GETTING STARTED

CREST Awards are organised and administered through a network of local coordinators.

What do you need to do?

1. Decide where you want to use CREST. For example:
- any type of club
- enrichment/activity days
- technology/engineering project
- science investigation

2. Discuss ideas with the local CREST coordinator who will:
- send you a registration form
- provide further project ideas and support
- help to link students with suitable mentors in industry or higher education

3. Return registration form. The local CREST coordinator will then process your registration and send out the students' Profile Forms

4. Contact the local CREST coordinator during the project process if necessary

5. Contact the local CREST coordinator when students have completed their work:
- to discuss assessment
- to conduct assessment

6. Send the local CREST coordinator the students' names to issue you the signed CREST certificates

Your local CREST coordinator is:

Contact details for all local coordinators and registration fees are listed on the website **www.britishscienceassociation.org/crest**

If you have any difficulty contacting your local coordinator, please telephone 020 7019 4943 or email crest@britishscienceassociation.org

Sponsors of CREST Awards

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RESEARCH COUNCILS UK

About the British Science Association
The British Science Association aims to promote openness about science in society and to engage and inspire people directly with science and technology and their implications. Established in 1831, the British Science Association organises major initiatives across the UK including the annual British Science Festival in September, Europe's largest public science event, and National Science and Engineering Week in March where over a million people take part in science related activities across the UK.

The British Science Association has over 25 years experience of running STEM enrichment programmes for young people. The British Science Association is a partner in the following projects: National Science Competition, The Big Bang: UK Young Scientists' and Engineers' Fair, DCSF After-School Science and Engineering Clubs, STEM Directories, The London Engineering Project and The Shine Trust's CREST ★ Investigators clubs.

FundRaising Standards Board

Registered Charity No. 212479 and SCO39236

BRITISH SCIENCE ASSOCIATION

CREST Awards

Your guide to the CREST Award scheme

CREativity in Science and Technology Awards

www.britishscienceassociation.org/crest

WHAT IS CREST?

CREST is the nationwide curriculum enrichment award scheme for STEM (Science, Technology, Engineering and Maths). The scheme was extended to primary-aged children with the launch of CREST ★ Investigators in 2007. CREST now provides one seamless award scheme for 5 -19 year olds designed to recognise achievement and develop skills, knowledge and interest in STEM.

This guide focuses on CREST Awards for 11-19 year olds. For a quick guide to getting started with CREST, please refer to the back page.

Through the CREST Award scheme, young people aged 11-19 explore the real nature of STEM by doing their own creative project work. The scheme was established 22 years ago and has over 28,000 young people from across the UK taking part each year.

The joy of the scheme is that it motivates and unlocks the potential of all students and gives them a tangible recognition of achievement, which can be included in their progress file/personal record of achievement and helps with applications to universities, colleges and potential employers. When you enter your students for a CREST Award, you can be confident that they will be developing skills linked to the requirements of the curriculum.

CREST is designed to be flexible. Project work can be achieved within curriculum time and will support a wide range of courses. The scheme has also proved to be an excellent way of delivering extra-curricular STEM activity.

One of the key strengths of CREST is that it encourages projects with strong industry or academia links. CREST also motivates students to apply their knowledge to solve real challenges which they themselves feel are important.

In addition to the award scheme, students have the opportunity to have their work celebrated at regional and national fairs.

Information about CREST ★ Investigators is available via www.britishscienceassociation.org/creststar

'CREST creates enthusiasm, independent learning and a greater interest in STEM'
Secondary science teacher

THE AWARDS

CREST projects are offered at three levels, with increasing complexity and challenge between each. The levels are progressive but can be awarded separately at any stage. The differentiated levels enable youngsters of all abilities to experience positive achievement in STEM and develop many of the required key skills in the process.

Bronze

- Typically completed by 11-14 year olds
- Around 10 hours of project work is expected
- Encourages students to experience and understand the project process whilst improving their enquiry, problem solving and communication skills
- Students can achieve Bronze awards through CREST link schemes/activities such as BP Enterprising Science Projects, and The Smallpeice Trust's Engineering Experience courses
- Can be used to enhance current educational projects (Darwin 200, Bloodhood SSC and Team QinetiQ) by providing a structure through which students' achievements can be recognised
- Can be completed as an after school club activity or whole class investigation/ technology module
- Can be completed as an enrichment day/ week in school (e.g. during National Science and Engineering Week). Information on how to run a 'CREST in a Day' event is available on the CREST website

Silver

- Typically completed by 14-16 year olds
- It is a much more in-depth project requiring around 40 hours to complete
- External mentors are encouraged at this level
- Students can achieve Silver awards through CREST link schemes/activities such as Land Rover's TrackNAVCHALLENGE and Go4SET
- Suitable coursework (e.g. GCSE Design and Technology) and project work for Work Related Learning, Enterprise and the new Diplomas can be awarded at Silver level
- Can be completed as an after school club activity

Gold

- Typically completed by 16-19 year olds
- It is a long-term project requiring around 100 hours work
- External mentors are compulsory at this level
- Students can achieve Gold awards through CREST link schemes/activities such as the Engineering Education Scheme and Nuffield Science Bursaries
- Suitable coursework or project work for the new Diplomas can be awarded at Gold level

'I think CREST was really interesting. I would recommend it to anyone my age'
CREST Bronze student

'I think it made a big change in my choice of A Levels for college. I am planning to study technology but CREST made me more enthusiastic about my choice'
CREST Silver student

'We were given an actual engineering problem which we had to solve, making us realise the relevance of engineering in society'
CREST Gold student

CREST ESSENTIALS AT ANY LEVEL

1. CREST recognises individual achievement. An activity must offer a student the opportunity to:

- practise existing and develop new scientific and technological skills
- follow a scientific/technological process
- demonstrate individualised and independent learning
- apply their work to a 'real world' context
- research and make use of material and human resources
- demonstrate some creativity or innovation in their work
- communicate their work to audiences, both expert and non expert
- consider the broader implications of the work of scientists, engineers and technologists

2. All students monitor their progress with the aid of a CREST Profile Form.

The design of the Profile Form prompts students to address each award criteria and encourages them to work through these in a sequential manner. Profile Forms are available at each award level from the local CREST coordinator.

3. Projects can be:

- chosen by the student
- chosen by the teacher
- provided by a local company or university
- provided by a CREST link scheme/activity
- chosen from the CREST online project ideas resource

The online project ideas resource

Visit **www.britishscienceassociation.org/crestprojectideas** for a range of inspirational ideas grouped into 10 themes including fashion, sport, environment and space.

The online resource provides:

- project plans for each award level
- health and safety information
- curriculum links

CREST mentors

At Silver and Gold level, practising scientists and engineers from industry and academia mentor CREST projects and the students.

They might:

- act as an 'expert witness', providing information and/or resources
- be a point of access for specialist equipment or techniques
- provide relevant work experience or arrange an industrial visit
- help students develop their ideas and guide them as they look at their results

Mentors should not tell students what to do, but help them to develop the project as far as possible.

Mentors usually become involved by talking to students about the context of their work. The exact role varies depending on individual circumstances.

Talk to your local CREST coordinator and find out about the Science and Engineering Ambassadors (SEAs) or Researchers in Residence (RinR) scheme.

ASSESSMENT OF THE AWARDS

Bronze awards can be assessed internally, by another teacher or by a leader from the participating school or organisation. The assessment of Silver and Gold level projects will need to be arranged with the local CREST coordinator.

Assessment typically involves a CREST assessor:

1. Reading through the student's Profile Form and if available the project report/portfolio.
2. Speaking with the student involved. At every award level, students should have an opportunity to present their project work.
3. CREST assessors refer to a standardised CREST assessment grid to assess the project. A copy of this is available on the CREST website.
4. If successful, the CREST assessor will sign off the Profile Form. The local CREST coordinator will then issue the certificate for the student.

Students who do not meet the criteria for the award level will be advised on areas to work on in order to achieve the award.

ENHANCING THE CURRICULUM

- Facilitates delivery of STEM activities in schools
- Supports 'How Science Works'
- Can be used to recognise and award work experience placements, enterprise activities and coursework
- Supports Applied Courses and Diplomas through providing experience of work
- Supports Applied Courses and Diplomas through providing a work context
- Encourages links between schools and industry using industrial mentors
- Provides students with a tangible recognition of achievement, which can be included in their progress file/personal record of achievement and helps with applications to universities, colleges and potential employers.
- Demonstrates the 'added value' your school can offer pupils and parents
- Provides a focus to apply for grants, gaining additional finance for departments and enhancing departmental visibility
- Adds sparkle to teaching
- Provides opportunities to be involved in regional and national fairs

CREST has been the subject of a comprehensive independant evaluation study. The findings revealed that:

- The CREST scheme has a strong positive impact on young people aged 11-19
- Students gained knowledge, developed transferable skills and showed improving attitudes towards STEM
- Many teachers felt that the scheme helped inform their teaching, and that CREST raised the profile of STEM in their school
- Mentors highlighted the impact of CREST on students' decision-making and their subject choices at university

For further information on the CREST evaluation, visit our website www.britishscienceassociation.org/crest

A leaflet on how CREST links to the Scottish Curriculum is available to download from the CREST website.

The CREST scheme is featured in the new STEM Directories and the Learning Grid Guide.

'We've been running CREST Awards at Framwellgate School successfully for several years now and they give excellent added value to the curriculum, recognising achievements of our students and encouraging them to take part in science outside the classroom. The scheme provides a valuable insight into what science is really like, challenging them to think, work and communicate like a real scientist. It's not surprising to discover that CREST has encouraged many of our students to pursue careers in science and given them a love of science and of learning'

Director of Science, Framwellgate School

CELEBRATING SUCCESS

Regional CREST Fairs are organised across the UK in 12 regions. They are a wonderful opportunity to celebrate students' project work and thank teachers for their support.

At regional fairs, students exhibit their project work, present their work to local experts in the fields of science and engineering and meet with other students from the region.

As well as celebrating personal achievement at the regional fairs, judges will also select projects at each award level to be showcased at The Big Bang: UK Young Scientists' and Engineers' Fair, London. At this national fair, students meet and exchange ideas with eminent scientists and engineers as well as their peers and present their projects to a panel of judges. There are substantial cash prizes for the individual, teams and departments submitting the best projects as well as exciting, international, expenses paid trips.

Teachers' Prize

The British Science Association was able to offer a teachers' prize at the national fair to recognise the vital role that teachers play in helping students to complete CREST projects in school. The prize was made possible by sponsorship from Lloyd's Register Educational Trust.

Elizabeth Major, a teacher at Mary Webb School and Science College, won the prize following nomination by the local CREST coordinator. She has been heavily involved with promoting CREST and motivating her students to take up hands-on activities in science and engineering for over 5 years.

As well as receiving a £500 bursary and a trophy to take back to her school, Elizabeth won an all expenses paid opportunity to attend the Intel International Science and Engineering Fair in the US. Her experience of the event has given her ideas to build on in her own school: 'My trip inspired me to initiate a research project for year 7 pupils which encompasses experimental work that can be done at home as well as in school. This I hope will engage and motivate pupils as well as providing the opportunity to address Personal, Learning and Thinking Skills (PLTS).'

Case Studies

From Microcosm to Magma Oceans: A Lunar Meteorite Perspective by Elisabeth Muller, Bedford High School:

Elisabeth's Nuffield Science Bursary funded project analysing the mineralogy of a lunar meteorite opened doors for her after she won two amazing awards at the fair. Elisabeth represented the UK at the European Union Contest for Young Scientists in Copenhagen; she also went on the Royal Society International Expedition Prize trip to New Zealand.

Road Safety for Children by Georgina Little, Kent College:

Georgina's project brief was to design an item of clothing that would protect a 4-6 year old from the dangers of traffic. Georgina produced a high quality jacket which combined the safety element with something that would appeal to a child of that age. At the fair, Georgina won the Best Silver CREST Technology Project.

Steps to Ramp – Multi Access System by Peter Briggs and Darrel Hollands, John Port School:

Peter and Darrel's project was to make a product which would allow both able-bodied and disabled people get up a set of steps easily. They went through several design options before deciding to develop the idea of turning a set of steps into a ramp at the click of a button. At the fair, Peter and Darrel won the Best Bronze CREST Technology Prize.