



WWF

NEWSLETTER

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LEARN ONLINE

These activities are designed to complement the issues raised in the rivers edition of Learn, our termly poster resource for schools. The poster can be downloaded from wwf.org.uk/learn/rivers

ACTIVITIES

- Introducing otters
- Rainwater harvesting
- Freshwater habitats
- Water cycle
- Saving water
- Ripples

RESOURCE SHEETS

- Resource sheet 1
- Resource sheet 2
- Resource sheet 3
- Resource sheet 4
- Resource sheet 5

Introducing otters

| Learning cycle: | Motivation |
|--------------------|--|
| Age range: | 7-14 |
| Curriculum links: | English, science |
| Time needed: | 50 minutes |
| Group size: | Pairs or small groups |
| Setting: | Indoors |
| Key vocabulary: | Species, habitat, interdependence, food web |
| Learning outcomes: | <ul style="list-style-type: none">• To understand the relationships between species and their habitats• To begin to understand how human activity impacts on habitats and species |

Preparation:

Watch the short film about otters:

www.bbc.co.uk/nature/life/European_Otter#p005766q

Explain that otters disappeared from most freshwater habitats in England about 40 years ago but that they are now returning. Most people will never have seen an otter in the wild but as otter populations increase, more people are likely to encounter them. Explain that they are going to think about how they can tell people about the otter and help to make sure that they react positively to its return.

Brainstorm:

- What will people want to know about otters?
- What might make people hostile towards otters?
- Why might they welcome them?

Resources needed:

Access to online and/or printed research materials.

Procedure:

Task:

Create an outline plan for a short public information film, radio broadcast or newspaper advertisement which will explain:

- Why otters disappeared from freshwater habitats in England.
- Why otters are now returning.
- Interesting facts about otters.
- Why otters are important.
- How people can help to protect otters in the wild.

Use the following websites to research the species:

www.arkive.org

www.bbc.co.uk/nature/life/European_Otter

Plenary

Invite groups to share their work. Think about how each plan addresses the points identified in the brainstorming session.

Extension:

Develop a final version from the outline plan. Pupils could also think about other species that could potentially be reintroduced. Or perhaps find out about species that have been introduced that are causing problems for our native freshwater species.

Evaluation:

Work in pairs. Write at least five reasons to celebrate the otters return to English rivers.

Rainwater harvesting

| Learning cycle | Building knowledge |
|--------------------|---|
| Age range: | 7-14 |
| Curriculum links: | Science, design and technology, maths |
| Time needed: | 60 minutes |
| Group size: | Pairs or small groups |
| Setting: | Inside or outside |
| Key vocabulary: | Rainwater harvesting, volume, area, mains water, tap water |
| Learning outcomes: | <ul style="list-style-type: none">• To understand that rainfall is a natural resource that can be harvested and used• To understand that rainwater can sometimes be used as a sustainable alternative to mains water |

Preparation:

Ask: How could we measure the amount of rain that falls on the school in 1 day/week/year?

Explain that some schools collect or harvest rainwater and use it in place of tap water. In some schools, rainwater harvesting has cut mains water consumption by 50%. Discuss how rainwater might be used in place of mains water; could we drink it/use it for cooking/washing hands/flushing toilets?

Explain that pupils are going to design and build a system for harvesting rainwater.

Resources needed:

Water bottles, junk modeling equipment and materials.

Procedure:

Brainstorm:

What rules do we need to make sure we get a fair test/competition in which pupils design, build and test a system for collecting the largest amount of rainwater in a plastic water bottle?

Paired/group work: Design and build a rainwater harvesting system.

Plenary

Discuss the designs; how to ensure you are conducting a fair test and how you'll measure and record rainfall.

Extension:

Test and evaluate the systems created by the pupils.

Evaluation:

Ask pupils to research and write a short report explaining their work and suggesting how rainfall might be used within the school to reduce mains water consumption.

Freshwater habitats

| Learning cycle: | Building knowledge |
|--------------------|--|
| Age range: | 5-11 |
| Curriculum links: | Science, geography, English |
| Time needed: | 40 minutes |
| Group size: | Individuals or pairs |
| Setting: | Indoors |
| Key vocabulary: | Species, habitat, interdependence, food web, food chain |
| Learning outcomes: | <ul style="list-style-type: none">• To begin to understand that habitats contain a network of species and relationships• To begin to understand the links between habitats and human activity |

Resources needed:

Copies of Resource sheet 3, access for research.

Procedure:

Discussion: What is a habitat? [A place where groups of plants and animals live] What sort of things do habitats need to provide for the species that live there? [Food, water, shelter, breeding partners] Can we name some different types of freshwater habitat? [River, pond, stream, canal, wetland].

Task: Read through the tasks on Resource sheet 3. Show the pupils how they might use the website to sort the information and find out about other species that share the same habitat.

Plenary:

Invite pupils to talk about what they've found out about the habitats and the species that live in them.

Extension:

Create an illustrated food web for a freshwater habitat.

Evaluation:

Ask pupils to write an acrostic poem about the species that live in a habitat e.g.

- Patient newts searching for grubs.
- Open-mouthed frogs watching for flies.
- Newly hatched tadpoles waiting for legs.
- Dart-like dragonflies busying back and forth.

Water cycle

| Learning cycle: | Making links |
|--------------------|--|
| Age range: | 7-14 |
| Curriculum links: | Geography, science |
| Time needed: | 40 minutes |
| Group size: | Pairs or small groups |
| Setting: | Indoors |
| Key vocabulary: | aquifers, desert, glaciers, ice sheets, irrigation, water cycle, precipitation, condensation |
| Learning outcomes: | <ul style="list-style-type: none">• To understand that water is essential to life.• To understand more about the water cycle. |

Preparation:

Ideally, pupils will already have some understanding of the water cycle.

Resources needed:

Copies of Resource sheet 5, large sheets of paper

Procedure:

Whole Class: Discuss what pupils already know about the water cycle; show them how to draw a large diagram to represent this information.

Paired/Group task: Ask the children to create a diagram of the water cycle that includes the information on Resource sheet 5.

Plenary:

Invite pupils to show their diagrams; explain how they've shown certain parts of the cycle; talk about the facts on the resource sheet and ask questions.

Extension:

Create a best copy of their diagrams.

Evaluation:

Ask pupils to write a short piece of explanatory text beginning with the words: Water is essential for life on the planet because...

Saving water

| Learning cycle | Taking action |
|--------------------|--|
| Age range: | 7-11 |
| Curriculum links: | English, geography |
| Time needed: | 40 minutes |
| Group size: | Pairs or small groups |
| Setting: | Indoors |
| Learning outcomes: | <ul style="list-style-type: none">• To begin to understand some of the options for reducing water consumption• To begin to understand that individuals can take action to protect the natural world |

Resources needed:

Copies of Resource sheet 4 and online access for research.

Procedure:

Read through Resource sheet 4 and make sure pupils know what to do.

Ask pupils to complete the task.

Plenary:

Invite pupils to share their ideas. Discuss the order in which they've placed the methods: Which did you put first/last? Why? Would your order change if you were asked to rank them starting with the most important/the cheapest/the easiest/the quickest to introduce? How should we rank these methods?

Extension:

Develop and introduce some of the ideas in an action plan for the school. If you have a green team within your school, they might be interested in the Green Ambassador Scheme – wwwf.org.uk/greenambassadors

Evaluation:

Discuss ways to measure the results of water saving action at your school.

| Learning cycle | Reflection |
|--------------------|---|
| Age range: | 5-11 |
| Curriculum links: | Art |
| Time needed: | 60 minutes |
| Group size: | Individuals |
| Setting: | Indoors |
| Key vocabulary: | Interdependence, habitat, impact, human activity, consumption |
| Learning outcomes: | <ul style="list-style-type: none"> • To begin to understand the concept of interdependence. • To understand that our water consumption impacts on the natural world |

Preparation:

Look at images of ripples and/or watch the ripples that are created when a small stone is dropped into water.

Procedure:

Explain that actions often have an effect like a stone being dropped into water – the consequences can be like a ripple that moves out and affects people, wildlife and places.

Briefly explain the concept of interdependence in Nature [All living things depend on the survival of other living things and natural resources like soil, water and air for their own survival].

Ask pupils to think about their work on water and suggest examples of actions and their ripple effects e.g. taking showers instead of baths – extracting less water from rivers – protection of habitats – benefits to wildlife.

Ask pupils to create a piece of artwork that includes the following themes: ripples, interdependence, freshwater species and habitats and reducing water consumption.

Plenary:

Display the finished work and invite pupils to explain their ideas.

Extension:

Develop a presentation about the themes covered in this lesson for other members of the school.

Evaluation:

Ask pupils to explain the concept of interdependence. Ask them to use a mapping diagram to show some of the links.



RESOURCE SHEET 1: MATHS CHALLENGE

‘UK Rivers are on the edge of ruin because of our spiralling demand for water. Population growth means that things can only get worse in the years ahead.’

Use a calculator and the data in the table to create some calculations that help to explain why this statement doesn’t have to be correct.

| | | |
|--|--|--|
| The UK population will increase by 6 million by 2021 | Average water use 148 litres per person day | Inefficiency: 1.4 glasses of water are extracted for every 1 glass we use |
| 2050 UK water demand could be 15% less or 35% more depending on action taken by Governments and consumers. | 47% of people say that they save water by turning off the tap when brushing teeth. A running tap uses around 4 litres per minute, by turning the tap off when you brush your teeth you can save 13 litres a day. | 37% of people say they save water by taking a shower rather than a bath. The average bath uses 80 litres of water to fill. |
| Fixing leaks and ensuring taps are turned off properly can save up to 9 litres, every day | The UK Government want to reduce average water use to 130 litres per day by 2030 | The total UK population is currently about 60 million |
| People with water meters tend to use 10 – 15% less water than those that don’t | Installing push taps in the school could save up to 10 000 litres per pupil per year | A toilet hippo can save about 3 litres per flush. Efficient washing machines use 45 litres per load; others can use up to 165 litres. |
| A rainwater butt can save 5 litres per day | Dual flush toilets can save up to 7 litres per flush | Total number of UK households approx 19 million |

Some starters

- 1 If 10 people cleaned their teeth with the tap off, they save _____ litres every morning.
- 2 If 6 households got water butts they save _____ litres per week.
- 3 If every person in the UK used 4 litres less water per day.....
- 4 If 5000 households each fixed 1 leaking tap.....



RESOURCE SHEET 2: RIVER POETRY

Visit the library or search online and find these poems:

- The River in March by Ted Hughes
- The Water Cycle By Helen H Moore
- The River by Valerie Bloom

Read these extracts and quotations:

On the Banks of Plum Creek by Laura Ingalls Wilder

Spring Floods – ‘The fast, strong water was fearful and fascinating. It snarled foaming through the willow tops and swirled far out on the prairie. It came dashing high and white around the bend upstream. It was always changing and always the same, strong, terrible.’

The Old Crab – ‘The low trees grew thickly on both sides of the narrow water, and their boughs almost touched above it. The water was dark in their shade. Then it spread out and ran wide and shallow, dimpling and splashing over sand and gravel. It narrowed to slide under a footbridge and ran on gurgling till it stopped in a large pool. The pool was glassy-still by a clump of willows.’

Kenneth Grahame, The Wind in the Willows

‘he stood by the edge of a full-fed river. Never in his life had he seen a river before -- this sleek, sinuous, full-bodied animal, chasing and chuckling, gripping things with a gurgle and leaving them with a laugh, to fling itself on fresh playmates that shook themselves free, and were caught and held again. All as a-shake and a-shiver -- glints and gleams and sparkles, rustle and swirl, chatter and bubble.’

Water is the driver of Nature.
Leonardo da Vinci



RESOURCE SHEET 3: FRESHWATER HABITATS

The facts and species information in the table have been mixed-up.

1. Rearrange the information so that each habitat has information about a species that lives there and a fact about either the species or the habitat. You might use the following website to help: www.arkive.org
2. Collect more facts about the species in the table.
3. Find out about some of the other species that live in different types of freshwater habitat.

| | |
|--|--|
| Habitat: A pond in the UK Habitat Fact: 20% of all freshwater on Earth is found in this lake. Species: Grey heron. | Habitat: American freshwater swamp Species Fact: Can be 6 metres long. Species: Great crested newt. |
| Habitat: River in the UK Species Fact: Some Botos are pink. Species: American alligator | Habitat: River Amazon Habitat Fact: Loch Ness contains more water than all of the other lakes in the UK combined. Species: Freshwater white-clawed crayfish. |
| Habitat: River Nile Species Fact: Uses claws to catch prey. Species: The Kingfisher. | Habitat: Wetlands in the UK Species Fact: Breeds in heronries. Species: Baikal seal. |
| Habitat: Lake Baikal Species Fact: Also known as the warty newt. Species: Nile crocodiles. | Habitat: Lake in the UK Species Fact: Can hover over the water as it hunts. Species: Boto. |

RESOURCE SHEET 4: SAVING WATER



Think about some of different ways to save water in your school.

Look at the water saving ideas in the table below and make notes about each idea:

- Approximately how much money will it cost?
- Approximately how much water will it save?
- Briefly explain how this idea could be put into action in your school – what needs doing/who need to do it/when could it be done?

Or

- Where one of these water saving ideas is already being used in the school, explain your thoughts about the scheme and how it might be improved.

When you have finished, decide the order in which these ideas should be put into practice.

| | |
|---|---|
| Team of water monitors – report and/or deal with leaks, dripping taps, running taps | Install flow-restrictor or aerator inserts to all taps. |
| Wash art brushes and pallets in bucket rather than under running tap. | Install water butts for rainwater harvesting. |
| Install motion control sensors to all taps so they can't be left running. | Install water-less urinals. |
| Take part in World Water Day. | Install dual flush toilets. |
| Install water efficient dishwasher and clothes washing machines. | Increase awareness through 'Save Water' Campaign. |

Websites to research

www.waterwise.org.uk/reducing_water_wastage_in_the_uk/

<http://thewaterschool.co.uk/>

www.waterconservationschool.com/fiftyways.htm

RESOURCE SHEET 5: WATER CYCLE



Draw a large diagram of the water cycle that includes facts taken from the following table.

| | |
|---|---|
| Jellyfish and tomatoes are 95% water; frogs and worms are 80% water. | Water is found at the bottom of a well and in the ice on the summit of Mount Everest; in the dew on a spider's web and the raindrops on an Orangutans back. |
| Water is found in paint and shampoo; vinegar and milk; ice cream and margarine. | Water is found in cans of fizzy drinks and bottles of beer; loaves of bread and tins of baked beans. |
| Water is constantly recycled and never destroyed – the water in your tap was around when dinosaurs roamed the planet. | The waste water from our homes is pumped and treated and returned to the rivers. |
| Water is found in the roots, trunks, branches, twigs and leaves of trees. | The Atacama Desert is one of the driest places on Earth – some places get no rain. 1 million people live in this desert. |
| Water is extracted from rivers, pumped and treated and pumped to your tap. | Humans are 70% water; apples are 85% water. |
| There's more water in the soil and air than in all of the rivers in the world. | Water is found in the bladder of a tiger and the saliva of a tortoise. |
| Only 3% of the Earth's water is freshwater – most of this is locked away in ice sheets, glaciers or underground aquifers. | 200ml out of every litre of the Earth's accessible freshwater is located in Lake Baikal |
| The town of Mawsynram in India receives an average of 12 metres of rain per year – the wettest place in the world. | Half of the World's food crops are grown under irrigation. |

LOOK OUT FOR OUR NEXT ISSUE OF LEARN IN JANUARY 2012

FOR MORE INFORMATION

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