

Guidance for Teachers

Sustainability *first*

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Great Science Share for SCHOOLS

Protecting our Changing World

Sustainability *first*

Equipment:

- Device to share video
- Pencils, paper and/or computers for pupils' to write questions, comments, concerns etc.

Main concepts:

- Exploring connections to the earth and nature, including through different cultures.
- Exploring ecosystem services - everything earth provides us including clean air, water, food and beauty.
- Introduction to the climate crisis including greenhouse gases, decreasing biodiversity and how this impacts ecosystem services

Curriculum Linking:

England

- Key Stage 2 Science: Pupils should be taught to recognise that environments can change and that this can sometimes pose dangers to living things.

Scotland:

- Social Studies: I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally responsible way. SOC 2-08a
- Health and Wellbeing: I can understand how advertising and the media are used to influence consumers. HWB 2-37a

Wales

- Geography: Pupils should be given opportunities to describe the causes and consequences of how places and environments change, e.g. by season; from past to present; the need for sustainability.
- Science: Pupils should use and develop their skills, knowledge and understanding by comparing the Earth with other planets, investigating materials around them and considering the importance of recycling.

Step by Step Guidance:

- Watch the video with pupils
- Afterward, encourage pupils in groups, or as a class, to consider their connections with planet earth.
- What do they value most about planet earth?
- How might the climate crisis impact their connections with planet earth?
- Are pupils' concerned by this?
- Submit questions, comments and/or concerns in the uploader form here.



Share with us so we can learn with you!

Make sure to upload your work here so we can learn with you and share your work widely with waste experts at our June 15th pupils' assembly!

DISCLAIMER: This activity sheet was written for The Great Science Share for Schools, Sustainability First, their sponsors (National Grid) and the Great Science Share for Schools are not liable for the actions of activity of any persons who uses this resource or in any of the suggested further resources. We assume no liability with regard to injuries or damage to property that may occur as a result of using this information. These activities are designed to be carried out by children working with an adult. The adult is fully responsible for ensuring the activity is carried out safely. You can access further H&S advice from www.cleapss.org.uk

Protecting our Changing World Presentation Transcription

I love living on planet Earth. I know that whatever I need to survive and be happy, the earth will provide it for me. I particularly love food – and I'm constantly amazed at the different kinds of vegetables and fruits growing across the globe, in different climates and in such amazing, intricate ways!

Have you ever stained your fingers touching beetroots? Isn't the colour so rich and unique? Have you ever cut open a pomegranate and looked at all the delicate seeds resting inside the fruit? Have you ever pulled carrots from the ground – at first glance, there's just a sea of green leaves, but if you burrow your fingers below the soil, you'll pull out bright orange, and sometimes purple or yellow roots – the carrots, that you can roast, or boil, or eat raw to enjoy its crunchy texture.

Have you ever poured golden, silky smooth maple syrup over a stack of pancakes? Maple syrup comes from maple trees. Around spring, the tree begins making maple sap, a thin, sugary liquid, that feeds its buds so that they can bloom into leaves during the spring. Once the leaves on the tree have grown, the sap flows back down the trunk so that we can take some and make maple syrup. Maple trees feed themselves, and us, at the same time!

For me, part of what makes me love planet earth is the fact that it nourishes me, and my family and friends and everyone around me. Plants know how to produce enough food to make us strong and happy.

What makes you feel connected to the earth?

It's easy to be connected to earth when it does so much for us! Let's explore how planet earth makes itself a safe home for us.

Clean Air

Firstly, the earth knows how to provide us with clean air so that we can fill our lungs with oxygen. How does the earth do this? Well, many trees and plants clean the air we breathe, by breathing in all the yucky stuff in our air including carbon dioxide, which is a gas that is currently making our planet warmer and contributing to climate change. Trees then breathe out nice clean oxygen, which helps us keep our hearts beating and our minds sharp! Trees need carbon dioxide to grow and we need oxygen to grow – trees are helping us while helping themselves.
The oceans also play a critical role in capturing carbon dioxide from things like cars and planes that pollute the air. Around a quarter of all carbon dioxide emissions are absorbed by the ocean, making it one of the world's largest stores of carbon." World Economic Forum)

Fresh Water

The planet also provides us with clean water. Plants and animals in rivers and lakes clean our water and filter out all the gunk so that we can use the water to drink and cook and clean. Algae, that green, slimy organism, which actually is neither a plant nor an animal, cleans water for us! Algae uses pollutants and sunlight to grow – so it's doing us a favour and doing itself a favour by cleaning our water! And this is just one example of the ways planet earth provides us with freshwater!

An ecosystem is all the living things in an area – like in a lake, or a sea or a river. Ecosystems work delicately in perfect harmony – plants and animals rely on one another in different ways – creating a healthy environment for all living things. People are also like this, we depend on one another to be healthy and happy and that's why we live in communities.

The variety in plants and animals in an ecosystem is called biodiversity - biodiversty is really important. If there are many different plants and animals in rivers and lakes, or lots of biodiversity, then it means that it's easier to keep the water clean.

Food

As I mentioned, the planet also provides us with amazing food! Plants, like beanstalks, know how to grow big and tall, and we can eat them!

Did you know sometimes plants grow better when they grow beside other plants? In Canada and North America, Indigenous communities, or the first inhabitants of North America before European settlers, found that growing beans, squash and corn close together helps each of the plants! How does this work? Well, when the corn grows tall, the beans can wrap around it and use the corn for support as they also grow tall. The beans also release a chemical into the soil called nitrogen, which can be good for other plants, like the squash. The squash doesn't grow tall like the corn and the beans, but it spreads across the allotment helping prevent weeds, or plants that can harm the beans and corn, from growing and disrupting the growth of the beans and corn. Indigenous people in Canada and America call beans, corn, and squash the three sisters – because they take care of each other like siblings often do!

Protecting our Changing World Presentation Transcription Continued

Through exploring how the earth provides us with clean air, clean water, and yummy food – we can see that the earth knows how to care for itself, and us, at the same time. We all know how to live in balance.

Beauty

There's also one simple thing that planet earth provides us with.... its beauty! Aside from the clean air and water and fresh fruit and vegetables, the earth is also just really nice to look at! From crystal clear rivers to sleepy swamps.
In the UK, we're lucky to be surrounded by so much natural beauty. What is the most beautiful place in the UK that you've visited?

For me, one of the most beautiful places I've visited is Glen Coe, in the Highlands in the north of Scotland. Glen Coe is a narrow valley surrounded by mountains and beautiful green rolling hills –looking at the mountains made me feel so small, but also protected by their magnificent presence. How did Glen Coe form? 420 million years ago (can you imagine what the world was like 420 million years ago?), that's over 200 million years before dinosaurs, a volcano erupted in the area, and the beauty that we're left with is from the remains of this volcano!
Isn't it amazing to think that the beautiful nature we get to look at has been forming for hundreds of millions of years!

Culture

So much of our culture revolves around nature and planet earth. Many festivals around the world celebrate the fresh food, clean air, clear water, and stunning beauty the earth provides for us.

Have you ever seen a cherry blossom tree? In Springtime, cherry blossom trees wake up from their winter slumber and sprout beautiful pink blossoms from their branches, like a wild head of pink hair, lighting up villages, towns, and cities across the world! In Japan, many people follow hanami, which is an ancient tradition of watching the cherry blossom blooms and appreciating their short-lived beauty as the blossoms fall and the trees prepare for a warm summer. Many people have a tea ceremony under the cherry blossoms. People even look out for a cherry blossom forecast which shares precise information on when they'll bloom!

In the south of India, in a beautiful coastline state called Kerala, people come together to celebrate their rice harvest during the Onam Festival. The festival takes place during the Monsoons.

Have you heard of the Monsoon? Monsoons refer to heavy rainfall experienced by many parts of the world during the summer months, including in countries like India, Sri Lanka, China. In India, the monsoon is important as it helps farmers grow food like rice and cotton grow. Without the monsoon, many cities, towns, and villages across the world wouldn't have enough water – but the earth protects us, and through weather events like the monsoon, we are given water to grow food and nourish ourselves!

In Peru, many people celebrate an ancient festival called Inti Raymi. During the winter solstice, or around December 21st when the sun is farthest from the earth, everyone gathers to thank the sun for all it gives us, like heat, energy and light and to ask it to come closer so we can get more heat, energy, and light, like we do in the summer.

Inti Raymi was first celebrated by the Inca Empire, which is an ancient civilisation that existed in what is now Peru around the 1400s and 1500s. Isn't it amazing that around 600 years later, we're still thanking the sun for everything it gives us?

Let's not forget another thing planet earth provides us with – happiness and feeling good!

Have you ever sat in silence in a forest - the wind moving through the trees and rustling the leaves as if passing them by and saying hello can be so peaceful!

In Japan, many practice something called "forest bathing" or in Japanese, shinrin-yoku in their daily lives . Shin-rin yoku doesn't involve water, or what we might think of when we think of bathing, but it actually means connecting with nature – and using our 5 senses, taste, sight, smell, touch, and taste to really take in nature. Shin-rin yoku can mean walking aimlessly in the forest, touching the barks of trees, smelling the moss growing on the rocks, dipping your fingers in the river, and tasting the raindrops on your tongue.

What's amazing, is that shin-rin yoku is good for our health! Isn't it wonderful how nature, just existing as it is, is good for our health?

I don't know about you – but I feel wonderful thinking about how the earth protects myself and my loved ones in so many ways!

Protecting our Changing World Presentation Transcription Continued

The earth provides us with so much – but unfortunately, many of us don't treat the earth that well in return. Because of this, the earth is suffering and is changing.

Why is this happening? Well, let's start from the beginning.

There are gases called greenhouse gases that are important in making sure planet earth doesn't get too cold for us to live comfortably. These gases include carbon dioxide, methane, nitrous oxide, and others, and they trap heat in our atmosphere, like a greenhouse.

Unfortunately, many of the activities in our daily lives release too many greenhouse gases, and now there is a build-up of these gases in our atmosphere and our planet is becoming too warm. It's like if you turned the radiator up all the way in a tiny room!

But what are these activities that release greenhouse gases?

When we drive in a car, most cars burn fuel which releases carbon dioxide into the air. When we fly in an airplane, the plane uses fuel that also releases carbon dioxide. And when we turn on our central heating, that too can release carbon dioxide. Now think about all the driving and flying people around the world do – and how we like to keep toasty warm in the winter! That's a lot of greenhouse gases being released into the air, don't you think?

Think of all the objects and appliances and items of clothing in the world - making things often requires us to use natural resources, like water, wood from trees, minerals from the ground and oil and gas. To make these items, companies also often burn fuel which releases carbon dioxide. Many of us live in a culture where we're encouraged to keep buying new things (instead of fixing or reusing things), companies make lots of stuff to keep up with everyone buying new things – which means we use lots of resources, and release lots of greenhouse gases.

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