



**Engage**

**Teacher Conference**

# **Easy practical science for the classroom**

Hear about the free resources available in the CREST library that can help you deliver simple, practical science experiments. Offer your pupils the opportunity to learn through student-led, hands-on challenges that are easy to deliver for those without science expertise, using minimal equipment.

**Catherine Davies**

Education Resources Manager, British Science Association

# Engage Teacher Conference

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## Welcome, please be aware:

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





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Teacher Network

# *Easy practical science for the classroom*

***Catherine Davies***

Education Resources Manager, British Science Association



## ***What we'll cover in today's session***

- Housekeeping
- Barriers to carrying out practical science in the Primary classroom
- Introduction to CREST Awards
- How to use CREST to support simple, practical science in your setting
- Further support
- Any questions?

## *Housekeeping*

- Thank you for joining us this afternoon – this online session is scheduled from 16.00-16.45.
- We would like to record the session - please switch your cameras on if you're happy 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.

## ***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*





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# ***CREST Awards are run by the British Science Association***

- At the British Science Association, we want to see more people, especially those from currently underrepresented groups, feel that science is relevant to their lives.
- When it comes to education, we'd like the science curriculum to be more relevant to young people and to offer more opportunities for them to take the lead on science projects and practical investigations.







# CREST Awards

- CREST is a scheme that inspires young people to think and behave like scientists and engineers
- CREST projects are hands-on, practical and engaging, covering a broad range of STEM topics and themes, as well as making cross-curricular links
- CREST activities are open-ended and student-led, using an enquiry-based learning approach with real-world contexts

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



# ***CREST Awards***

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



# *How can you use CREST to support simple, practical science in your classroom?*

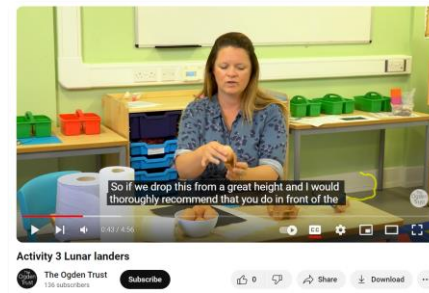


# Ages 3-5 / EYFS - Earth and beyond

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

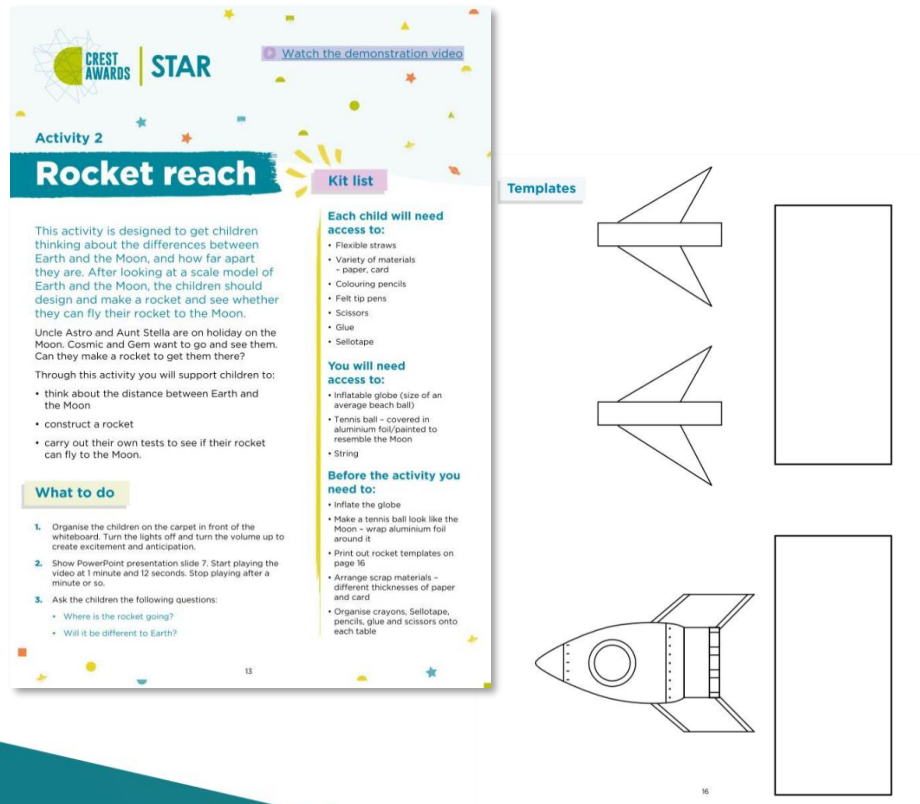


| Skills matrix              |  |   |   |
|----------------------------|--|---|---|
| Learning Area              | Aspect                                 | Key of knowledge development linked to Early Learning Goals   | Activities where these skills are developed                             |
| Communication and Language | Listening, attention and understanding | Have conversations about what they have heard and ask questions to clarify their understanding  | Rocket Reach<br>Lunar landers<br>Galactic Gardens<br>Rock Hoppers       |
|                            | Speaking                               | Offer explanations for why things might happen, sharing use of newly introduced vocabulary from non-fiction                                   | Rocket Reach<br>Lunar landers<br>Galactic Gardens<br>Rock Hoppers       |
|                            | Speaking                               | Participate in oral games, role and use to use discussing, offering their own ideas, using newly-introduced vocabulary                        | Rocket Reach<br>Lunar landers<br>Galactic Gardens<br>Rock Hoppers       |
| Expressive Arts and Design | Being imaginative and expressive       | Perform songs with peers  | Galactic Gardens<br>Constellation Counters                              |
|                            | Creating with Materials                | Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function            | Rocket Reach<br>Lunar landers<br>Constellation Counters<br>Rock Hoppers |
|                            | Literacy                               | Read words consistent with their phonics knowledge to word reading  | Galactic Gardens<br>Constellation Counters<br>Rock Hoppers              |
| Maths                      | Numerical Patterns                     | Write recognisably before, most of which are correctly formed   | Galactic Gardens<br>Constellation Counters<br>Rock Hoppers              |
|                            | Numerical Patterns                     | Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity | Galactic Gardens<br>Constellation Counters<br>Rock Hoppers              |
|                            | Numerical Patterns                     | Explore and represent patterns within numbers   | Galactic Gardens<br>Constellation Counters<br>Rock Hoppers              |



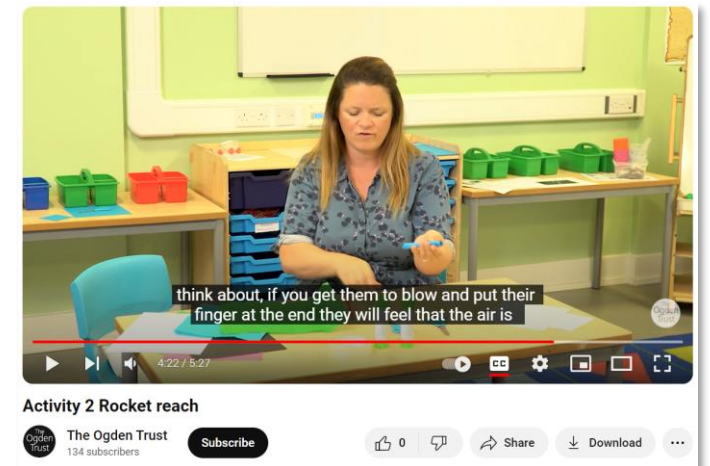
## Ages 3-5 / EYFS – low resource project

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.



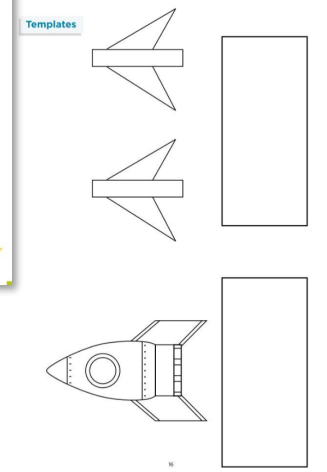
### Equipment list

- Bendy straws
- Paper / card
- Scissors
- Glue / sellotape
- Pens





## *Live demo - Rocket reach*



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***

- Bendy straws
- Paper / card
- Scissors
- Glue / sellotape
- Pens



## Ages 5-7 / KS1 / P2-P3

## CREST Star Challenges

This collection of projects for children aged 5-7, 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 5-7 - easy curriculum links, low resource project***

This project has clear links to the Year 1 & 2 topic, Plants.

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 surroundings and can then record their results and present them in a map or poster.

### ***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 5-7 - low resource project

This activity is designed to get children thinking about friction. Children can test different shoes and observe which ones are the most and the least slippery. They can explore changing the angle of the ramp, as well as the surface of the ramp, introducing the concept of fair testing.



**Slippery Slidey Shoes**  
Organiser's Card

**About the activity**  
This activity is designed to get children thinking about friction. Oop! Gem and Cosmic have slipped on the floor. Help them figure out how to stop it happening again.

**Through this activity you will support your group to:**

- Think about why the shoes slipped on the floor
- Test different shoes and observe which ones are the most and the least slippery
- Record their results and share them with the group

**Kit list**

- A collection of shoes to sort and test - children could bring in some of their own shoes
- Wide ramp e.g. a shelf, a wipe board, a tray
- Different materials to cover the ramp (optional)
- Podium sheets - [www.britishschoolsassociation.org/creststar](http://www.britishschoolsassociation.org/creststar)

**What to do**

1. Follow the structure on the ACTIVITY CARD. Make sure that you give children time to talk about their ideas.
2. Read the story. Then get the children to talk to a buddy about the questions and the opinions of Cosmic, Gem and the Caretaker.
3. Each group will need shoes to sort and to test.
4. Talk through how they might test the shoes but encourage them to use their own ideas too.
5. When they have finished put the shoes on the winners' podium and talk about why these were the best shoes. They could also take photographs wearing slippery and non-slippery shoes or draw a picture of Cosmic and Gem wearing the non-slip shoes.
6. There are follow up activities for children who have finished or want to do more finding out at home and earn a bonus sticker.

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### Equipment list

- A collection of shoes to sort and test (children could use their own!)
- A wide ramp (shelf, tray, large whiteboard)
- Different materials to cover the ramp (optional)





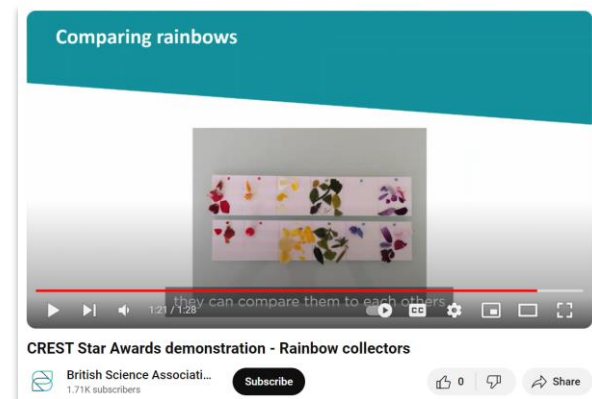
## Ages 3-7 - confidence building, accessible



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 can also work really well 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





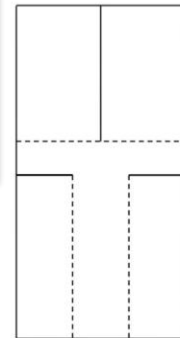
**Ages 7-11 / KS2 / P4-P7**

## 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

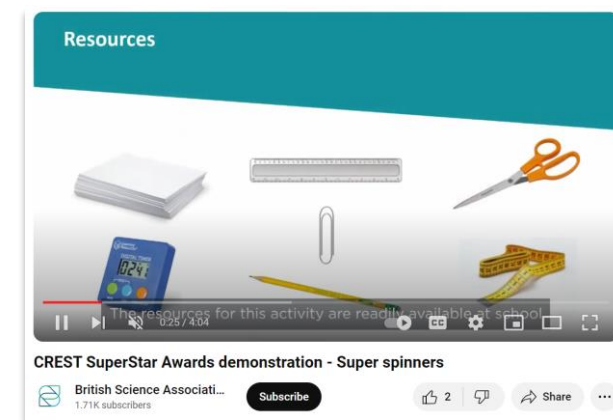


This activity is designed to get children thinking about helicopter blades and how different blade sizes change the way a paper spinner falls.

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

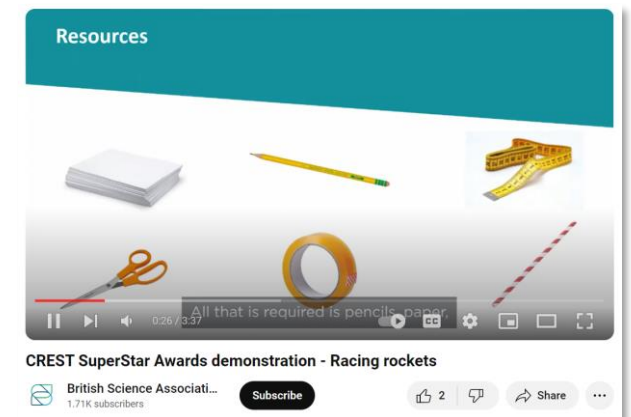
This activity is designed to get children thinking about rocket designs and allows them to test different rocket shapes and sizes. It fits with the Y5 curriculum area 'Forces'.

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



### Equipment list

- Pencils
- Strips of paper or card
- Sellotape
- Scissors
- Bendy straws
- Metre rule or tape measure



# Ages 7-11 – low resource project, confidence building



## 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 Starview 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 QLT film or plastic), non-permanent markers etc.
- Sellotape
- Scissors
- Hand lenses or magnifying glasses

### What to do

- Introduce the activity using the news article. Ask them if they have taken a fingerprint before.
- Give out activity cards and equipment to the children.
- 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.
- Demonstrate how to take a fingerprint
- 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).

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.


This activity is designed to get children thinking about fingerprints. It links to the Y6 topic of 'Evolution and Inheritance'. It requires little specialist scientific knowledge and uses easy to source equipment.



### Equipment list

- Black and/or white paper
- Sellotape
- Soft graphite pencils
- Powders (flour, cocoa, chalk dust)
- Magnifying glasses

### Resources



CREST SuperStar Awards demonstration - Fantastic fingerprints

British Science Associati...  
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# Live demo - Super Spinners



**CREST AWARDS SUPERSTAR**

## Super Spinners

Organiser's Card

**About the activity**

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

Mr Spaceman arrived for work in a helicopter, amazing the students. He's testing which helicopter is best. Can the students help to find out if a longer blade design will make a difference?

Through this activity you will support your group to:

- Think about what makes paper fall in different ways
- Test whether a paper spinner falls in different ways with different blade sizes
- Share their ideas with the group

**Kit list**

To make the spinners they will need:

- A4 Paper
- 30 cm ruler
- Metre ruler
- Paperclips or Blu-Tack
- Scissors
- 1 ready-made spinner to show the children how they work
- Large and small templates for spinners (if you think children will need them) - see following page
- Stopwatch
- Other types of paper and card


**Keywords**

- Flight
- Shape
- Size
- Aerodynamics

**Watch out!**

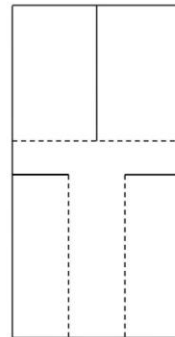
It can be useful to drop the spinners from a height greater than a child's height. However, children should not stand on chairs or tables to launch their spinners unless very closely supervised. A library stool or kitchen steps are better.

Children need to handle and carry scissors in a safe manner.



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1. Take a piece of scrap paper.
2. Explore making a spinner – you could use the template to help you!
3. Add a paperclip to help it fall properly.
4. Explore changing the size of the spinner's blade – how does it affect the way your spinner falls?



## Equipment list

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





# Engage Teacher Network

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



Once they have completed 8 projects they can earn a CREST Award, recognising their achievement with a certificate!

# Engage Teacher Network

## HOW IT WORKS



You can use this account to enter students, create projects, pay CREST entry fees and request certificates.

Browse the activities on our CREST library, selecting eight you would like to run with your students.

This is the fun part! Children take on the role of investigators and the teacher becomes the facilitator. Use the organiser card to help you set up the activity. Encourage your students to work together using the activity card with your support.

Students should record each activity they participate in with a sticker or drawing in their passport.

You or another educator should assess your students' involvement. If you feel they have sufficiently taken part then they will have achieved their CREST /

Log in to your CREST account, pay the entry fee and request certificates. These will be posted to your delivery address.





## **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)

<https://www.crestawards.org/engage/grants>



## *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 out practical science?



**Engage** Teacher Network

***Thank you for joining us!  
Any questions?***



 [crestawards.org](https://crestawards.org)

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# Engage Teacher Conference

# Thank you

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