

Engage Teacher Conference

Save time and money: free primary resources from leading providers

Leaders from the STEM sector are coming together to showcase their top free primary resources. Find inspiration for your lessons.

Paul Tyler, My Science Club

Ruby Seger-Bernard, The Royal Society

Catherine Davies, The British Science Association

Joe Shimwell, NUSTEM

Alison Trew, Primary Science Teaching Trust

Sarah Dagnell, Explorify

Helen Bickford, British Ecological Society

Kate Salter, Sustrans

Victor Heng, National Education Nature Park

Engage Teacher Conference

Engage

Welcome, please be aware:

- Talks are recorded
- You can ask questions in the chat throughout
- There will be time for questions at the end

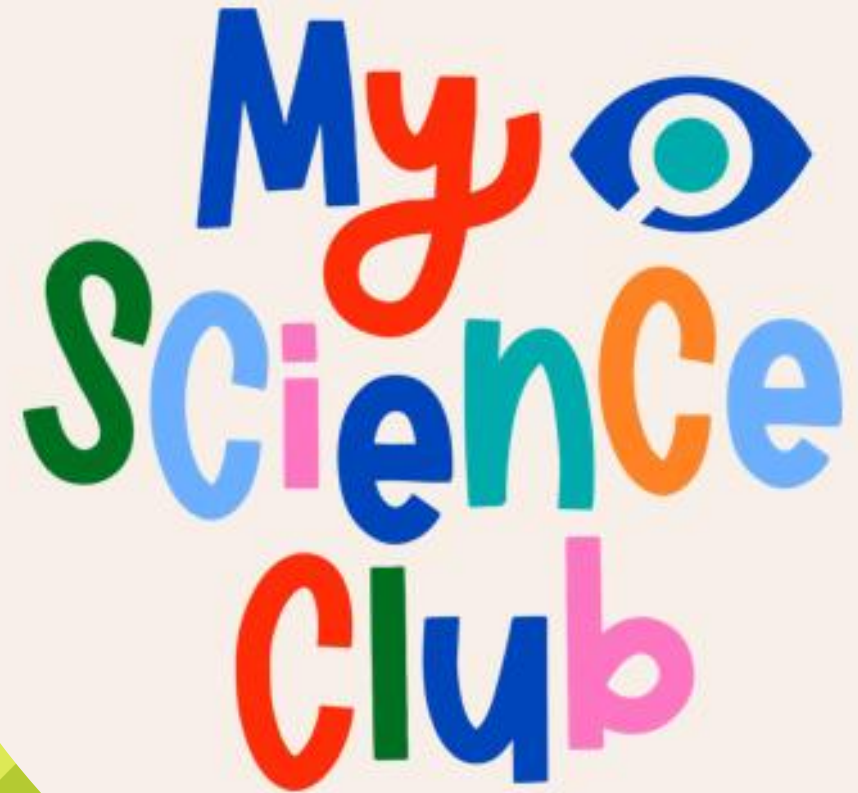


Engage

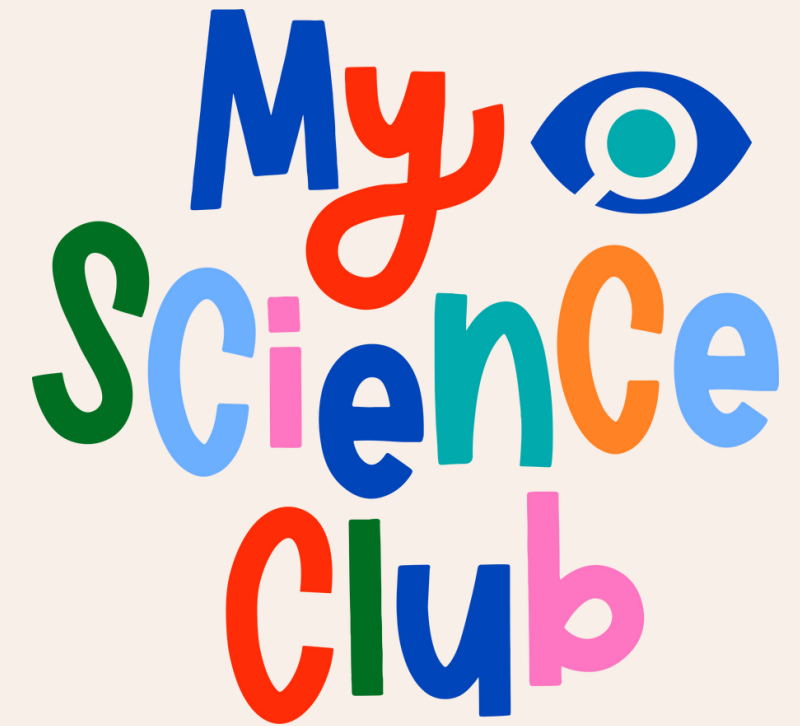
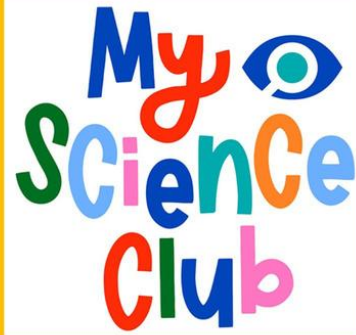
My Science Club

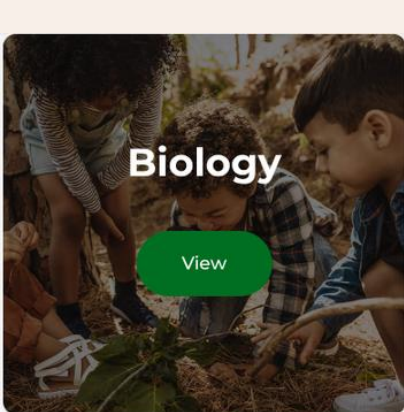
Paul Tyler
Resource Director

www.myscienceclub.com



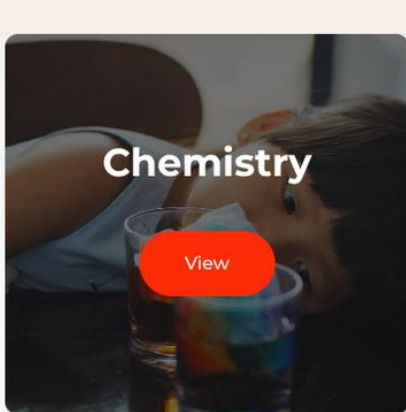
WHY WOULD YOU RUN
A SCIENCE CLUB?





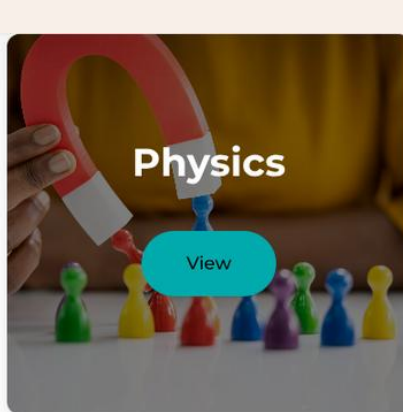
Biology

[View](#)



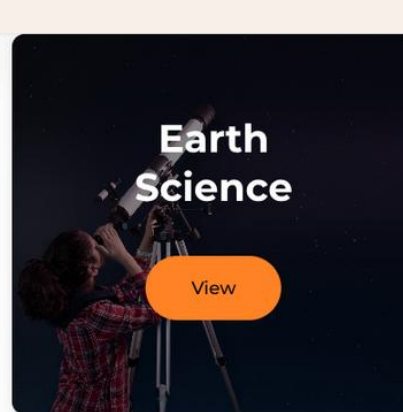
Chemistry

[View](#)



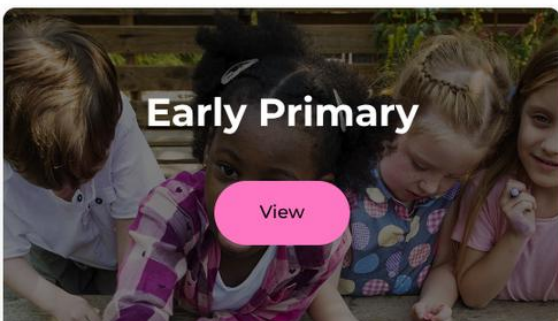
Physics

[View](#)



Earth Science

[View](#)



Early Primary

[View](#)



Middle Primary

[View](#)



Upper Primary

[View](#)

VIBRATION ACTIVITIES

Hit the tuning fork prongs.



Tuning fork splash

Touch the prongs on the surface of the water.

What do you notice happening? Why do you think it happens?

Ping Pong Race

Hit the tuning fork prongs.



Touch the prongs against the ping pong ball.

What happens to the ball? Why do you think it happens?

Ruler Twanging

Pull the end of the ruler down and let it go.



Hold the ruler flat against the table top.

What happens when you change the length of the ruler?

Dancing Rice

Hit the baking tray hard with the wooden spoon.



What happens to the rice when you hit the baking tray?

My Science Club
EDUCATOR'S GUIDE

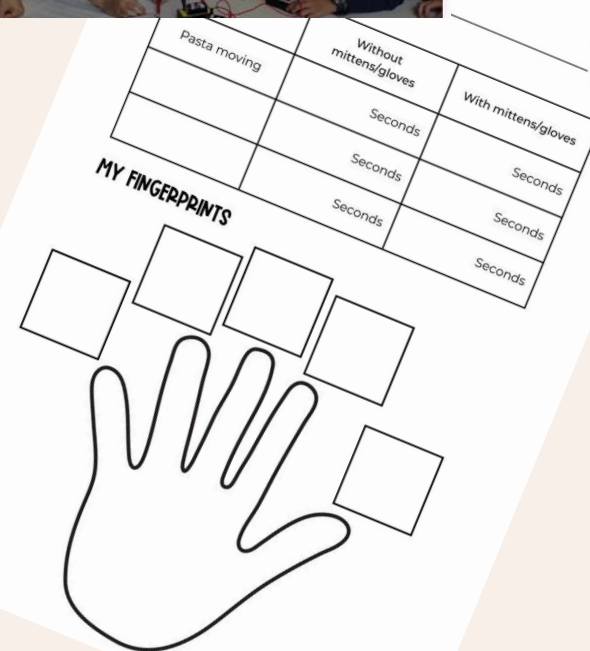
SESSION 4 - FANTASTIC FINGERS

In this My Science Club session children will investigate why our fingers are so amazing and how they are all unique.

EQUIPMENT		
QUANTITY	ITEM	NOTES
1 pair per pair	Mittens or thick gloves	You can ask children to bring in a pair of mittens or gloves or just pick up very cheap ones from a supermarket.
2 per pair	Small bowls	
10 pieces per pair	Dried pasta	Any shape of dried pasta is fine, or you can use other small objects such as paperclips or marbles.
Selection for the group	Materials for testing fingers with	Read the main activity to see a list of suggested items.
1 per pair	Sheet of A4 paper	
1 per pair	Pencil	
1 per pair	Roll of clear sticky tape	The wider the sticky tape is the easier it is to get full prints.
1 per pair	Scissors	
1 per pair	Magnifying glass	
1 per person	Printable 15	You can use a black sheet of A4 paper instead.

My Science Club

My Science Club



FREE

**Running
My Science
Club**

**Topical
Science
Updates**

**Up Close
and
Personal**

**Sample
Sessions**

Blogs

News

**Limited
Resource
Challenges**

My Science Club

HOW TO JOIN

My Science Club

1



Head to the My Science Club website.

2

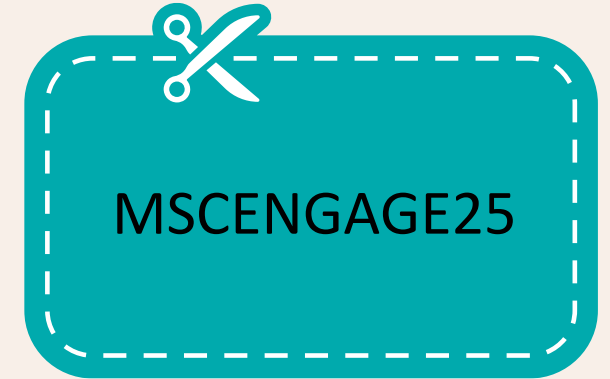


Click on 'Join My Science Club' and check out in 3 clicks.

3



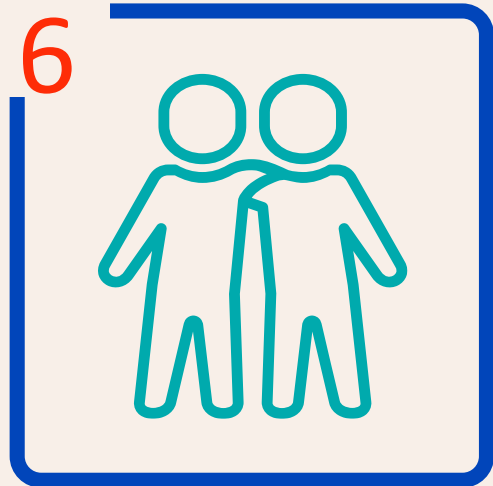
Your £49.99 annual membership gets you 6 credits to use throughout the year.



Sign up to our newsletter.



6



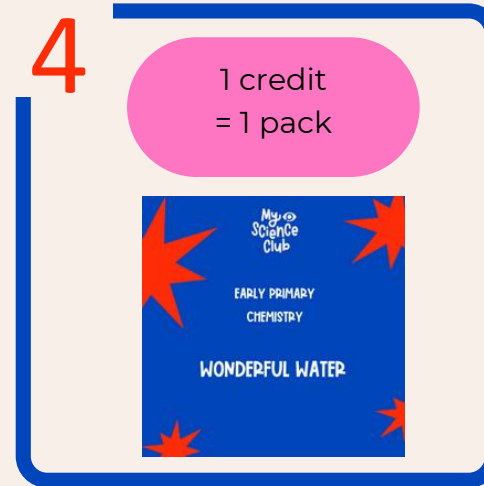
Get more credits by recommending friends to join.

5



Use your credits anytime throughout the year. New packs will constantly be added.

4



1 credit gets you 1 pack of resources.

Engage

The Royal Society

Ruby Seger-Bernard
Schools Engagement
Officer

www.royalsociety.org

A circular inset image showing a close-up of a microscope's objective lens and stage. The text 'THE ROYAL SOCIETY' is overlaid in a red, serif font. The background of the slide features a large, abstract shape in shades of yellow and orange.

**THE
ROYAL
SOCIETY**

@Kkolosov



Royal Society STEM resources and Partnership Grants

Ruby Seger-Bernard
Schools Engagement Officer

Brian Cox School Experiments

THE ROYAL SOCIETY

Does carbon dioxide affect the pH of seawater and the strength of shells?

Objective
In this practical, students are investigating the effect of carbon dioxide (CO₂) on the ocean. In the first experiment, they observe the effect of increasing the concentration of CO₂ on the acidity of seawater. In the second experiment, they are investigating the effect of acidity on the shells of sea creatures.

Introducing the experiment
Write the words ACID and ALKALI on the board and invite students to work in pairs to list as many facts and examples as they can related to acids and alkalis.

Introduce ocean acidification by showing students the video What is Ocean Acidification? from the University of Plymouth: <https://youtu.be/L2bawm7Jd4> (less than 2 minutes).

During the experiment
Discuss with the students the difference in ease and accuracy of using a pH meter compared with UI solution. You may also decide to try UI paper or even litmus paper to demonstrate the effectiveness of certain indicators. Students are unlikely to see any changes with litmus paper.

This is an activity that easily lends itself to having students design their own experiment if time allows.

Discussion points after the experiment
Ask students to prepare an 'elevator pitch' – give them one minute to explain what ocean acidification is and what the results of their experiment showed. Some students may want to prepare an elevator pitch on the limitations of the experiment.

BRIAN COX SCHOOL OCEAN ACIDIFICATION TEACHER NOTES

The science behind this experiment
The ocean absorbs some of the CO₂ we emit as part of the carbon cycle. CO₂ dissolves in sea water to form acid, which lowers the pH of the water making it more acidic.

As the amount of CO₂ in the atmosphere increases, more CO₂ will dissolve in sea water making it more acidic.

The point of the lesson is to think about the rise in CO₂ levels due to human effects – ie more fossil fuel use. CO₂ in the environment leads to more CO₂ dissolving in water, ultimately making the sea more acidic.

Many of the plants and animals living in the oceans have skeletons or shells made out of calcium carbonate. Some species are very sensitive to changes in acidity. As ocean acidity increases, their shells and skeletons may start to dissolve, affecting their ability to build and repair their shell. This could ultimately affect the survival of some species.

Physiological processes within organisms, for example growth and reproduction, are also sensitive to changes in pH. Microscopic plankton at the bottom of the food chain, shellfish and molluscs, and plants that cement the coral reef together may all be affected, with wider implications for the marine food web, habitats, and the food security of many human populations.

Do all types of chocolate melt at the same temperature?

Lots of chocolate is stored on shelves in shops. If the shop is too warm will the chocolate melt? If you hold a piece of chocolate in your hand too long it will melt, but do all types of chocolate melt at the same temperature? Does the percentage of cocoa solids affect its melting point?

In this experiment, students heat different types of chocolate in a water bath, to see how long it takes them to melt. You could give them time to come up with a method for testing this themselves, perhaps in a previous class, or give them an exact method to follow.

Hot water for the water bath can be taken from a kettle or wall heater. Cold water should be added to achieve the target temperature of 50°C and then taken to the classroom, in a suitable container, by staff. The container could be stood on an insulated mat in the classroom to minimise cooling during the lesson.

It is essential that you have sufficient hot water for each group readily available at the beginning of the activity. The hot water must be carefully dispensed by a supervising adult into the students' containers, which should be filled to a level so that the foil cases are touching the hot water.

Each group of students could have all the types of chocolate to investigate or you may choose for each group to have only one type of chocolate and compare between groups.

Health and safety considerations:

- The chocolate must not be eaten;
- students undertake activity on a tray in case of spillage and paper towels should be available;
- only staff are to handle suitably enclosed containers with warmed water;
- avoid splashes to skin, wipe off quickly or use cold running water if splashes occur; and
- have cold running water readily available in case of any incidents.

For up-to-date advice on health and safety, particularly in regard to heating and hot water, please refer to CLEAPSS (England, Wales or Northern Ireland) or SSERC (Scotland) guidelines.

Suggested sequence
45/60 minutes

- Lead a class discussion on the topic of changing
- Students should be given time to come up with a method for testing this themselves, perhaps in a previous class, or give them an exact method to follow.
- Each group of students could have all the types of chocolate to investigate or you may choose for each group to have only one type of chocolate and compare between groups.
- Students should be given time to come up with a method for testing this themselves, perhaps in a previous class, or give them an exact method to follow.
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- Each group of students could have all the types of chocolate to investigate or you may choose for each group to have only one type of chocolate and compare between groups.

Alternative At what temperature?

This could be used as a demonstration of the effect of temperature on the melting point of chocolate.

Primary level resources available

Strong links to the curriculum

Clear careers links (short videos)

Free to download

Videos and printable resources at: royalsociety.org/school-experiments

Contact education@royalsociety.org

Other Royal Society resources for schools

Young People's Book Prize 2024



Climate Change and Biodiversity Q&A cards / posters



Why Science is for me animation / poster



Partnership Grants Scheme



- The Partnership Grants scheme provides UK schools and colleges (aged 5 -18) up to £3,000 to work in partnership with STEM professionals from academia or industry to run a long-term investigative STEM project.
- The grant goes to the school and covers the equipment needed, with a small amount available to support teacher cover and CPD.
- Information about the grants including map and case studies can be found on our website: www.royalsociety.org/grants/partnership-grants
- Training sessions are available via the website or email education@royalsociety.org for more information



Engage

CREST Awards The British Science Association

Catherine Davies
Education Resources Manager

www.crestawards.org





Engage Teacher Network

CREST Star and SuperStar projects are typically completed by children aged 3-11, or those working at this level.



Engaging

Hands-on



Student-led



Inspiring

Fun



Relatable

Why run CREST challenges with your pupils?

- Activities are designed to be low-cost and easy to run
- Free to use and download from our resource library
- Can be completed in 45 minutes - 1 hour
- Demo videos and supporting slides available for some activities
- No need for specialist knowledge or equipment
- Relatable contexts allow children to make links with their own lives

"Because the activities are so varied and quite good fun, I think they have sort of had the impact of making everyone excited about STEM."
Participating teacher

"The lessons you get taught are just amazing. When we done the spinners, we learnt about leadership and stuff. Doing the rafts, we learnt about craftsmanship. It's really good."
Participating pupil



Resources are free to use and download from our resource library
<https://primarylibrary.crestawards.org>

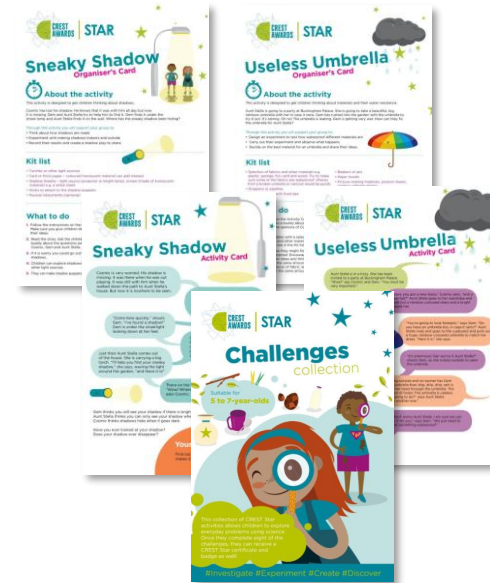
Early years challenges with a physics focus



New early years and primary accessible Star collection for ages 3-7, or those working at this level



Star collection – aimed at children aged 5-7



SuperStar collection – aimed at children aged 7-11



Other collections, supporting classroom slides, demo videos and Welsh language translations are also available!



Engage Teacher Network

Your pupils can track their progress using a CREST Star or SuperStar passport...



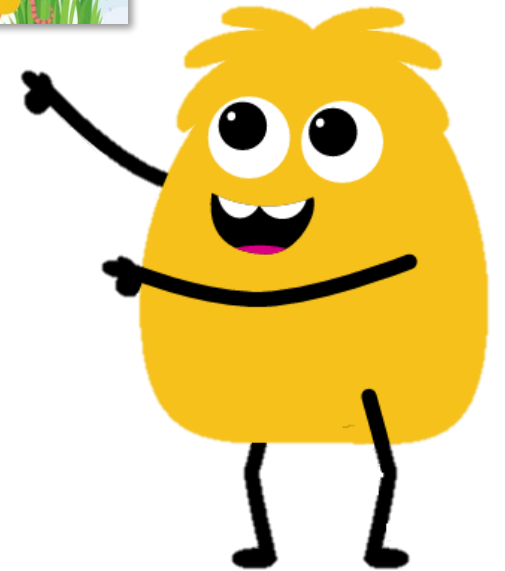
...when they have completed at least 6 projects, they can earn a CREST Award!

Apply for an Engage Grant in September and receive funding and free CREST Awards for your class!



BRITISH SCIENCE WEEK

2025 Activity Packs



- Free to download
- Packed with fun, hands-on science activities
- Cross-curricular learning opportunities
- Ideas to extend the learning at home
- Links with skills and careers

<https://www.britishscienceweek.org/>

Engage

NUSTEM, Northumbria University

Joe Shimwell

NUSTEM Outreach Specialist:
Early Years and Primary

www.nustem.uk

nustem



Northumbria
University
NEWCASTLE



Joe.Shimwell@unn.ac.uk



nustem

NUSTEM Curriculum Careers Tool

Free database of STEM careers linked to primary national curriculum topics for science and maths.

Nustem.uk/pct

This presentation outlines the research background to the Curriculum Careers Tool.

Topic Areas

🐾 Animals, including humans

🌍 Earth and Space

⚡ Electricity

🔧 Everyday Materials

🔬 Evolution & Inheritance

⚡ Forces

🧲 Forces & Magnets

💡 Light

🌿 Living Things & Their Habitats

🌱 Plants

🪨 Rocks

🌞 Seasonal Changes

🔊 Sound

🔬 States of Matter

Science communicator

Science communicators communicate science to the general public....

[Read more >](#)

Meta researcher

Meta researchers study research itself. They study research methods,...

[Read more >](#)

Artificial intelligence researcher

Artificial intelligence researchers create models and simulations...

[Read more >](#)

Photochemist

A Photochemist investigates the chemical effects of light. ...

[Read more >](#)

Electronics Engineering Technician

Find out what Electronics engineering technicians do and the attributes that they have.

[Read more >](#)

Solar Energy Engineer

Solar energy engineers are experts in utilising sunlight to generate...

[Read more >](#)

Electrical Technician

Electrical technicians are responsible for designing, developing,...

[Read more >](#)

Systems Engineer

Systems engineers design and create systems to meet specific...

[Read more >](#)

Power Plant Operator

Power plant operators manage and maintain the machinery that...

[Read more >](#)

Broadcast Engineer

Broadcast engineers are responsible for the development, operation,...

[Read more >](#)

IT Systems Analyst

Systems analysts work within the IT industry and are responsible...

[Read more >](#)

Network Engineer

Network engineers are involved in the installing, maintaining,...

[Read more >](#)

Control Systems Engineer

A control systems engineer designs and creates a set of devices...

[Read more >](#)

Nuclear Engineer

Nuclear engineers design, build, maintain and decommission nuclear...

[Read more >](#)

Power System Engineer

Power system engineers work within electrical engineering and...

[Read more >](#)

STEM Person of the Week

A free download and print resource. To be used across a whole school to broaden children's careers knowledge, and to break down common stereotypes associated with science and scientists.

nustem.uk/spotw

STEM PERSON
OF THE
WEEK

STEM Person of the Week

Introducing STEM Person of the Week

Welcome to STEM Person of the Week – a STEM engagement activity that's been shown to reduce children's stereotypes of science and scientists by providing counter-stereotypical character attributes through a set of diverse STEM role models.

This resource aims to equip teachers with everything they need to effectively run this 5-week intervention in their school setting. The resource is simple to use and suitable for children and young people. Primary schools have used the resource for children aged 5 – 11, and secondary schools have used the resource with young people aged 11 – 14.

In fact, we recommend that you run STEM Person of the Week with your whole school or whole year groups; this way, children, young people and teachers can share what they're learning beyond the classroom and into their social spaces and staff room.

Here you'll find:

- Links to the resources which you can download and print
- Aims, background and research
- Guidance for teachers who want to deliver in their school



The ARC Framework

- To broaden children's careers understanding with regards scientists, we're working with schools to embed a new framework to teaching science.
- ARC – Attributes, Representation, Careers.

If you're interested in join a network of schools and to find out more, please sign up to you network list:

<https://nustem.uk/nustem-schools-network-primary/>

Thanks.

joe.shimwell@unn.ac.uk

Engage

The Primary Science Teaching Trust

Dr Alison Trew
Regional Mentor and
Project Lead

www.pstt.org.uk



A scientist just like me



Use your classroom to promote diversity in science

Slideshows and some videos 'telling the story' of scientist:

- stand-alone, fifteen-minute discussion activities to challenge stereotypes about science jobs
- part of a science topic that relates to the work of the scientist



SCAN ME

A scientist just like me

Hi there! I am Dr Kelsey Byers – an evolutionary biologist



Where do I work?

I work at the John Innes Centre in Norwich where I study how the smells of flowers (both nice and not so nice!) affect plant evolution and pollination.

What did I like doing when I was at school?

I have wanted to do something with nature my whole life. I originally wanted to be a vet, but realized I liked biology a lot and now I study it.

What do I like doing in my spare time?

I love birdwatching, looking at insects, trees, and flowers, cooking and baking, and reading books. Anything where I can explore the outdoors is fun for me!

Relatable to children

Simple explanations:

What do I do as an evolutionary biologist?

How does what I do make the world a better place?

<https://pstt.org.uk/unique-resources/a-scientist-just-like-me/>

A scientist just like me

What I like about my job

I love that I can come up with a cool idea and test it! I also get to be in a variety of places - my lab, the glasshouse, and outdoors in the field. I am a very curious and passionate person and I get to use these which is great.



Challenges I have faced

I am disabled (I use a wheelchair) and sometimes my co-workers think I can do less than I really can, for example they might think I can't do work outdoors. This isn't true - everyone's abilities are different, and I can do a lot more than people sometimes think.

Challenges:

Physical disabilities
Dyslexia
Dyscalculia
Family background
Gender issues

A scientist just like me

If you want to be an evolutionary biologist, you need:

- ✱ **to be a very curious person** - someone who is constantly asking themselves questions about how things came to be like they are in nature and why.
- ✱ **to enjoy looking at plants and animals** and to think about how they fit into their environment.
- ✱ **to be interested in nature** and the natural world.
- ✱ to enjoy **coming up with new ideas**.



DISCUSSION TIME

What skills and interests do you already have that would help you become an evolutionary biologist?

What new skills and knowledge would you need to develop?

2
9

Engage

Explorify, STEM Learning

Sarah Dagnell
Primary STEM Lead

www.stem.org.uk/explorify



Back to school with Explorify



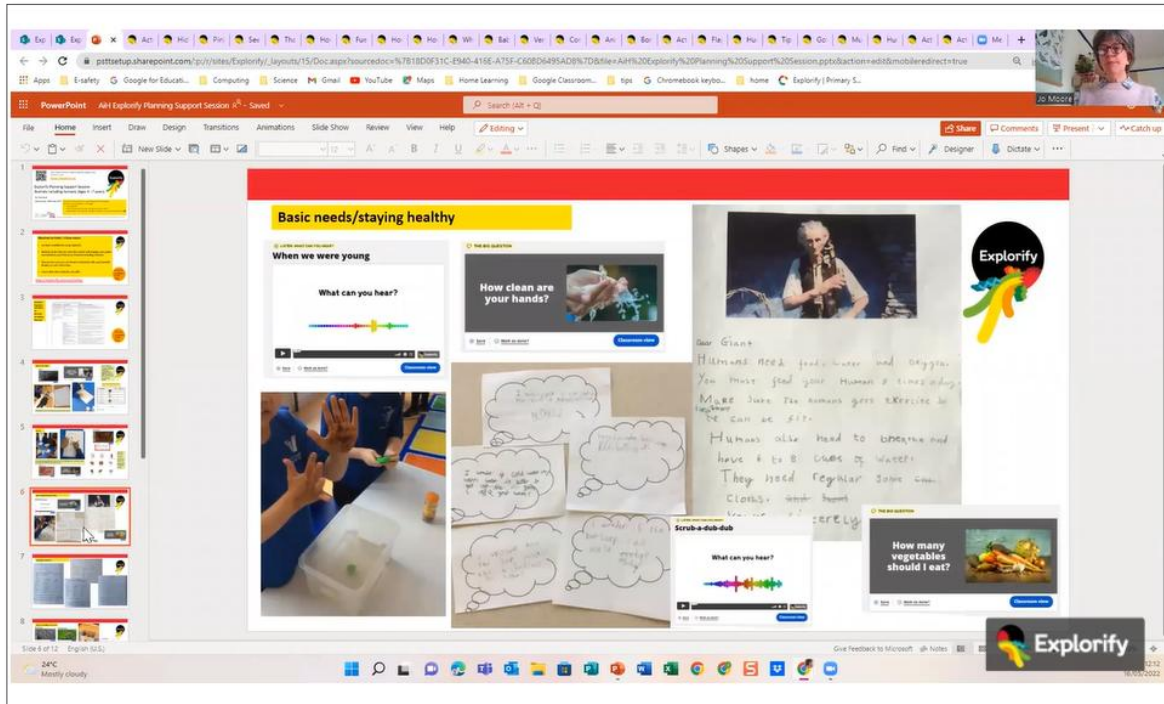
Explorify is an extensive and totally free digital resource of engaging, creative science activities for primary and early years teachers designed to stimulate curiosity, discussion, and debate in the classroom.

- Planning support
- Assessment
- Inclusion

<https://www.stem.org.uk/explorify>



Science teaching support: Planning



Animals including humans (ages 4 – 7) Explorify planning support



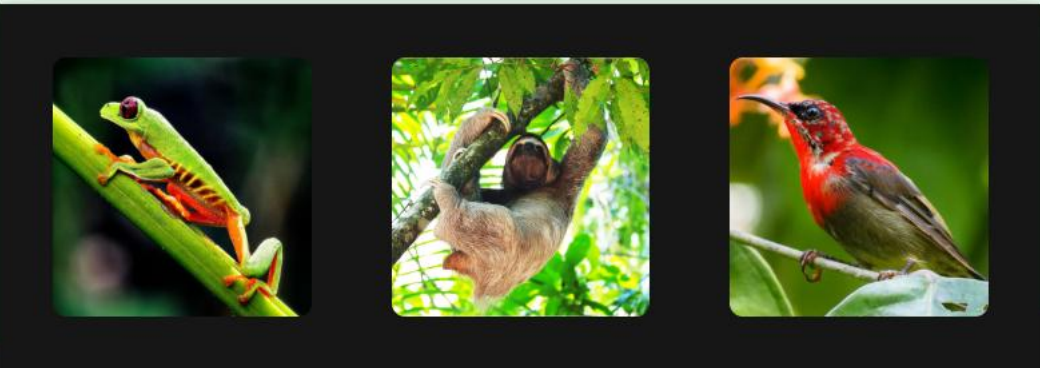
Curriculum statements	Explorify activities	Suggested use/taking it further
NAME DIFFERENT ANIMALS		
Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside. (England)	Birds CreatureComforts – blue tit	ZIZO Birds are warm-blooded, have wings and feathers and most species can fly. Use the different activities to identify the features of different birds, as well as birds in general.
	Feathered friend - ostrich, wren and barn owl That's a flap – bird song	OOO Take your class for a walk to observe some birds. You could go to a local park, wood, river, canal or pond. Give the children a spotter sheet to take with them with the birds they are likely to see. The RSPB and WWF have a great selection of sheets to choose from.
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (England)	Study of feathers - a work of art featuring different feathers	LWCYH You could discuss what might be suitable food to take with you to feed the birds, or make a bird feeder for outside the classroom.
	Red ruffles – red kite Flappy Friends – penguin, duck and sparrow	SWA You could also join in the RSPB Big School's Birdwatch . This video takes you through bird watching with a class. On laptops or tablets, children can find out about different birds using the RSPB's A-Z guide . It is very child friendly and the children can listen to the sounds the birds make.
	Mammals Prints – dog	ZIZO Mammals are warm-blooded, feed their young with milk and have fur or hair.
	Black tips – dog (EYFS) Stripes and patches – dog (EYFS)	OOO Use these activities to establish the features of mammals by asking simple questions like "Does this animal have hair or fur?" or "Do dogs lay eggs?".

Explorify as an assessment tool

Starting a teaching sequence

ODD ONE OUT

Terrific tree dwellers




The image shows three square photographs of animals. From left to right: a green tree frog with orange and red markings on its underside, a brown sloth hanging from a tree branch, and a small red bird with a black beak perched on a branch.

Progressing through a teaching sequence

HAVE YOU EVER?

Have you ever tried to turn something on when it wasn't turned on at the plug?

Have you ever tried to turn something on when it wasn't turned on at the plug?



The image shows a black power plug inserted into a white wall socket. The plug is a standard two-pronged plug with a grounding pin.

Explorify for inclusion

Frame

(1) Look <input type="text"/>	<table border="1"> <tr> <td>1</td> <td>one</td> <td></td> <td>the</td> <td></td> </tr> <tr> <td>2</td> <td>two</td> <td>?</td> <td>How are they</td> <td>the same?</td> </tr> <tr> <td>3</td> <td>three</td> <td>?</td> <td>How are they</td> <td>different?</td> </tr> </table>	1	one		the		2	two	?	How are they	the same?	3	three	?	How are they	different?	(2) Think <input type="text"/>
1	one		the														
2	two	?	How are they	the same?													
3	three	?	How are they	different?													
(4) Share <input type="text"/>	I think the odd one out is the _____ because _____ _____			(3) Write <input type="text"/>													

Thinking sheet

Give it a pull

Tug of war

the drawer
 =

magnet

I	think		is the odd one out because....
---	-------	--	--------------------------------

pulling

pushing

attracting

repelling

forces

2
 two people

1
 one thing

no

1
 one

life skills

Engage

The British Ecological Society

Helen Bickford
Education Officer

www.britishecologicalsociety.org



Practical ecology lessons for the primary classroom

Helen Bickford – Education Officer
helenb@britishecologicalsociety.org

Through science we can



Practical ecology lesson plans

In collaboration with the Francis Crick Institute, we have 6 (one for each year group) detailed practical lesson plans including:

- Curriculum links
- Material lists
- Health and safety guidance
- Hints and tips for teachers
- Worksheets (and answers)
- Ideas for adaptive learning
- Careers links
- A mix of indoors and outdoors activities



Practical ecology lesson plans

Year 1 – Footprint tunnels

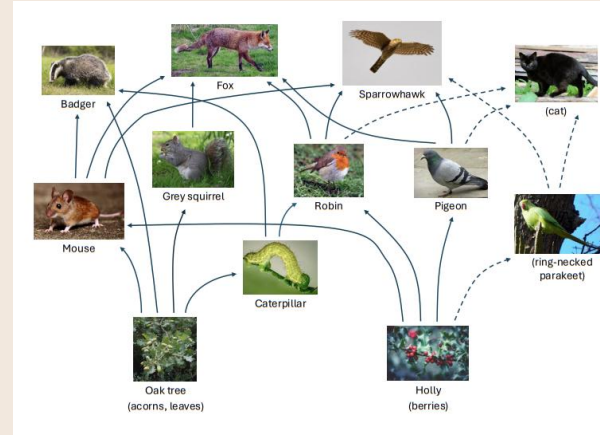
Year 2 – Investigating invertebrates

Year 3 – Plant dissection

Year 4 – Weave a food web

Year 5 – Ecologist in training

Year 6 – penguin huddle



Practical ecology lesson plans

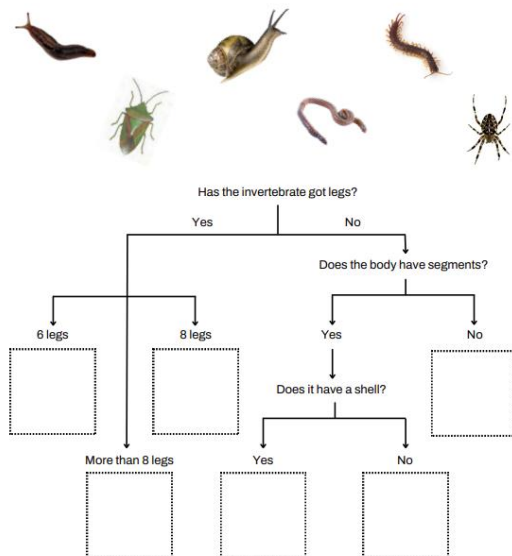
Disco bugs!

How to identify common UK invertebrates

Activity 2: Learn how to identify invertebrates

Make your own ID guide

Can you put these invertebrates into the identification key below?



Footprint tunnels

Teacher guidance

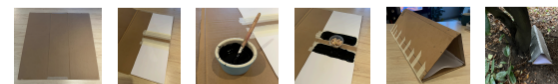
Activity 3: Make a footprint tunnel

Materials:

Listed on page 1

Instructions:

- Recommended 6 groups of 5 students making a tunnel each
- Cut the large piece of card into a rectangular shape and score 2 lines to be able to bend it into a triangular prism
- Masking tape 2 sheets of A4, one on each end of the middle section of cardboard
- Make the black paste with 1:1 food grade charcoal and vegetable oil
- Liberally paint the paste onto the masking tape at the end of the A4 sheets closest to the middle
- Place a small amount of cat food in the middle
- Fold the sides up and securely tape it together
- To protect it from rain you can cover it in bin bags
- Take it out to your school grounds and find a shaded spot under a tree or bush
- Try to weigh it down with some stones, heavy sticks or use tent pegs if you have them to stop it moving. In urban areas there is a risk that foxes may try to rip up the tunnel which is why weighing it down is important
- Leave it over night and collect it the next day
- Carefully open it up to hopefully reveal lots of little black footprints



Questions to open up discussion during the activity

- Where would be a good place for our tunnels and why?
- What kind of footprints do you think we'll find?

When you've finished you could use the footprints you've collected to make a display.

What's it like to be an ecologist? *(eh-kol-uh-jist)*

Ecologists are scientists who study the natural world, including animals, plants and other living things. They also study non living things, including the weather, soil and water. They observe how these things interact to measure the health of habitats and work to protect them.

What does an ecologist do?



Work outside in all weathers - this is called fieldwork

Count plants or wildlife, noticing changes in numbers or behaviours



Work indoors - in labs, using microscopes to take a closer look at nature

Teach people how to look after the environment, keeping the planet happy

Who do ecologists work for?



- The Government - to help protect and improve nature in their local area including in parks
- Building companies - to make sure new buildings won't cause harm to the land, plants and animals
- Charities - to help survey and monitor different habitats including woods, farmland and marine areas such as coastlines
- Museums - to help people learn about nature

Is a career in ecology for me?

- Do you like nature and spending time outdoors in any weather?
- Are you interested in animals, plants and other living things?
- Do you have a curious mind and enjoy doing experiments?
- Then imagine yourself as an ecologist one day and explore family learning opportunities at a green space near you



Ecologist in training

Bird Species - Additional Information

Ring-necked parakeet

This bird isn't native to the UK; it has been accidentally introduced due to pet parakeets escaping multiple times. They can adapt to different habitats and eat lots of different foods (seeds, fruit, flowers); this means their numbers are increasing.



Starling

Numbers are declining. It is not known exactly why; it's likely to be due to a combination of factors, including lack of food (insects).



House sparrow

Although still very common, there are far fewer sparrows than there used to be. Sparrows usually nest in cracks and gaps in houses, but as we repair buildings and make better houses, they have less places to nest. They also have less insects to eat, due to there being less wild areas for insects.



Greenfinch

Numbers of greenfinches are decreasing due to a disease (called trichomonosis), which is spread through contaminated food and water. Dirty bird feeders can increase the risk of this disease spreading.



Wood pigeon

Numbers have been increasing for several decades, although now this has levelled off. Changes in farming practices mean that they have food available all year round.



Robin

Numbers have increased in the last few decades. It is thought that this is due to winters becoming milder. Robins are very susceptible to cold weather, losing up to 10% of their body weight during a very cold winter's night.



Find all of these resources on our website:

<https://www.britishecologicalsociety.org/content/practical-ecology-lessons-for-the-primary-classroom/>

Engage

Sustrans

Kate Salter
Delivery officer

www.sustrans.org.uk

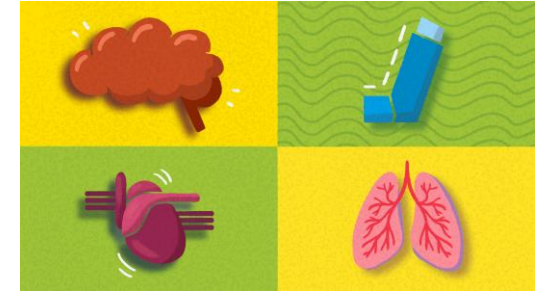


‘Clean Air schools’

- Resources for schools focused on reducing air pollution at schools

WHY?

- Save lives; reduce asthma and other avoidable diseases
- Children are especially vulnerable
- Solutions to air pollution, address other key issues for schools (congestion; road safety; pupil focus)



‘Clean Air schools’

TOOLKIT

- Resources hosted online (primary and secondary schools)
- Curriculum linked, practical sessions
- Suitable for eco groups/school councils
- www.transformingtravel.info/schools
- Inform; Investigate; Involve; Improve

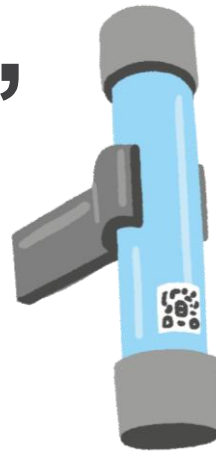


CLEAN AIR SCHOOLS

Teachers Toolkit



'Clean Air schools'



- Conduct practical, fun sessions to collect real Scientific data
- Explore the school site
- Free/ low-cost activities

Name:	Class:	Year:
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Diffusion Tubes Student Worksheet



Facts

- Air pollution is unwanted chemicals, gases, and particles in our air.
- Diffusion tubes measure air pollution.
- The type of air pollution they measure is called nitrogen dioxide.
- It mostly comes from vehicle (car) exhausts.

Think

At school, where do you think you would find:

- The most air pollution?
- The least air pollution?

'Clean Air schools'

- Educate and empower students to take action to ensure they are healthier and contribute to a better world.
- Examples of resourced activities:
 - Clean air route planning
 - Growing plants for better air quality
 - Write a school travel policy
 - Gaining a CREST award



CREST Award Project: Air Quality at Schools

STUDENT PROJECT BRIEF

PROJECT OVERVIEW

Vehicles to be banned outside school to improve air quality.

AIM: To investigate how cars affect air quality at your school.

PROJECT BRIEF:

Imagine (if you aren't already) that you are on the school council and a proposal has been put forward to 'ban motorised vehicles from outside school to improve air quality'. This has happened at some schools in the UK already. They are called 'School Streets'.

Your brief is to design and carry out a scientific investigation to decide whether to accept or reject this idea for your school. You'll then need to produce a resource to communicate your research and findings of your investigation to all staff and pupils, to explain why as a school community, you should accept or reject the proposal, and what (if any) other action(s) you recommend being taken.

To gain your Discovery CREST Award, you will need to complete a student passport. To complete a Silver or Gold CREST award, you will need to write a report AND the CREST Student Profile Form and submit it by the deadline you are given.

GETTING STARTED

Do some research to find out what makes good or bad air quality, why that matters and how motorised vehicles affect air quality. Discover a bit more about School Streets and other initiatives to address air quality at schools. Try to find any existing data about what the air quality is like at your school and also methodologies for getting air quality data.

TIP: Make sure you record where you found the information (your sources). There are some suggested sources of information in the Appendix.

PLAN YOUR TIME!

Once you have the background information, you'll need to plan the rest of your time so that you can complete the work in the time allocation relevant to the level of the award you are aiming for. This needs to include: research time, considering different ways to tackle the brief, designing an experiment with your selected approach, conducting the experiment, analysing your results, evaluating your results and then creating your report to go to the school community.



4
4

Engage

National Education Nature Park

Victor Heng
Learning Programme Developer

www.educationnaturepark.org.uk

A circular graphic on the right side of the slide contains several stylized, flat-colored illustrations. At the top left is an orange figure of a person walking. To its right is a green donkey. Below the person is a grey cloud. To the right of the cloud is a blue pitchfork. At the top right is a green leaf. At the bottom right is an orange arrow pointing upwards.

**National Education
Nature Park**

What is available as part of the Nature Park?

- Support teams in every region in England to help you get started.
- Digital tools for measuring land-use and biodiversity
- Teaching resources to facilitate student leadership in the Nature Park programme



Habitat heroes

Add a record

Map

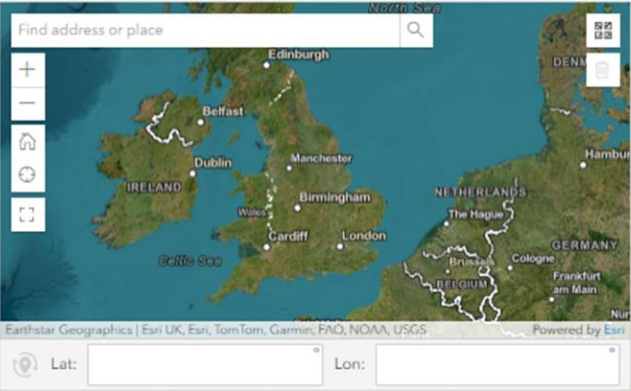
Gallery

About

Where are you?*

Add a dot to the map to show where you found this place for wildlife.

Find address or place






Lat: Lon:

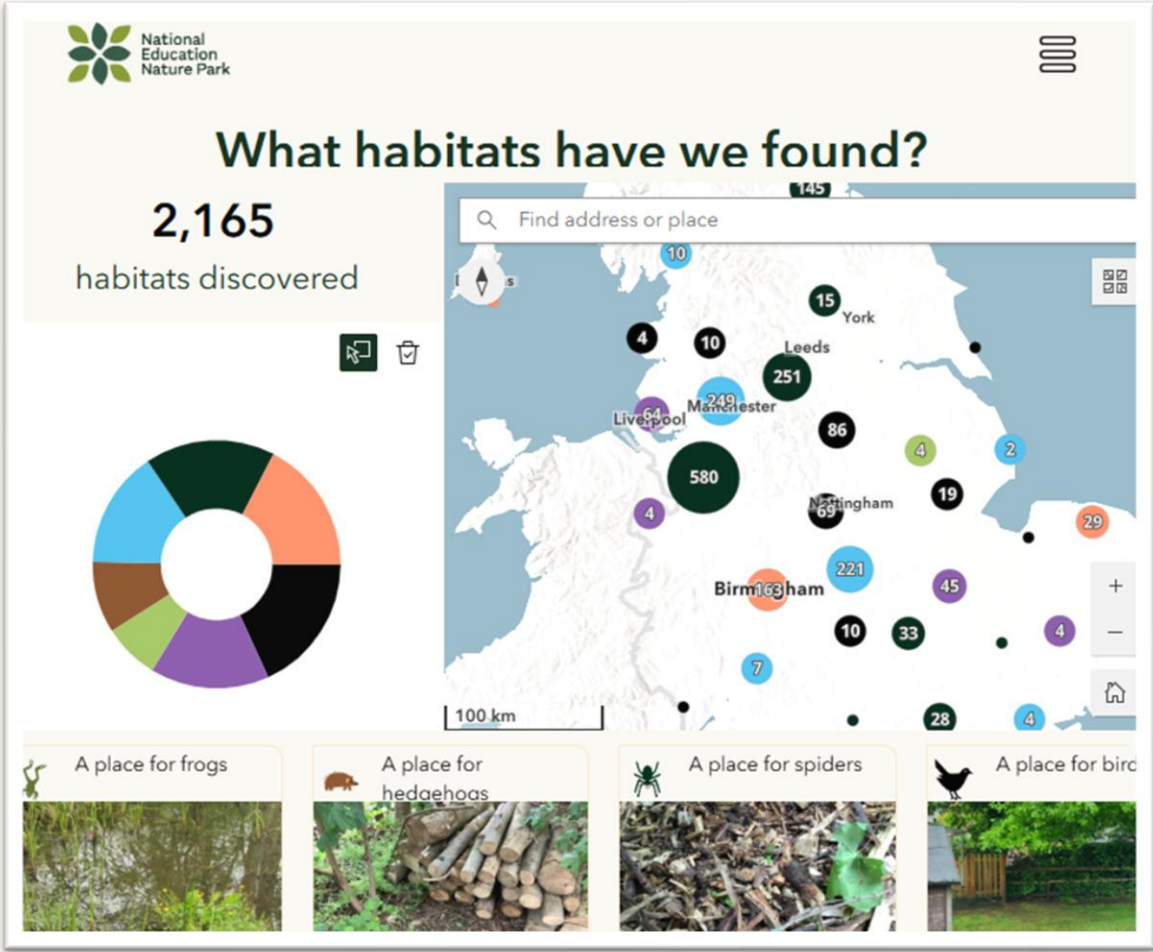
Can you find a place that's good for.....*

☐ bumblebees and butterflies

☐ birds

☐ worms





Habitat mapping resources

Grass and wildflowers

Answer the questions and follow the arrows to find out what habitats you have. When you reach a blue rectangular box, work with your teacher to add this habitat to your map.

Find an area of grass or wildflowers on your site. Look at your answer from activity 3. How much grass do you have in your example area?

All or mostly grass (option A or B)

Look at your answer from activity 3. Are there more than 8 different kinds of plants?

Yes: There are more than 8 kinds. The habitat is a meadow.

No: There are 8 or fewer different kinds. Are these plants taller than your hip height?

Yes: The habitat is a playing field or lawn.

No: The habitat is a meadow.

National Education Nature Park and Climate Action Awards

Trees

Answer the questions and follow the arrows to find out what habitats you have. When you reach a blue rectangular box, work with your teacher to add this habitat to your map.

Find one or more trees on your site. How are the trees laid out?

In a line: Is the line of trees longer than 20 metres? Yes: The habitat is a line of trees. No: Record each tree as one tree. Carry out the Woodland Survey activity. Which of the following habitats matches your answer to the Woodland Survey? The habitat is broadleaved woodland. The habitat is evergreen woodland. Ancient grazing woodland. Very large size only. and some or sharp enough to have this.

Between 1 and 4 trees, in a group or spread out: Record each tree as one tree. Carry out the Woodland Survey activity. Which of the following habitats matches your answer to the Woodland Survey? The habitat is broadleaved woodland. The habitat is evergreen woodland. Ancient grazing woodland. Very large size only. and some or sharp enough to have this.

National Education Nature Park and Climate Action Awards

Flowers and food

Answer the questions and follow the arrows to find out what habitats you have. When you reach a blue rectangular box, work with your teacher to add this habitat to your map.

Find some flowers or a food growing area on your site. Does the area contain plants that people can eat, such as fruits, vegetables, nuts or herbs?

Yes: Are all the plants trees? No: The habitat is a food growing area. Yes: Are there 5 or more trees? The habitat is an orchard. No: Are the flowers and other plants planted in small stones or among large rocks? Yes: The habitat is a rock garden. No: Are the flowers and other plants planted in pots or containers that could be picked up and moved? Record each plant as plants in a pot. The habitat is a raised bed. Does a drainpipe flow directly into the planter? The habitat is a rain garden.

National Education Nature Park and Climate Action Awards

Homes and help for nature

National Education Nature Park and Climate Action Awards

Bird box, Log pile, Bee hotel, Bird feeders, Bee hive, Compost area, Water butt, Flowerpot, Bat box, Hedgehog house, Bird bath, Wildlife pond.

Tick off the microhabitats, from your Nature Park map, add them to your Nature Park map.

2 How much grass is there?

Option A: All grass. Option B: Mostly grass. Option C: Mostly other plants.

3 How many leaf shapes?

How many different leaf shapes can you find? (Use tally marks)

National Education Nature Park

- Website:
www.educationnaturepark.org.uk
- Email:
hello@educationnaturepark.org.uk
- #EducationNaturePark on social channels



Any questions?

Engage

Or get in touch with today's speakers:

My Science Club

hello@myscienceclub.com

The Royal Society

education@royalsociety.org

CREST Awards

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NUSTEM

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Primary Science Teaching Trust

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Explorify

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British Ecological Society

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Sustrans

education@sustrans.org.uk

National Education Nature Park

hello@educationnaturepark.org.uk

Engage Teacher Conference

Thank you

Complete the **5-minute feedback form** for the chance to win one of ten **£10 Amazon vouchers!**
www.tfaforms.com/5181926



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 crest@britishscienceassociation.org

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