

# The Climate Challenge

## Explorify planning support



Curriculum statements	Additional related English Curriculum areas	Explorify activities	Suggested use / Taking it further (Climate Challenge key learning points in <b>bold</b> )
	<h2>Biodiversity- plants, animals, habitats</h2>		
<p>English:</p> <p>To recognise that environments can change and that this can sometimes pose dangers to living things (Y4)</p> <p><i>Northern Ireland:</i></p> <p><i>The variety of living things in the world and how we can take care of them (KS1).</i></p> <p><i>Changes in the local natural environment,</i></p>	<p><b>Plants</b></p> <p><b>Y1:</b> Identify and name a variety of <b>common wild</b> and garden plants, including deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p><b>Y2:</b> Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p> <p><b>Y3:</b> explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p> <p><b>Y5:</b> Describe the life process of reproduction in some plants and animals.</p>	<p><a href="#">Buzzing with life</a>    <b>WGO</b></p>	<p>Identify flowers in the local habitat- younger children could use this <a href="#">spotter sheet</a>. Older children could use the free app Seek by INaturalist (<a href="#">user guide</a>).</p> <p><b>Meadows are now one of Britain’s rarest habitats; 97% have been lost since the 1930s. They support a large population of living things.</b> The RSPB have created a simple <a href="#">video</a> about planting wildflower seed. Find out more about the Plantlife’s <a href="#">No Mow May</a> initiative by watching their introduction video.</p> <p style="text-align: center;"></p> <p>You can encourage wildlife in your school grounds and help restore local biodiversity by planting your own wildflower meadow. The Wildlife Trust has advice about ways to introduce wild flowers <a href="#">here</a>. You could also register for support and match funding from the Earth Restoration Service’s Flutter Flowers <a href="#">here</a> or sign up to be part of <a href="#">Backyard Nature</a>. Do your pupils want to create a wildflower corner at home? They could make <a href="#">seedballs</a> using these instructions and then find a suitable spot for them.</p>

<p><i>including how they can affect living things (KS2).</i></p> <p><i>The relationship between animals and plants in a habitat (KS2).</i></p> <p>Scottish:</p> <p>Contribute to the design or conservation of a wildlife area (SCN 2-02a).</p> <p>Collaborate in the design of an investigation into the effects of fertilisers on the growth of plants. Express an informed view of the risks and benefits of their use (SCN 2-03a).</p> <p>Contribute to discussions of current scientific news items to help develop an awareness of science (SCN 1-20a).</p> <p>Research and discuss the</p>	<p><b>Y3:</b> Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><b>Y5:</b> Describe the life process of reproduction in some plants and animals.</p>	<p><a href="#">Feathery friend</a>      <b>ZIZO</b></p>	<p>This provides an opportunity to explore pollination. Children could learn to recognise different species of bee, with this excellent <a href="#">British Science Week</a> resource. It's estimated that about one third of the food we need is dependent upon pollination by bees. <b>Scientists are concerned that the populations of some bee species are declining in the UK. This could be because of habitat loss, climate change and the use of insecticides.</b></p> <p></p> <p>What could your school grounds offer bees? You could make a <a href="#">bee bath</a> for when they might be thirsty; a '<a href="#">bee hotel</a>' for solitary bees to live in or make a hibernating nest for a queen bumble bee to use over winter with either a <a href="#">buried tea pot</a> or <a href="#">terracotta pot</a>. Of course, planting a <a href="#">wild flower area</a> (or using <a href="#">seed bombs</a>) near these facilities would be perfect!</p>
		<p><a href="#">Which pollinators visit our school grounds?</a>      <b>TBQ</b></p>	<p>Surveying pollinators will help children understand the role they play. To <b>increase the biodiversity supported, a range of flower types are needed.</b> The Royal Horticultural Society (RHS) has produced an easy-to-use chart, the <a href="#">Pollinating Insects Spotter Guide</a> to help identify pollinators. Meanwhile, the urban bees <a href="#">website</a> produces a monthly guide to which bees can be spotted.</p> <p></p> <p>Children could get involved with <a href="#">planting a wildflower area</a> in school or make <a href="#">wildflower seed bombs</a>. For a simple activity for younger children, watch this <a href="#">video</a> about how to create a bee bath. Older primary children would love to make a <a href="#">sugar water</a> or <a href="#">fruit butterfly feeder</a> or a <a href="#">bee hotel</a>.</p>
	<p><b>Y3:</b> Investigate the way in which water is transported within plants</p>	<p><a href="#">Make a plant self-watering device</a>      <b>PS</b></p>	<p>As children start to understand that most plants take up water from the soil through their roots, we can link this to how the <b>rising temperatures which result from climate change, may mean that we need to look after our plants a little more to ensure they don't wilt and die.</b></p> <p></p>

<p>contribution that individuals are making to scientific discovery and invention and the impact this has made on society (SCN 2-20a).</p>			<p>Grow plants- indoors or outdoors. Guttering, <u>wooden pallets</u> or even <u>recycled plastic bottles</u> can allow plants to be grown on your school's vertical surfaces. Children may want to plant these with herbs or strawberries (use this <u>guidance</u> for growing food). Could any of their self-watering designs be helpful? <u>The Royal Academy of Engineering</u> have a vertical farming resource.</p>
<p>Report and comment on current scientific news items to develop a good knowledge and understanding of topical science (SCN 2-20b).</p> <p><b>New Welsh:</b></p> <p><i>Step 1: I can explore the environment, make observations and communicate my ideas.</i></p>	<p><b>Y3:</b> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p><b>Y4:</b> Describe the life process of reproduction in some plants and animals.</p> <p><b>Y6:</b> Give reasons for classifying plants and animals based on specific characteristics.</p>	<p><a href="#">We did not plant trees?</a>      <b>WI</b></p>	<p>Children begin to understand that leaves make food using carbon dioxide and release oxygen. This can lead to a discussion about why forests are essential to our lives and that they are under threat. <b>An area of forest the size of the USA has been lost in the last 100 years.</b> Calculate the carbon storage of your local trees with the BBC Terrific Scientific <u>Trees</u> resource. If you can take your children to a copse or wood, they will enjoy using this <u>woodland spotter sheet</u> or you could use one of the <u>Woodland Trust's tree ID tools</u></p>  <p>The <u>Woodland Trust</u> often offer free community tree or hedge schemes and notably, in 2022, your school can apply for a <u>free tree pack</u> and be part of the Queen's Green Canopy to celebrate Her Majesty's Platinum Jubilee. Alternatively, your school could look after a tree nursery with the <u>Earth Restoration Service</u>. Trees for cities provide curriculum guides and lots of <u>guidance</u> about planting in schools, like this one for a <u>sapling hedge</u>. It is also easier than you might think to work towards a Green Tree School's <u>award</u> with the Woodland Trust.</p>
<p><i>Step 2: I can recognise that what I do and the things I use, can have an impact on my environment</i></p>	<p><b>Y4:</b> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p>	<p><a href="#">Meadow feast</a>      <b>OOO</b></p>	<p><b>The animals pictured live in meadow, field margin and hedges which have become a rarer because of our demand for land and intensive farming.</b> Use <u>OPAL's resources</u> and <u>guide</u> to survey the hedges in your local area. You could even take your own pooter with you using these <u>instructions</u>. Alternatively, you could investigate a range of local habitats using a <u>pitfall trap</u>. Do you find more invertebrates under hedges compared to other habitats?</p>  <p>As above for, Which pollinators visit our school grounds?</p>

<p><i>and on living things and I can identify things in the environment which may be harmful and can act to reduce risk to myself and others.</i></p> <p><i>Step 3: I can understand how my actions and the actions of others impact on the environment and living things.</i></p>	<p><b>Animals</b></p> <p><b>Y1:</b> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p><b>Y2:</b> Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p> <p><b>Y4:</b> Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p><b>Y6:</b> Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p><a href="#">Who is David Attenborough?</a> <b>WHO</b></p>	<p>In this short <u>film</u>, Sir David Attenborough reflects on his life filming the natural world and calls for action to protect it. Here is an earlier clip Sir David Attenborough's meeting his favourite animal: the <u>sloth</u>. Find out about his life story by listening to a <u>reading</u> of the book, 'Little People, Big Dreams: David Attenborough' by Maria Isabel Sánchez Vegara.</p>
		<p><a href="#">Who is Jane Goodall?</a> <b>WHO</b></p>	<p>Dr Jane Goodall is a scientist who studies primates such as monkeys and apes (a primatologist). She is famous for her ground-breaking research on chimpanzees and spent 60 years observing their behaviour in Gombe National Park, Tanzania</p> <p>Be inspired by watching this <u>film</u> of the highlights of Dr Jane Goodall's life made for her 80th birthday. In this <u>film</u>, watch Dr Jane and her team release a rescued chimpanzee into a safe island sanctuary in the Republic of Congo.</p>
		<p><a href="#">Who is Mya-Rose Craig?</a> <b>WHO</b></p>	<p>Learn more about Dr Mya-Rose Craig, her interest in the natural world and her work with birds in this <u>video</u>. Take part in the RSPB's Big Schools Birdwatch and Big Garden Birdwatch. Children can track which birds they have seen using their <u>survey sheets</u>. Your class may want to go onto to achieve a <u>Wild Challenge Award</u> for going out and connecting with nature.</p>
		<p><a href="#">Bird feeders</a> <b>PS</b></p>	<p>You might be surprised to learn what can be used to make a bird feeder: <u>recycled plastic bottles</u>, <u>oranges</u>, <u>apples</u>, <u>floral wire kebabs</u>, <u>yoghurt pots</u>, <u>lego</u>, <u>tea cups</u> or <u>pine cones</u>.</p> <p>If the class were to try their bird feeders out on the school grounds, where do they think would be the best place to put them? What would they need to take into consideration?</p>
		<p><a href="#">Hungry hedgehogs</a> <b>WGO</b></p>	<p>These activities could work together. Younger children can identify hedgehogs as omnivores and later construct food chains with them in. <u>This clip</u> from the BBC explains how the changing seasons affect hedgehogs.</p>
		<p><a href="#">House hunting hogs</a> <b>PS</b></p>	<p>Older children can research more about how hedgehogs are adapted, good sources include: the <u>British Hedgehog Preservation Society</u>, <u>Wildlife Trust</u>, <u>National Geographic Kids</u> and <u>BBC Autumnwatch</u>. <b>Hedgehogs are a vulnerable UK species, and this <u>film</u> explains why biodiversity is so important.</b></p>

			 <p>There are lots of things we can do to help hedgehogs: You can encourage wildlife in your school grounds and help restore local biodiversity. You could plan and build hedgehog houses for hedgehogs to hibernate in with the <a href="#">instructions</a> from <b><u>House hunting hogs</u></b>. Your school could register as a <a href="#">hedgehog champion</a>. You could make hedgehog holes in fences at home and school using <a href="#">this guide</a> to ensure that you are being as hedgehog friendly as possible. It could even be as simple as creating a wild corner which left untouched. Schools can even achieve a <a href="#">Hedgehog friendly campus award</a> for their efforts.</p>
	<a href="#">Beavering away</a>	<b>WGO</b>	<p>Children of all ages might like to try simple dam building. This <a href="#">video</a> is helpful and there is further <a href="#">guidance</a> from the Beaver Trust.</p> <p>For older children, the Beaver Trust has an <a href="#">education pack</a> which includes keystone species activities. The website also has superb <a href="#">competition</a> and <a href="#">media</a> pages. <b>Beavers were hunted to extinction in the UK 400 years ago and are now being reintroduced.</b> Find out more about reintroductions on this <a href="#">Woodland Trust site</a> and after appreciating the advantages, discuss concerns about rewilding beavers: they could gnaw down trees we want to keep, spread disease or prevent fish migration.</p>  <p>If you decide to 'be like a beaver' and build a school pond, you will be providing a fantastic habitat and water source for local wildlife (Warwickshire Wildlife Trust has produced this <a href="#">helpful guidance</a> and ASE has this useful <a href="#">safety guide</a>). When you don't have much space, you could still add <a href="#">mini-ponds</a>. It would also be fun to make your <a href="#">own nets</a> and go pond dipping with the guidance and keys in this <a href="#">pond pack</a> or with <a href="#">OPAL's freshwater invertebrate guide</a>.</p>

		<a href="#">Batty homes</a> 000	<p>There are 18 species of bat in the UK and they are all under threat, with declining populations. The resources and teacher guides from the <a href="#">Bat Conservation Trust</a> explore the classification, lifecycles and conservation of bats. Understand more about bats by watching this <a href="#">short BBC film</a> of a long-eared bat hunting. In maths lessons, children could explore these <a href="#">fact files</a> on the 18 species of bats found in the UK and create comparative charts and graphs. Children may also like to create 'Top Trump' cards. When learning about scale factors, children could calculate how large their <a href="#">wingspan</a> would be if they were a bat.</p> <p> Children could play this fun '<a href="#">Bat and Moth</a>' game to see how well they would do as a bat. They could create posters highlighting the importance of bats and dispelling <a href="#">bat myths</a> to persuade others that bats should be understood and appreciated.</p> <p>To encourage bats in your local area, older children with sufficient support could collaborate to make <a href="#">bat roosting boxes</a>. It is also important to grow <a href="#">flowers that release evening</a> scent to attract the moths which bats love to hunt.</p>
	<p><b>Y4:</b> Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p><b>Y6:</b> Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<a href="#">Flying high</a> WGO	<p>Children of all ages will love taking part in RSPB annual BIG School bird watch in February. They have great <a href="#">bird spotting resources</a> available. <b>Older children can learn that some birds that should be native to the UK and that were once abundant, have declined to near extinction. Birds have been hunted and the eggs collected. Reintroductions have helped some bird species recover.</b> Research about the red kite <a href="#">here</a>, the white-tailed eagle with the RSPB and white storks in this <a href="#">National Geographic article</a>.</p> <p> Children enjoy making bird feeders to encourage birds to visit but please be mindful of allergies. These <a href="#">simple designs</a> work well and WWT have <a href="#">useful guidance</a> on how to repurpose a plastic bottle. The Natural History Museum offers <a href="#">instructions</a> to make a bird nesting box. Once they are in use, <a href="#">cleaning the bird boxes</a> each year is important (but follow safety guidance).</p>

	<p><b>Y4:</b> Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p><a href="#">Family meal</a></p>	<p><b>WGO</b></p>	<p>After considering their place in a food chain (Find out more about the polar bear's diet with <a href="#">WWF</a> or research a range of polar bear facts <a href="#">here</a>), children learn that Climate change has led to an increase in global temperatures. <b>As the Arctic warms, the sea ice melts and this makes it difficult for polar bears to thrive. They hunt, roam and breed on the sea ice and so their survival depends upon it.</b></p> <p></p> <p>Everyone can immediately help fight global warming by reducing their personal consumption of electricity. This activity could inspire children to make a personal <a href="#">pledge with the WWF</a> .To get whole families involved, you could encourage them to apply for their <a href="#">Green Blue Peter Badge</a>.</p>
	<p><b>Y4:</b> Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p><a href="#">How can we slow down evaporation and make sure wildlife can drink?</a></p>	<p><b>TBQ</b></p>	<p>Children can compare how the surface area of different containers affects evaporation (plans available <a href="#">here</a>.) <b>Some types of extreme weather events are happening more often or are becoming more intense because of global warming. Higher temperatures can make heatwaves more intense and increase evaporation which worsens droughts.</b> Water is essential for wildlife.</p> <p></p> <p>Experts recommend building a <a href="#">pond</a>, using a bird water feeder (see photo), hanging a drip jug above your bird bath or building a <a href="#">butterfly puddling station</a>.</p>
	<p><b>Habitats</b></p>	<p><a href="#">Important Habitats</a></p> <p>Suitable for cross curricula work for older primary children</p>	<p><b>OOO</b></p>	<p><b>Three priority habitats in the UK- each one is rich in wildlife.</b> Research the plants, birds and other animals that can be found in these different habitats. Good starting points include: <a href="#">Peatland</a>, <a href="#">Lowland heath</a>, <a href="#">Yorkshire Limestone pavements</a> Children could apply their geography skills and map where these habitats are found in the UK: <a href="#">Peatland map</a>, <a href="#">Lowland heath map</a>, <a href="#">Limestone pavement map</a>. Watch this <a href="#">video</a> about the <b>benefits of peatland</b>.</p>

			 <p>The government are proposing measures to stop using peat for gardening but <u>conservationists worry</u> that the timeline for this is too slow. The Wildlife Trusts are trying to raise awareness of the impact of peatland habitat loss. On their website, they <u>list retailers</u> that have committed to phasing out peat and their relative timelines for doing this. Perhaps children could design posters explaining why peatlands are so important and persuading people to buy peat-free products?</p>
	<a href="#">What impact do our choices have on habitats?</a>	<b>TBQ</b>	<p>In last century there has been a massive increase in the human population. <b>Conservationists recommend that as well as preserving land for wildlife, we should learn to share it with wildlife.</b> Discussion about land use including hedges, wildlife road crossings, farmland, new development of homes and roads.</p>  <p>Children could identify a local issue to explore: The <u>Green School Project</u> has an excellent school dinners survey- you need to sign up but this is free. OR children could create an <u>action plan</u> for land sharing the school grounds? They could plant <u>trees, shrubs or even a whole hedge</u>, install a <u>pond</u> or <u>mini pond</u>, make <u>log or rock piles</u>, plant flowering plants which flower at different times of the year, make compost heaps and <u>dead hedges</u>, introduce climbing plants up vertical surfaces, supply bird <u>food</u> and <u>clean water</u>, plan <u>wild flower areas</u> and <u>wild life shelters</u>.</p>
	<a href="#">Who is Milly Hennayake?</a>	<b>WHO</b>	<p>Milly Hennayake is an engineer who keeps people safe from flooding. <u>Experts</u> say that climate change is likely to result in more floods in the future. As well as designing engineering solutions that divert water away from buildings, homes and roads, Milly also designs <u>sustainable urban drainage systems (SUDS)</u> which uses nature to control surface water close to where the rain falls. This <u>positive impacts</u> on the environment by providing habitats as well as reducing flooding.</p>



Children could increase the number of natural surfaces in the school grounds by creating new planting areas, hedges or trees (Woodland Trust offer guidance and sometimes funding). Mains2Rains suggests simple ways to use rainwater more effectively, from letting areas of grass grow longer to swapping paving for plants. Children could decide what would work for their school and make a pledge. The WWF guidance for schools also offers inspiration.



# Global warming- resources, energy, consequences

<p>English:</p> <p>To recognise that environments can change and that this can sometimes pose dangers to living things (Y4)</p> <p><i>Northern Ireland KS2:</i></p> <p><i>How waste can be reduced, reused or recycled and how this can be beneficial.</i></p> <p>Scottish: Consider examples where energy is conserved, identify the energy source, how it is transferred and ways of reducing wasted energy (SCN 2-04a).</p>	<p><b>Resources</b></p> <p><b>Y1:</b> Distinguish between an object and the material from which it is made.</p> <p><b>Y2:</b> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p>	<p><a href="#">Your school banned paper?</a></p> <p><b>WI</b></p>	<p>Discuss how much paper is wasted in school and consider ways to improve this. Allow the children to investigate the trees near your school by estimating how tall they are with this <a href="#">simple method</a> and how wide their trunks are using children’s arm spans. Children can try <a href="#">paper making</a>, with this resource from the Centre for Industry Education Collaboration called <a href="#">Pencils</a>.</p> <p></p> <p>You could register with the Woodland Trust and start working towards a Green Tree School’s <a href="#">award</a> by using their assembly, <a href="#">The Man Who Planted Trees</a>.</p>
	<p><b>Y2:</b> Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p><b>Y3:</b> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <p><b>Y6:</b> Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p>	<p><a href="#">What is a balanced diet for us and the planet?</a></p> <p><b>TBQ</b></p>	<p><a href="#">Chester Zoo</a> has a wealth of videos and songs which help explain the reasons sustainable palm oil is important. The <a href="#">WWF</a> has scored the sustainability commitment of companies who use palm oil. Do the children recognise any of the companies who are lagging behind or have not responded? Children could study Chester Zoo’s <a href="#">list of 100% sustainable palm oil products</a></p> <p></p> <p>Children could think about the foods they eat most regularly, and <a href="#">pledge</a> to make a switch. Alternatively, they could create a WWF <a href="#">plate placard</a>.</p>
	<p><b>Y3:</b> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p>	<p><a href="#">We ate insects?</a></p> <p><b>WI</b></p>	<p>The Young People’s Trust for the Environment explore <a href="#">food miles in this lesson</a>. Children could find out where a range of foods come from and use this <a href="#">calculator</a> to find out how many miles each product has travelled. You could even visit a local greengrocers or supermarket to look at where the fruit and veg comes from.</p>

<p>Explore non-renewable energy sources, describe how they are used in Scotland today and express an informed view on the implications for their future use (SCN 2-04b).</p> <p>Investigate the use and development of renewable and sustainable energy to gain an awareness of their growing importance in Scotland or beyond (TCH 2-02b).</p> <p>Take appropriate action to ensure conservation of</p>	<p><b>Y6:</b> Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p>		 <p>Learn about <a href="#">seasonal foods</a> here and make a seasonal food calendar to display for your family by writing down delicious, seasonal, healthy foods for every month of the year (<a href="#">this resource</a> will help).</p>
	<p><b>Energy</b></p> <p><b>Y2:</b> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p>	<p><a href="#">Solar does it</a></p>	<p><b>ZIZO</b></p>  <p>Investigate some solar-powered toys to see how well they work. Will they work on cloudy days as well as sunny days?</p> <p>You could treat your class and harness the power of the sun by making smores in a <a href="#">solar oven</a> with NASA's instructions or this straight forward <a href="#">video</a>.</p>
	<p><b>Y4:</b> Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>Through exploring non-renewable energy sources, I can describe how they are used in Scotland today and express an informed view on the implications for their</p>	<p><a href="#">How much electricity do we use?</a></p>	<p><b>TBQ</b></p>  <p>BBC <a href="#">Terrific Scientific</a> will take learners on a journey to find out how much energy is used in school. Or children could devise their own survey to find out where electricity could be saved. This electricity section of WWF's Green Ambassadors <a href="#">school survey</a> may be helpful. Can children agree on three ways to reduce the amount of electricity used in school?</p> <p>Begin by electing class eco-monitors to make sure that classroom lights are turned off when not in use. Could this be the start of a school Eco-team? You could even take the steps required to be an <a href="#">Eco-School</a>. Community awareness can start by encouraging children to apply for a <a href="#">Green Blue Peter badge</a> because it has a POWER pledge and involves the whole family.</p>

<p>materials and resources, considering the impact of my actions on the environment (TCH 1-02a).</p> <p>Contribute to discussions of current scientific news items to help develop an awareness of science (SCN 1-20a).</p> <p>Research and discuss the contribution that individuals are making to scientific discovery and invention and the impact this has made on society (SCN 2-20a).</p> <p>Report and comment on current scientific news items to develop a good</p>	<p>future use SCN 2-04b</p>	<p><a href="#">What If All transport was electric?</a></p>	<p><b>WI</b></p>	<p>Challenge the class to think about a carless (electric or otherwise) future. How would people move around? How could technology help solve transport problems? What do they think about driverless cars? How would the class persuade people to use electric transport? How can the challenges of moving to electric vehicles be overcome? Investigate batteries further and then enter your results into this global experiment with the <a href="#">Royal Society of Chemistry</a>.</p> <p></p> <p>Exploring the <a href="#">benefits of walking</a> (even part of the way) to school might inspire your school to take part in the annual <a href="#">Walk to School week</a> in May (you may be <a href="#">eligible</a> for a free place) or even take part in their annual <a href="#">badge design competition</a>. The local community might be inspired to set up a Walking bus as suggested in this <a href="#">guidance from the Eden project</a>.</p>
		<p><a href="#">Take your turn</a></p>	<p>OOO</p>	<p>Discuss renewable energy sources with your class. They could research the different ways electricity is generated and the <a href="#">pros and cons</a> of each.</p> <p></p> <p>Pupils could learn about Earth Hour in school and take part by switching off their lights at home (date for 2023 is 25th March). You could use this fun game to get children motivated. To get the whole school involved you could sign up to Switch off fortnight (in November).</p>

<p>knowledge and understanding of topical science (SCN 2-20b).</p> <p><b>New Welsh:</b></p> <p><i>Step 1: I can explore the environment, make observations and communicate my ideas.</i></p> <p><i>Step 2: I can recognise that what I do and the things I use, can have an impact on my environment and on living things and I can identify things in the environment which may be harmful and can act to reduce risk to myself and others.</i></p>		<p><a href="#">Green Power</a>      <b>OOO</b></p>	<p>Your class could learn about life without electricity and then design and make a simple wind turbine with <a href="#">Practical Action's STEM Wind Power Challenge</a> or delve into the options to power <a href="#">Moja Island</a>.</p>  <p>If your children enjoy lego, you could invite them to create a green power solution with Build the change. Pupils could learn about Earth Hour in school and take part by switching off their lights at home (date for 2023 is 25th March). To get the whole school involved you could work together to become a Let's go Zero school. For more ideas on small positive steps to help the planet, read our article on 'The Climate Challenge'. Your children may be inspired to try and persuade the school governors to consider whether solar panels would be viable to power the school (For the governors: useful government guidance and links to Solar for Schools and Possible –solar schools).</p>
	<p><b>Y6:</b> explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p>	<p><a href="#">Light up the dark</a>      <b>PS</b></p>	<p>Can the children think of other uses for these creations? Explore the <a href="#">project</a> further to understand how this simple solution has changed lives.</p> <p>This Primary Science <a href="#">webquest</a> is an excellent way for the children to explore who invented electric light bulbs and how scientific ideas change over time.</p>  <p>If this inspires your class, give them the opportunity to invent something that promotes climate justice. The YouTube channel Kidsinventstuff sets monthly challenges for children to design their own invention. You can download the worksheets, submit their designs and the winner's design gets made by the YouTube channel. Alternatively, you might want to try 'If you were an Engineer, what would you do?' where children can interview an engineer, identify a common problem and design a solution.</p>

<p>Step 3: I can understand how my actions and the actions of others impact on the environment and living things.</p>	<p><b>Y6:</b> Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p>	<p><a href="#">What If We didn't use transport to get to school?</a></p>	<p><b>WI</b></p> <p>Find out the different methods children use to get to school. What is the total distance travelled by the class altogether and how much time does this take? Children could design their own table to record over a week how they travelled to school, how long it took, the weather... and other factors they think might be important?</p> <p></p> <p>Exploring the <a href="#">benefits of walking</a> (even part of the way) to school might inspire your school to take part in the annual <a href="#">Walk to School week</a> in May (you may be <a href="#">eligible</a> for a free place) or even take part in their annual <a href="#">badge design competition</a>. The local community might be inspired to set up a Walking bus as suggested in this <a href="#">guidance from the Eden project</a>.</p>
	<p><b>Consequences</b></p> <p><b>Y4:</b> Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p><a href="#">On thin ice</a></p>	<p><b>WGO</b></p> <p>Investigate how melting sea ice and land ice affect sea levels with this simple but effective <a href="#">project</a> from NASA.</p> <p></p> <p>Use the persuasive facts about polar bears to write a letter, create a film or poster to inform your school and community about how to make steps to save energy and reduce global warming. There are lots of small household habits they could alter which they might not realise could help:</p> <ul style="list-style-type: none"> <li>• Turn down your thermostat at night or when you're away for more than four hours during the day.</li> <li>• Dress warmly with layers to help retain body heat.</li> <li>• Keep garage doors closed in winter to prevent them letting cold drafts in.</li> <li>• Keep curtains and shades open during the day to let the sunshine heat the room.</li> <li>• Only boil the amount of water which you will use.</li> <li>• Avoid opening oven doors too often and turn off ovens a few minutes before the time needed so that the trapped heat can continue the cooking.</li> <li>• When buying new appliances, make sure to choose the most energy efficient model.</li> </ul>

			<ul style="list-style-type: none"> <li>• Vacuum the coils on your refrigerator at least every three months. Dust makes the refrigerator work harder and use more energy.</li> <li>• Defrost your freezer once a year or whenever the ice build-up is more than 4 cm.</li> <li>• Run the dishwasher and washing machine only when it is full and on the shortest cycle that is effective.</li> <li>• Try to line dry clothes whenever possible.</li> <li>• Switch to energy efficient LED bulbs.</li> <li>• Turn off lights when not in rooms.</li> <li>• Only use outdoor lighting when needed.</li> <li>• Repair dripping taps quickly.</li> <li>• Install water butts and use rain water to water gardens</li> </ul>
	Melting away	ZIZO	<p>Explore some of the data and evidence with your pupils. NASA has excellent <a href="#">images</a> showing the effects of climate change on different environments over time, and produces accessible <a href="#">data</a> that clearly shows the loss of sea ice. The <a href="#">European Space Agency resource pack</a> includes excellent practical experiments which help children understand the effects of ice melting.</p>  <p>Use this <a href="#">visual guide</a> from the Natural History Museum to explore what we can do to help the planet. Were there any ideas that the children were <b>surprised</b> about? What positive action could they start doing to reduce how much energy they use so that less carbon dioxide is produced? Could they make a poster to remind others about why this action is important? For example, posters to remind everyone to turn off lights, computers, taps and monitors could be strategically positioned around school.</p> <p>The <a href="#">NFU Climate heroes lesson</a> highlights a surprising initiative: farmers are feeding cows seaweed to reduce their methane emissions (in burps!).</p>



# Pollution- water, air, light, sound and land

<p>English: To recognise that environments can change and that this can sometimes pose dangers to living things (Y4)</p>	<p><b>Water</b></p> <p><b>Y2:</b> Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</p>	<p><a href="#">Remarkable reef</a> <b>WGO</b></p>	<p>Explore the Great Barrier Reef with this <a href="#">virtual field trip</a>.</p> <p></p> <p>To help protect the coral reef, one of the actions suggested by the <a href="#">National Oceans Service</a> is to not waste water as it all eventually finds its way back to the oceans. Can the children think about ways that they could do this? Maybe they could make a promise to not leave the tap running when they clean their teeth?</p>
<p>Scottish: Investigate different water samples from the environment and explore methods that can be used to clean and conserve water and be aware of the properties and uses of water (SCN 2-18a)</p>	<p><b>Y5:</b> Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p>	<p><a href="#">Dangerous Flood water?</a> <b>MS</b></p>	<p>Watch this <a href="#">BBC film</a> showing how water can be recovered from a salt water solution by distillation. An extension to this activity could be adding olive oil to the 'flood water' to represent an 'oil spill'. There is guidance on how children could investigate separating oil and water using 'moon sand' (hydrophobic sand) on page 21 of this <a href="#">Lab- booklet</a>.</p> <p></p> <p>Take part in <a href="#">Water Aid's</a> fun and enlightening Pupil Pipeline Challenge. If you want to learn more about sustainable development goals your children could take part in the <a href="#">World's Largest Lesson</a>.</p>
<p>Collaborate in the design of an investigation into the effects of fertilisers on the growth of plants. Express</p>	<p><b>Water/Land</b></p> <p><b>Y1:</b> Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p><b>Y2:</b> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p>	<p><a href="#">Plastic Fantastic</a> <b>PS</b></p>	<p>Watch this <a href="#">BBC Newsround</a> report about plastic waste</p> <p></p> <p>You could reduce the amount of plastic which is thrown away from your school by encouraging the use of reusable water bottles, reusing plastic wallets instead of laminating new displays or using coloured pencils rather than highlighters. Perhaps even <a href="#">register your school</a> and work towards plastic free status.</p>

<p>an informed view of the risks and benefits of their use (SCN 2-03a).</p> <p>Contribute to discussions of current scientific news items to help develop an awareness of science (SCN 1-20a).</p> <p>Research and discuss the contribution that individuals are making to scientific discovery and invention and the impact this has made on society (SCN 2-20a).</p> <p>Report and comment on current scientific news items to develop a good knowledge and understanding of topical science (SCN 2-20b).</p> <p>New Welsh:</p>	<p><b>Y1:</b> Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p><b>Y2:</b> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Observe and describe how seeds and bulbs grow into mature plants.</p> <p><b>Y3:</b> explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</p>	<p><a href="#">Biodegradable plant pots</a></p>	<p><b>PS</b></p> <p>Children could keep a photo record or write and draw a seed diary.</p>  <p>Children can start to spread the messages about plastic pollution. They could make a set of instructions (written or video) to share with their families about how to make biodegradable plant pots and why it is important?</p>
	<p><b>Y5:</b> Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p>	<p><a href="#">Clean up the beach</a></p>	<p><b>PS</b></p> <p>If they haven't already noticed the grains of salt mixed with the sand, challenge your class to separate the sand and salt too. You could ask them to think about which of the two substances dissolves in water and whether or not a solution can be separated by filtering. A guidance lesson is available <a href="#">here</a>.</p>  <p>If you live near a beach, you can organise or <a href="#">join in</a> with a beach clean yourselves. The Marine Conservation Society offers excellent <a href="#">guidance</a>. If you don't live near a beach, then perhaps you could organise a litter pick to clean up your local environment? Keep Britain Tidy offer some <a href="#">good advice</a> to help you prepare for a safe litter pick</p>
	<p><b>Y2:</b> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p>	<p><a href="#">Pack it in</a></p>	<p><b>PS</b></p> <p>Once the wraps are dry, the children could test their properties. Was the material waterproof before the beeswax was added? Are the wraps waterproof now? Try shaping the beeswax wraps? Does warming them with the heat of their hands help? Why? Would they recommend washing them with very hot water? Why not?</p> 

<p>Step 1: I can explore the environment, make observations and communicate my ideas.</p> <p>Step 2: I can recognise that what I do and the things I use, can have an impact on my environment and on living things and I can identify things in the environment which may be harmful and can act to reduce risk to myself and others.</p> <p>Step 3: I can understand how my actions and the actions of others impact on the environment and living things.</p>			Why not make extra wraps to sell at a school event? Children could donate the money made to an environmental group or use it to invest in making the school grounds more wildlife friendly. You could encourage families to apply for their <u>Green Blue Peter badge</u> because they could use their beeswax wrap instead of plastic film for their Plastic Pledge.
	<p><b>Air</b></p> <p><b>Y3:</b> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p><b>Y4:</b> Compare and group materials together, according to whether they are solids, liquids or gases.</p>	<p><a href="#">Glowing depths</a>      <b>ZIZO</b></p>	<p>Observe what happens when everyday materials burn. <u>CLEAPSS guidance</u> suggests working in small, supervised groups, using a sand tray and small samples (e.g. wet and dry paper, cotton, a raisin).</p>  <p>Bringing plants inside the classroom has been proven to improve air quality and children may enjoy hearing about how <u>Putney High school</u> showed this. Then they can introduce classroom plants using their <u>guidelines</u>.</p>
	<p>Through exploring non-renewable energy sources, I can describe how they are used in Scotland today and express an informed view on the implications for their future use SCN 2-04b</p>	<p><a href="#">How can the wind help us?</a>      <b>TBQ</b></p>	<p>Read the story of <u>William Kamkwamba</u>. William used engineering to solve a problem for his village. What problem would you like to solve? Can you design something to solve the problem? Your class could submit their ideas to the <u>Primary Engineers Leaders Award</u>.</p>
	<p><b>Air, light and sound</b></p> <p><b>Y4:</b> Compare and group materials together, according to whether they are solids, liquids or gases.</p>	<p><a href="#">Pollution Everywhere</a>      <b>OOO</b></p>	<p>A short, clear <a href="#">video</a> to explain how <b>light pollution</b> affects turtle hatchlings with background reading (if desired). Another powerful <a href="#">video</a> along with key facts and sound files illustrating how <b>sound pollution</b> affects marine life. Try making <a href="#">this simple pollution catcher</a> to investigate your local air quality.</p>  <p>We can suffer from noise being everywhere too, so remembering our mental health is important. Quiet times for mindfulness can really help.</p>

	<p><b>Y4:</b> Identify how sounds are made, associating some of them with something vibrating.</p>		<p>Try these <a href="#">short activities from Ophea</a> or take a few moments to breathe in time with this <a href="#">video</a>. Some families might want to take part in this Citizen Science Project with <a href="#">Globe at Night</a> or it might be part of a <a href="#">Star gazing school event</a>.</p>
	<p><b>Y5:</b> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p>	<p><a href="#">Air Pollution Scientist</a></p>	<p><b>WGO</b></p> <p>Dr Mark Richard's research focuses on ways of measuring the invisible chemicals which pollute the air. Children can use this <a href="#">website</a> to look at the air quality in their area, which uses data provided by the Met Office. Try making <a href="#">this simple pollution catcher</a> to investigate your local air quality.</p>
	<p><b>Land</b></p> <p><b>Y5:</b> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p>	<p><a href="#">Where does our rubbish go?</a></p>	<p><b>TBQ</b></p> <p>This <a href="#">website</a> provides a wide range of useful statistics about recycling. Children might be inspired to produce posters, poems/raps or letters persuading people to reduce, reuse and recycle.</p>  <p>Get the whole school motivated to recycle batteries with the <a href="#">Big Battery Hunt</a>. When you register, you receive free pupil collection boxes and resources to support your efforts. Perhaps you could organise a litter pick to clean up your local environment? Keep Britain Tidy offer some <a href="#">good advice</a> to help you prepare for a safe litter pick.</p>
	<p><b>Y5:</b> give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>	<p><a href="#">Who is Kiara Nighin?</a></p>	<p><b>WHO</b></p> <p>Kiara Nirghin is a South African woman who, at the age of 16, invented a new water conservation material for soils. She used local waste products (orange peel and avocado skins) and developed special techniques to make a super absorbent polymer (SAP). This is a powder which absorbs lots of water when it is wet (up to 300 times its own weight) and then releases the water when the plants need it.</p> <p>Children can explore super absorbent polymers by investigating nappies. Younger children could explore which brand is the most absorbent, while older children could take it further and extract the super absorbent polymer (SAP) from the nappies and observe the water being absorbed. There is guidance for the investigation in the <a href="#">TAPS</a> focused assessment plan for Year 5: Nappies. Meanwhile <a href="#">this</a> shows how to extract the SAP from nappies (watch up to 3.10).</p>

	<p><a href="#">Have you ever seen rubbish where it shouldn't be?</a></p>	<p><b>HYE</b></p>	<p>Can the children identify local areas where they know rubbish is dropped or dumped? What wildlife lives there? What might the impact be? The children could organise a clear up or contact the local council to work with them to ensure the area is cleared.</p>
	<p><a href="#">There was no plastic?</a></p>	<p><b>WI</b></p>	<p>Read the <a href="#">intergenerational letters</a> from Sustainability First to learn about how our wasteful habits have changed over the last 77 years.</p>  <p>Scientists across the globe are working on solving to the plastic waste problem. Some have developed biodegradable plastics from various waste products. This <a href="#">potatoes to plastics pack</a> includes reading and writing ideas as well as instructions showing how to extract starch from potato peelings and make and test bioplastic from that starch.</p>
	<p><a href="#">Stringy patterns</a></p>	<p><b>ZIZO</b></p>	<p>Many teabags don't rot well because they contain plastics such as polypropylene which is often added to help heat-seal the tea bags. What questions would your children like to investigate about the biodegradability of tea? Challenge them to design and set up a comparative test. Children could bury a range of tea bags (including biodegradable brands but possibly also different tea types or tea bag shapes) 8cm deep and 1 metre apart, placing labels above ground to mark the spots. Perhaps they could also bury the same weight of loose leaf tea? They could dig them up three or four months later and look for signs that the bags have started to biodegrade. (If needed, here is detailed <a href="#">guidance</a> from a European project).</p>  <p>If you use a composter at school, children could take part in citizen science <a href="#">Big Compost Experiment</a>. A brilliant design can change people's habits! Show children these creative <a href="#">tea strainers</a>. What do they have in common? Can the children create their own design for a tea strainer? Ask them to consider what it would be made of and how it would be used.</p>

ABBREVIATIONS AND DESCRIPTIONS OF THE DIFFERENT EXPLORIFY ACTIVITY TYPES		
<b>ZIZO</b>	Zoom In, Zoom Out	Visually engaging close-up photos
<b>OOO</b>	Odd One Out	Find similarities and differences
<b>WGO</b>	What's Going On?	Short, distraction-free videos
<b>HYE</b>	Have You Ever?	Activities linked to everyday experiences
<b>WI</b>	What If?	Explore ideas in new contexts
<b>TBQ</b>	The Big Question	Plan an investigation
<b>PS</b>	Problem Solvers	Think critically and creatively
<b>MS</b>	Mission Survive	Fun, imaginative hands-on challenges
<b>MB</b>	Mystery Bag	Use senses to work out contents in a bag
<b>LWCYH</b>	Listen What Can You Hear?	Recordings of familiar sounds
<b>SWA</b>	Start With Art	Using artworks to prompt science discussion
<b>WJH</b>	What Just Happened?	Observing changes over time
<b>WHO</b>	Who Is?	Learn about a diverse range of scientists

**Other recommended resources to support planning:**

[PLAN primary science assessment resources \(planassessment.com\)](https://planassessment.com)

[Assessment \(TAPS\) - Curriculum Materials | Primary Science Teaching Trust \(psts.org.uk\)](https://psts.org.uk)

[The Great Science Share](#) - see videos on Scientific Enquiry under the tab "Great Science Skills".

Explorify is managed by STEM Learning and the Primary Science Teaching Trust



Updated July 2023