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

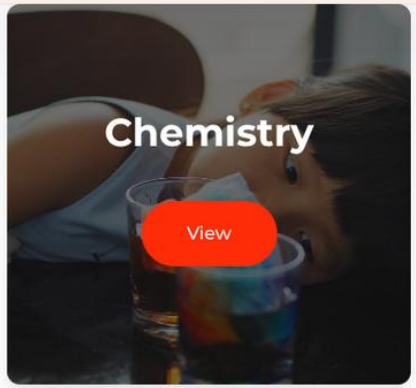
My Science Club

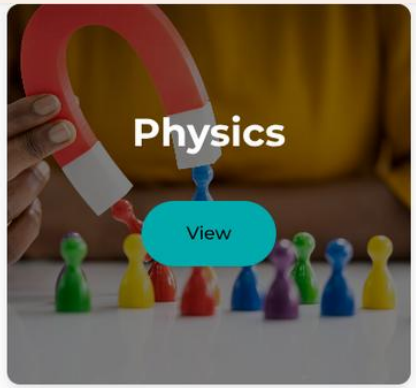
Paul Tyler
Resource Director

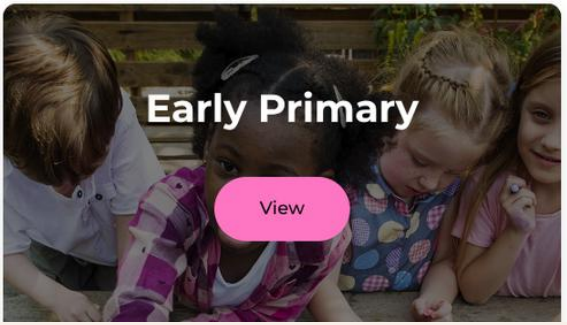
www.mysciencecclub.com

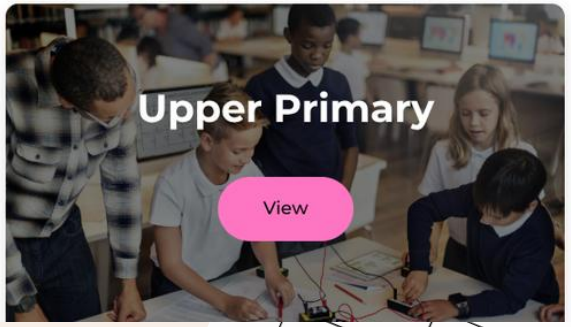
WHY WOULD YOU RUN A SCIENCE CLUB?

My Science Club





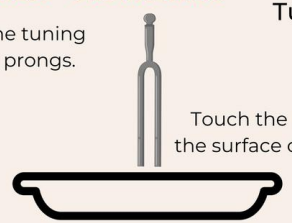




VIBRATION ACTIVITIES

Tuning fork splash

Hit the tuning fork prongs.



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.

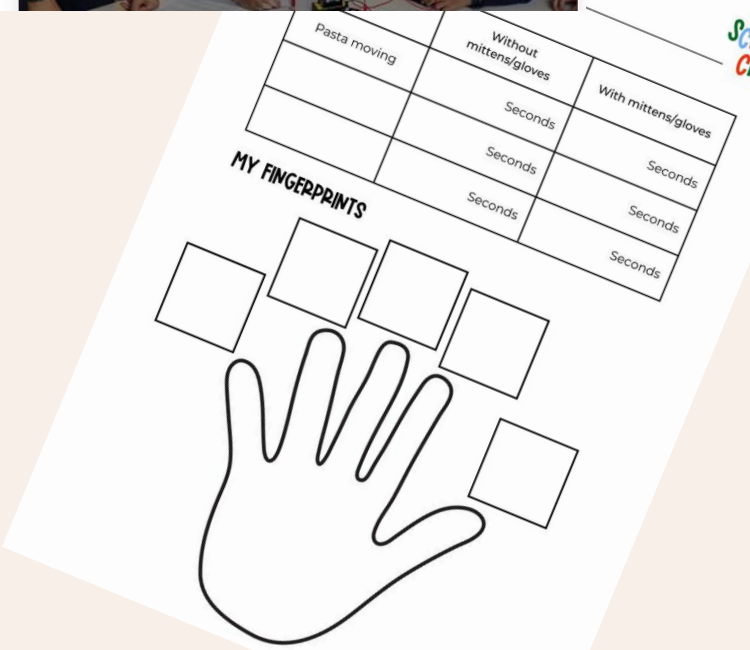
Hold the ruler flat against the table top.

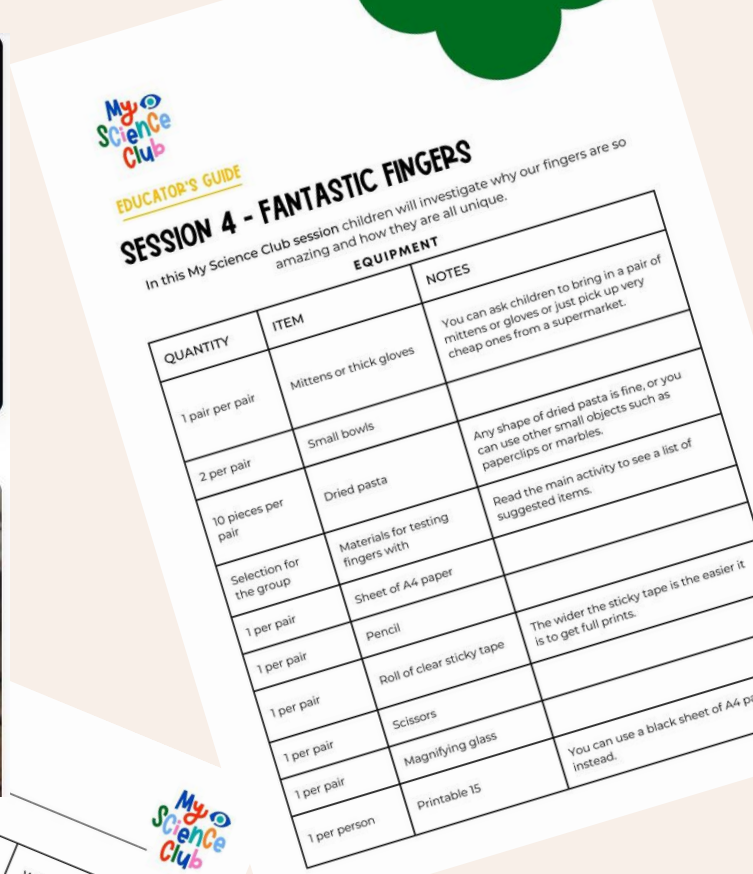
What happens when you change the length of the ruler?

Dancing Rice

Hit the baking tray hard with the wooden spoon.

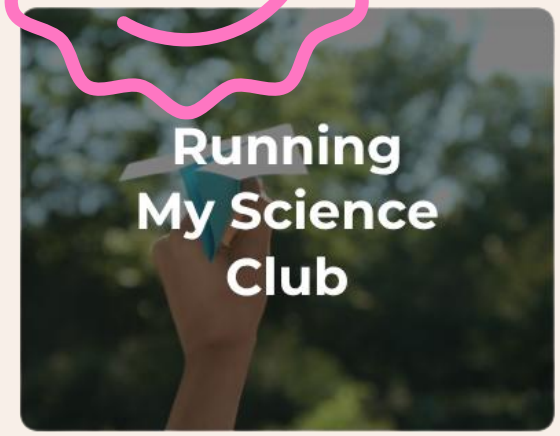
What happens to the rice when you hit the baking tray?





My Science Club

FREE



My Science Club

HOW TO JOIN My Science Club

1

www.mysciencecliub.com

Head to the My Science Club website.

2

Join My Science Club

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

3

Membership

£49.99

= 6 credits

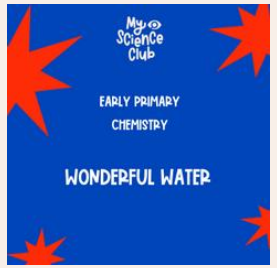
Your £49.99 annual membership gets you 6 credits to use throughout the year.

MSCENGAGE25

Sign up to our newsletter.

4

1 credit
= 1 pack



1 credit gets you 1 pack of resources.

5

NEW!

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

6

Get more credits by recommending friends to join.

Engage

The Royal Society

Ruby Seger-Bernard
Schools Engagement Officer

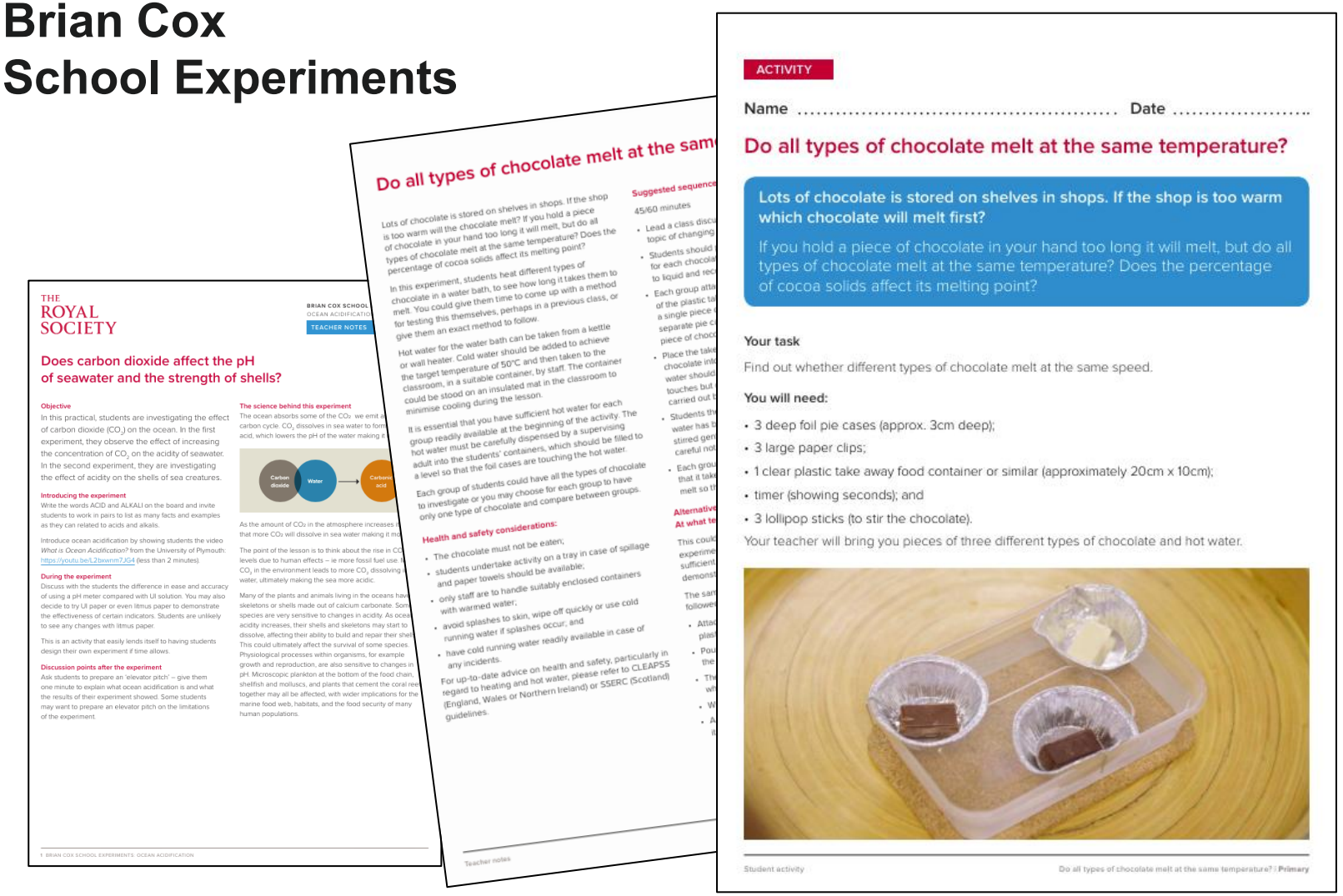
www.royalsociety.org

Royal Society STEM resources and Partnership Grants

Ruby Seger-Bernard
Schools Engagement Officer

THE ROYAL SOCIETY

Brian Cox School Experiments



Primary level resources available

Strong links to the curriculum

Clear careers links (short videos)

Free to download

Videos and printable resources at: royalsociety.org/schoolexperiments

THE ROYAL SOCIETY

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

THE ROYAL SOCIETY

Contact: education@royalsociety.org

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

THE ROYAL SOCIETY

Engage

CREST Awards The British Science Association

Catherine Davies
Education Resources Manager

www.crestawards.org

CREST AWARDS

Engage Teacher Network

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

Hands-on

Fun

Engaging

Inspiring

Student-led

Relatable

CREST AWARDS

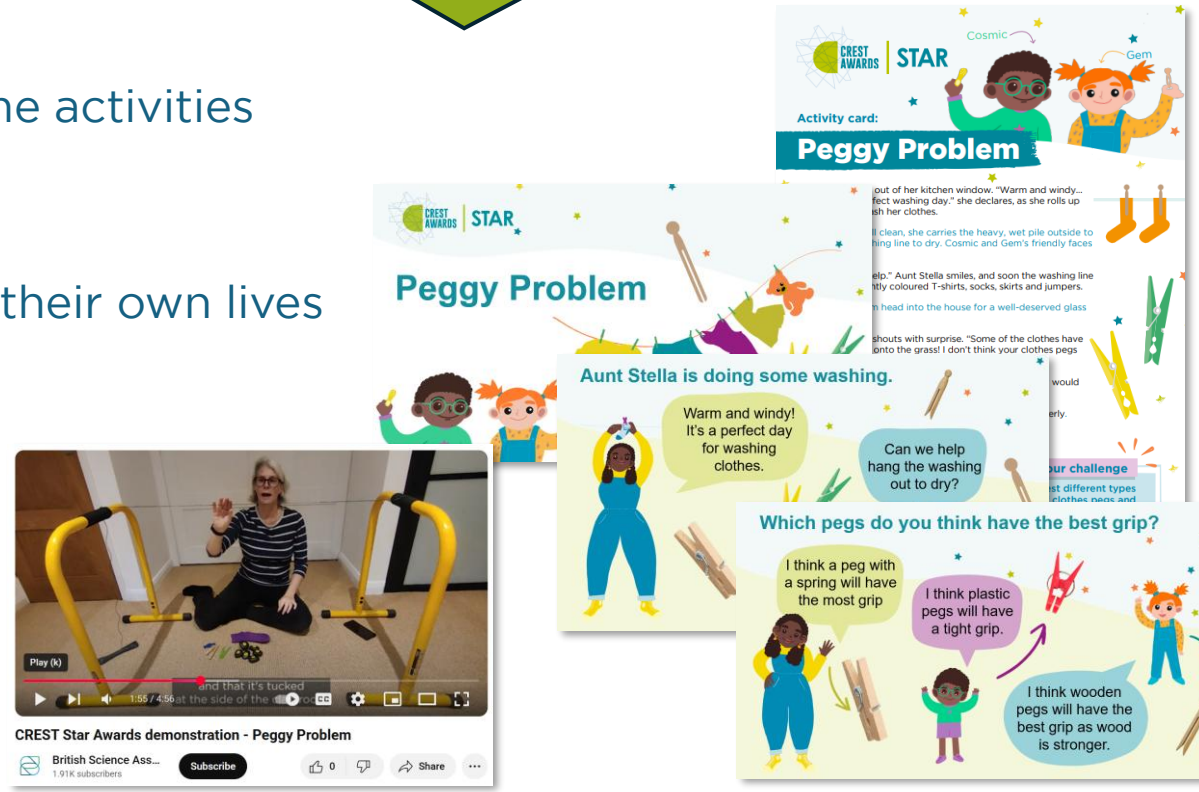
Engage Teacher Network

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

"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 craftmanship. It's really good."
Participating pupil

"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



Engage Teacher Network

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!

crestawards.org

2025 Activity Packs

BRITISH SCIENCE WEEK

- 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

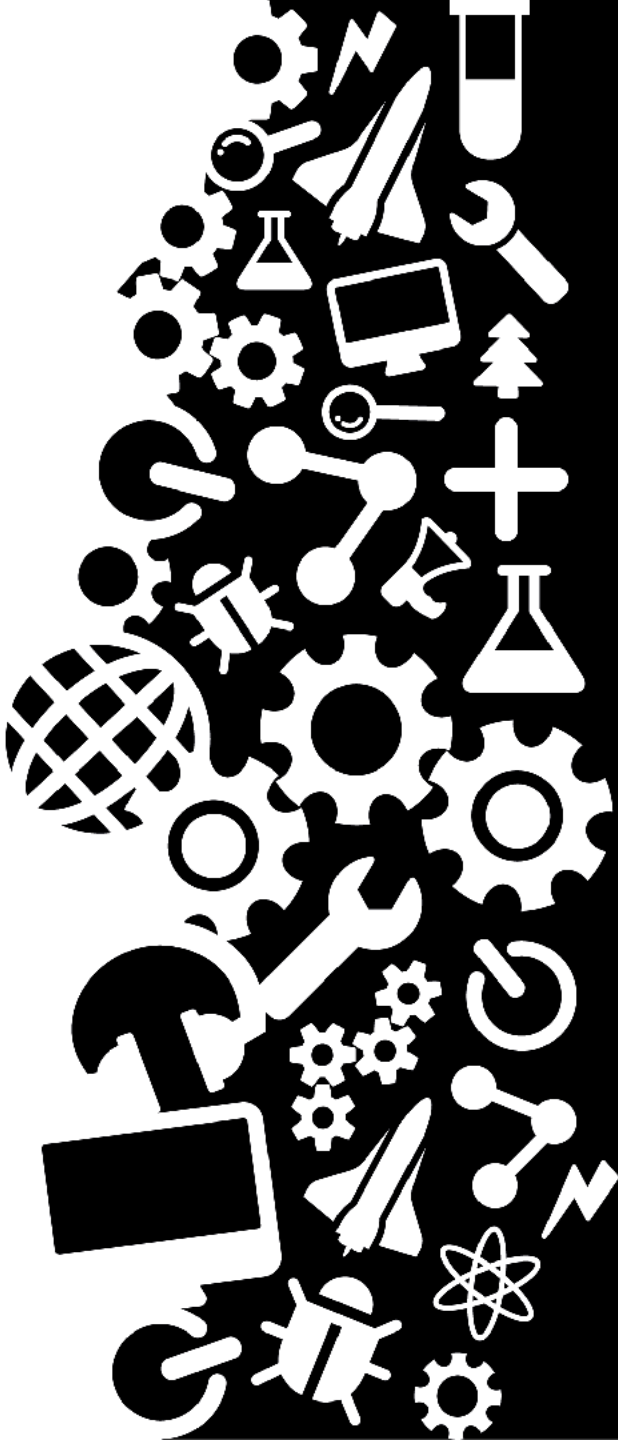
Resources for embedding careers teaching in science

Joe Shimwell

Joe.Shimwell@unn.ac.uk

Northumbria University NEWCASTLE

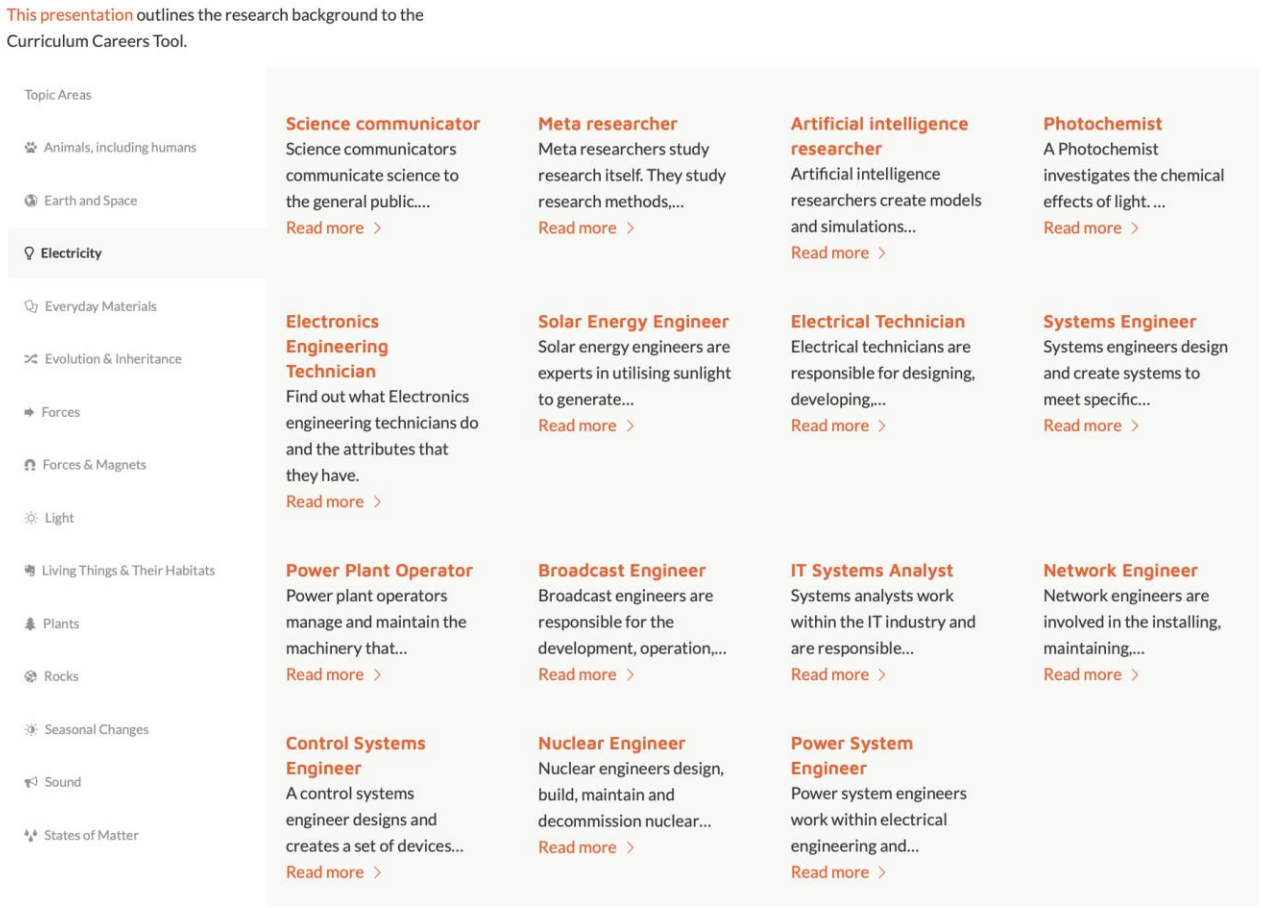
nustem



NUSTEM Curriculum Careers Tool

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

Nustem.uk/pct



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.

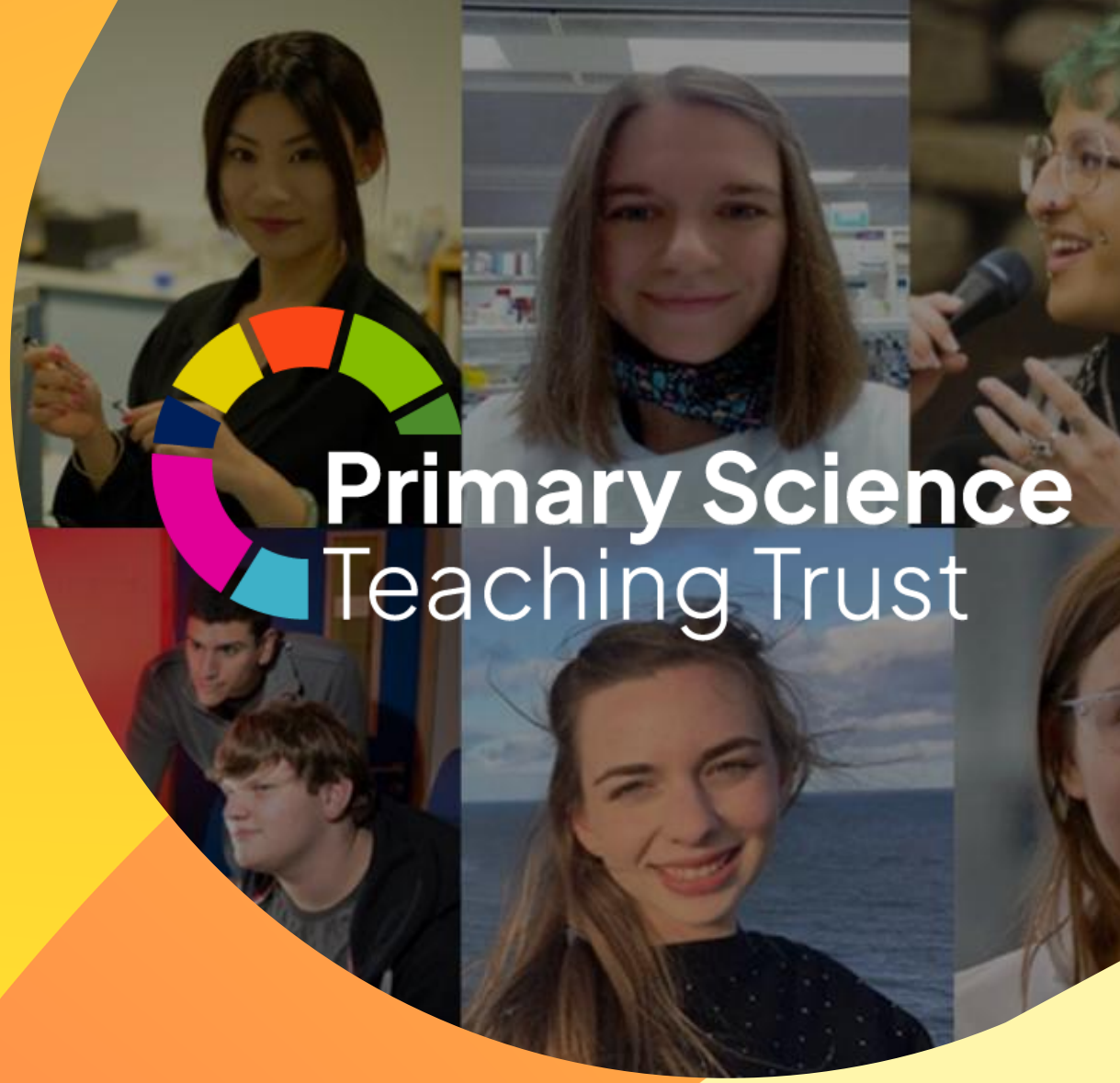
joe.shimwell@unn.ac.uk

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

Primary Science Teaching Trust

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/

Primary Science Teaching Trust

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

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

Primary Science Teaching Trust

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?

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

Primary Science Teaching Trust

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.

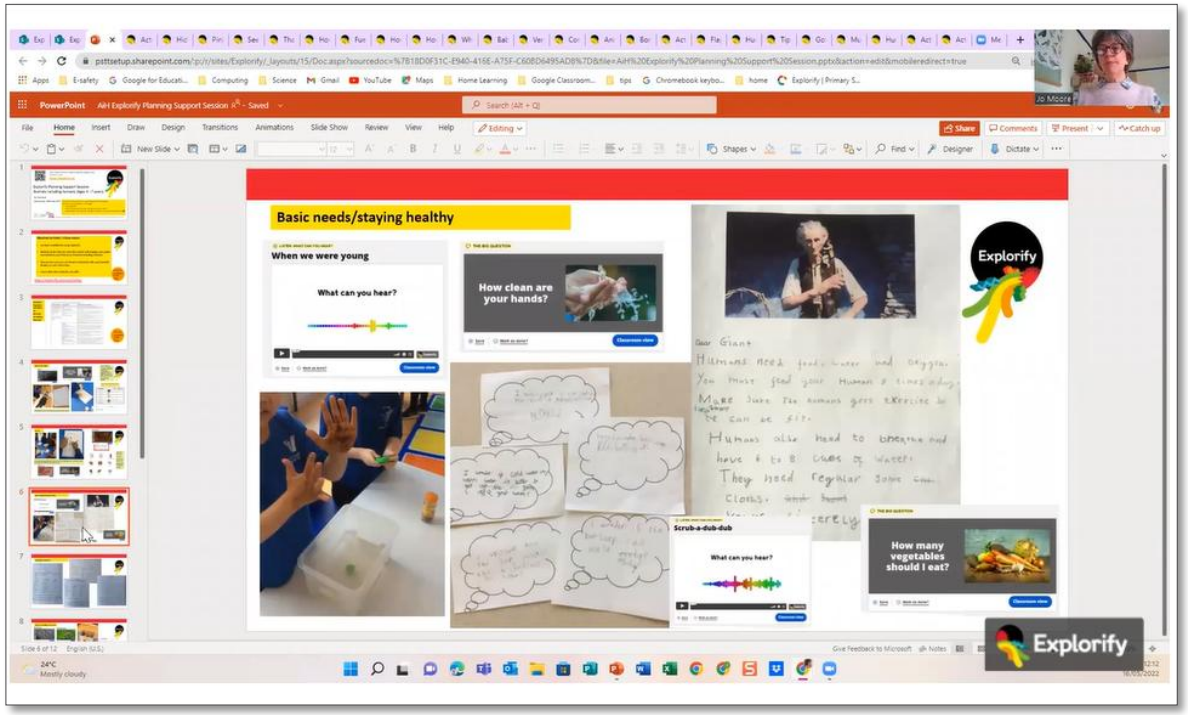
- Planning support
- Assessment
- Inclusion

Explorify
POWERED BY STEM LEARNING

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

STEM LEARNING

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)* **Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals** *(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. 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 WWT have a great selection of sheets to choose from. 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. 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.
	Feathered friend - ostrich, wren and barn owl	OOO	
	That's a flap – bird song	LWCYH	
	Study of feathers - a work of art featuring different feathers	SWA	
	Red ruffles – red kite	ZIZO	
	Flappy Friends – penguin, duck and sparrow	OOO	
	Mammals Prints – dog	ZIZO	Mammals are warm-blooded, feed their young with milk and have fur or hair.
	Black tips – dog (EYFS)	ZIZO	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?".
	Stripes and patches – dog (EYFS)	ZIZO	

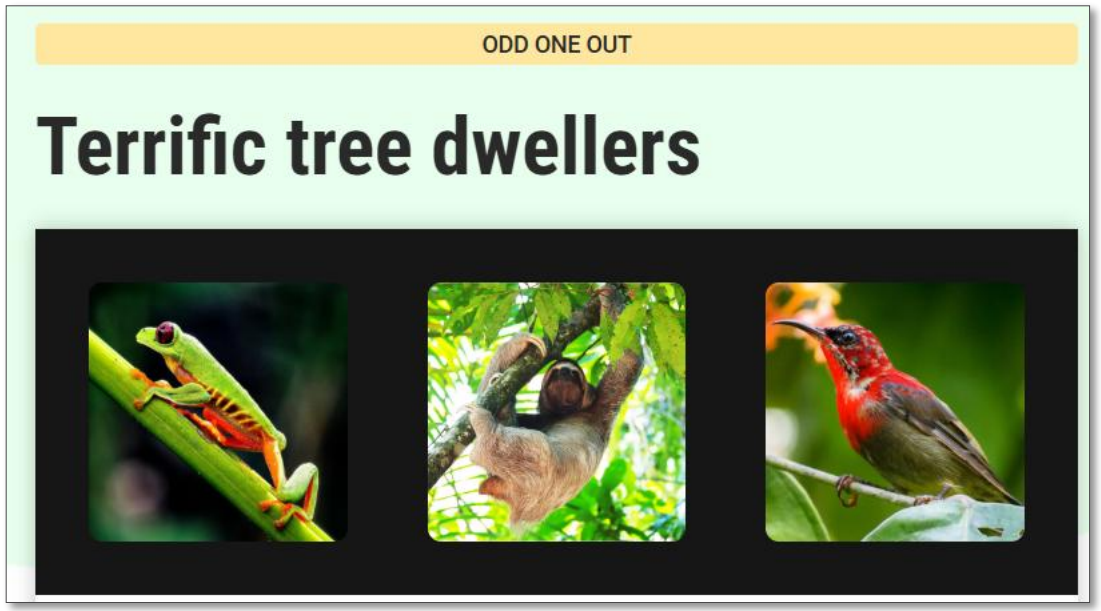
Explorify POWERED BY STEM LEARNING

https://www.stem.org.uk/explorify/explorify-science-teaching-support

STEM LEARNING

Explorify as an assessment tool

Starting a teaching sequence



Progressing through a teaching sequence

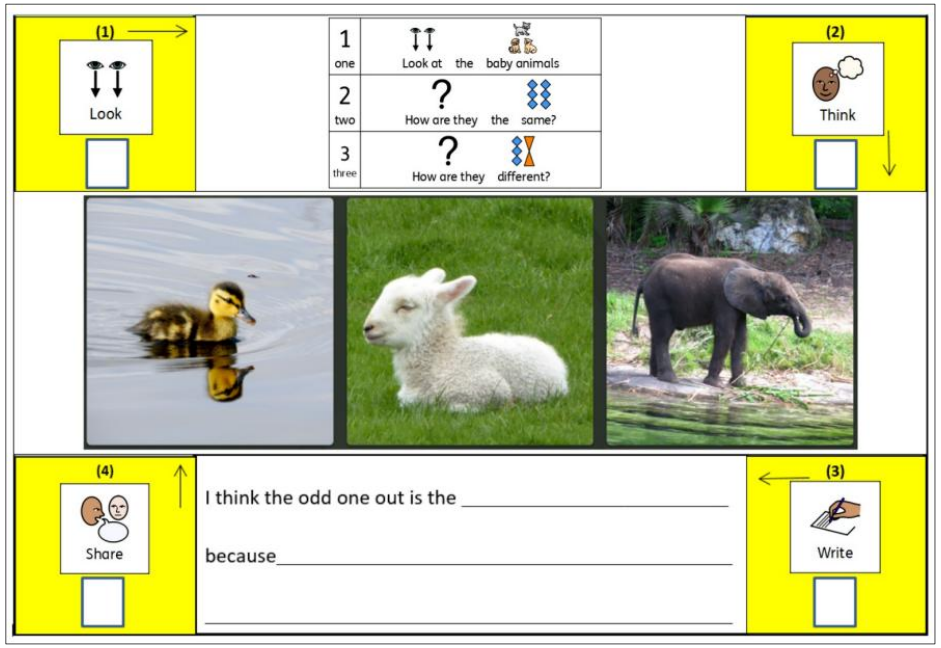
Explorify
POWERED BY STEM LEARNING

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

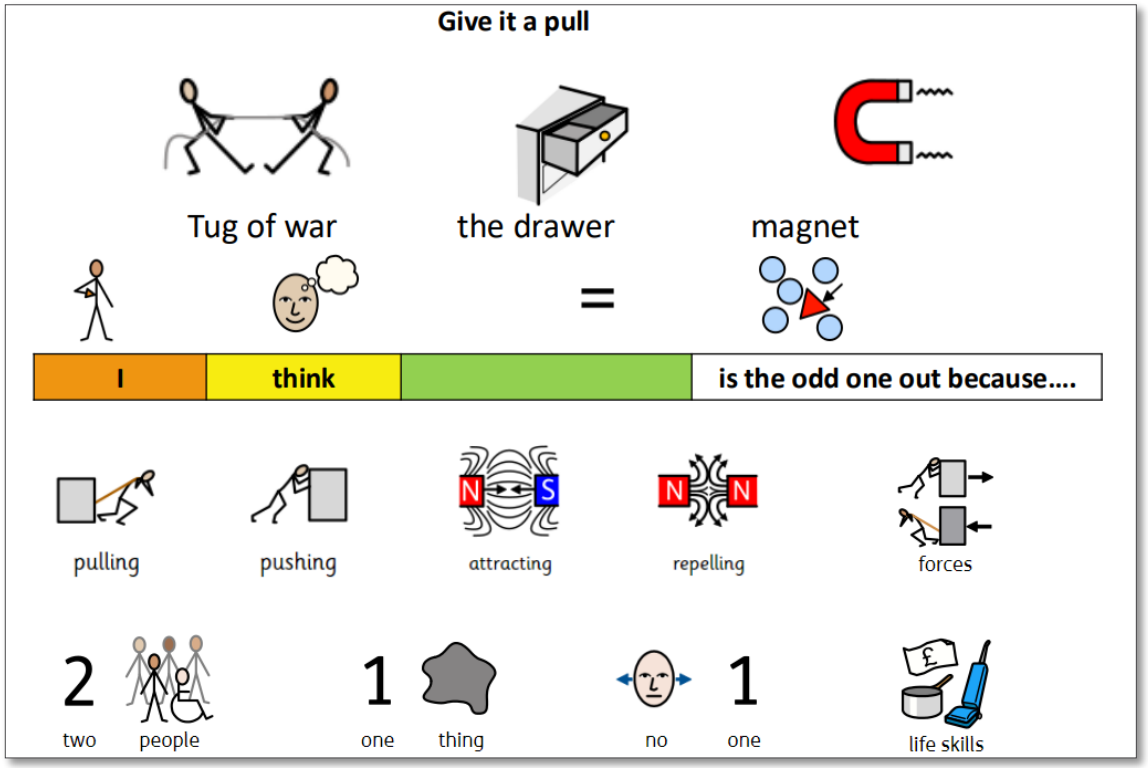
STEM LEARNING

Explorify for inclusion

Frame



Thinking sheet



Explorify
POWERED BY STEM LEARNING

https://www.stem.org.uk/explorify/explorify-for-inclusion-hub

STEM LEARNING

Engage

The British Ecological Society

Helen Bickford
Education Officer

www.britishecologicalsociety.org

BRITISH ECOLOGICAL SOCIETY

BRITISH ECOLOGICAL SOCIETY

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

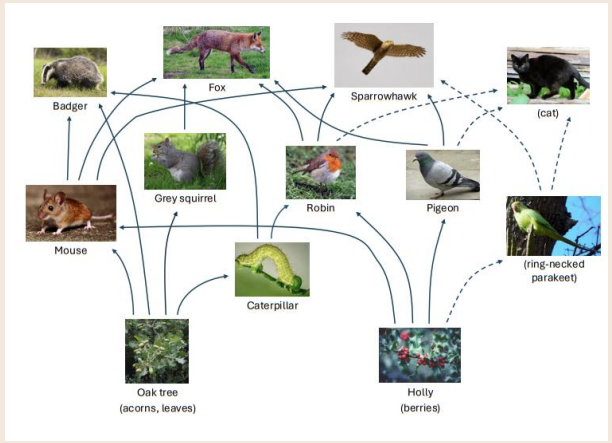
Year 2 – Investigating invertebrates

Year 3 – Plant dissection

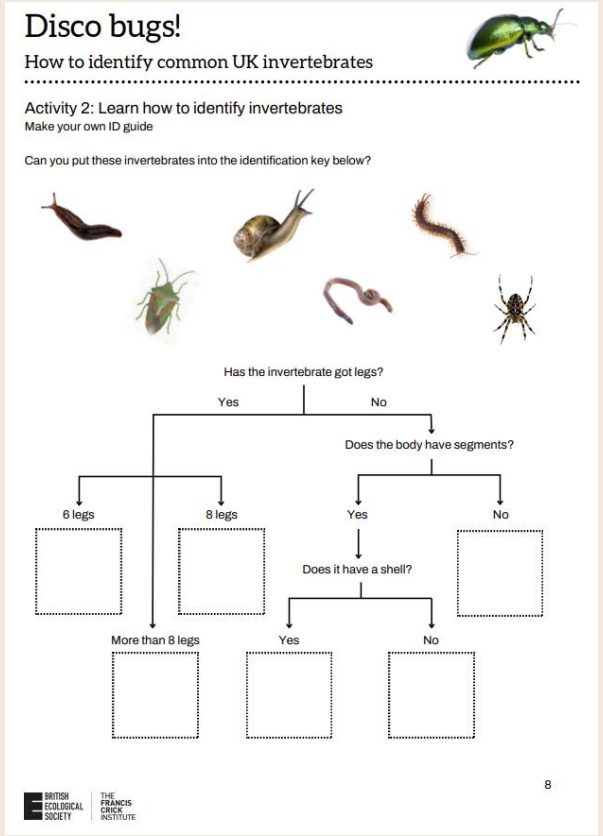
Year 4 – Weave a food web

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?

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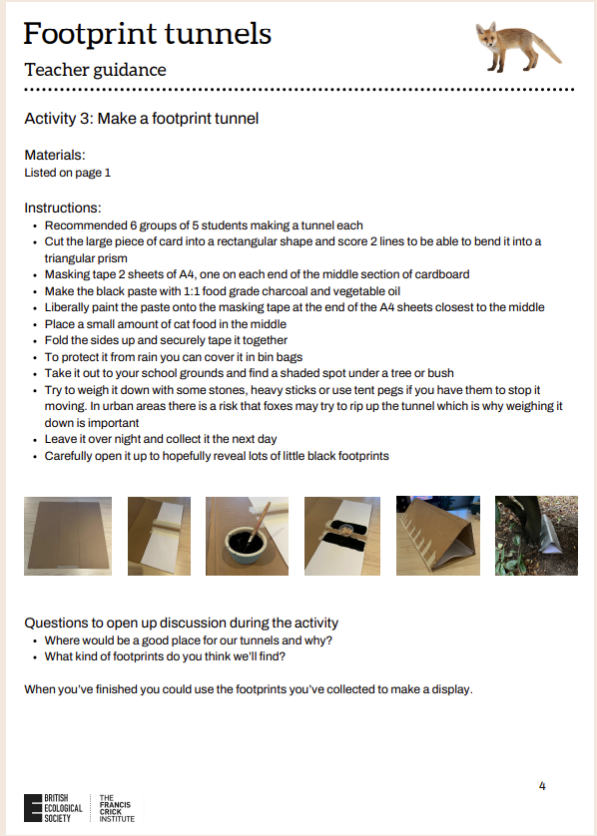

Footprint tunnels

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.

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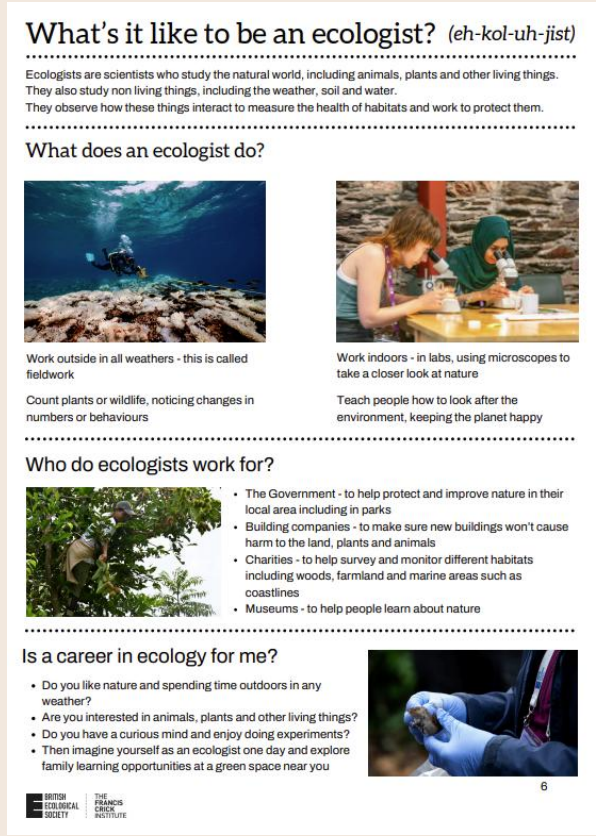

What's it like to be an ecologist? *(eh-kol-uh-jist)*

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

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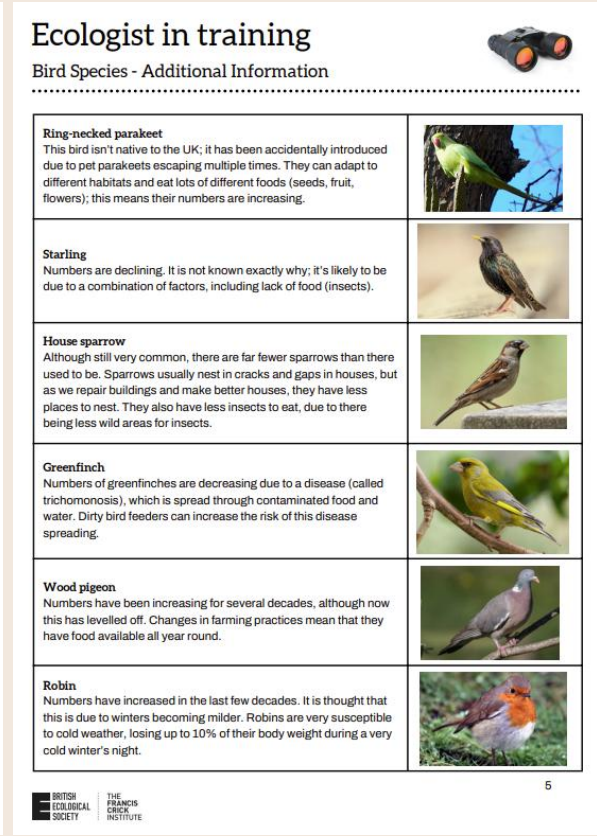


Ecologist in training

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.

5

Find all of these resources on our website:
https://www.britishecologicalsociety.org/content/practical-ecology-lessons-for-the-primary-classroom/

Engage

Sustrans

sustrans
JOIN THE MOVEMENT

Kate Salter
Delivery officer

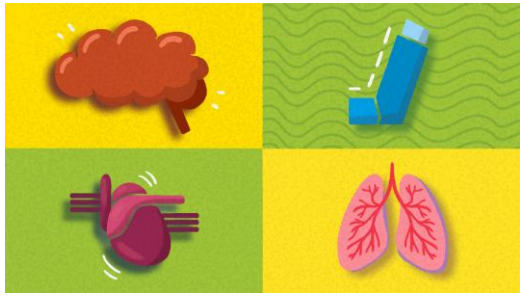
www.sustrans.org.uk

‘Clean Air schools’

- Resources for schools focused on reducing air pollution at schools

WHY?

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



sustrans
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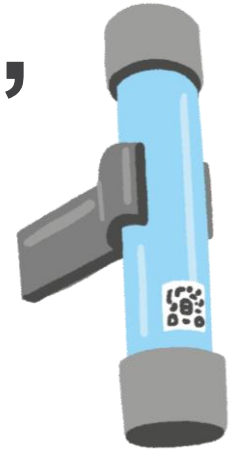
‘Clean Air schools’

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’



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

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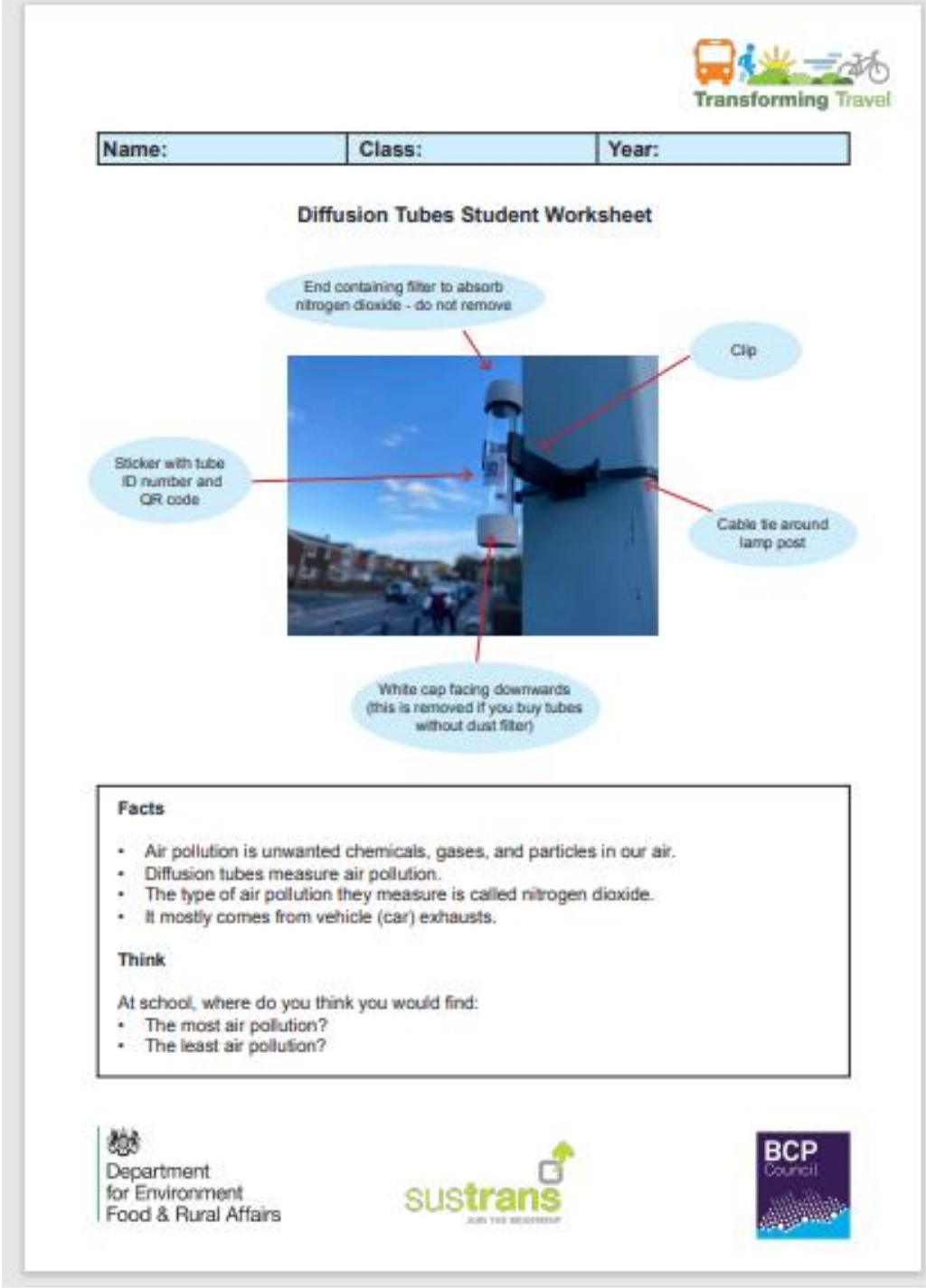

Transforming Travel

Name:	Class:	Year:

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?

Department for Environment Food & Rural Affairs

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BCP Council

‘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

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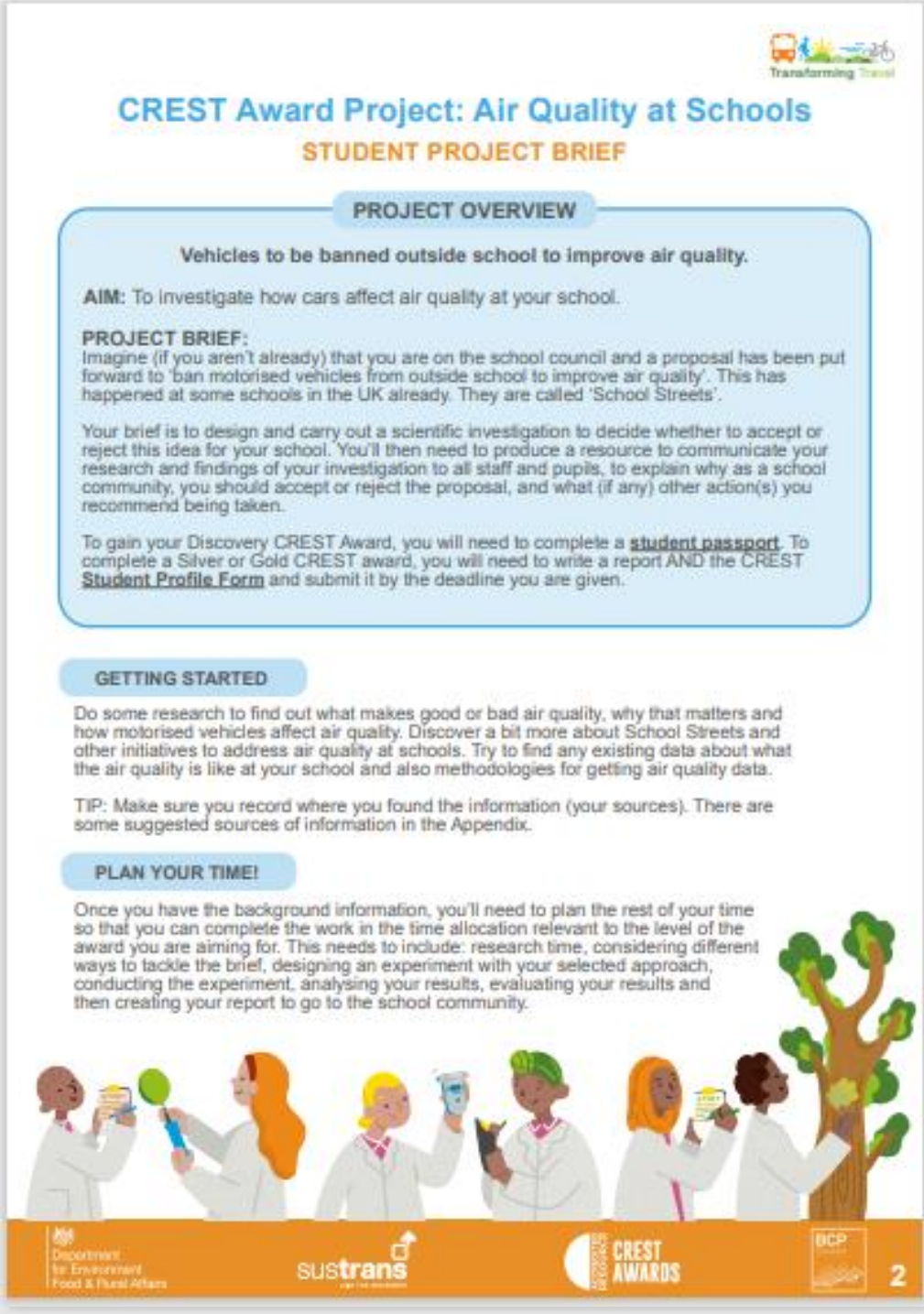

Transforming Travel

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.

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Engage

National Education Nature Park

Victor Heng
Learning Programme Developer

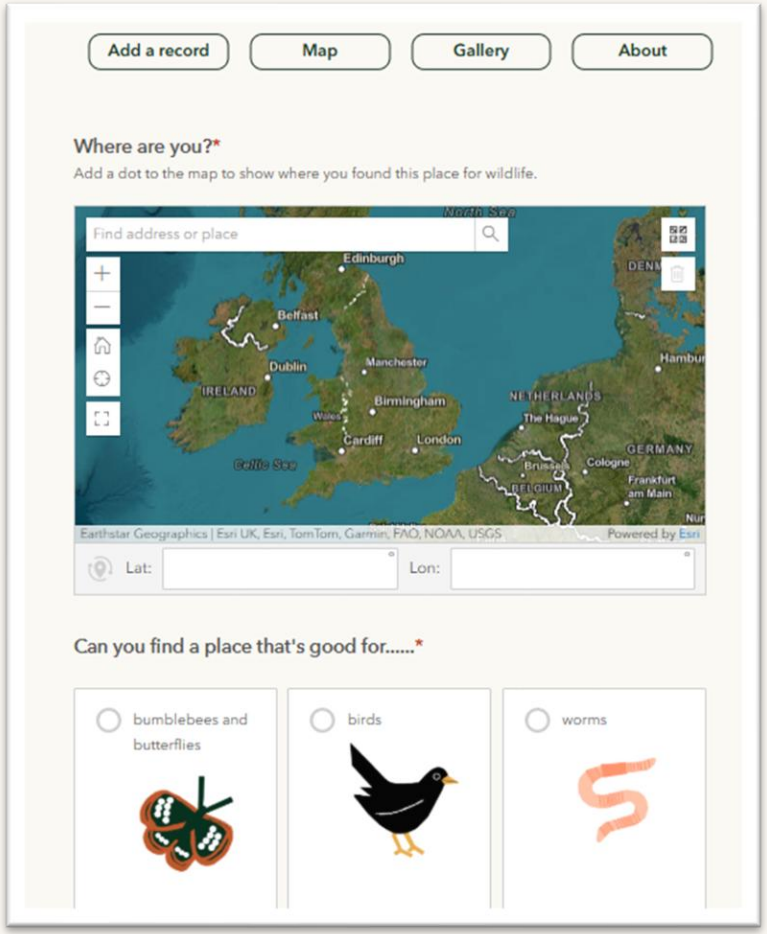
www.educationnaturepark.org.uk

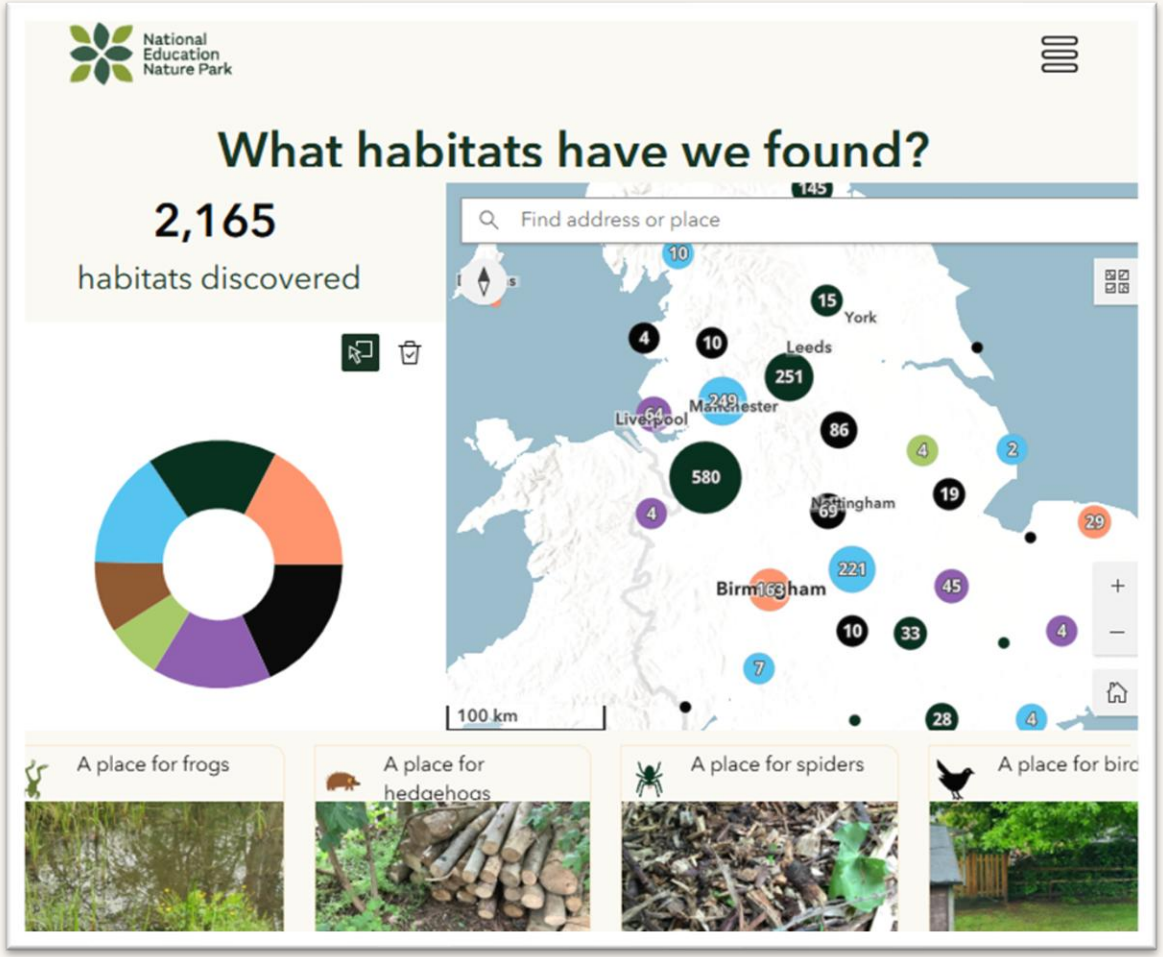
What is available as part of the Nature Park?

- 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

National Education Nature Park

Habitat heroes





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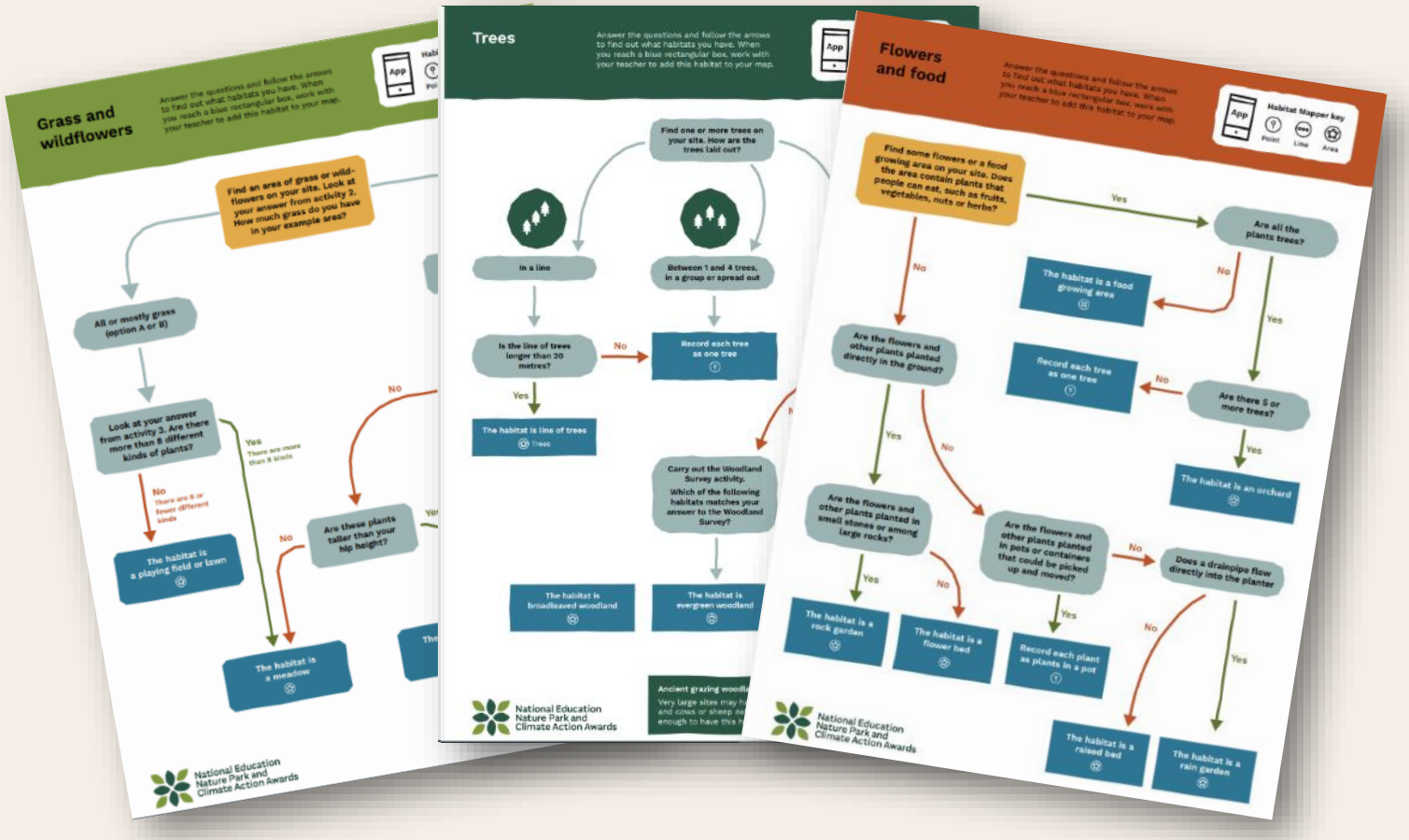
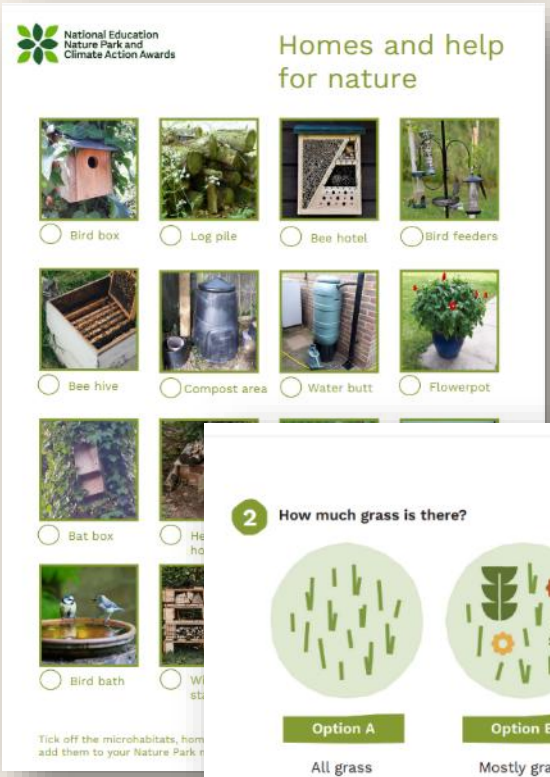
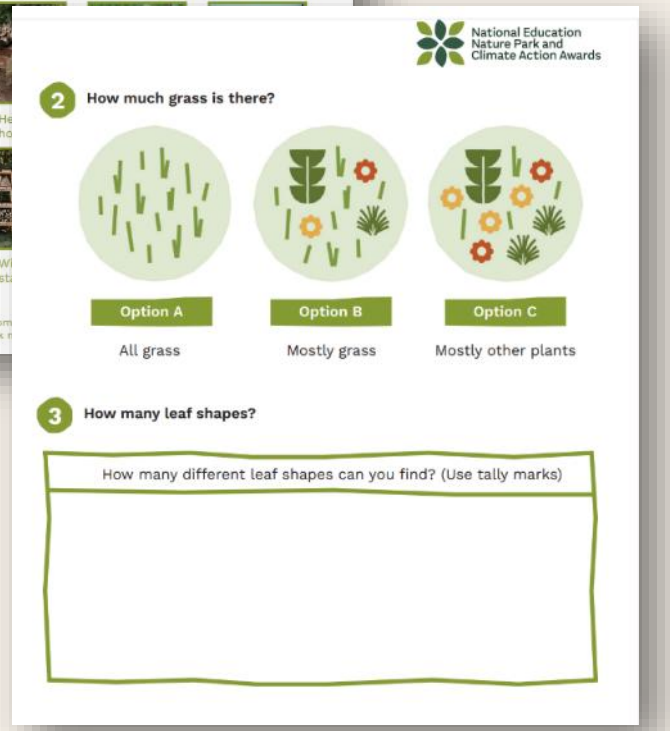
Habitat mapping resources







National Education Nature Park

National Education Nature Park

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

National Education Nature Park

Any questions?

Engage

Or get in touch with todays speakers:

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The Royal Society
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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
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National Education Nature Park
hello@educationnaturepark.org.uk

Engage Teacher Conference

Thank you

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