CREST AWARDS

Using CREST Awards

to support the primary curriculum

A guide for UK primary school teachers on using CREST Awards as part of the curriculum

Managed by:

BRITISH SCIENCE ASSOCIATION

Supported by:

Horners' Education Charity

UK Research and Innovation

About this guide

CREST is a nationally-recognised scheme that inspires young people to think and behave like scientists and engineers. This resource has been designed to help primary school teachers use the CREST Star and SuperStar activities as part of their teaching.

In this booklet you will find a list of relevant activities mapped against some of the themes and content topics found in the primary curricula for England, Wales, Scotland and Northern Ireland.

All activities mentioned in this booklet are available in the **CREST Resource Library** and completely free to download. Each one comes with an activity card for you to use with your children, as well as an organiser card offering guidance, hints and tips on running that activity.

If you have any questions about running CREST in your classroom, please contact us at **crest@britishscienceassociation.org** and we will be happy to help.

Contents

Using CREST in the primary curriculum

Why use CREST during curriculum time?

CREST is a project-based learning programme that is often used during enrichment activities to encourage open-ended investigation within science, technology, engineering and maths (STEM).

However, CREST can also be used to enhance a child's curriculum time, with many activities directly supporting learning within the science and design and technology curricula. In addition, CREST can be used to extend and complement learning within the foundation subjects and allow children to practice skills developed within English and maths. The great thing about CREST activities is that they support learning using enquiry-based techniques, so children can also develop reflection, teamwork and communication skills.

This guide has been developed to help you identify the most relevant CREST challenges to support your children's learning.

What are the guiding principles of CREST?

CREST helps children to develop a variety of skills, as defined by the CREST guiding principles:

Real-world context	CREST projects and activities have a clear, real-world context, appropriate for the level.
Problem solving	CREST projects and activities demonstrate creative approaches in developing solutions to scientific problems.
Independent working	CREST projects and activities show independent working skills. Children should carry out their projects either on their own, in pairs or in small groups, ideally completing their challenge independently of adults (appropriate to the level).
Decision making	CREST projects and activities should, as far as possible, support children to lead their own projects, set their own aims and objectives and create their own plans for how to conduct the project.
Practical science	CREST develops children's understanding of scientific methods, as well as research, production and/or communication techniques and knowledge related to their projects.
Reflective practice	CREST projects and activities should allow children to reflect on what they have learnt.
Reporting and communicating	CREST projects and activities should enable children to share their results (not necessarily in a written format) and explain the impact of what they did.
Research	CREST projects and activities require children to do background research to help them complete and understand their projects.
Creativity	CREST projects and activities allow children to utilise creativity and approach their projects in innovative ways.

How do I use this curriculum mapping tool?

This guide lists topics in the STEM curricula for children aged 3-11 in each of the four UK nations and identifies the CREST Star and SuperStar challenges which help to teach them. It is designed to be used whilst planning teaching of the curriculum at primary level so CREST activities can be included during lesson time. You can also use CREST challenges to teach investigative skills whilst covering content which goes beyond the curriculum.

What does a child need to do to achieve a CREST Award?

Children need to complete at least six CREST challenges to gain a CREST Award. They can use a CREST Passport to record their progress, which you can download and print from our resource library: **primarylibrary.crestawards.org**

Once your children have completed the challenges, you can reward them with certificates which you can order on our website: **www.crestawards.org**

Where can I find the instructions and resources for the activities mentioned here?

All CREST activities mentioned in this guide are free to use and download for an unlimited time from our online Resource Library. The challenges are all included in the following packs:

- CREST Star challenge pack
- CREST SuperStar challenge pack

How can I embed CREST into curriculum time?

Each challenge takes around 45 minutes to one hour to complete. You could choose at least six CREST challenges on the same topic to complete whilst covering this curriculum area, or you could complete one or two activities a week and spread them over a term. This will enable you to embed CREST into curriculum lessons and ensure that all children can achieve an Award.

Can I develop my own STEM activities into CREST challenges?

Once you have completed a few CREST challenges with your children you will become familiar with their structure and may choose to develop your own curriculum-focused activities into CREST challenges.

You can use the table of CREST Star and SuperStar guiding principles on pages 4–5 to help you check that your activities are suitable. Activities should not just be a set of instructions to follow – they should involve problem solving and encourage children to make their own decisions about their approach to testing solutions.

What are the differences between CREST Star and CREST SuperStar activities?

Both sets of activities are ideally suited to primary-aged children. CREST Star activities are aimed at children aged 3-7 who are just starting their STEM journeys.

CREST SuperStar activities are more challenging, offering children aged 7-11 the perfect introduction to problem-solving in STEM.

National curriculum for England, KS1 and KS2

The national curriculum for England has three main aims in science teaching, all of which are supported by the CREST guiding principles.

The national curriculum for science in England aims to ensure that all children:

CREST guiding principles:

Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics

- Practical science
- Research

Develop an understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them

- Independent working
- Reflective practice
- Reporting and communicating

Are equipped with the scientific knowledge required to understand the uses and implications of science, both today and in future

- Decision making
- Real-world context
- Problem solving
- Creativity

The following CREST Star challenges have been mapped onto the English primary science curriculum content areas for Key Stage 1 (ages 5-7):

Plants

- Discovery Bag
- Plant Detectives
- Rainbow Colour Collectors

Everyday materials

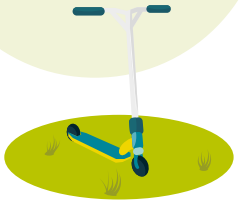
- Be Seen, Be Safe
- Teabag Trouble
- Scrapyard Scraps
- Sniffly Sneezes
- Useless Umbrella

Living things and their habitats

- Animal Adventure
- Scrapyard Scraps

Investigative skills

- Brilliant Bubbles
- Muddy Mess
- Confusing Cans
- Slippery Slidey Shoes
- Speed Scooters



Technology

- Music Maker
- Starting Sounds
- Testing Timers

Similarly, the following CREST SuperStar challenges have been mapped onto the English primary science curriculum content for Key Stage 2 (ages 7-11):

States of matter

- Tomato Sauce

Plants

- Drifting Dandelions
- Bumblebee Mystery

Animals including humans

- Making Toothpaste
- Buy Them Try Them
- Colorado Brown Stain
- Outdoor Gym
- Playground Games

Properties and changes of materials

- A Hole in my Bucket
- A Sticky Problem
- Cheesy Challenge
- Get Set Jellies
- Investigating Ink
- Just My Cup of Tea
- Polymer Problem
- Protecting Polymers
- Surprising Stains
- Testing and Comparing Tea
- Yummy Yoghurt

Rocks and soils

- Fossil Folly

Living things and their habitats

- A Special New Tree
- Goodbye Old Tree
- Tree Trouble
- Recycle Reuse
- Under Your Feet
- Bumblebee Mystery
- Warm or Cold

Forces and magnets

- Bowled Over
- Racing Rockets
- Band Rollers
- Super Spinners

Sound

- Hoodie Hearing

Evolution and inheritance

- Camouflaged Creatures
- Fantastic Fingerprints
- Disappearing Dinosaurs
- Fossil Folly

Investigative skills and technology

- Bridge Blunder
- Brilliant Birds
- Spinning Solutions
- Crafty Rafts
- Kite Calamity
- Discus Dilemma

We have used the English primary national curriculum for science to map the content themes against the relevant CREST Star and SuperStar challenges. You can view the full curriculum here:

https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study

Curriculum for Wales

The four purposes of the Curriculum for Wales match well with the CREST guiding principles.

The curriculum for Wales aims to help children develop into:

- Ambitious, capable learners, ready to learn throughout their lives
- Ethical, informed citizens of Wales and the world
- Enterprising, creative contributors, ready to play a full part in life and work
- Healthy, confident individuals, ready to lead fulfilling lives as valued members of society

CREST guiding principles:

- Problem solving
- Reflective practice
- Reporting and communicating
- Real-world context
- Decision making
- Practical science
- Independent working

We suggest the following CREST Star challenges for the six statements of What Matters for Science and Technology in the Curriculum for Wales for ages 5-7:

Being curious

- Brilliant Bubbles
- Discovery Bag
- Muddy Mess
- Music Maker
- Sneaky Shadow

Design thinking and engineering

- Testing Timers
- Starting Sounds
- Music Maker

Living things

- Animal Adventure
- Plant Detectives

Matter and its behaviours

- Scrapyard Scraps
- Sniffly Sneezes
- Teabag Trouble
- Useless Umbrella

Computation and the digital world *

- Slippery Slidey Shoes
- Speedy Scooters
- Music Maker

* You can use digital tools such as cameras and microphones to record results in these challenges

Forces and energy

- Confusing Cans
- Slippery Slidey Shoes
- Speedy Scooters

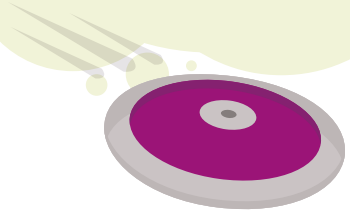
The following CREST SuperStar challenges map onto the six statements of What Matters for Science and Technology in the Curriculum for Wales for ages 7-11:

Being curious

- A Hole in my Bucket
- A Sticky Problem
- Bumblebee Mystery
- Camouflaged Creatures
- Colorado Brown Stain
- Over to You

Design thinking and engineering

- Bridge Blunder
- Band Rollers
- Bowled Over
- Crafty Rafts
- Discus Dilemma
- Kite Calamity
- Outdoor Gym
- Spinning Solutions

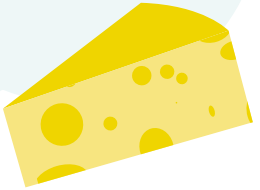


Living things

- Making Toothpaste
- Buy Them Try Them
- Colorado Brown Stain
- Outdoor Gym
- Playground Games

Matter and its behaviours

- A Hole in my Bucket
- A Sticky Problem
- Cheesy Challenge
- Get Set Jellies
- Investigating Ink
- Just My Cup of Tea
- Polymer Problem
- Protecting Polymers
- Surprising Stains
- Testing and Comparing Tea
- Tomato Sauce
- Yummy Yogurt



Forces and energy

- Band Rollers
- Bowled Over
- Bridge Blunder
- Super Spinners
- Racing Rockets

Computation and the digital world *

- Bumblebee Mystery
- Drifting Dandelions
- Super Spinners

* You can use digital tools such as cameras to record and analyse results in these challenges

You can read about the curriculum for Wales in full here:

https://hwb.gov.wales/curriculum-for-wales/

Curriculum for Excellence, Scotland

The Curriculum for Excellence in Scotland sets out to help young people develop into successful learners, confident individuals, responsible citizens and effective contributors. The CREST guiding principles fully support the science area of the Curriculum for Excellence.

Curriculum for Excellence approaches to learning:

- Use technologies in learning – to find material, communicate, create and present
- Active learning – being actively engaged, whether mentally or physically, using real life and imaginary situations
- Cooperative learning – encouraging thinking and talking together, to discuss ideas and solve problems
- Interdisciplinary learning – using links between different areas of learning to develop, reinforce and deepen understanding
- Outdoor learning – making use of the outdoor environment for learning
- Personalisation and choice – being given choices and being involved in planning how and what to learn

CREST guiding principles:

- Reporting and communicating
- Real-world context
- Practical science
- Problem solving
- Decision making
- Independent working
- Reflective practice

We recommend using the following CREST Star challenges for the content areas in the Curriculum for Excellence first level (P2-P4):

Planet Earth

- Discovery Bag
- Plant Detectives
- Rainbow Colour Collectors
- Animal Adventure
- Scrapyard Scraps

Biological systems

- Plant Detectives

Topical science

- Discovery Bag
- Muddy Mess
- Confusing Cans

Forces, electricity and waves

- Confusing Cans
- Music Maker
- Starting Sounds
- Be Seen, Be Safe
- Slippery Slidey Shoes
- Speedy Scooters
- Testing Timers

Materials

- Brilliant Bubbles
- Teabag Trouble
- Scrapyard Scraps
- Sniffley Sneezes
- Useless Umbrella

The CREST SuperStar challenges listed below are well suited to the content areas in the Curriculum for Excellence second level (P5-P7):

Planet Earth

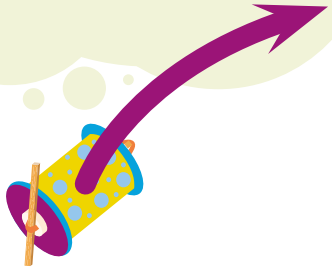
- Brilliant Birds
- Bumblebee Mystery
- Camouflaged Creatures
- Drifting Dandelions
- Under Your Feet
- Warm or Cold
- Worm Charming

Biological systems

- Making Toothpaste
- Buy Them Try Them
- Fantastic Fingerprints
- Outdoor Gym
- Disappearing Dinosaurs
- Fossil Folly

Forces, electricity and waves

- Bridge Blunder
- Band Rollers
- Bowled Over
- Crafty Rafts
- Discus Dilemma
- Kite Calamity
- Super Spinners
- Spinning Solutions
- Hoodie Hearing

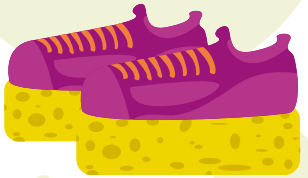


Materials

- A Hole in My Bucket
- A Sticky Problem
- Cheesy Challenge
- Get Set Jellies
- Investigating Ink
- Just My Cup of Tea
- Polymer Problem
- Protecting Polymers
- Recycle Reuse
- Surprising Stains
- Testing and Comparing Tea
- Tomato Sauce
- Yummy Yogurt

Topical science

- Bumblebee Mystery
- Colorado Brown Stain
- Disappearing Dinosaurs
- Polymer Problem
- Warm or Cold



You can find more information relating to the Curriculum for Excellent in Scotland via the following links:

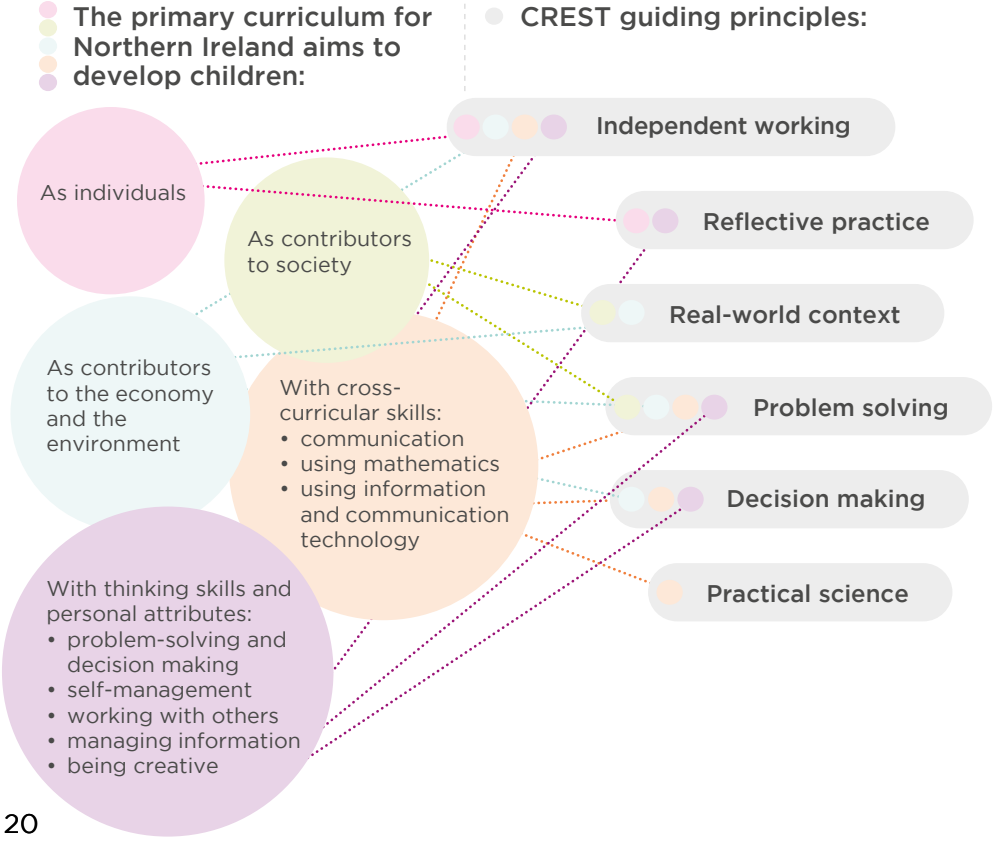
https://education.gov.scot/Documents/sciences-pp.pdf

https://education.gov.scot/media/0g2cthxv/cfefactfileoverview.pdf

Primary curriculum for Northern Ireland

The primary curriculum for Northern Ireland aims to empower young people to develop their potential and to make informed and responsible choices throughout their lives. There is a strong emphasis on skill development. Of note is area four of the primary curriculum, The World Around Us, which focuses on the development of knowledge, skills and understanding in geography, history, science and technology.

The CREST guiding principles fully align with the objectives of the primary curriculum for Northern Ireland.



The following CREST Star challenges map onto the science content areas in the primary curriculum for Northern Ireland for ages 5-7 (P2-P4):

Place

- Be Seen, Be Safe
- Scrapyard Scraps
- Sniffly Sneezes
- Teabag Trouble
- Useless Umbrella

Interdependence

- Brilliant Bubbles
- Discovery Bag
- Muddy Mess
- Music Maker
- Sneaky Shadow

Change over time

- Animal Adventure
- Plant Detectives

Computation and the digital world *

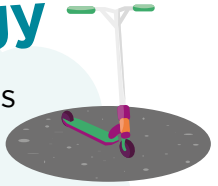
- Slippery Slidey Shoes
- Speed Scooters
- Music Maker

* You can use digital tools such as cameras and microphones to record results in these challenges

Design and technology

- Music Maker
- Starting Sounds
- Testing Timers
- Confusing Cans
- Slippery Slidey Shoes
- Speed Scooters

Movement and energy

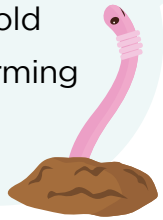


- Confusing Cans
- Music Maker
- Sneaky Shadow
- Slippery Slidey Shoes
- Speed Scooters
- Testing Timers

The following CREST SuperStar challenges can be incorporated into the content areas in the primary curriculum for Northern Ireland for ages 7-11 (P5-P7):

Interdependence

- Hoodie Hearing
- Fossil Folly
- Disappearing Dinosaurs
- Brilliant Birds
- Bumblebee Mystery
- Drifting Dandelions
- Warm or Cold
- Worm Charming



Place

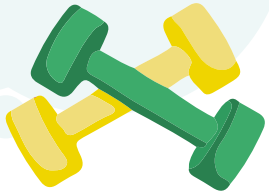
- Camouflaged Creatures
- Under Your Feet
- A Hole in My Bucket
- A Sticky Problem
- Cheesy Challenge
- Get Set Jellies
- Investigating Ink
- Just My Cup of Tea
- Polymer Problem
- Protecting Polymers
- Recycle Reuse
- Surprising Stains
- Yummy Yogurt

Change over time

- Tomato Sauce

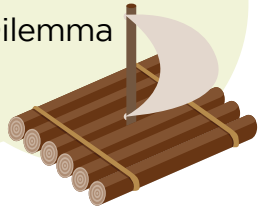
Movement and energy

- Bridge blunder
- Band rollers
- Bowled over
- Crafty rafts
- Discus dilemma
- Kite calamity
- Super spinners
- Spinning solutions
- Hoodie hearing
- Outdoor gym



Design and technology and investigative skills

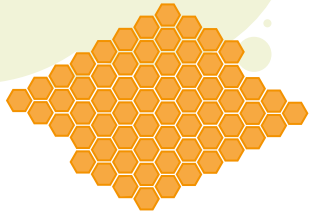
- Bridge Blunder
- Brilliant Birds
- Spinning Solutions
- Crafty Rafts
- Kite Calamity
- Discus Dilemma



Computation and the digital world *

- Bumblebee Mystery
- Outdoor Gym
- Super Spinners

* You can use digital tools such as cameras to record and analyse results in these challenges



You can find more information about the primary curriculum for Northern Ireland via the following link:

https://ccea.org.uk/learning-resources/northern-ireland-curriculum-primary

Using CREST to support other curriculum areas at primary level

CREST challenges encourage cross-curricular learning and often involve applying scientific knowledge to subject areas beyond science, technology, engineering and maths. Project-based learning at higher levels allows children and young people to plan their own projects on topics which interest them.

Here are some ideas for how CREST Star and SuperStar challenges can be used to meet the objectives in non-STEM subjects at primary level.

English

These CREST challenges encourage writing for different purposes:

- Animal Adventure (Star)
- Starting Sounds (Star)
- A Special New Tree (SuperStar)
- Making Toothpaste (SuperStar)

History

These CREST challenges investigate historical objects, people and events:

- Spinning Solutions (SuperStar)
- Colorado Brown Stain (SuperStar)

Geography

These CREST challenges investigate people, places and environments and the interactions between them:

- Journey Stick (SuperStar)
- Windy Ways (SuperStar)
- How Do You Drink Yours? (SuperStar)

Art and design

These CREST challenges allow children to produce creative work, using art and craft techniques to explore ideas and record their experiences:

- Rainbow Collectors (Star)
- Journey Stick (SuperStar)
- Recycle Reuse (SuperStar)

Spotlight on CREST Star: Animal Adventure

Get CREST Star pupils to investigate minibeasts and habitats with the hands-on Animal Adventure project. This outdoor activity is a brilliant way to help pupils learn about the animal kingdom, understand scientific methods and explore their local environments.

Animal Adventure maps onto the following science curriculum content areas:

- Living things and their habitats (England)
- Living things (Wales)
- Planet Earth (Scotland)
- Change over time (Northern Ireland)

Find it in the **CREST Star challenge pack**.

Spotlight on CREST SuperStar: Spinning Solutions

This CREST SuperStar challenge adds fun and scientific insight to the daily act of washing clothes. By designing, making and testing their own model washing machine drums and mangles, pupils can act as engineers and think about centrifugal force whilst getting creative with everyday equipment found at school or at home.

Spinning Solutions covers a range of science curriculum content areas:

- Investigative skills and technology (England)
- Design thinking and engineering (Wales)
- Forces, electricity and waves (Scotland)
- Design and technology and investigative skills (Northern Ireland)
- Movement and energy (Northern Ireland)

Find it in the **CREST SuperStar challenge pack**.

CREST AWARDS

Managed by:

BRITISH SCIENCE ASSOCIATION

Supported by:

Horners' Education Charity

UK Research and Innovation