Engage Teacher Conference

Fun and accessible hands-on science for the primary classroom

Explore engaging ways for pupils to connect with practical STEM learning, using the free resources available in the CREST Resource Library.

Catherine Davies
Education Resources Manager, British Science Association

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

CREST AWARDS

Engage Teacher Network

Fun and accessible hands-on science for the primary classroom

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Housekeeping

- Thank you for joining us this afternoon – this online session is scheduled from 16.00-16.45, including time for questions.
- The session will be recorded - please switch your cameras on if you're happy and able to.
- There will be a chance to ask questions at the end. Before that, please feel free to add any comments or reflections to the chat.

What we'll cover in today's session

- Barriers to carrying out practical science in the Primary classroom
- Introduction to CREST Awards
- How to use CREST to support fun, accessible, practical science in your setting
- Live demos
- Rewarding your children with a CREST certificate
- Any questions?

Barriers and challenges

- Carrying out practical science activities in primary classrooms can be a challenge!
- What are some of the barriers you face?

Time

Confidence

Resources

Pupil needs

Lack of extra adult support

Packed curriculum

Advantages and benefits

- Despite the challenges, we know that practical science project work is hugely valuable for children!

Fun

Engaging

Hands-on

Accessible

Student-led

Inspiring

CREST Awards are run by the British Science Association (BSA)

- At the BSA, our vision is a future where science is more relevant, representative and connected to society. We believe that all of society should be included in science.
- When it comes to education, we'd like the science curriculum to be engaging, fun and relevant to young people, offering opportunities for them to take the lead on projects and practical investigations, improving their experience of science at school.

CREST Awards

- CREST brings science, technology, engineering, and maths (STEM) to life for young people aged 3-19 of all abilities through hands-on activities and exciting projects.
- CREST sparks curiosity, builds confidence, and connects students with real-world STEM.
- CREST projects are practical and engaging, covering a broad range of STEM topics and themes, as well as making cross-curricular links.
- CREST challenges are open-ended and student-led, using an enquiry-based learning approach with real-world contexts.

CREST Awards

- We have a huge online library of free project resources!

  https://library.crestawards.org/

- You can mix and match challenges to fit the topics in your curriculum, the interests of your group, or themes which relate to your local area.

- Young people aged 3-19 can complete CREST projects at different levels, going on to earn a certificate to recognise their achievement.

  https://www.crestawards.org/

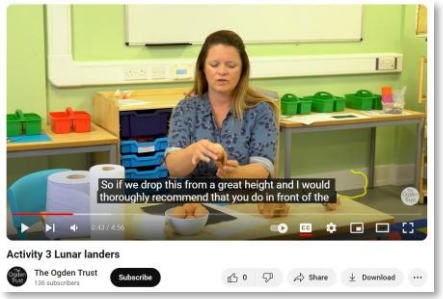
CREST AWARDS

Engage Teacher Network

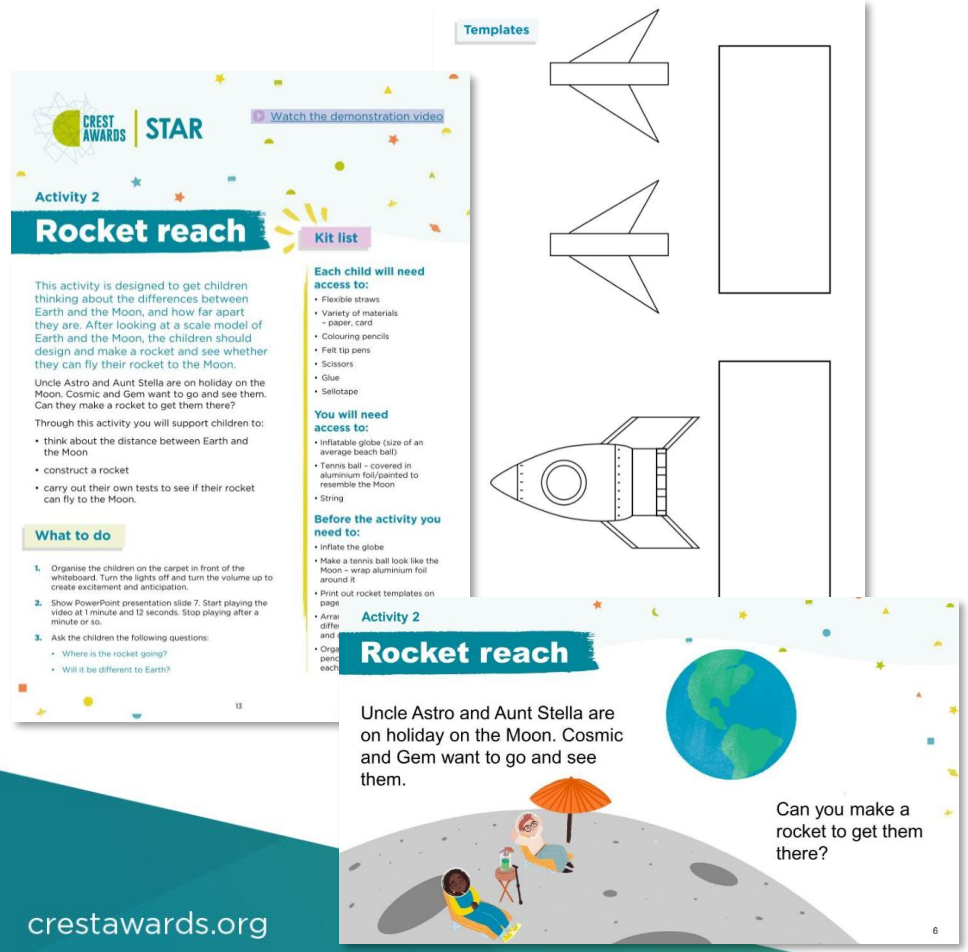
How can you use CREST to support fun, accessible hands-on science in your classroom?

Ages 3-5 / EYFS / Nursery & P1 – Earth and beyond

Our ‘Earth and beyond’ pack is a collection of physics-focused activities, designed in partnership with the Ogden Trust, especially for younger children. The challenges are designed to develop key skills including curiosity, creativity, communication and problem-solving



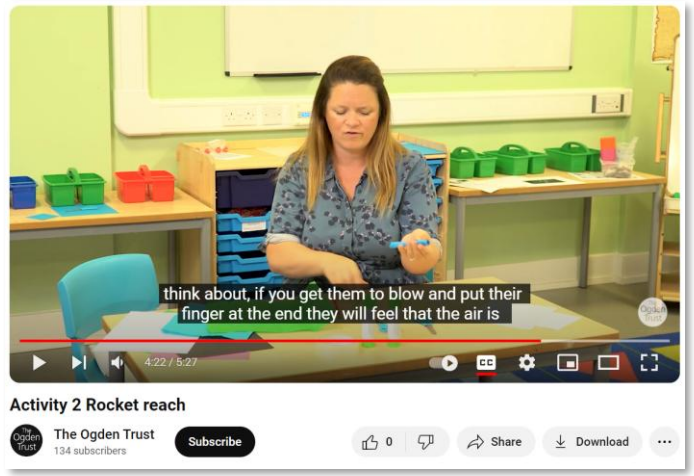
Ages 3-5 – low resource project



This activity is designed to get children thinking about the scale of the Earth and the Moon and the distance between them. Children then have a chance to design and create their own simple rocket.

Equipment list

- Paper / card
- Scissors
- Pencils and pens
- Sellotape
- Bendy straws



Live demo – Rocket Reach


CREST AWARDS | STAR

Watch the demonstration video

Activity 2

Rocket reach

Kit list

This activity is designed to get children thinking about the differences between Earth and the Moon, and how far apart they are. After looking at a scale model of Earth and the Moon, the children should design and make a rocket and see whether they can fly their rocket to the Moon.

Uncle Astro and Aunt Stella are on holiday on the Moon. Cosmic and Gem want to go and see them. Can they make a rocket to get them there?

Through this activity you will support children to:

- think about the distance between Earth and the Moon
- construct a rocket
- carry out their own tests to see if their rocket can fly to the Moon.

Each child will need access to:

- Flexible straws
- Variety of materials – paper, card
- Colouring pencils
- Felt tip pens
- Scissors
- Glue
- Sellotape

You will need access to:

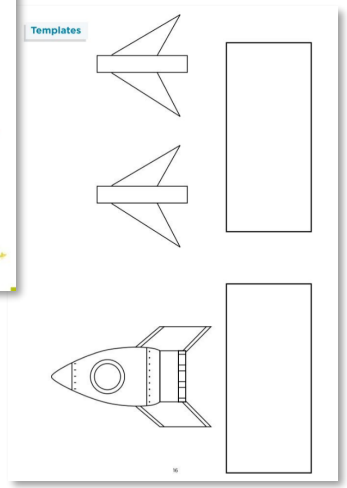
- Inflatable globe (size of an average beach ball)
- Tennis ball – covered in aluminium foil/painted to resemble the Moon
- String

Before the activity you need to:

- Inflate the globe
- Make a tennis ball look like the Moon – wrap aluminium foil around it
- Print out rocket templates on page 16
- Arrange scrap materials – different thicknesses of paper and card
- Organise crayons, Sellotape, pencils, glue and scissors onto each table

What to do

1. Organise the children on the carpet in front of the whiteboard. Turn the lights off and turn the volume up to create excitement and anticipation.
2. Show PowerPoint presentation slide 7. Start playing the video at 1 minute and 12 seconds. Stop playing after a minute or so.
3. Ask the children the following questions:
   - Where is the rocket going?
   - Will it be different to Earth?


Templates

1. Cut a strip of paper
2. Roll it around your pencil
3. Secure with sellotape
4. Flatten one end of the tube and secure with tape
5. Slide the tube onto your straw
6. Blow and see how far it goes!

Equipment list

- Paper / card
- Scissors
- Pencils and pens
- Sellotape
- Bendy straws

Ages 3-7 / EYFS & KS1 / Nursery-P3
CREST Star Early years and primary challenges

Our new collection aimed at children aged 3-7 includes 8 of our Star challenges that have been adapted to be accessible for younger learners, or those working at this level.

- Organiser and Activity Cards
- Editable versions available
- Fun characters and stories
- Relatable contexts
- 45 minutes – 1 hour to run
- Supporting slides
- Demo videos

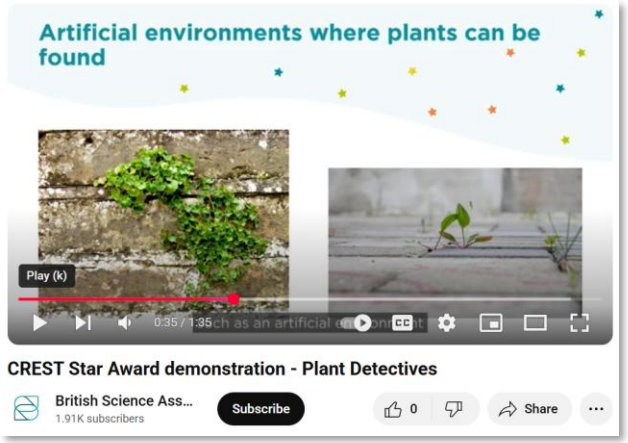
Ages 3-7 – easy curriculum links, low resource project

This challenge has clear links to curriculum goals around plants, living things and the natural world.

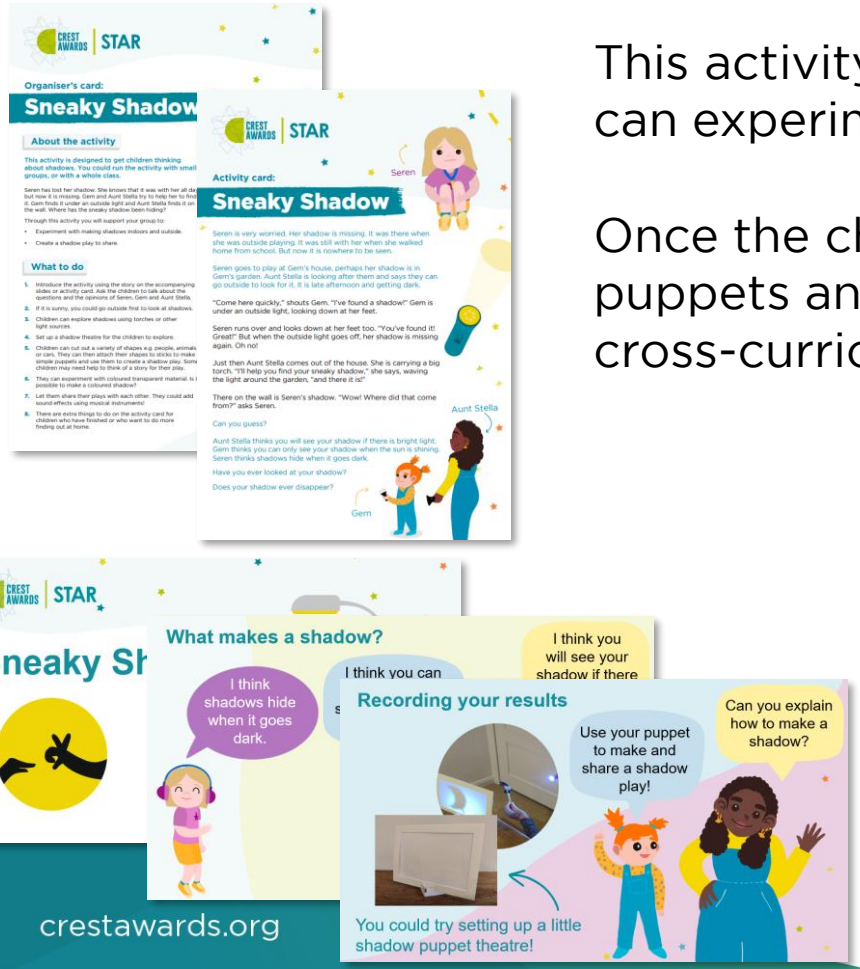
The activity is designed to get children thinking about where plants grow and how they get there. They have a chance to investigate and discover plants in their outdoor surroundings and can then record their results by taking photos or marking them on a simple map.

Equipment list

- Outdoor environment
- Magnifying glass (optional)
- Identification guide (you could try Google Lens or another app for this if you have tablets)
- Camera or drawing equipment



Ages 3-7 – cross-curricular links

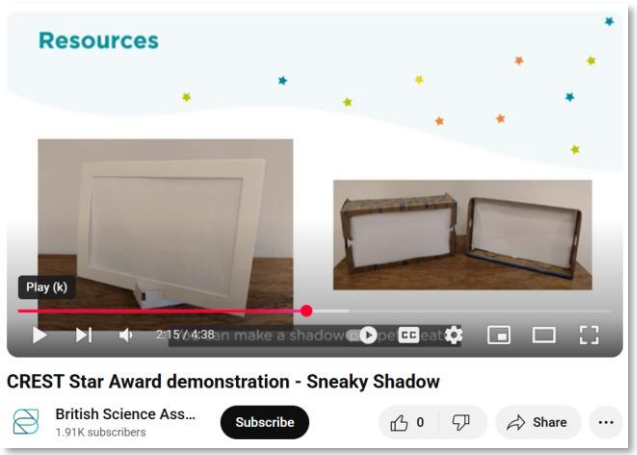


This activity gets children thinking about how shadows are made. They can experiment with making shadows both outside and inside.

Once the children have finished exploring, they make their own shadow puppets and create a shadow play to perform! This can create some great cross-curricular links with other areas of learning like English and music.

Equipment list

- Torches or other light sources
- Card/thick paper, scissors, tape and sticks (to create the shadow puppets)
- A simple shadow theatre – this could be a large white sheet, or a cardboard frame and tracing paper – plus a light source like a lamp or torch

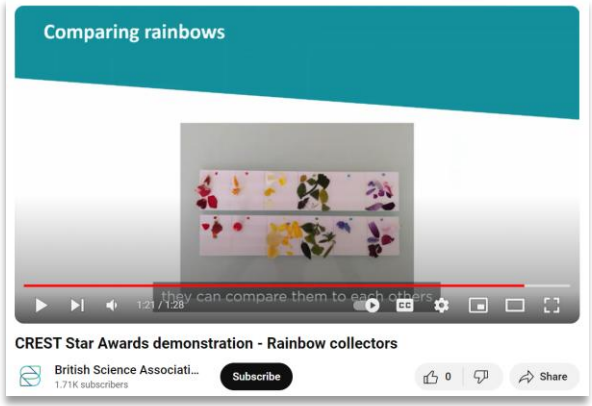


Ages 5-7 – confidence building, accessible

This activity is designed to get children thinking about colours in nature. It's simple, accessible and easy to run, making it ideal for adults who are building their confidence with practical project work. It could also be easily adapted for children in early years and aligns nicely with the Early Learning Goal 'Understanding the World – The Natural World'

Equipment list

- Outdoor environment
- Colour-collecting palettes:
- a strip of paper divided into 6 sections, each marked with a different coloured spot
- or each group could have a plate-sized circle with just one of the colours
- Pieces of double-sided sticky tape



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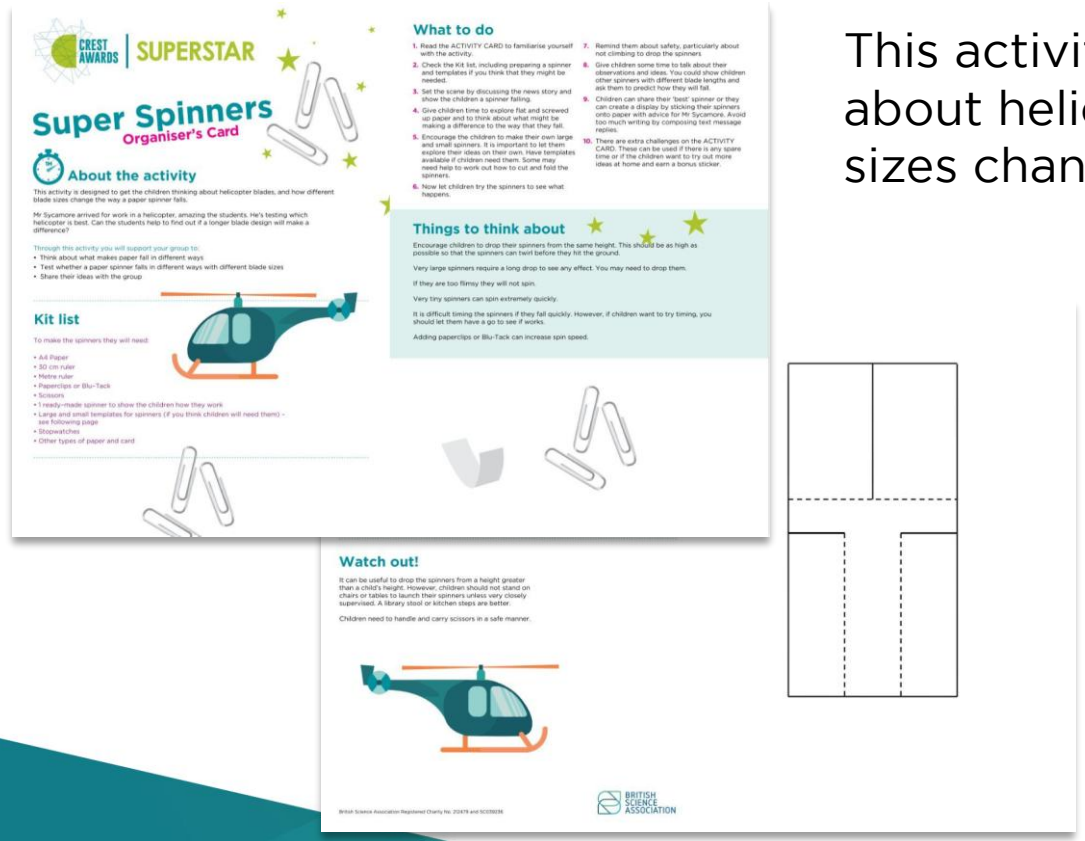
Ages 7-11 / KS2 / P4-P7 CREST SuperStar Challenges

This collection of projects for children aged 7-11, or those working at this level, allow learners to explore everyday problems using science. Each challenge is designed to take 45 minutes to an hour and involves hands-on investigation, decision making and group discussion.

Ages 7-11 – low resource project

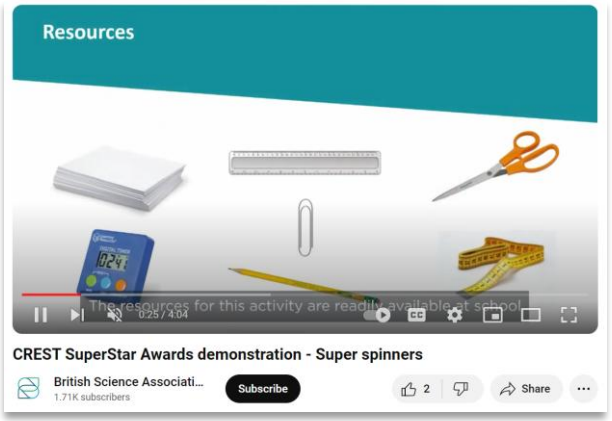


This activity is designed to get children thinking about helicopter blades and how different blade sizes change the way a paper spinner falls.

All the resources are likely to be readily available at school.

Equipment list

- A4 paper
- Ruler / metre stick
- Paperclips / Blu-Tack
- Scissors
- Stopwatch (optional)



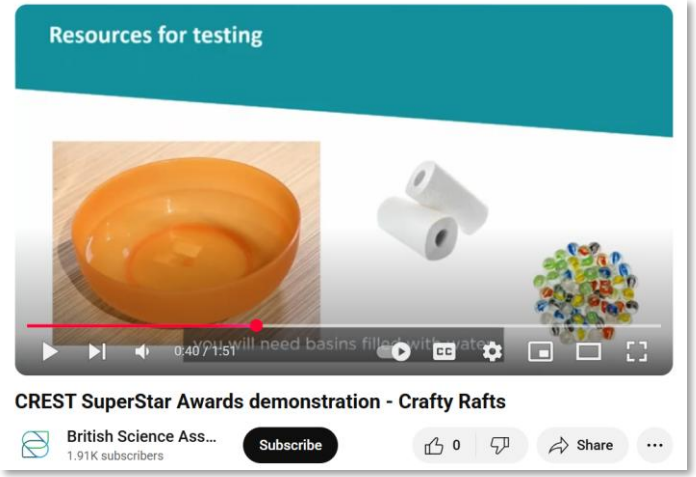
Ages 7-11 – low resource project

This activity gets children thinking about floating and sinking, challenging them to make a simple paper raft that floats.

All the resources are likely to be readily available at school.

Equipment list

- A bowl of water for each group (you may like to put down waterproof coverings or provide some paper towels for spills!)
- Sheets of paper (you could also provide foil as an alternative material to test)
- A set of marbles, all the same size
- Sellotape, masking tape, staples and/or other fasteners



Ages 7-11 – low resource project, confidence building

CREST AWARDS | SUPERSTAR

Fantastic Fingerprints
Organiser's Card

About the activity

This activity is designed to get children thinking about fingerprints.

The investigators have been given a news article about fingerprints. Teachers at Startown Primary School are wondering if they can use fingerprints to identify the students. Are the students' fingerprints that different?

Through this activity you will support your group to:

- Collect their fingerprints
- Compare different fingerprints and identify patterns
- Record and present their results

Kit list

- Dust (flour, chalk, talc, cocoa powder)
- Soft pencils
- Blank paper (white paper for pencil and cocoa prints; black paper for white powder prints)
- Other things to investigate e.g. oil or cream (leaves a print on O+T film or plastic), non-permanent markers etc.
- Sellotape
- Scissors
- Hand lenses or magnifying glasses

What to do

1. Introduce the activity using the news article. Ask them if they have taken a fingerprint before.
2. Give out activity cards and equipment to the children.
3. Explain that they will be investigating fingerprints today. Give children time to talk about what they know about fingerprints. Let them look at their own fingerprints with hand lenses or microscopes.
4. Demonstrate how to take a fingerprint
5. Support the children to design and carry out a test and to make their own records of their results. Draw children's attention to the different patterns found in fingerprints (loops, arches and whorls)
6. Ask the children to present their findings to the rest of the group, they can be as creative in their presentation as they want. The prints could be projected for the entire group to see. The children could try to work out which print belongs to which person. They could draw large images of their fingerprints.

Things to think about

Let the children investigate how to get good prints. Only give advice if they are failing to make any progress.

To obtain a good quality fingerprint, children should wash their hands between prints. They also need to tap off the excess powder. A thin layer is best.

Marker pens and ink-pads can be used but they can be difficult to remove from the children's fingers.

Keywords

- Fingerprints
- Identification
- Forensics

Watch out!

Check if any children have wheat or nut allergies before using flour and cocoa.

Children should be reminded to keep fingers out of their mouths and eyes during this activity and to wash their hands thoroughly at the end of the session.

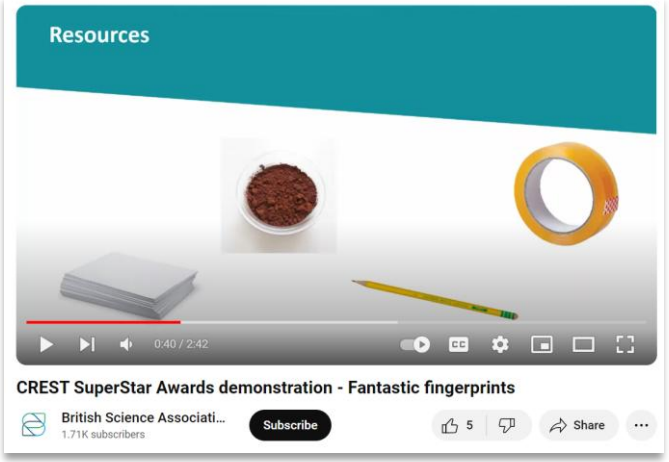
Do not use permanent markers.

BRITISH SCIENCE ASSOCIATION

This activity is designed to get children thinking about fingerprints. It links to topics on 'Evolution and Inheritance'. It requires little specialist scientific knowledge and uses easy to source equipment.

Equipment list

- White and black paper
- Sellotape
- Soft graphite pencils
- Powders (flour, cocoa, chalk dust)
- Magnifying glass or zoom function on a tablet or mobile phone camera



Live demo – Fantastic Fingerprints

1. Take a piece of white paper.
2. Using a soft pencil, put lots of graphite onto the paper, then rub your fingertip on it until it's nicely coated.
3. Take a small piece of sellotape and roll your fingertip across it, then stick it onto a clean part of the paper.
4. Use a magnifying glass to observe the fingerprint – can you identify the pattern?

Equipment list

- White and black paper
- Sellotape
- Soft graphite pencils
- Powders (flour, cocoa, chalk dust)
- Magnifying glass or zoom function on a tablet or mobile phone camera

CREST AWARDS

Engage Teacher Network

Children can use a CREST passport to keep track of the challenges they have completed...

Once they have completed at least 6 projects they can earn a CREST Award, recognising their achievement with a certificate!

CREST AWARDS

Engage Teacher Network

To order certificates for your pupils...

1. Create a free account on our online application platform

2. Complete the application details, telling us which 6-8 challenges your children completed

3. Pay for your certificates and they will be delivered straight to your setting!

https://apply.crestawards.org/

Engage Teacher Network

More support...

The CREST Resource Library and Help Centre

https://primarylibrary.crestawards.org/

Engage Grants

(Awarded twice a year to support you to run CREST)

www.crestawards.org/engage/funding

CREST AWARDS

Engage Teacher Network

Reflection

Is there a CREST project that you would like to try with your pupils?

Could CREST help you overcome any of the barriers you face to carrying our practical science?

CREST AWARDS

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Thank you for joining us!
Any questions?

BRITISH SCIENCE ASSOCIATION

crestawards.org
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Engage Teacher Conference

Thank you

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