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WATER

Uses and Conservation

Water – Conservation and Uses

Introduction

This is the first of two issues relating to Water. The study of water conservation provides opportunities to integrate the wider topic of “Water” across the whole curriculum. Some examples are given below.

Geography Knowledge and understanding of environmental change and sustainable development, in particular identifying opportunities for pupils’ own involvement. This can be linked in turn to development of knowledge and understanding of places – their own and a contrasting locality.

Citizenship Objectives that relate to preparing to play an active role as citizens are also relevant to this theme, looking at how economic choices affect individuals, communities and the sustainability of the environment.

Design and Technology Comparing technologies for delivering water to the point of use, investigating and evaluating a range of products linked to the conservation of water, designing and making their own devices to conserve water.

A study of water is relevant in the following QCA Schemes of Work:
Geography KS1 & 2: Units 8, 10, 11, 14 and 22.

Background Information

Although we have a wet climate, we have less water available *per person* (1334 cubic metres per year) than some drier countries such as Italy, Spain and even Sudan! In regions with a high population and lower rainfall, the amount is one fifth of the average (266 cubic metres). The water cycle is continuous but there is no way of knowing when and where the rain will fall, especially as climate change looks set to cause an increase in unpredictable weather.

The average person in the UK uses 150 litres every day, which is almost 50% more than 25 years ago and is still rising, partly because of the increase in using power showers and other high consumption domestic appliances. This includes water used for drinking, cooking, cleaning, washing, flushing toilets, washing cars and watering the garden. It does not include water used in production processes (e.g. to produce a burger requires 2400 litres).

This level of increase is not sustainable, so it is important that we all begin to avoid wasting water. About a third of our water usage is accounted for by waste. For example, leaving the tap running while cleaning your teeth can waste 5 litres of water per minute, a hosepipe left running can use as much as 1000 litres per minute. A dripping tap can waste as much as 5000 litres per year. 30% of the water we use every day goes down the toilet – and old toilets can use up to 14 litres per flush. New dual flush toilets use only 2.6 and 4 litres per flush.

Households with a water meter use, on average, 10 to 15% less water than households without a metered supply, but at the moment only one home in three has a water meter.

Ideas for use in class

This activity aims to increase pupils' awareness of water as a valuable resource and to investigate ways in which they can save water. There are plenty of resources available so the topic can be increased in length according to time available.

Introduction

In small groups, ask pupils to discuss all the ways in which they use water every day, from the time they get up until they go to bed, and including water used for them by others in cooking and washing (this may include appliances such as dishwashers set to run at night to take advantage of off peak electricity rates). They can all record their ideas on a large sheet of paper for the teacher to sum up in class discussion, or nominate one person to take notes and report back to the class.

Main activities

Give pupils some of the facts about water usage and the need to save water, then ask them to search the internet for ways in which they could save water. They can search freely using a suitable search engine but it may be better for them to start with sites selected by their teacher.

www.thewaterfamily.co.uk is a great site which enables pupils to measure how much their family could save by changing the way they use water throughout the home.

www.waterwise.org.uk has useful sections on saving water in the home and in school. There is also a "Fun stuff" which has downloadable resources for different age groups. These could be particularly useful if it is not possible for the whole class to access the internet at the same time.

www.environment-agency.gov.uk has some good information on saving water and the reasons for doing so, although searching for the most useful sections of the site is probably best done by the teacher in advance of the lesson.

It is worth making contact with your local water board, as most have very good programmes and resources for schools. For example, www.stwater.co.uk (Severn Trent) produce many educational resources available as downloads, a DVD and an interactive house for investigating ways to save water throughout the home. You can also arrange a visit to one of their education centres. www.anglianwater.co.uk also runs a mobile education centre for schools in its region.

Conclusion and follow up work

At the end of the first session, give pupils the "Ways we use water" chart to take home to record their family's use of water. Volumes of water used in this table have been taken from on line Water Calculators, of which several are available, including one on the BBC website. If preferred, older pupils could investigate these and devise their own water use charts.

These can be used in subsequent lessons to work out daily/annual use and averages per person. Pupils can itemise ways in which they could save water and use their charts to calculate the potential savings to be made in their house.

Ways we use Water

Activity	Number	x litres used	Weekly total (litres)
How many people live in your house? Cooking and drinking		x 70	
How many people live in your house? Handwashing and teeth cleaning		x 100	
How many baths a week in your house?		x 80	
How many ordinary showers a week in your house?		x 35	
How many power showers a week in your house?		x 70	
How many times a week do you use the washing machine?		x 80	
How many times a week do you use a dishwasher?		x 35	
How many times a week do you wash up by hand?		x 6	
How many times a week is the toilet flushed?		Older toilet x 14 Newer model x 4	
			Total

Further activities

- Saving water in school – the Waterwise site has some good suggestions on how schools can reduce their water wastage and associated costs. Pupils can set up a monitoring committee to review water use and produce publicity materials and undertake promotional work to convince others of the importance of saving water.
- Understand how water is important for our general health and well-being, including the effects of dehydration on learning performance. www.water.org has resources to develop an understanding of Water for Health and so do some of the other websites mentioned above.
- Pupils could investigate the industrial use of water. They can start by talking to adult family and friends about ways in which water is used in their work place, using this as a basis to find information on industries which use large volumes of water in processing and ways in which savings are being made.
- Find out about water use in other countries. If we had to carry water for miles rather than just turning on a tap, would we be more careful when using it? The Learn Zone at www.wateraid.org has many resources to help explore this and other areas of study connected with water.
- Learn about how many builders and organisations are developing projects and technology to either replace the need to use water (earth/composting toilets), recycling waste water for use in toilets and in the garden, desalination in locations where fresh water is a scarce commodity to provide water for washing and laundry.
- Produce a news sheet outlining the areas studied. If time is insufficient for all the water-related subject areas to be covered by the whole class, groups of pupils can be assigned specific areas to research and produce articles or fact sheets.

Forthcoming Events. Full information is available from the respective web sites.

ESTA Primary Team Members will be providing practical workshops, resources and useful information at:-

ASE Conference, Nottingham 6th – 9th January 2010. Saturday 9th January 2009 Primary Workshop: Sort minerals by devising and discussing criteria. Use this knowledge to work through rock identification at different levels with the ESTA rock kit. Test rock porosity and make your own well. Consider rock erosion and soil formation. Observe differences in porosity/permeability, colour, texture and composition of various soils and link this to their origins. (QCA Unit 3D – Rocks and Soils).

TAKE AWAY TOUR OWN ROCK KIT AND TEACHING PACKS.

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