

The logo for Engage Teacher Conference, featuring the word 'Engage' in white bold font inside a dark teal rounded rectangle.

Engage

Teacher Conference

Save time and money: free secondary resources from leading providers

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

Ross Dempster-Johnson, Apps for Good

Ruth Mackay, The British Science Association

Elizabeth Chambers, The Royal Society

Kelly Murfet, IRIS

Scott Atkinson and Rebecca Lindsay, Royal Academy of Engineering

Caitlin Brown, Sutton Trust

Katie Haylor, Royal Society of Chemistry

Dr Sarah Rhodes, Queen Elizabeth Prize for Engineering

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



3

Engage

Apps for Good

Ross Dempster-Johnson
Head of Programmes

www.appsforgood.org



Apps for Good

Our Mission and Aims

We believe that all young people can shape their future through technology.

We provide free tech innovation courses to schools, giving teachers ready-made education content, so young people from all backgrounds can develop computing and essential skills to create a brighter future through technology.

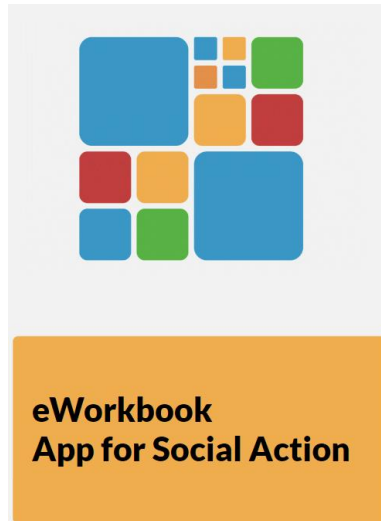
Our work is powered by:

- 1: Tech for Good
- 2: The need for essential skills
- 3: What matters to students
- 4: Industry engagement


The Apps for Good Journey



Course eWorkbook



Social change



Social change refers to change in social attitudes, beliefs, behaviours, institutions and laws

Social change aims to tackle the root causes of a problem in society; this transformation is referred to as **systems change**

- Social action works its way out into society to create social change
- Social change can be controversial; people do not always agree on what is best for society

Teams:

- Organiser** leads team discussion
- Discuss whether a law passing same-sex marriage is an example of **systems change**, and if so, in what ways
- Discuss other social actions that have resulted in systems change, such as the suffragette movement
- Documenter** lists the team's thoughts in the box below

SUSTAINABLE DEVELOPMENT GOALS

17 Sustainable Development Goals (SDGs) have been created by the United Nations (UN) in order to help everyone achieve a more sustainable future (sdgs.un.org/goals)

Your app will focus on one of the 12 social action goals below

1. No poverty	7. Affordable and clean energy
2. Zero hunger	10. Reduced inequality
3. Good health and well-being	11. Sustainable cities and communities
4. Quality education	12. Responsible consumption and production
5. Gender equality	13. Climate action
6. Clean water and sanitation	16. Peace, justice and strong institutions

Impossible ideas

Generate impossible ideas for social action apps that link your chosen community to various United Nations Sustainable Development Goals (SDGs)

- Impossible ideas are ideas that are purely imaginary and could not realistically happen
- The emphasis is on quantity rather than quality of ideas
- Think aloud

Example
Where the chosen community is **school**, an example would be an app in which children choose their favourite fruit and vegetables, which then get handed to them through the screen of their mobile phone

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Course overview – App for Social Action



- Encourage students to utilise technology to act
- Students experience the app development process from ideation to creating an app prototype using the programming environment App Lab
- Computing content focuses on supporting beginners whilst offering exploration activities for more confident programmers

CONTENT	SESSIONS	ESSENTIAL SKILLS	APP LAB	COMPUTING	DIGITAL LITERACY
INTRODUCTION TO SOCIAL ACTION	1. Technology for Social Good	TEAMWORK	DESIGN MODE	USE-MODIFY	
DEVELOPING IDEAS FOR SOCIAL ACTION APP	2. Ideation 1	SPEAKING LISTENING			
	3. Ideation 2	CREATIVITY LEADERSHIP	CODE MODE	USE-MODIFY	
PRESENT APP IDEAS TO INDUSTRY PROFESSIONAL	4. Industry Engagement	SPEAKING AIMING HIGH			
CREATE AND REFINE PROTOTYPE APP	5. Prototype App Development 1	PROBLEM SOLVING CREATIVITY	CODE MODE	CREATE	
	6. Prototype App Development 2	PROBLEM SOLVING STAYING POSITIVE			
PREPARE SUBMISSION FOR SHOWCASE	7. Prep for Showcase	TEAMWORK CREATIVITY			

Engage

The British Science Association – CREST Awards

Ruth Mackay
Education Officer

www.crestawards.org





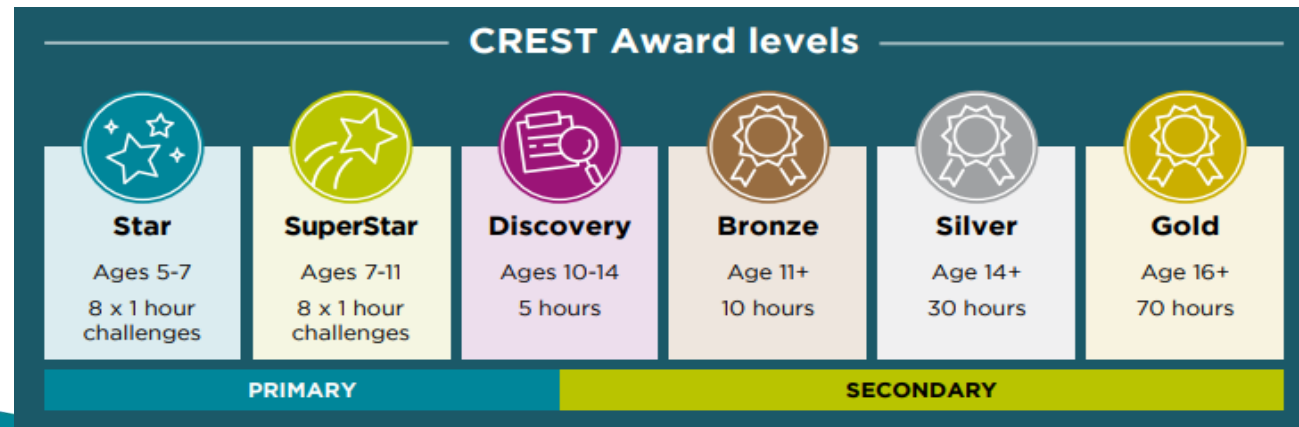
- Inspire young people to think and behave like scientists and engineers
- Activities are hands-on, practical and engaging, covering a broad range of STEM topics and themes, as well as making cross-curricular links
- Activities are open-ended and student-led, using an enquiry-based learning approach with real-world contexts
- Free, easy to use resources to support you to deliver practical science in the classroom.

“(This project) has given me more confidence, as it is physical proof that you can achieve something.”

George, student from Lighthouse School in Leeds



“I think it brings a new sense of curiosity and discovery to students who have not been afforded the chance to really engage in science.”
Secondary school teacher, ‘Machines of the future’ pilot project participant



Discovery Awards

Pupils work in teams to learn about a topic then develop their own idea and present their findings before reflecting on their learning.



DISCOVERY

CREST AWARDS | **DISCOVERY PASSPORT**

Use this CREST Discovery Award Passport to think about your work today.

Be honest about what you did well and where you could improve.

Have fun and make sure you contribute as much as you can to your team's effort to achieve your Discovery Award.

Managed by: **BRITISH SCIENCE ASSOCIATION** Supported by: **Urenco** **UK Research and Innovation**



10-14 years typical age

5 hours (or 1 day)

Discovery assessment objectives:

Self-management
Team-working
Problem solving
Research
Communication
Reflective practice

Bronze, Silver or Gold

Typical age

Time commitment

Assessment

Key benefits

Key stages
(suggested)

crestawards.org



GOLD

Typical age

CREST

AS personal
and is well
employers

/ L3
L3

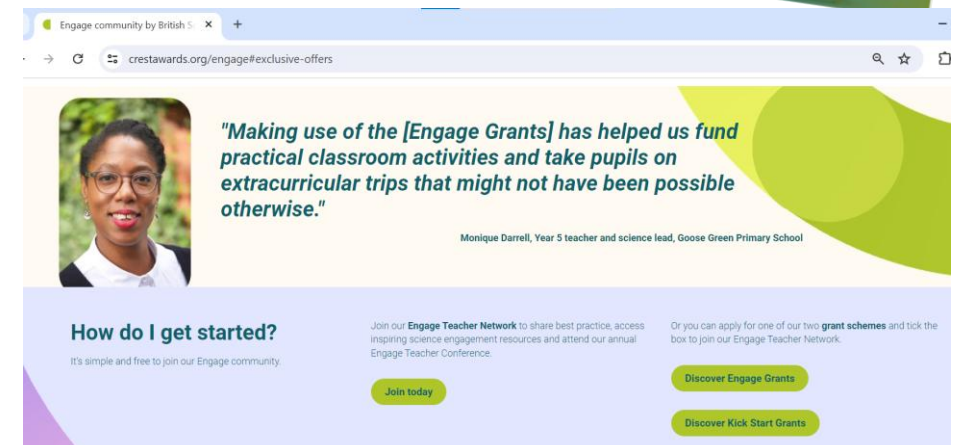
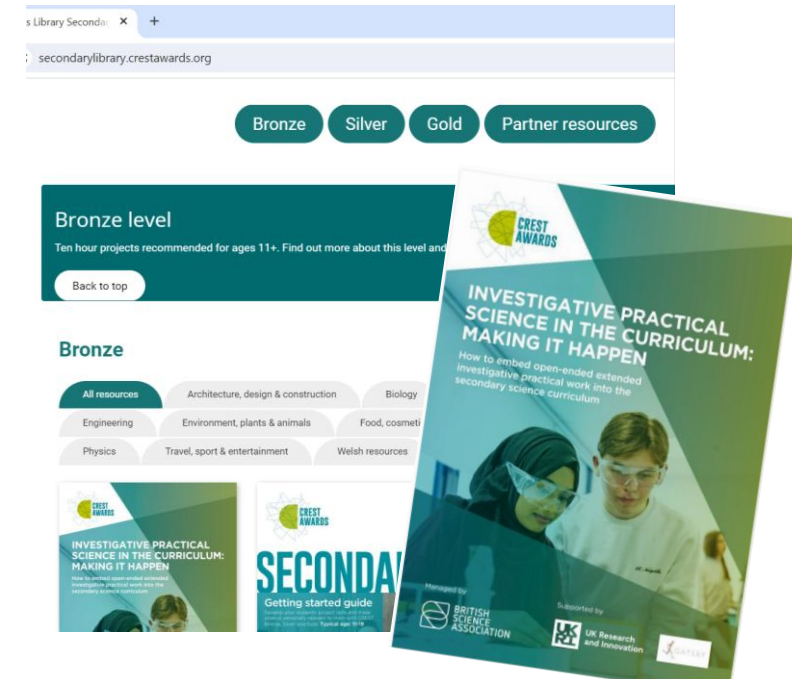
and: KS5

is most suitable

Next steps

- Explore our Resource library
<https://secondarylibrary.crestawards.org/>
- Join us on Thursday 12 June for '[Get funded! Explore STEM grant opportunities for schools](#)'.
- Get in touch with us at
crest@britishscienceassociation.org
- Apply for an Engage grant
<https://www.crestawards.org/engage>
- Check out our new website – launching in the Autumn term!

crestawards.org



Engage

The Royal Society

Elizabeth Chambers
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 abstract yellow and orange curved shapes.

**THE
ROYAL
SOCIETY**

@Kkolosov

The Royal Society's Partnership Grants

The Partnership Grants scheme supports:

- UK schools and colleges to **develop a sustained partnership with STEM professionals** from academia or industry.
- **A grant of up to £3,000**, used by the school/college to enable the **running of an open-ended investigative project**, undertaken by the students with support from the STEM professionals.
- The scheme is open to any registered school or college covering 5-18 education.
- Tomorrow's Climate Scientist is an extension to the Partnership Grants scheme, funding projects researching into climate change and biodiversity loss locally.



What are the benefits of the Partnership Grants?



Projects funded between 2021 - 2024

- **£3,000 funding** – can use equipment purchased for other things.
- **Support the curriculum** – choose your own topic including cross-curricular projects to support your curriculum and/or interests.
- **Develop students' skills** – scientific process/working scientifically, communication, teamworking and data skills etc.
- **Support your careers targets** – help students meet a range of STEM professionals and learn what they do in their jobs.
- **Not a standardly competitive process** – lots of support for schools and colleges interested in applying.
- **Opportunities to raise your profile** – share your grant work wider at events, in-person and online or with support from the Society's press team.

Brian Cox school experiments

Bring your classroom experiments to life with Professor Brian Cox

Explore our new experiments and resources, designed to focus on global challenges, emerging technologies and STEM careers.

THE
ROYAL
SOCIETY



- Free to download from our website (no login needed).
- Supports the curriculum – a range of topics that link to UK curricular and supports careers provision.
- Covers primary and secondary (7-14) – access our primary or secondary pack.

THE
ROYAL
SOCIETY

BRIAN COX SCHOOL EXPERIMENTS
OCEAN ACIDIFICATION
TEACHER NOTES

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 (CO_2) on the ocean. In the first experiment, they observe the effect of increasing the concentration of CO_2 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/L2bwwm7JG4> (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.

The science behind this experiment

The ocean absorbs some of the CO_2 we emit as part of the carbon cycle. CO_2 dissolves in sea water to form carbonic acid, which lowers the pH, making it more acidic.



As the amount that more CO_2 enters the ocean, the point of levels due to CO_2 in the water, will rise. Many of the species of acid dissolving in the water, will be affected.

THE ROYAL SOCIETY

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

Experiment 1: Investigating the effect of carbon dioxide on the pH of water

Your task is to investigate how carbon dioxide (CO_2) can affect the pH of seawater. This will give you an idea of whether increasing CO_2 emissions are likely to result in ocean acidification.

Method

1. The concentration of salt in seawater is approximately 3.5% (or 35,000 ppm), which equates to 35 grams per litre. Use tap water and the measuring jug to make 500 cm^3 (half a litre) of seawater. (Tip: 1 level tablespoon of salt is approximately 18 grams).

I added _____ tablespoons of salt to _____ cm^3 of water.

(Step 1 may already have been done by the science technician)

2. Fill the two beakers with seawater (leave 1 – 2 cm space between the water and the lid) and save the rest for experiment 2.

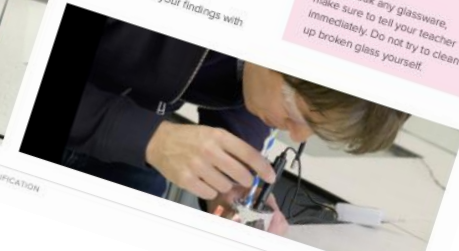
3. Use the pH meter or Universal Indicator solution to record the pH of the water in the first beaker. Write this value into the first column of Table one.

4. Choose one person from your group who will do the task. Their job is to blow gently through a straw (adding CO_2) into the water for two minutes. Measure the pH of the water every 30 seconds and record your findings in Table one. Don't worry, you are allowed to breathe! Take small breaths when needed.

5. Repeat the experiment but this time cover the cup with a lid and insert the straw into the opening. Record your findings in Table two.

6. Answer the questions overleaf and be prepared to share your findings with the rest of the group.

1. Brian Cox School Experiments: Ocean Acidification



EQUIPMENT LIST

- Materials for each group**
- Salt
 - Water
 - 2 cups/beakers
 - 1 lid
 - 2 straws
 - pH meter or Universal Indicator solution
 - Measuring jug
 - Tablespoon
 - Stopwatch
 - Where might we get a reliable and free source of CO_2 ?

SAFETY PRECAUTIONS

- Make sure to blow through the straw and to not suck the water up.
- Make sure to clean up any spills immediately and to keep the water well away from any electrical devices.
- If you break any glassware, make sure to tell your teacher immediately. Do not try to clean up broken glass yourself.

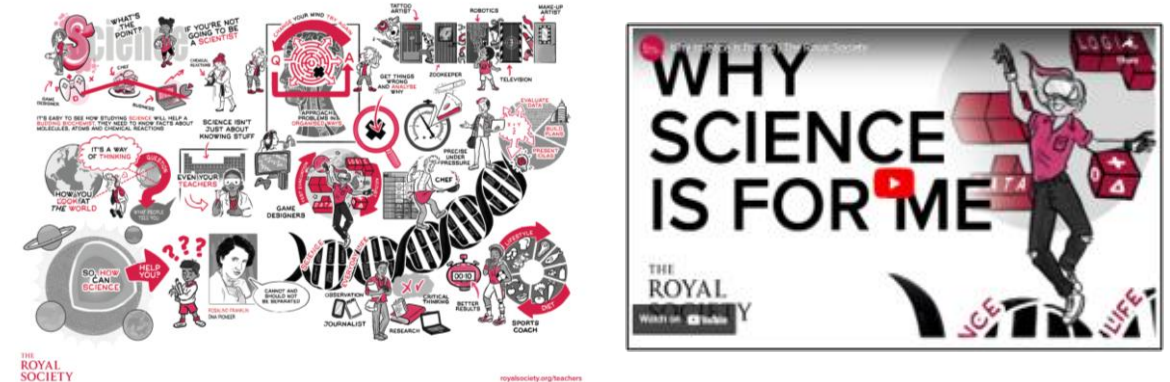
BRIAN COX SCHOOL EXPERIMENTS
GENOME EDITING AND PLANT BIOLOGY
STUDENT WORKSHEET

General resources

- Climate Change and Biodiversity Q&A cards and classroom posters

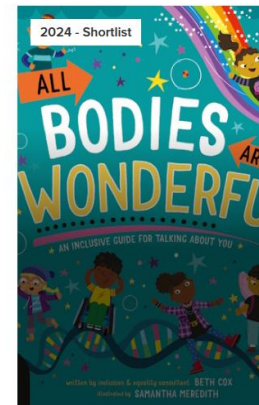


- Why Science is for me animation and posters



Young People's Book Prize 2024

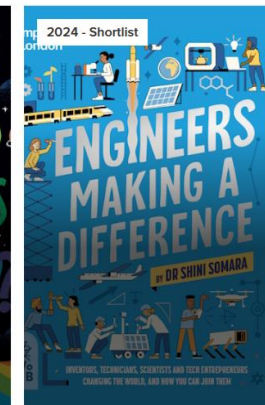
THE ROYAL SOCIETY



All Bodies Are Wonderful



Can You Get Rainbows in



Engineers Making a



Mission: Arctic

Engage

IRIS

The Institute for Research in Schools

Kelly Murfet
Head of Engagement

www.researchinschools.org



2023/24 academic year

1923

Students took part in IRIS research

242

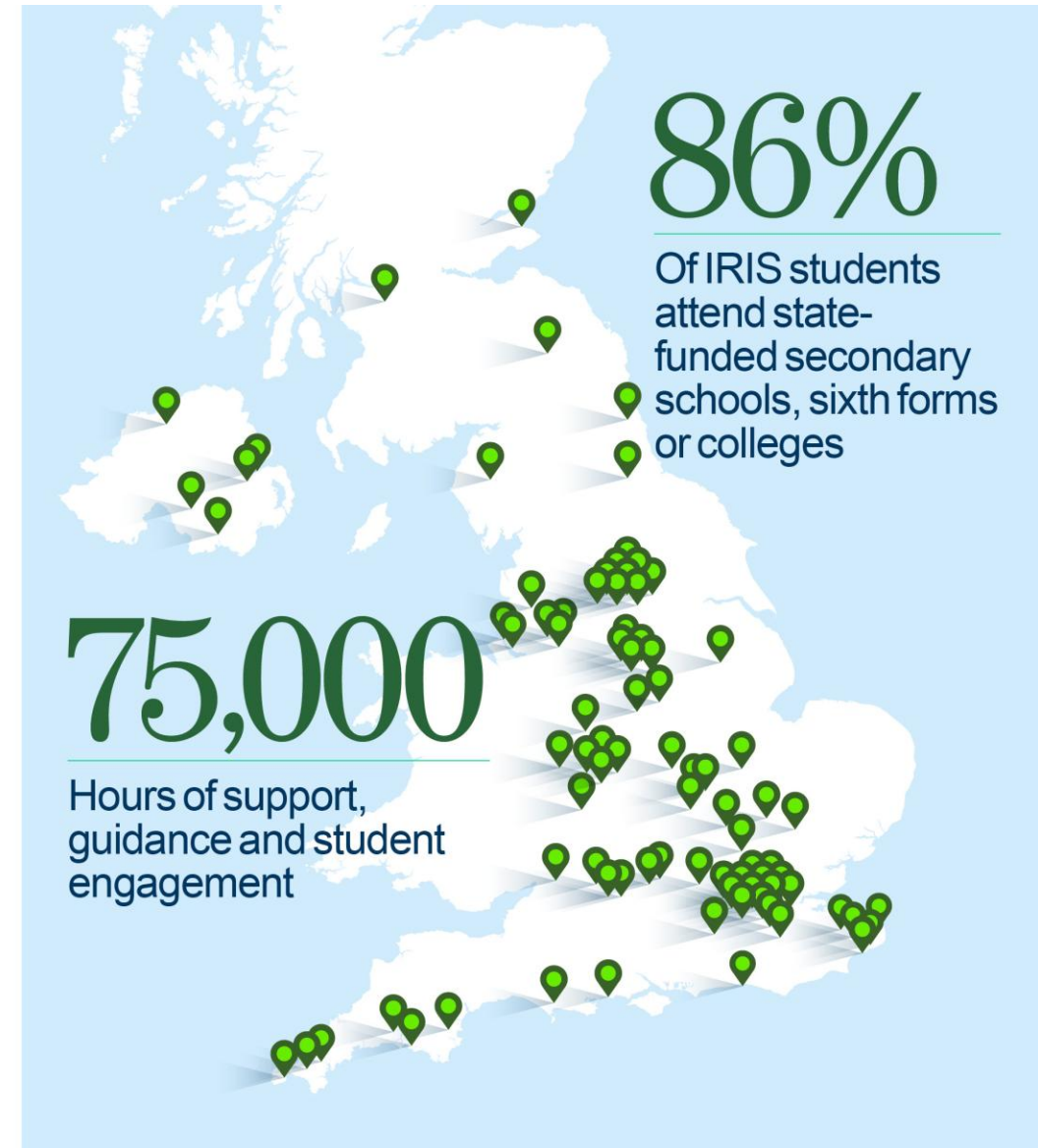
Research projects carried out

101

Schools ran IRIS projects

52%

Of students carrying out research through IRIS were female



Projects



Wild Things

Age suitability:

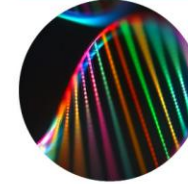
11+



Carbon Researchers

Age suitability:

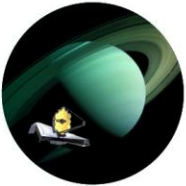
12+



DNA Origami

Age suitability:

14+



Cosmic Mining

Age suitability:

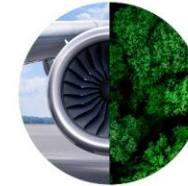
14+



Earth Observation

Age suitability:

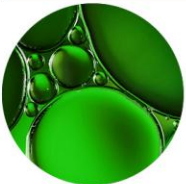
14+



Future Flight

Age suitability:

14+



Original Research

Age suitability:

14+



Big Data: ATLAS

Age suitability:

16+

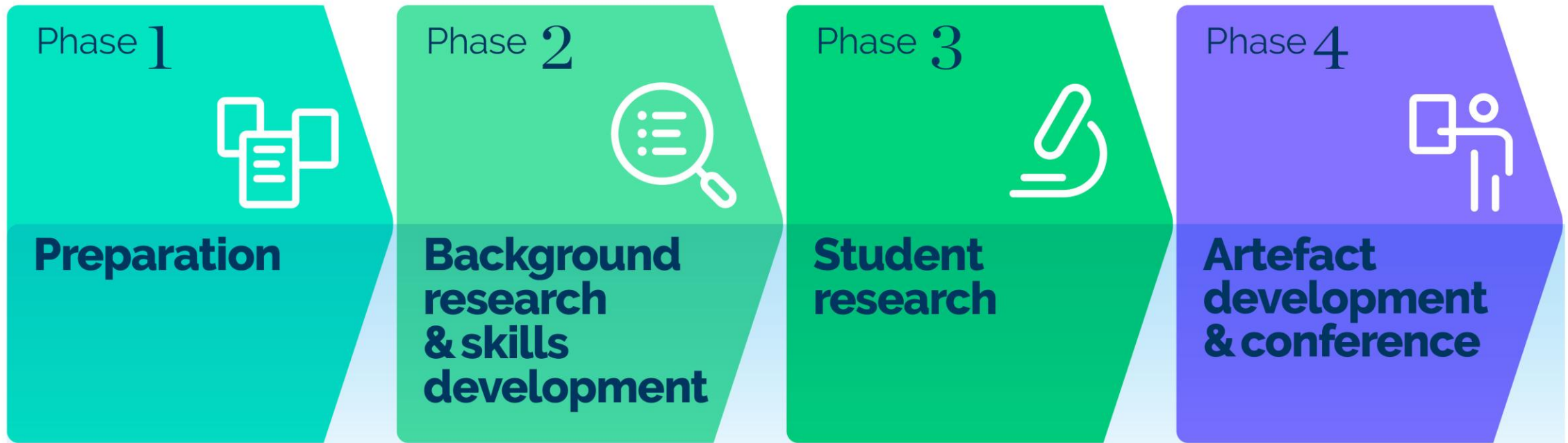


Greener Fragrances

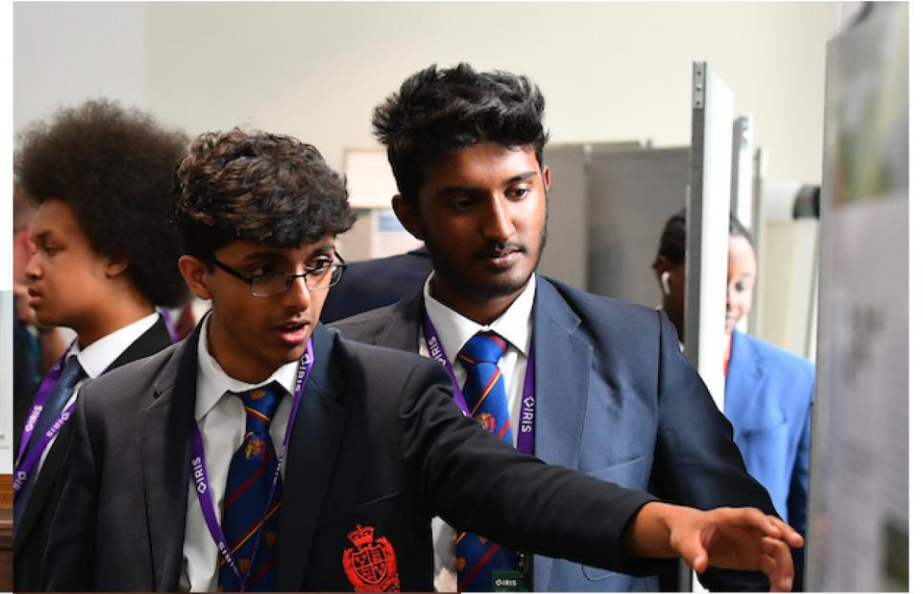
Age suitability:

16+

Phased project structure



IRIS Conferences



The Institute for
Research in Schools

Engage

Royal Academy of Engineering

Scott Atkinson

Education Programmes Manager

Rebecca Lindsay

This is Engineering Campaign Manager

www.thisisengineering.org.uk

**THIS IS
ENGINEERING**

OUR CORE PRINCIPLES

Search: *This is Engineering*     

TALK TO TEENS
WHERE THEY ARE
ABOUT WHAT INTERESTS THEM.

FOR THE WHOLE PROFESSION
BRAND NEUTRAL
OPEN ACCESS.

THIS IS
ENGINEERING

ENENI

ROBOTICS

TRAILBLAZER

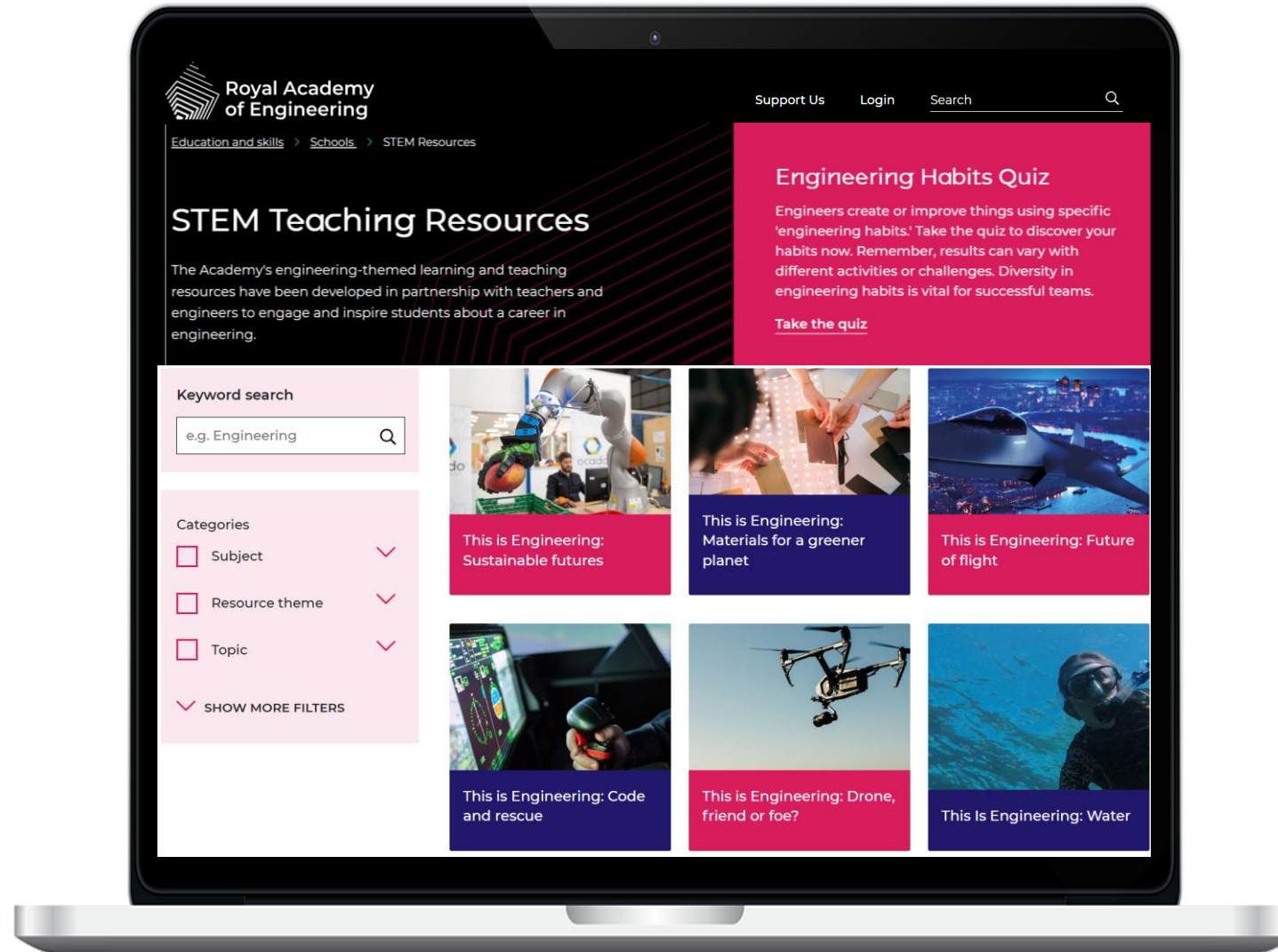


NEW WEBSITE

Explore a vast range of engineering careers and
find one that could be for you



THIS IS ENGINEERING SCHOOLS – RESOURCES



Engage

The Royal Society of Chemistry

Katie Haylor
Assistant Editor, Education
Resources

www.edu.rsc.org



ROYAL SOCIETY
OF **CHEMISTRY**

New literacy support

Resources to support:

- vocabulary
 - reading
 - writing
 - speaking and listening
- all in a chemistry context.





I am a ...

Resources

Education in Chemistry

Teach Chemistry

Events

Teacher PD

Enrichment

Our work

Internal

Concentration

In other words ...
how many particles
there are in a specific
space

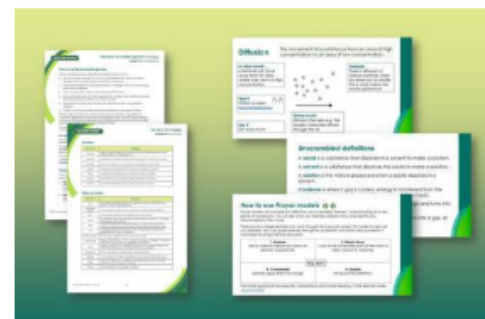
Literacy in science teaching

Resources and ideas to embed literacy into your curriculum and develop learners' skills in reading, writing and talking about science and their understanding of scientific language

Our latest resources by key chemistry topic

Find key terms glossary resources, reading comprehension, structured talk and structure strips for each key topic

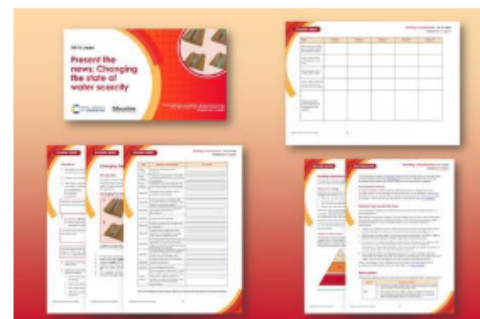
Particle model



Particle model | Key terms support | 11-14

Language support pack for structure and bonding, with key terms list, accessible glossary, Frayer models and unscrambling definitions

Atomic model



Atomic model | Reading comprehension | 14-16 years

Use this reading comprehension based on a real science research news story to develop literacy skills and confidence

Structure and bonding



Structure and bonding | Structured talk | 14-16 years

In this speaking and listening task learners work together to build word bridges by applying, building and sharing understanding of bonding



Particle model | Reading comprehension | 11-14 years



Atomic model | Key terms support | 14-16



Structure and bonding | Key terms support | 14-16

Start

The relative atomic mass (A_r) of an element is

Carbon-12 standard relative mass of an element

Link

average mass

atom

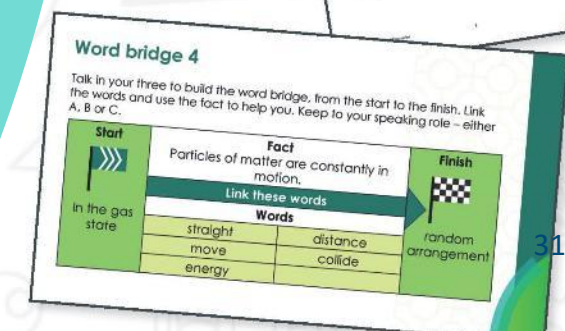
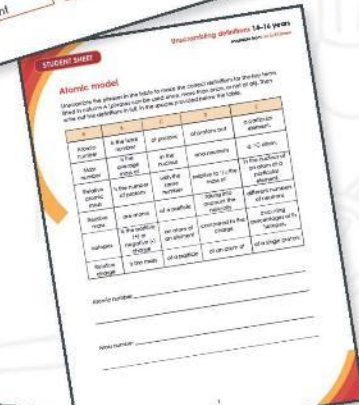
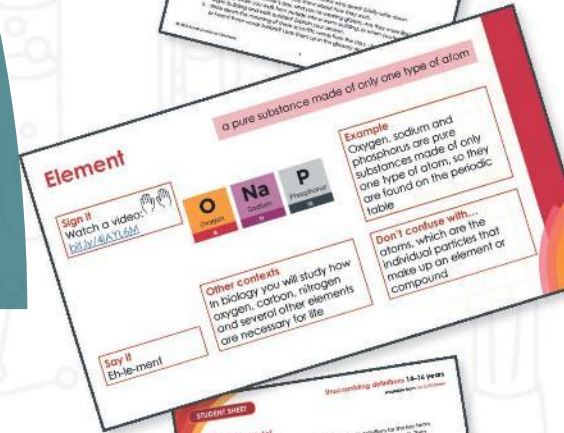
and moving through channels that widen

is observed on crystals. Scientists the surface of a slowly **subliming** annels that appear on the surface e as more of the **solid** sublims to a **particles** along the channels.

scarcity in desert areas. A similar s and animals to trap water.

All resources are...

- written and reviewed **by teachers**
- **ready-to-use** saving on preparation time
- **editable**
- linked with key **curriculum** topics
- designed to promote **metacognition**
- accompanied by teacher **guidance** and answers
- **free** for teachers in UK and ROI



Thank you. Any questions?

education@rsc.org

We want feedback! All comments welcome.

3
3

Engage

Sutton Trust Online

Caitlin Brown

Digital Programmes and Platform
Manager

[www.suttontrust.com/our-
programmes/sutton-trust-online-sto/](http://www.suttontrust.com/our-programmes/sutton-trust-online-sto/)



About the Sutton Trust

“They help **open your eyes to all options** that's are out there and help you be **able to achieve them**, it keeps you open minded and stops you feeling overwhelmed with all the choices and things to do.”

Our programmes:

Pathways to the Professions

Discover your pathway to a career.

Banking & Finance,
Consulting, Engineering,
Law, Medicine,
Veterinary Medicine

Access Apprenticeships

Learn how to access top apprenticeships.

Law (London),
Banking & Finance
(London), Engineering
(Manchester)

US Programme

Ever considered studying abroad?

Spend a week in the US exploring the American higher education system.

Summer Schools

Experience what university life is really like!

Choose from over 40 different subjects at 13 leading UK universities.

Sutton Trust Online

Our 18-month digital programme.

All the information, skill, and advice you need on your journey to university or an apprenticeship.

Applications now closed for this year – opening September 2025.

Applications now closed – opening Jan 2026.

Applications now open!

Why take part?

Sutton Trust students are

**3 times
more
likely**

to receive an offer
from a top university



Sutton Trust Online (STO)

This fully digital programme is an added benefit to all of our other programmes, but can also be directly applied to. This one-stop-shop platform provides expert resources and webinars on exploring, applying to, preparing for and succeeding at top universities and apprenticeships.

What's in it for students

Personal Statement builder tool and mentor

Q&A with admissions staff and students

Exclusive webinars on financial aid, interviews, and admissions tests

Free access to A-level tutoring via Up Learn



Mandatory criteria

Students currently:

✓ In Year 12 (England and Wales), Year 13 (Northern Ireland), S5 (Scotland)

✓ With excellent academic grades

✓ Who attend, and have always attended, a state (non fee-paying) school

Social mobility criteria

We look at other criteria including:

✓ Free school meal eligibility

✓ First generation to university

✓ Your school's context

✓ Where students live

Engage

Queen Elizabeth Prize for Engineering Create the Trophy Competition 2026

Dr Sarah Rhodes
Head of Programmes

www.qeprize.org/trophy



Queen Elizabeth Prize
for Engineering



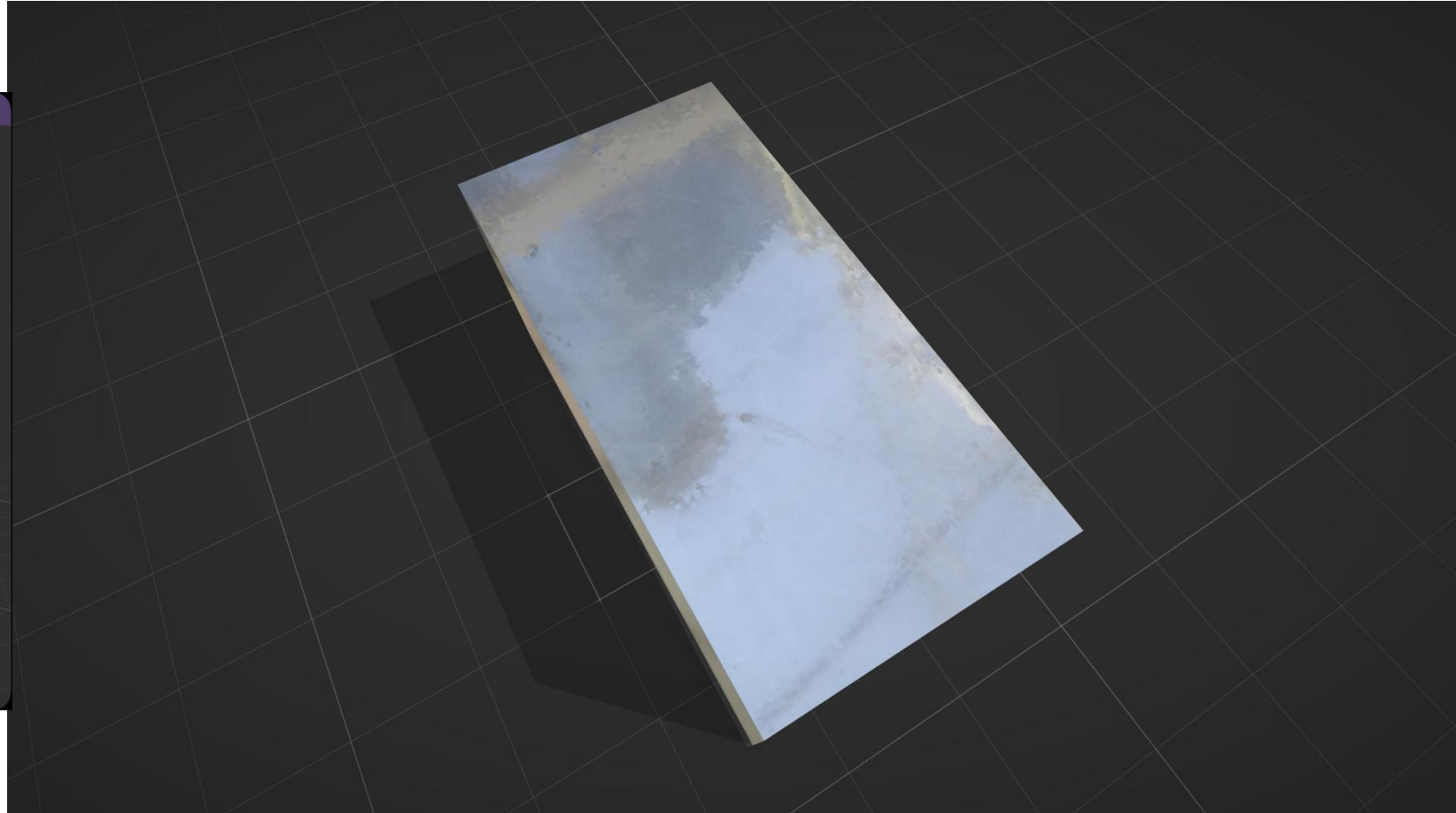
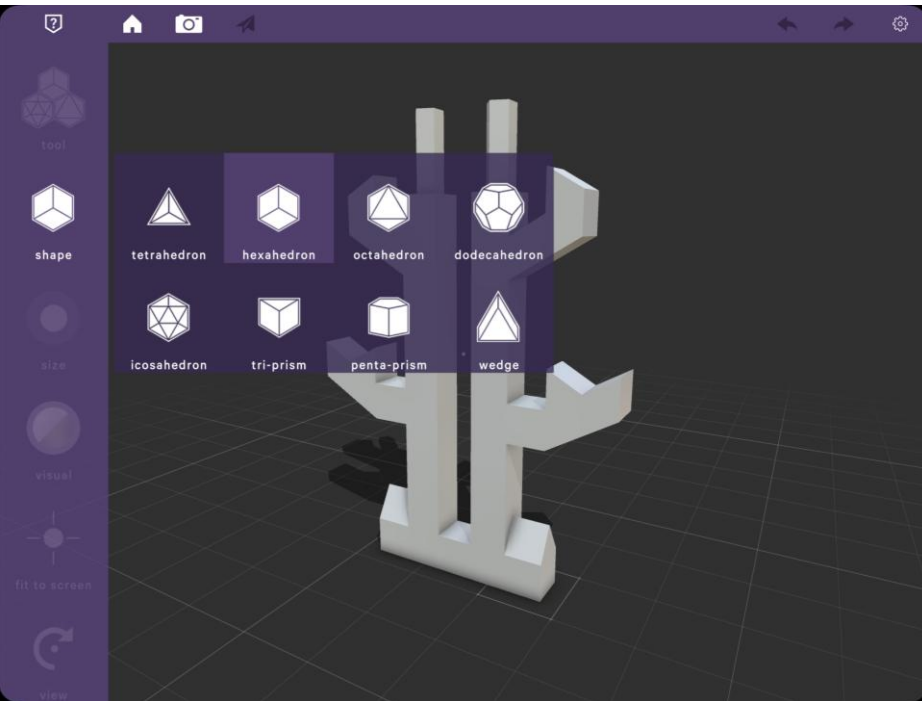
Queen Elizabeth Prize
for Engineering

Aims

1. Promote excellence in engineering and celebrate engineering's visionaries
2. Inspire young minds to consider engineering as a career choice



Create the Trophy Competition – 3D Design Studio app



'QEPrize 3D Design Studio'

- Free to download – simplified CAD
- User friendly, minimal text to make it globally accessible
- OBJ file design format – opensource design

Outstanding competition prize package



QEPrize

Finalists and their parent/guardian are invited to the winners' announcement.



Laptop

Given a high-end laptop and a 3D printed model of their trophy



Presentation

Winner and their parent/guardian are invited to meet the 2026 QEPrize winners



Science Museum

Their winning trophy is put on permanent display in the Engineers gallery, Science Museum

www.qeprize.org/trophy



Queen Elizabeth Prize
for Engineering



www.qeprize.org

4
3

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 stylized illustrations. At the top left is an orange stick figure. To its right is a green donkey. Below the donkey is a grey cloud. At the bottom left of the circle is a blue pitchfork. To the right of the pitchfork is an orange arrow pointing upwards.

**National Education
Nature Park**

Habitat mapping



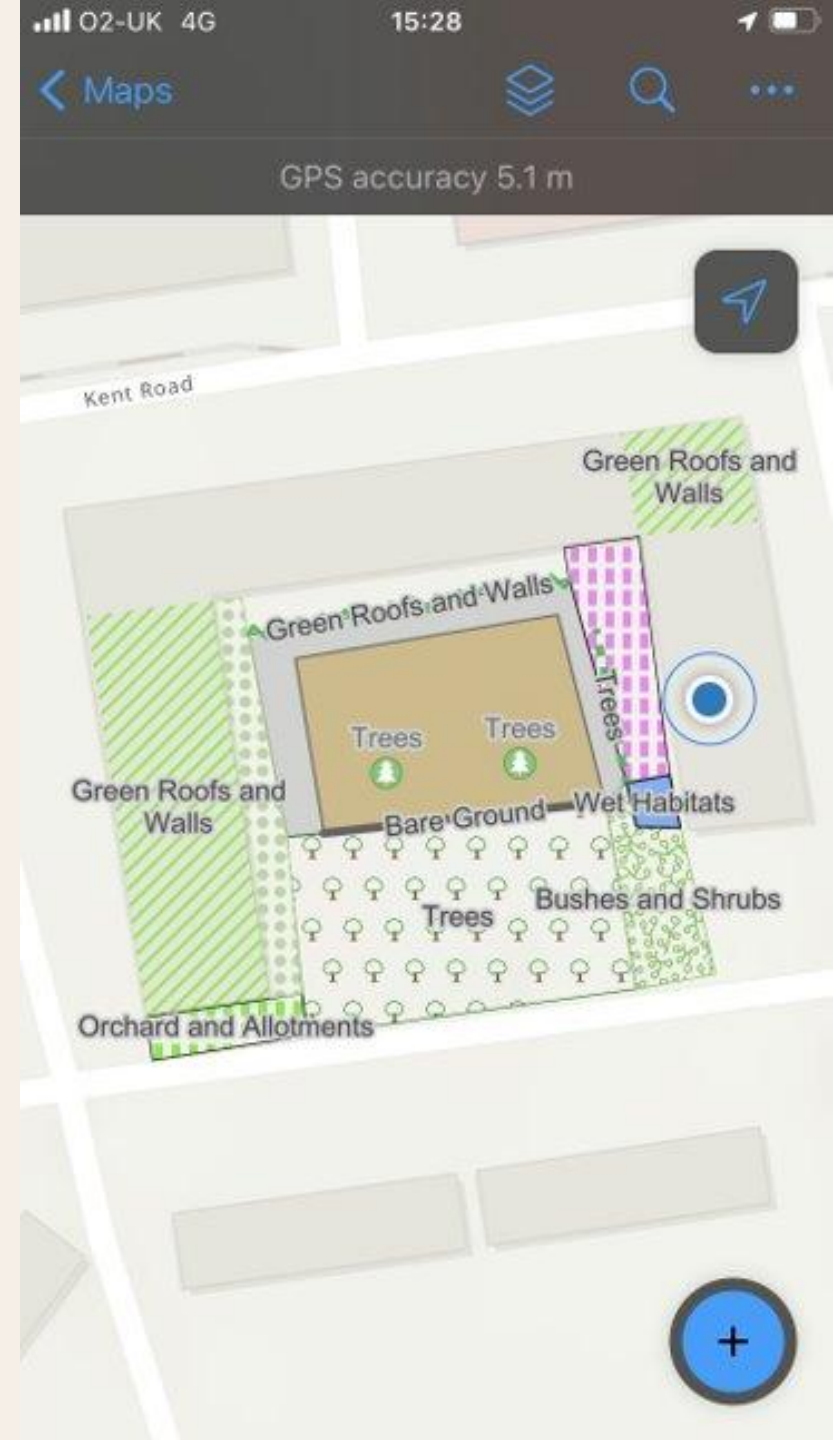
Mapping your site

Mapping habitats on your site, both natural and human-made, to understand your starting point

Areas e.g. a patch of grass

Lines e.g. a hedge or fence

Points e.g. small features like potted plants, a compost bin or a bird feeder



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 flower bed.

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.

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 sites may be used by deer and other animals and enough to have this habitat.

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? No: Record each tree as one tree. Yes: The habitat is an orchard.

No: Are the flowers and other plants planted directly in the ground? Yes: Are the flowers and other plants planted in small stones or among large rocks? No: Are the flowers and other plants planted in pots or containers that could be picked up and moved? Yes: Record each plant as plants in a pot. No: Does a drainpipe flow directly into the planter? Yes: The habitat is a raised bed. No: The habitat is a rain garden.

Homes and help for nature

National Education Nature Park and Climate Action Awards

 <input type="checkbox"/> Bird box	 <input type="checkbox"/> Log pile	 <input type="checkbox"/> Bee hotel	 <input type="checkbox"/> Bird feeders
 <input type="checkbox"/> Bee hive	 <input type="checkbox"/> Compost area	 <input type="checkbox"/> Water butt	 <input type="checkbox"/> Flowerpot
 <input type="checkbox"/> Bat box	 <input type="checkbox"/> Hedgehog house	 <input type="checkbox"/> Bucket pond	 <input type="checkbox"/> Rain garden
 <input type="checkbox"/> Bird bath	 <input type="checkbox"/> Willow		

Tick off the microhabitats, homes 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)

Why use digital mapping tools (GIS)?

- We can understand our starting point and measure **change**
- We understand our setting in its wider **context**
- We make a difference **collectively**
- An opportunity for learners to build key **digital skills**



Any questions?

Engage

Or get in touch with today's speakers:

Apps for Good

education@appsforgood.org

CREST Awards

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The Royal Society

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Royal Society of Chemistry

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Thank you

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