **technology/art/design** or as a **citizenship** exercise and uses the defined stages in the process to create a design of a solar charger that is capable of powering or charging a mobile phone or mp3 player.

This exercise should begin by using the examples of solar chargers provided, as an additional ICT exercise students could make their own "mood board" of existing and possible designs from the internet as well as the cost of each charger to build a picture of the existing market.

A teacher led discussion on these chargers already on the market should take place. It is important to note that some chargers look, work, and therefore sell better than others because of their design. The research process should also include research and discussion of the potential advantages of a solar charger and how this fits into the responsibilities of being a "global citizen".

A class discussion and evaluation exercise should follow this activity where pupils can express which product would be best suited for the market, and their reasoning for their choice could explain the meaning of their individual pieces of paper. It would be useful to end the discussion by asking pupils if anyone has changed their opinions through listening to other arguments. This exercise could end with a class vote, star diagram, or the school/teacher/subject evaluation methods.

Contact Details

Action Renewables
The Innovation Centre
Northern Ireland Science Park
Queens Road
Belfast
BT3 9DT
Email: education@actionrenewables.org
Web: www.actionrenewables.org



Websites and further reading.

Web address

Content

www.foe.co.uk/campaigns/climate/issues/climate_change/

Friends of the earth website which has a dedicated section on climate change, with diagrams as well as an outline of the Kyoto Protocol , and information on fossil fuels, nuclear energy and green fuel.

www.metoffice.gov.uk/research/hadleycentre/

The Hadley Centre at the Met Office provides scientific insights into climate change with reviews and reports as well as models and diagrams explaining climate change in detail.

www.ace.mmu.ac.uk/Resources/gcc/

The Global Climate Change Student Guide is a site specifically for geography students of a higher level which combines geography, geology and environmental science to explain global climate change.

www.stopclimatechaos.org/

Stop Climate Chaos is a registered charity that with the help of other UK charities and agencies aims to put pressure on the UK government to act on climate change. The site provides information on climate change and volunteering opportunities.

www.carbonfootprint.com/

The Carbon Footprint website allows people to calculate their carbon footprint and also provides information on climate change as well as giving people the opportunity to offset their carbon footprint.

www.globalwarming.org/

The Global Warming website aims to dispel the arguments that global warming is causing major problems and presents the counter arguments of global warming and climate change.

www.defra.gov.uk/environment/climate_change/index.htm

DEFRA, as a UK government department outlines the action that the UK government is taking to reduce carbon emissions and tackle climate change.

www.climatechoices.org.uk

Climate Choices – Children’s voices is a site for teachers of children aged 9-11 to help children begin to understand the issues surrounding climate change.

www.climatechallenge.gov.uk/

Climate Challenge is a government site provides information about climate change with key facts, information on how climate change is affecting the UK and what is being done to tackle this.

www.bbc.co.uk/northernireland/schools/4_11/pfocus/pdf/pfocus_spr04_pr05_ws.pdf

Excellent series of worksheets informing students about climate change and how it will affect here locally in Northern Ireland.

Further Reading and Funding Information

ESD Resource Guide: Useful Contacts for Schools

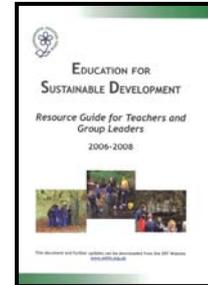
The Environmental Education Forum has produced a **Resource Guide** for use by teachers and group leaders. This document contains details of Forum members, the education programmes that they provide across Northern Ireland, and relevant contact details, e-mail and website addresses. It gives you details of how you and your group can become involved in environmental education work that will lead to your students becoming more aware of their environment, engaged with it and inspired to take action to lead more sustainable lifestyles at school, in your youth group and at home.

If you would like to receive a copy of the guide please contact:

Environmental Education Forum (EEF)
89 Loopland Drive
Belfast BT6 9DW
Tel 028 9045 5770

Copies of the guide can also be downloaded from the website at:

www.eefni.org.uk/publications



Grants and Awards for Environmental Projects

BIG LOTTERY FUNDING

For the period of 2006-2009 there is £90 million available through the **Big Lottery Fund** divided over several different grant programmes.

BIG Trust Fund

BIG Trust Fund is designed to support change in organisations in Northern Ireland's voluntary and community sector through a period of significant restructuring and rationalisation. It is a long-term investment, possibly up to ten years, to support all the changes that will need to happen to the voluntary and community sector in Northern Ireland. Due to be launched early 2007. See www.biglotteryfund.org.uk

Awards For All

Awards for All is a joint Lottery grants scheme aimed at local communities. Bring people together and increase community activity. Awards range from £500 to £10,000 and are on going. See www.awardsforall.org.uk

Big Deal

Fund projects that help young people to make a difference in their own life and to the lives of others. The Big deal can only make awards directly to individual and informal groups of children and young people aged 0-25. An individual can apply for awards of £500 and a group can apply for an award between £500 and £2,500. Closing date for applications is 30 September 2009. See www.thebigdealni.com for further details.

ROYAL SOCIETY OF WILDLIFE TRUSTS—BIFFAWARDS

Biffaward funds projects which provide and improve public amenities for communities within 10 miles of a Biffa operation and projects that increase or maintain biodiversity. The small grants scheme provides grants between £250 and £5,000 for projects that enable communities to improve local amenities and to conserve wildlife and habitats. The Main Grants Scheme grants between £5,001 and £50,000 for amenity projects that provide and improve community facilities to act as mechanisms for recreation, sporting achievement, lifelong learning and community involvement.

There are no deadlines for submitting an application. For further information via www.biffaward.org email: grants@rswt.org or Tel: 0870 036 1000.



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