



EARLY YEARS RESOURCE PACK

British Science Week
8 – 17 March 2019
britishscienceweek.org

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This resource pack is your 'one-stop-shop' for supporting you during British Science Week, but it can be used at any time. Feel free to adapt or extend the activities to suit your students' needs and the curriculum you are delivering.

In addition to the activities in this pack, there are lots of other ways to enthuse and engage your students throughout British Science Week.

In developing this pack, we have looked for activities which break down the stereotypes surrounding STEM and promote cross-curricular learning. We encourage you to use British Science Week as an opportunity to link STEM to other curriculum subjects and to your childrens' own backgrounds, lives and interests.

Events

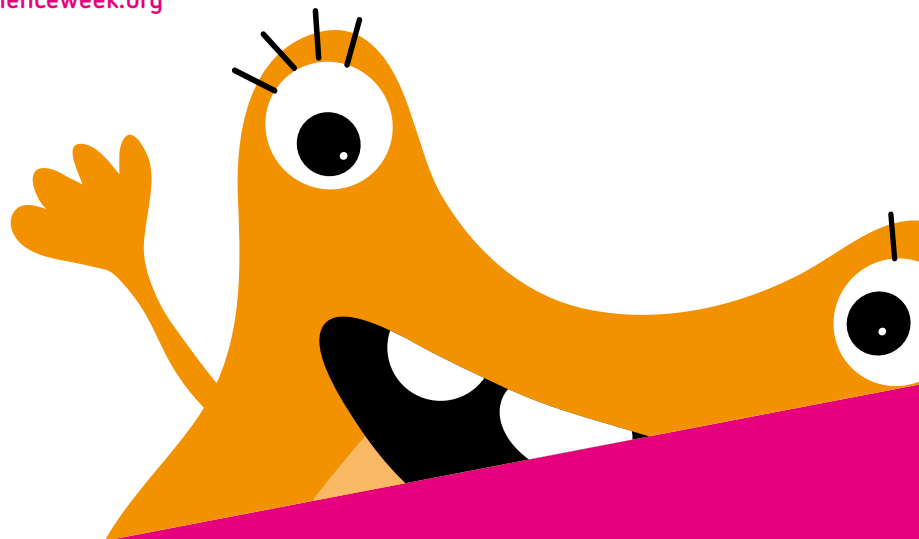
You can either create your own club, class or school event or search for things happening near you.

Last year, there were over 2,700 events reaching more than 750,000 people. Help us make British Science Week 2019 even bigger and better! Visit britishscienceweek.org

Early Years Explorer Award

Each child who takes part in at least four activities from this pack can get a British Science Week 2019 Explorer Award. To find out more visit britishscienceweek.org/explorer-award

britishscienceweek.org



Eurotunnel

2019 marks the 25th anniversary of the opening of the Channel Tunnel, which links Folkestone in Kent with Coquelles, Pas-de-Calais in France.

In celebration of this special anniversary milestone, Eurotunnel has partnered with the British Science Association on British Science Week, to explore the theme of 'journeys'.

At 37.9km (23.5miles), the Tunnel still holds the record for the world's longest under-sea tunnel. The

project took five years to complete and involved over 13,000 engineers, technicians and workers. However, its journey started over 100 years before that; the first design for a cross-Channel tunnel was produced in 1802 and the first attempt at a tunnel excavation was in 1880.

In 2019, we want to share the knowledge and excitement of this ambitious engineering project with a new generation. The British Science Week activity packs feature activities

relating to rock layering, tunnels and signals, and time and speed. Beyond these topics, the Eurotunnel story involves archaeology, nature and logistics.

We hope that you will enjoy this pack and that it will inspire you and your students to find out more about the making and everyday working of this wonder of the modern world. You can download our infographic poster, which is jam-packed with fascinating facts, here: eurotunnel.com/build

The theme for this year's British Science Week is "journeys", encouraging young people to think about the different scientific journeys that happen every day and how they can discover science through their own lives and experiences. It's a chance for young people to consider how journeys can help us experience more of the world around us.

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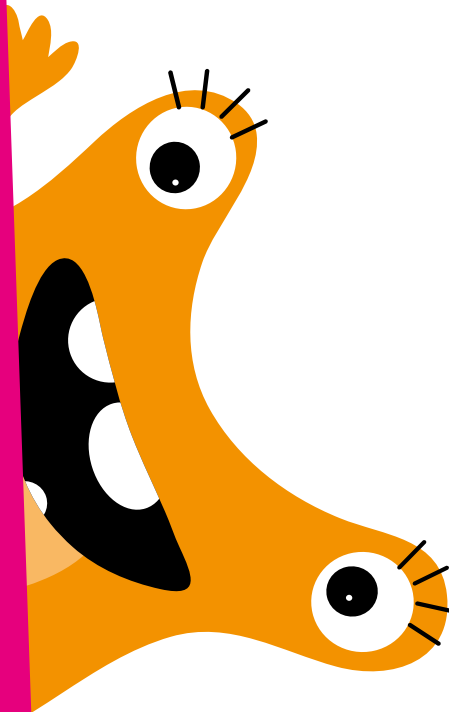
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EVERYDAY JOURNEYS

Tunnel engineers



About this activity

Have you ever dug a tunnel in the sand? The Channel Tunnel is dug through rock, deep beneath the English Channel. It took many years to build it.

In this activity, children will investigate different materials and tools for building and constructing their own tunnel.

Time

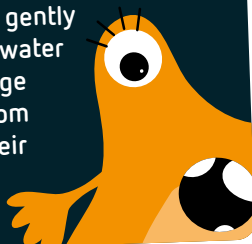
20 minutes

Kit list

- ✓ Play sand
- ✓ Clean pebbles of different sizes
- ✓ Clean, splinter-free small sticks of different lengths and thickness
- ✓ Water
- ✓ Various tools: e.g. wooden spoon, metal spoon, cup
- ✓ Trays
- ✓ Blue cloth

Watch out!

- ✓ Beware of sharp edges on all tools and materials
- ✓ Take care when moving pebbles and heavy trays
- ✓ Supervise the activity
- ✓ Mop up any water spills promptly
- ✓ If sand gets in the eyes, wash gently with clean water – discourage children from rubbing their eyes



Instructions:

- 1 Prepare four trays: dry sand, wet sand, pebbles and sticks.
- 2 Look at pictures or examples of different tunnels and talk about what they look like and how they are made. You could display the pictures during the activity for reference.
- 3 Explore the materials together. Ask the children to make a tunnel in each tray. Allow them to add more water to the wet sand tray to see what happens. Talk about the different materials and tools they used, and how easy or difficult it is to build with them.
- 4 Now, using all the materials together, ask them to build a tunnel in one of the trays.
- 5 Children could cover their tunnel with the blue cloth to represent the sea.

Think and talk about:

- ✓ Which materials are best for building with? Why?
- ✓ Which tools are you using?
- ✓ What happens when you add more water to the sand?
- ✓ What material have you used for each part of your tunnel and why?
- ✓ What would happen if you put something heavy on top?



EVERYDAY JOURNEYS

Slippery slopes

About this activity

In this activity, children compare the journeys of different household liquids as they move down a slope. Which one will be fastest and how will they move?

Time

20 minutes

Kit list

- ✔ Three pieces of guttering or smooth planks light enough for early years students to make ramps
- ✔ A small box to support the ramps
- ✔ Different liquid substances, e.g. syrup, oil, washing-up liquid, water and shaving foam
- ✔ Thick plastic sheeting
- ✔ Cloth, soap and water to clean hands and clear up spillages
- ✔ Paper towels

Instructions:

- 1 Ask the children to help you make three ramps by lifting one end of the guttering pieces or planks and supporting them securely on the box.
- 2 Place plastic sheeting under the end of each ramp.
- 3 Carefully pour a different liquid onto the top of each ramp.
- 4 Watch the liquids move down the ramps.
- 5 Encourage the children to describe the way they move, introducing vocabulary such as *thick*, *sticky*, *slippery*, *slow* and *fast*.
- 6 Allow the children to handle each liquid and describe how it feels.
- 7 Challenge children to find a way to change the steepness of the ramp.

Think and talk about:

- ✔ What do you think will happen to each liquid?
- ✔ Which liquid moves down the ramp the fastest?
- ✔ Which is the slowest?
- ✔ Can you describe how it moves and how it feels?
- ✔ What other liquids could you try?
- ✔ When it is steeper, does it go quicker or slower or not make a difference?



Watch out!

- ✔ An adult should supervise this activity
- ✔ Ensure the ramps are secure
- ✔ Protect the area around each ramp
- ✔ Clean up spillages promptly
- ✔ Don't let the liquids get into eyes or mouths!



EVERYDAY JOURNEYS

Be seen, be safe

About this activity

In this activity, you and your group will investigate different reflective materials.

Time

20 minutes

Kit list

- ✔ A selection of different materials, e.g. fabrics, reflector armbands, foil, shiny paper, black paper, dark/light coloured objects (you may want to ask the children in advance to bring things that they think will help them to be seen in the dark)
- ✔ A paper version of a black t-shirt (try using black sugar paper)
- ✔ A torch
- ✔ Non-toxic glue

Instructions:

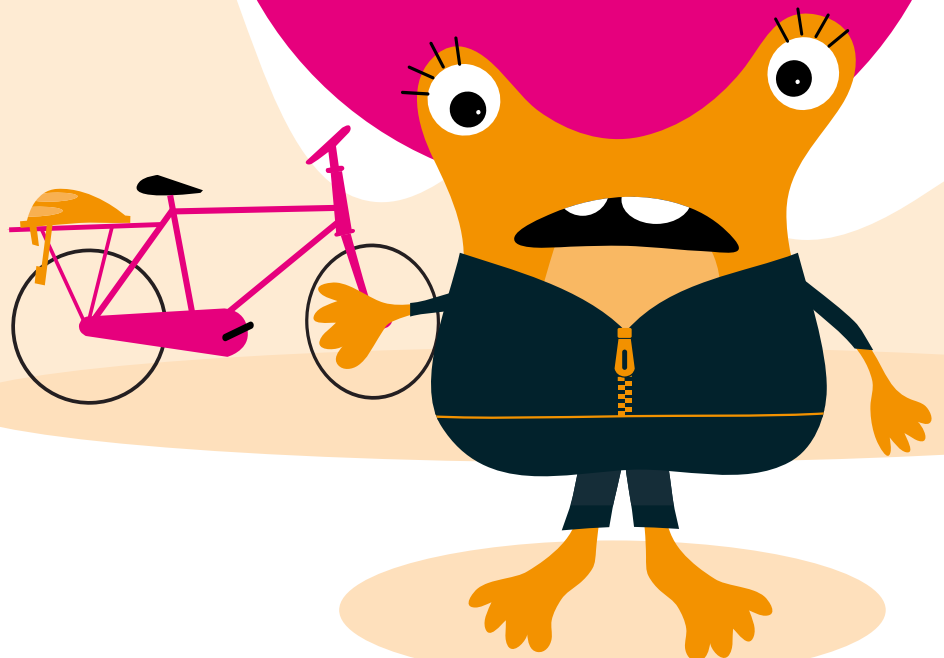
- 1 Introduce the activity using the story below about Cosmic and Gem. Ask the children what they think might help them to be seen in the dark.
- 2 Support the children to cut out different shapes of the materials they think will be best at reflecting.
- 3 Help the children to attach these materials to their paper t-shirt.
- 4 Get children to test the shininess of the materials by using the torch.

Think and talk about:

- ✔ What material do you think will be best at reflecting light?
- ✔ Why do you think it will be better than the others?
- ✔ What other methods can help you be seen in the dark?
- ✔ Try putting your paper designs in a dark place to see which ones stand out best.

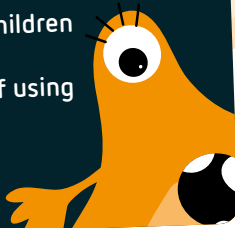
One evening, Cosmic and Gem are out riding their bikes in their black tracksuits. Suddenly there's a loud knock, rat-a-tat-tat, on the door. Oh no! It's a police officer with Gem and Cosmic. They are looking very sheepish.

"I nearly knocked these two off their bikes," grumbles the police officer. "They were riding round, no lights, and just look at what they are wearing! No wonder I couldn't see them."



Watch out!

- ✔ Make sure children are properly supervised if using scissors



Dinosaur adaptations



About this activity

All living things are adapted to their environments - this helps them journey and survive in their natural habitat. In this activity, your students will create creatures and decide what environment they would thrive in.

Time

20 minutes

Kit list

- ✔ Modelling clay
- ✔ Modelling tools
- ✔ Materials to make the habitat e.g. sticks, twigs, leaves, rocks
- ✔ Pictures of dinosaurs

Instructions:

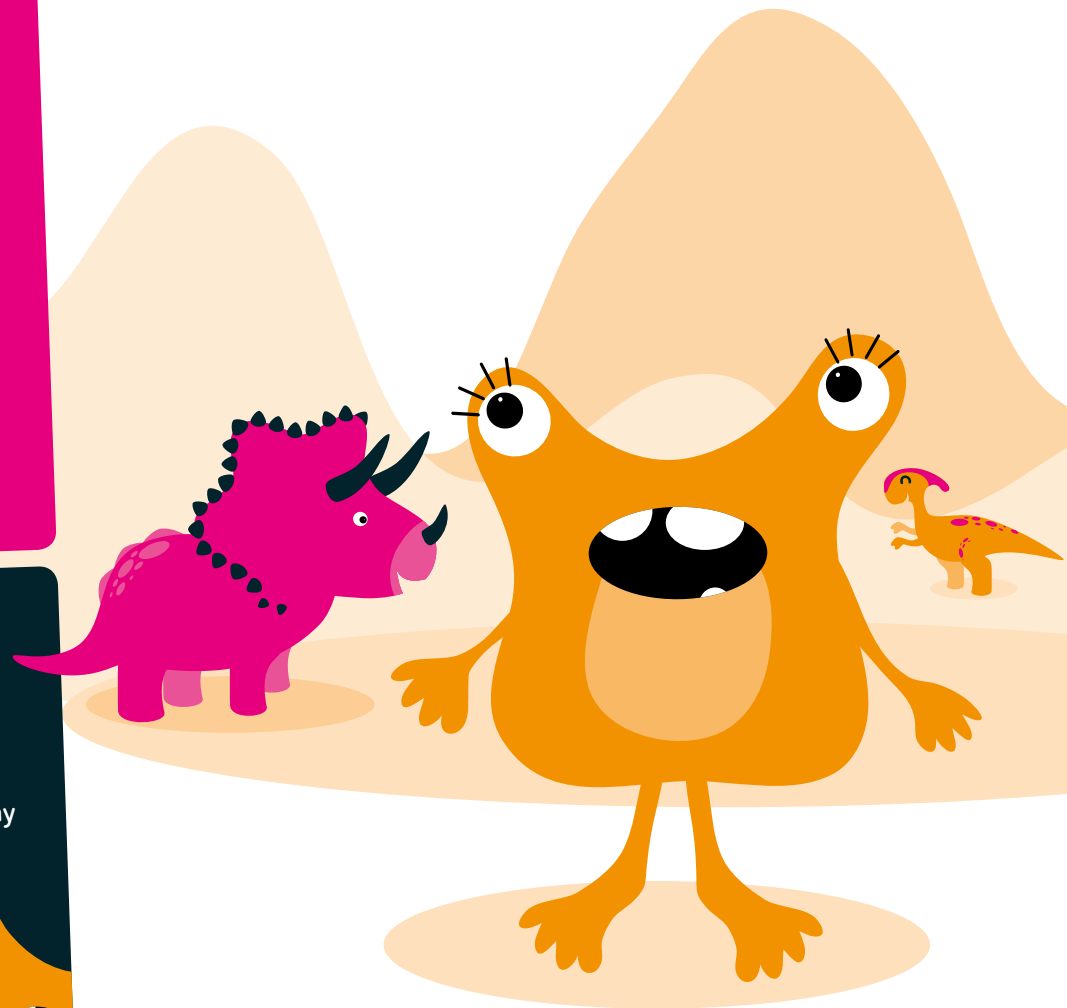
- 1 Introduce the children to the topic by showing them images of dinosaurs. Consider making some out of clay as examples.
- 2 Explain different adaptations, such as wings, claws or flippers.
- 3 Get the children to create their own dinosaurs using the modelling clay.
- 4 Get the children to draw an image of their dinosaur journeying through the environment they think it would live in.

Think and talk about:

- ✔ What kind of camouflage would your dinosaur have?
- ✔ Why did you give the dinosaur the adaptations you did?
- ✔ Do you think your dinosaur would be a herbivore or a carnivore?

Next steps:

- ✔ Find more activities from Okido magazine at okido.co.uk/schools



Watch out!

- ✔ Make sure to supervise your students when using modelling tools.
- ✔ Make sure to use child-friendly modelling clay



Make a time capsule



About this activity

A lot can change for children in a year. In this activity, you will make a time capsule to be opened in 12 months' time, to see how different things are compared to today.

Time

45 minutes

Kit list

- ✓ A large jar, or plastic container, per child
- ✓ Paper
- ✓ Pens
- ✓ Colouring pencils or pens
- ✓ Anything else the children might want to include in the capsule e.g. a newspaper, toys etc

Instructions:

- 1 Get the children to write things about themselves on a piece of paper. Include information such as names, ages, height, weight, their favourite food, their favourite subject and anything else.
- 2 Get children to draw a picture of themselves with their family or friends.
- 3 Children could also draw around their hand on a piece of paper.
- 4 Fold all the pieces of paper up and put them in the jar.
- 5 Give the children a piece of string and a small piece of cardboard and get them to write today's date on it.
- 6 Help the children to attach the string and cardboard to the jar.
- 7 Find somewhere to keep the jars until next year.

Think and talk about:

- ✓ How much do you think you will grow in a year?
- ✓ Will your favourite subject and food have changed?
- ✓ What else could you put in a time capsule if you were leaving it for an even longer time?

Next steps:

- ✓ Find more activities from Okido magazine at okido.co.uk/schools



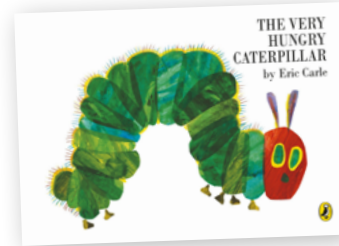
Watch out!

- ✓ Don't leave children unsupervised with scissors or glass jars



JOURNEYS THROUGH NATURE

The Very Hungry Caterpillar



About this activity

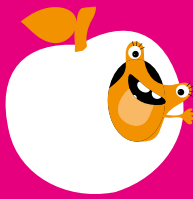
Follow the journey of *The Very Hungry Caterpillar* as it eats its way through different fruit. Children will create a trail of prints from pieces of cut fruit, exploring the different shapes, sizes and textures they can make.

Time

20 minutes

Kit list

- ✔ *The Very Hungry Caterpillar* book
- ✔ Poster paints
- ✔ Small trays or pots for paint
- ✔ Fruit: apples, pears, plums, strawberries, oranges. You could try using other fruits and vegetables too. You could also make a hole through each one where the caterpillar has eaten
- ✔ Knife – for adult use
- ✔ Suitable knives for children to cut up softer fruit themselves (optional)
- ✔ Plain paper for printing onto



Watch out!

- ✔ Keep sharp knives out of reach of children
- ✔ Children should use special knives designed for toddlers to cut up softer fruit
- ✔ Mop up any paint spills quickly
- ✔ Don't eat any of the fruit



Instructions:

- 1 Read the story of *The Very Hungry Caterpillar* together.
- 2 Ask children to pick out the fruits the caterpillar ate. You are going to explore the shapes and textures of the fruits together.
- 3 Cut some of the fruits in half and others into sections. Leave whole at least one piece of each fruit.
- 4 Show the children how to dip the fruit into the paint and press it onto the paper to make a print.
- 5 Let the children explore the different shapes, sizes and textures made by the cut fruit.
- 6 Supervise children to cut up softer fruit themselves. Help them explore the different ways to cut it to make different shapes and sizes of print.

Think and talk about:

- ✔ What shape is the print you have made?
- ✔ Can you make a bigger or smaller print?
- ✔ What could you use to make a round print?
- ✔ How many ways can you cut the fruit in half?
- ✔ Look closely at the prints you have made; can you see the seeds and skin of the fruit?

Next steps:

- ✔ Children could act out the story of *The Very Hungry Caterpillar*, counting all the things it eats as they go.

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JOURNEYS THROUGH NATURE

Brain hats

About this activity

This activity is designed to get children thinking about how amazing their brains are. The brain controls what we think, do and say. One of the ways we use our brains is to remember things, and we can use stories and songs to help us with remembering. In this activity, the children will make a brain hat and explore how stories can help us to remember.

Time

20 minutes

Kit list

- ✓ Left brain template
- ✓ Right brain template
- ✓ Colouring pencils or crayons
- ✓ Safety scissors
- ✓ Glue/sticky tape
- ✓ 10 everyday objects of your choice: e.g. stationary, toys or ornaments
- ✓ Tea towel
- ✓ Timer

Watch out!

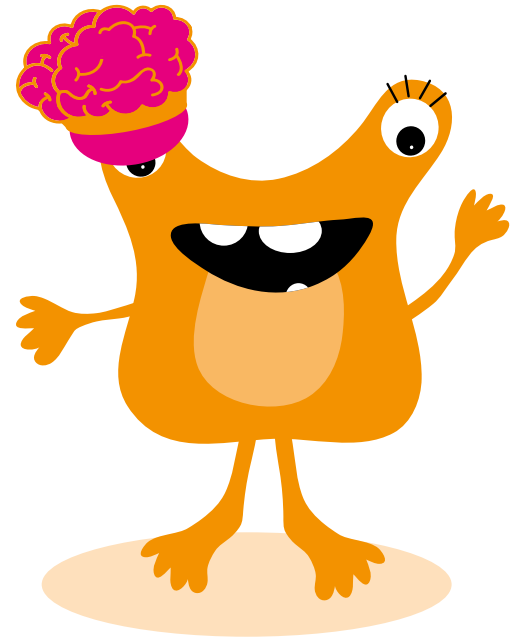
- ✓ Be careful when using scissors, as they may be sharp!



Instructions

Making the hat

- 1 Print out identical numbers of left and right brain templates from dementiaexplained.org/teachers. You can either print out pre-coloured brains or let the children colour in the different parts of the brain themselves.
- 2 Carefully cut around the brains, making sure the children follow the dotted lines.
- 3 Glue the triangular flaps to make the two halves of the brain hats.
- 4 Glue or tape the rectangular flaps and stick the two sides together. Use some sticky tape to help the two halves stay together.



Memory game

- 1 Cover the 10 different objects with a tea towel.
- 2 Tell the children they will have 30 seconds to look at the objects and try to remember them all. Uncover the items and start the timer for 30 seconds.
- 3 When the time is up, cover the objects. Ask the children to list as many as they can.
- 4 Now, try playing the game again but this time begin by telling a story that includes all the objects.
- 5 Try removing one object from the tray and see whether the children can work out which object is missing.

Think and talk about:

- ✓ How many things from the tray did you remember?
- ✓ Was it easier to remember using a story?
- ✓ Can you sing a song that helps you remember things?
- ✓ Do you know anyone who forgets things sometimes?
- ✓ How could you help them to remember?

Next steps:

- ✓ Visit Alzheimer's Research UK's website to learn more about the brain and dementia: dementiaexplained.org/young-kids

Poster competition

About this activity

Get creative and enter the British Science Association's annual poster competition. Your children can make their poster about whatever type of journey they like and enter our UK-wide competition with the chance to win an array of prizes.

Look out for the paintbrush symbol in this pack for inspiration for your posters.



Time

20 minutes

Kit list

- ✓ Paper (A4 or A3)
- ✓ Creative materials, e.g. pens, pencils, scissors, glue, watercolours, paint, colouring crayons, pipe cleaners, felt, thread, wool, foil, string, beads, stamps, foam or pom poms

N.B. try to avoid using straws or glitter – these plastics often end up journeying to the sea and harming ecosystems.

Instructions:

Research your poster

- ✓ Plan your poster
- ✓ Ask your children about journeys
- ✓ Explore ideas such as:
 - ✓ Everyday journeys
 - ✓ Journeys of the human body
 - ✓ Journeys of nature

Make your poster:

It's time to get creative! The poster must be:

- ✓ 2D (flat) – if you make a model, you need to just send us a photo of it on A4 or A3 paper
- ✓ They can use materials such as paint, drawing pencils, crayons and paper.

Send us your poster:

Posters will be judged on creativity, how well it fits the theme and how well the poster has been made or drawn. Once the poster is complete, write your children's information on the back, fill in the online registration form, and then post your entry to us at:

British Science Week Poster Competition,
British Science Association,
165 Queens Gate,
London, SW7 5HD

Next steps: Celebrate!

For more details, along with the full set of rules and tips for educators, check out our website

britishscienceweek.org/plan-your-activities/poster-competition

