

The
shape the future

Directory

of engineering and technology enrichment
activities for schools and colleges

Young people can engineer
astonishing things...

As a teacher, you can help discover these talents.

Getting pupils and students involved in engineering activities builds motivation for science, design & technology and mathematics. It can increase attainment in national tests by stretching the most able and by offering alternative learning styles for all, and it helps students consider what an engineering career might offer them.

Engineering offers a fantastic range of career options. Everyone can find their own place; as a technician, an advanced specialist, a designer, a project manager or as an engineering business leader at the highest level.

Each of these career destinations can be reached by many different routes, for example, through an apprenticeship, further education or through higher education.

There is no limit to the breadth of engineering. After all, every part of modern life depends on engineering including our homes, food, energy, transport, health and the environment. And engineering has a crucial role in finding a sustainable future for us all.

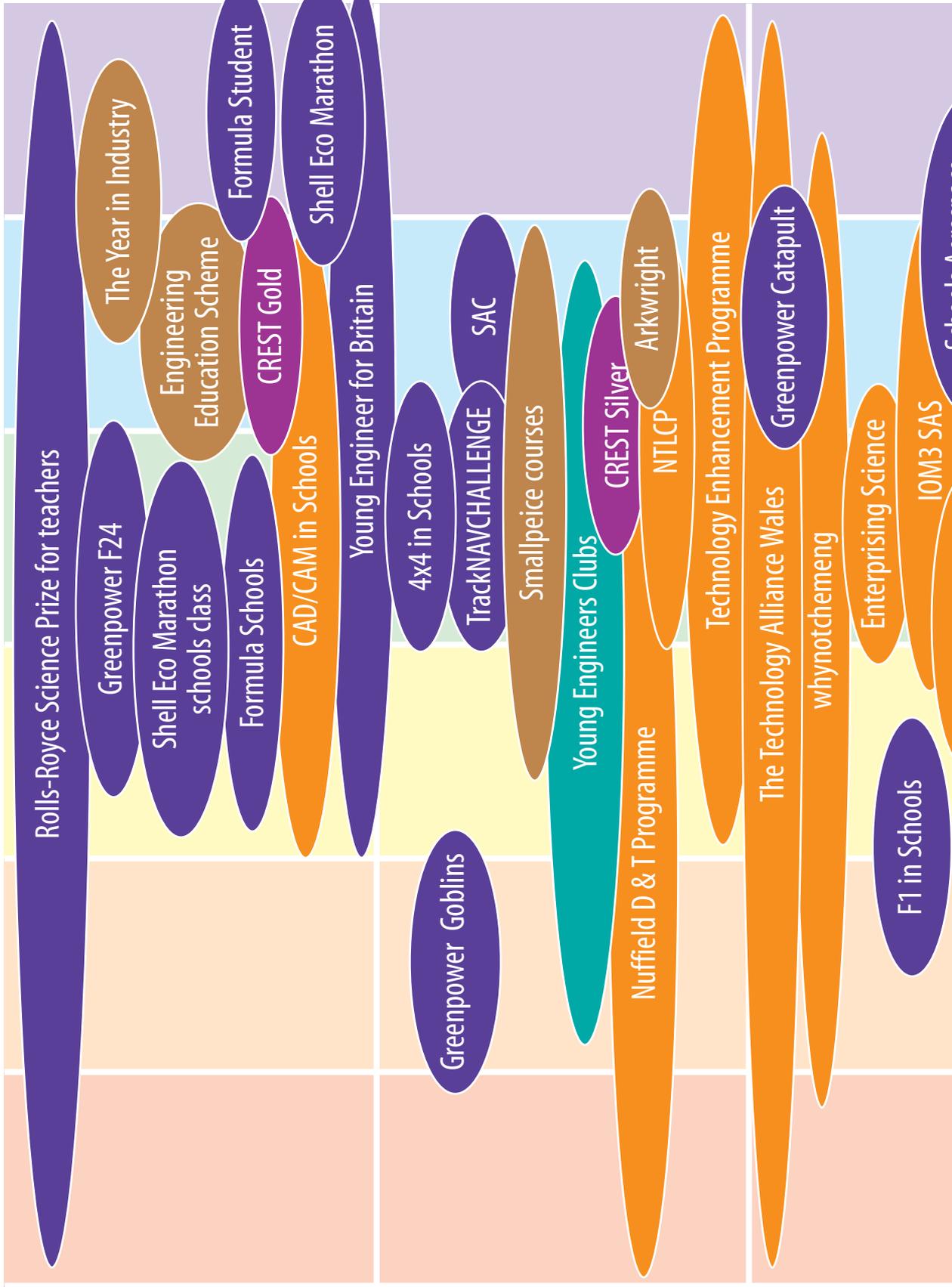
In here you will find a range of engineering activities for school and college students of all ages. These activities are:

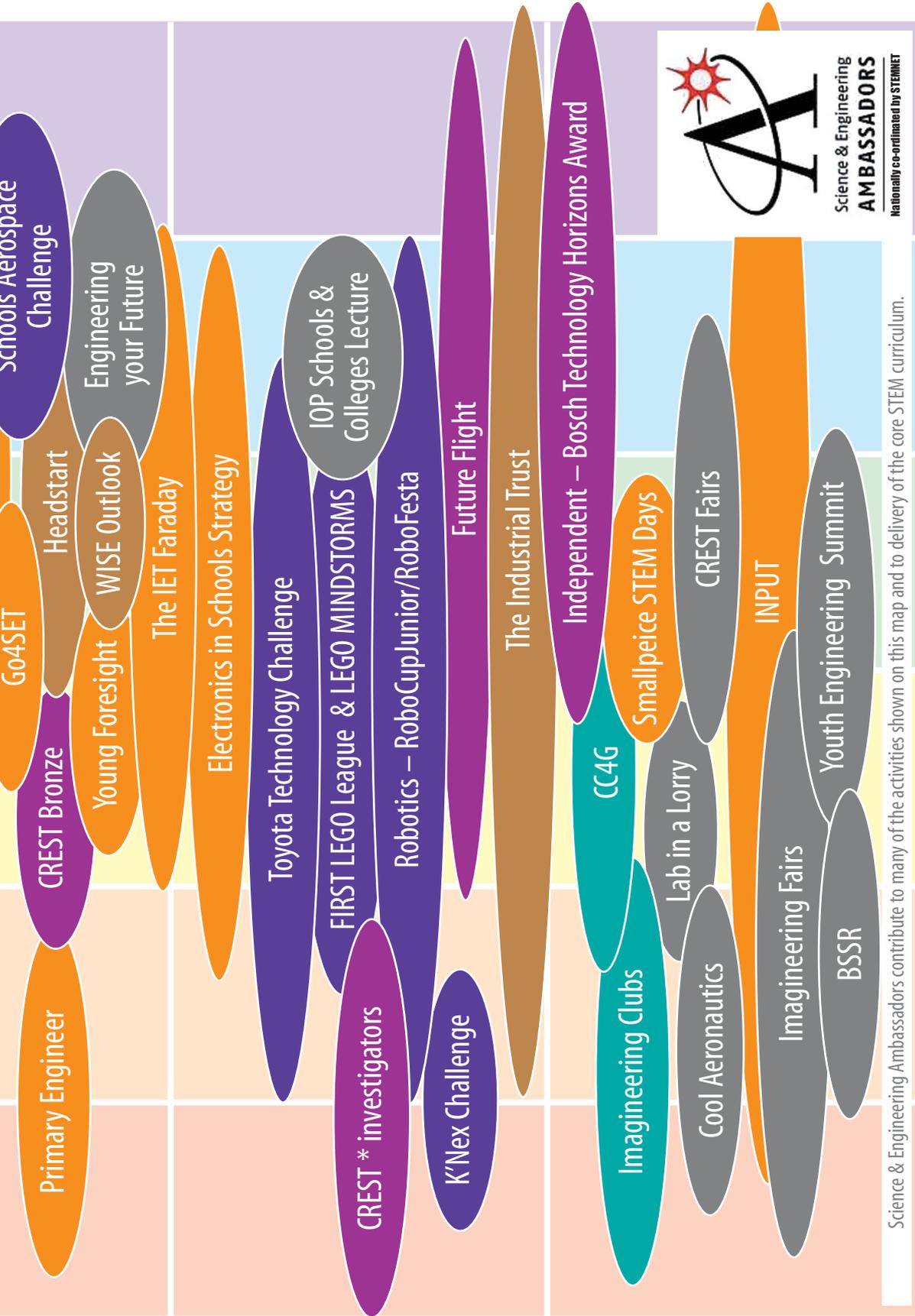
- committed to enhancing and enriching science, technology, engineering and mathematics (STEM) teaching and learning in schools
- designed to stimulate demand for STEM careers
- developing robust standards of quality assurance
- available, in most cases, across the UK

In response to the call from education, Government and business to see a more fruitful and coordinated approach to the promotion of engineering and technology in schools and colleges, the Shape the Future campaign was launched in November 2005. It is owned by the professional engineering community and has a steering group made up from many of the organisations listed on page 4. The aims of the campaign are:

- ❑ To bring greater coherence and coordination of engineering and technology activities, resulting in more effective, efficient and better targeted programmes
- ❑ To contribute to a simpler vision of STEM amongst young people and their influencers and in particular their teachers
- ❑ To ensure more young people take part in 'hands on' activities, in particular from groups and schools not previously engaged (see the details of an Access Fund on page 45)
- ❑ To support STEM teachers more effectively
- ❑ To keep STEM teachers better informed about opportunities whilst cutting down the number of unwanted mailings
- ❑ To help with careers education and guidance in STEM

Curriculum support	Award	Club	Industry/HE link	Competition	Event
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Science & Engineering Ambassadors contribute to many of the activities shown on this map and to delivery of the core STEM curriculum.

Adapted from the 2005 Learning Grid activity plan.

Age 5-7

Age 7-11

Age 11-14

Age 14-16

Age 16+

Age 19+

Learning Time Commitment ▲

About this Directory

This directory is in response to Government's Science, Technology, Engineering and Mathematics (STEM) Programme Report published in October 2006. The report called for better coordinated support for the promotion of engineering and technology in schools to avoid duplication and waste, to focus public funding on national schemes that are known to be effective and to give teachers better guidance in the choices they make on behalf of their students.

This selection of quality engineering activities for schools has been compiled following wide consultation with the professional engineering community and particularly by a partnership of:

The Royal Academy of Engineering
The Gatsby Charitable Foundation
The Learning Grid
The Engineering and Technology Board
STEMNET
The British Association for the Advancement of Science
The Association for Science Education
The Design and Technology Association
The Institute of Physics
The G15 group of chief executives of engineering institutions
The Engineering Education Alliance, a body drawing together all engineering institutions including the:

Institute of Acoustics, Royal Aeronautical Society, Institution of Agricultural Engineers, Chartered Institution of Building Services Engineers, Institute of Cast Metals Engineers, Institution of Chemical Engineers, Institution of Civil Engineers, British Computer Society, Energy Institute, Institution of Engineering and Technology, Institution of Engineering Designers, Society of Environmental Engineers, Institution of Fire Engineers, Institution of Gas Engineers and Managers, Institute of Healthcare Engineering & Estate Management, Institute of Highway Incorporated Engineers, Institution of Highways & Transportation, Institution of Lighting Engineers, Institute of Marine Engineering, Science and Technology, Institute of Materials, Minerals and Mining, Institute of Measurement and Control, Institution of Mechanical Engineers, Institute of The Motor Industry, Royal Institution of Naval Architects, British Institute of Non-Destructive Testing, Institution of Nuclear Engineers, Society of Operations Engineers, Institute of Physics, Institute of Physics & Engineering in Medicine, Institute of Plumbing and Heating Engineering, Institution of Railway Signal Engineers, Institution of Structural Engineers, Chartered Institution of Water and Environmental Management, Institution of Water Officers, Welding Institute.

By lending their support, these organisations are agreeing to promote STEM activities in schools in a coherent way, reducing the proliferation of initiatives that can be confusing and counter-productive. The result is that the full breadth of modern engineering is promoted in schools right across the UK, avoiding unnecessary distinctions being drawn between engineering disciplines that can over-complicate the simple message of engineering for all.

How the activities have been selected

The activities listed in this document have been selected on the basis of their national reach, their quality, their curriculum links, their commitment to evaluating impact, their ability to cover the wide range of modern engineering and the endorsement and support offered by the professional engineering community both nationally and in the regions.

Formal quality assurance is available through a *quality standard for engineering education activities* developed by the Learning Grid. Quality is assessed by an independent panel of primary and secondary teachers, lecturers and engineers working in industry. All of the activities shown here are committed to quality and many have already met the assurance standard, with others seeking the standard. For an up to date list see www.learninggrid.co.uk/initiatives

In addition to the national activities listed here, there are of course very many great activities that are more local, often supported by one of the regional centres operated by the Engineering Institutions listed on page 4.

So what's in it for you?

Here are some examples of how engaging with these activities enables teachers to enhance and enrich the school curriculum and provide opportunities to explore engineering first hand.

Peter Crompton of Fortismere School, an 11-19 comprehensive school in London, explains why he is involved:

I have been a contact teacher for one activity since 1995. Since that time over 100 Fortismere students have been involved and this has set a platform for their lifelong learning. The benefits to students have been enormous. The project-based applied learning has resulted in considerable personal development, further developing the essential life skills of teamwork, problem solving, creativity and innovation. The experience of industrial enterprise is a perfect preparation for the world of work giving essential insights into the tools required to succeed in their chosen career path.

The school has benefited with enhanced higher education, business and industrial links and my own professional development has been considerable. Working alongside companies has increased my understanding of what companies need and the skills required by them of my students. My experience has also resulted in significant project input into the wider curriculum.

Jenny Harrison chose to study engineering at Birmingham University after participating in these activities:

I think taking part really encouraged me to be successful in engineering. I met loads of friends and it showed me there are so many exciting possibilities available for anyone who is willing to go for it.

Principles of Curriculum Enhancement and Enrichment of STEM

A curriculum enhancement or enrichment of STEM is something that provides the school curriculum with opportunities to deliver more relevant content. To enable a STEM enhancement or enrichment to take place effectively in the school curriculum and ensure access for all we need to ensure that:

- **It will make a difference to learning.** It may improve motivation, attitudes, enthusiasm which can impact back on teaching and learning in lessons. A change in attitude, perception, attendance and aspiration may increase knowledge and understanding while engaging students in a stimulating and exciting addition to normal lessons.
- **It will fit into the schools curriculum design and delivery methods.** STEM activities and programmes must fit into a schools curriculum design and delivery methods and justify their value.
- **It will improve teacher's understanding of STEM education and the benefits that they will gain by engaging with a STEM activity.** Raising teacher awareness and understanding of the STEM aspects of business, industry, enterprise, careers, environment, lifestyle and the importance of STEM to students as future citizens.
- **We have better access to resources from industry that will make a difference in the classroom.** Ensuring we have active STEM SEAs, businesses and industries who are committed to working with schools and pupils to raise engagement with STEM related activities and programmes.

In order to improve access to STEM we need to ensure that all STEM activities and programmes have:

- a direct link to the curriculum content that is being taught and demonstrate that it can be delivered through an enhanced or enriched STEM activity through subjects or aspects such as citizenship etc
- links to the 'enterprise' culture showing how the STEM activities can be used to develop the strands of the enterprise curriculum
- links to the extended school providing opportunities for schools to develop STEM related activities outside the normal school provision
- links to Every Child Matters priorities
- links to applied and vocational provision including Double Award GCSE's and Diplomas
- be able to be referenced directly to the Self Evaluation Form (SEF)

Therefore in this version of the 'Shape the Future' Directory we have 'mapped' as many of the 'STEM' programmes listed as we can against these school priorities to make it easier for teachers, schools and employers to match their needs against the aims and objectives of the programmes on offer. The code used is fairly obvious Sc (Science), Ma (Maths), Te (Design and Technology), ECM (Every Child Matters).

Further information and more detailed references to 'mapping' STEM activities to the school agenda can be found on the STEMNET website at www.stemnet.org.uk

Need help in knowing where to start?

STEMNET is a UK-wide organisation promoting science, technology, engineering and mathematics (STEM) awareness among young people. It does this with the support of its extensive range of partners and its UK-wide network of local partners, organisations skilled in linking business and education to support schools and colleges in STEM.

For more information, visit www.stemnet.org.uk

STEMNET's local partners (known as SETPOINTS):

- can offer advice and guidance on which schemes may be suitable for you
- can provide details of, or facilitate contact with, the person or organisation best suited to meeting your specific needs
- can provide further support through access to Science & Engineering Ambassadors – trained, vetted volunteers keen to help
- through their own organisations they may be able to provide help with delivery of these schemes

To find your local partner visit www.stemnet.org.uk or call 020 3206 0450

Did you know?

That in March each year, National Science and Engineering Week provides a focus for engineering activities such as those listed in this document.

For details of events in your area see www.the-ba.net/the-ba/events/NSEW

That Enterprise Week takes place in November each year. The week is part of the Make Your Mark campaign - inspiring young people to turn their ideas into reality.

For more details see www.enterpriseweek.org

That Design and Technology Week takes place each year in June.

For more information see www.data.org.uk

That every year the 'enginuity' pack of careers resources is sent out to over 5,000 secondary schools. The resources are aimed at young people, teachers and advisers searching for clear and up to date information about careers in engineering and technology.

To find out more, order a free pack or download the on-line version see www.enginuity.org.uk

Primary

Sc OPW, OMW, OLW Planning and Investigating 9m, 7a, 9l, 1c, 2f, 2j, 2n Res Skills

Ma Use Of Number Broad

Te Planning 1e, 2d, 3a, 4a, 2b

ICT Presenting/Researching PPT, Internet

Positive Contribution ECM4

Making the Most of Ability 1d, 2a, b,

Enterprise Skills 4e, 5b

G&T Motivation Clubs Motivation

BA CREST ★ Investigators

Type: Clubs and awards

Age range: 5 – 12

The BA (British Association for the Advancement of Science) runs a number of activity and project-based award schemes for students of different ages under the CREST (Creativity in Science and Technology) scheme. BA CREST★ Investigators for children age from 4 to 11 is a science and technology award scheme with support materials aimed at teachers, club leaders and families and comprising engaging and exciting practical investigations. Children can work individually or in small groups on a wide range of science activities that are recognised by awards, certificates and badges which recognise their achievement.

Contact: The BA Young People's Programme

Tel: 020 7019 4943

Email: creststar@the-ba.net

Web: www.the-ba.net

Sc Planning and Presenting

Sc1a, 2af Sc4 1a, 2a

Te Mechanisms, Testing 2a, 5c, 6cd, 8d

ICT C&P,C&M Programming 1c, 2cd, 3ad, 4ad, 5bce, 6ac

Eng Robotics Introduction

Man Robotics Introduction

Eng Robotics-Sector Based Functional Skills

ICT Programming-Sector Based Functional Skills

Enjoy and Achieve ECM3

Developing Confidence 1a-e

Enterprise Skills 4e, 5bc

Clubs, Teamwork, Presentation

International Co-Operation Motivation

FIRST LEGO League

Type: Competition

Age range: 9 – 16

A nation-wide programme for primary and secondary children that combines hands-on, interactive robotics activities with a sports-like atmosphere using the LEGO® Mindstorms® NXT, RCX or Robotics Invention System. Teams consist of up to 10 players with the focus on team building, problem solving, creativity, and analytical thinking. Teams face an annual challenge emulating a real world event or situation and must undertake a Research Project and design, build, programme and test a fully autonomous robot capable of accomplishing the challenge in only eight weeks.

Contact: First Hand Technology

Email: info@firsthandtechnology.org.uk

Web: www.firsthandtechnology.org.uk

BAE Systems Schools Roadshow

Type: Roadshow

Age range: 9 – 12

BAE Systems is committed to supporting the Science and Design & Technology curricula in schools and to helping inspire young people about careers in Science & Engineering. It has designed a special schools roadshow, which involves a 30 minute piece of theatre followed by a 1 hour practical workshop. The roadshow makes two tours each year, 1 in the Spring for Northern and Scottish schools and 1 in the Autumn for schools in the South and Wales.

Contact: Anna Swallow

Email: annaswallow@cragrats.com

Web: www.baesystems.com/education

Sc OPW Physical Processes

Sc4, 1a-h, 4a Motivation

Ma Broad Aspects

Te I&D Designing and Making

1a-e, 2a-f, 4ab, 5a-c

ICT Broad Aspects

Positive Contribution ECM4

Making Most of Abilities 1d, 2a,b

Enterprise Skills 4d, 5b

Enrichment and extension

Resources for Projects Clubs

Nuffield Foundation Primary D&T

Type: Curriculum support

Age range 5 – 11

This curriculum development project has produced a set of teacher materials, primary solutions in design & technology, that can be purchased at low cost from the Design & Technology Association. The pack includes a CD-ROM that contains 24 units of work, a teacher guide and a sample unit of work. The units of work are also available free of charge from the project website which also contains a showcase of pupils work and a comprehensive range of tutorials to support the teaching of the units. The approach and materials were extensively evaluated and validated during development by an independent research team from the Open University led by Professor Patricia Murphy. The project works closely with the Design & Technology Association, DCSF and QCA. The site and primary solutions pack cover both Key Stage 1 and Key Stage 2 curricula (England).

Contact: Maja Melendez, Nuffield Curriculum Centre

Tel: 020 7636 6776

Email mmelendez@nuffieldfoundation.org

Web: www.primarydandt.org

Sc Broad Aspects

Ma Broad Aspects

Te 1a-e, 2a-e, 4a-d, 5abc

ICT Control CAD/CAM

Enjoy and Achieve ECM3, 4

Active Role as Citizens 2a, h

Enterprise Skills 4d, 4, 5c

Development of Imagination

Practical Thought

Communication Skills and aspects of

Key Stage 2 and 3 NC

Imagineering Clubs

Type: Club

Age range: 8 – 12

Imagineering Junior Engineering Clubs are aimed at encouraging children of Primary School age to become the next generation of Engineers and Scientists. In these Clubs, children are helped to make working models from a series of kits. As well as practical skills, through their natural curiosity, they gain an understanding of how their models work and of engineering and science in general. A typical club will involve 12 children, girls and boys, with mixed skills and backgrounds making their own working model which they can take home when finished. The club will be led by two engineer partner tutors with assistance from a teacher and parent.

Contact: Joy Smith at Imagineering Foundation

Tel: 01562 631466

Email: joy.jcm@btinternet.com

Web: www.imagineeringweb.co.uk

Sc OPW Physical Properties Sc3,2b-e
Ma NMM Broad Aspects
Te P Working with Tools
1bc, 2a,c-f, 3a-c, 4a-d Project
ICT C&A Broad Aspects
Enjoy and Achieve ECM3
Making the Most of Ability 1a-e
Enterprise Skills 4de, 5bc
Teamwork, Clubs WRL, AOTT

Greenpower Goblins

Type: Competition

Age range: 7 – 11

The Greenpower Goblin kit car is designed specifically to offer primary school pupils a chance to get involved in a simple, practical engineering project to build a 'racing car' that embraces many relevant aspects of science and technology. Mainly aimed at Years 5 and 6, the project allows widespread participation by pupils, teachers and parents/carers especially on race days. There is also potential to get the wider community involved, such as local engineering businesses. There is an annual 'Gathering of Goblins' at Goodwood, where each competing member of every team receives a certificate.

Contact: Greenpower
Tel: 01903 715915
Email: info@greenpower.co.uk
Web: www.greenpower.co.uk/racing/goblins.php

Sc Broad Aspects Enhancement
Broad Aspects

Rolls-Royce Science Prize

Type: Competition

Age range: Teachers of all phases

The Rolls-Royce Science Prize is an annual awards programme open to all schools and colleges in the UK and Republic of Ireland. Each year teams of three to six adults are invited to submit ideas for science teaching projects. Entries are taken in three age categories: 3-11, 11-16 and 16-19 with fifty nine schools winning cash prizes of £1000 upwards. Projects ideas can be in any area of science and a free, searchable database of all previous entries is available on-line. The closing date for submissions is the end of February each year. For further information and access to the on-line entry form, please visit the website.

Contact: Vaughan Lewis
Tel: 01332 269381
Email: vaughan.lewis@rolls-royce.com
Web: www.rolls-royce.com/scienceprize

Cool Aeronautics

Type: Event

Age range: 9 – 10

Cool Aeronautics are one-day events organised by the Royal Aeronautical Society to showcase aerospace and aviation to a young audience and show how subjects such as maths, science, ICT and more play a part. Around 90 children attend each event, taking part in educational and fun experiences to apply their knowledge to aerospace challenges. The day starts with three interactive talks giving the children the chance to ask questions and incorporate video, ICT, kit demonstrations etc. During the extended lunch period, children can play in the 'Have-a-go' zone which includes flight simulation games, building paper aeroplane activities, and competitions themed around aerospace. The afternoon consists of three aerospace-themed workshops and the classes rotate through each one.

Contact: Rosalind Azouzi
Tel: 020 7670 4325
Email: rosalind.azouzi@raes.org.uk
Web: www.raes.org.uk/coolaeronautics

Sc OPW Planning, Energy Transfer
2a-ejn, 4a Junior Engineers

Ma Broad Aspects

Te P Planning and Communicating
1a-e, 4a-d

Enjoy and Achieve ECM3

Developing Confidence 1a-e

Enterprise Skills 4de, 5bc

Groupwork Ks2 National Competition

K'Nex Challenge

Type: Competition

Age range: 7 – 11

Sponsored by Hasbro and run by Young Engineers the four tier challenge is open to all primary schools or organisations teaching school years 4, 5 and 6 (or equivalent). The aim of this challenge is to provide primary school pupils with an introduction to the exciting world of engineering and technology. Once registered, schools will be contacted by one of the local organisers who will arrange a suitable date for a school visit. This school level, lower tier session will normally be delivered by a Science and Engineering Ambassador and will include a talk and an opportunity for some practical activities using K'Nex materials. Successful pupils then move onto a local final, then a regional final. A national final is held each year.

Contact: Young Engineers

Tel: 01428 727265

Email: projects@youngeng.org

Web: www.youngeng.org

Sc OMW, OPW Broad Aspects
Projects Motivation

Ma NMM, SPM Broad Aspects
Applications

Te I&D, P, E Broad Aspects Projects

ICT Broad Aspects Applications

Eng Design and Make Unit 2 Projects

Man Assembly Unit 2 Projects

Eng Specialised Learning Level 2 (3)
Sector Related Extended Levels

ICT Specialised Learning Level 2 (3)

Achieve Economic Wellbeing ECM5

Making the Most of Ability 1a-e

Enterprise Skills 1b, 4ef, 5bc, 6a

Clubs, G&T Extending the Able
Promotion of Engineering

Young Engineers Clubs

Type: Club

Age range: 7 – 19

The Young Engineers club network supports over 1,500 active Young Engineer clubs spread across the UK. Clubs run in a wide variety of formats from teacher-run to student led. In some clubs, all of the students work on a single project. In others, several projects of varying complexity are on the go at any one time. Clubs are free to tailor their activities to suit the needs of their members and the resources that they have available. Young Engineers provides guidance on how to establish and sustain a club, where to obtain discounts, an activity bank of suitable activities and a whole host of other useful services. Club achievements are celebrated via the Club of the Year competition and the regional showcases.

Young Engineers also provides a selection of exciting national engineering challenges that aim to stimulate development, team and individual skills.

These include the BAA Challenge and the Royal Navy Challenge for secondary students and the Airbus challenge for both primary and secondary students.

Contact: Young Engineers

Tel: 01428 727265

Email: admin@youngeng.org

Web: www.youngeng.org

whynotchemeng

Type: Curriculum Support

Age range: 8 – 16

whynotchemeng was launched in 2001 by the Institution of Chemical Engineers (IChemE) to raise the profile of science and engineering careers, in particular chemical, biochemical and process engineering, within schools. Since then, *whynotchemeng* has been providing free resources for schools including climate change lesson resources for Key Stages 2, 3 & 4, literature for careers libraries, and posters for science labs. Our careers website at www.whynotchemeng.com contains comprehensive information for students, teachers and parents including real life case studies; Future Life cutting edge research; links to university departments throughout the UK and Worldwide; up to date employer information and company profiles, and live graduate and student blogs.

For more information or to order FREE copies of our careers literature

Contact: Claire Cooke
Tel: 01788 578214
Email: enquiries@icheme.org
Web: www.whynotchemeng.com

Sc Broad Aspects Enhancement
Ma Broad Aspects Enhancement
Te KS1/2 1a-e, 2a-e, 4a-d, 5abc
ICT Control CAD/CAM
Enjoy and Achieve ECM3
Developing Confidence 1a-e
Enterprise Skills 4de
G&T Clubs Resources Motivation

Primary Engineer

Type: Curriculum support and competition

Age range: 5 – 11

Primary Engineer is a complete Primary Liaison project comprising of inset courses and challenge activities delivered nationally through secondary schools working with their family of primary schools and the wider community. Secondary teachers attend a practical two day course designed by primary practitioners, based on the work of David Jinks, which they deliver to primary teachers. Printed books and CD-ROM based resources are provided for all teachers to support the course and classroom content. Challenge activities at Local, Regional and National levels for Key Stage 1 and 2 are aligned to the NC and celebrate both pupils' and teachers' work which also enable and support Design Technology networks that facilitate Key Stage 2-3 transition. Links to the General Teaching Councils CPD recognition programme, CREST*Investigators and Industry all form part of the wider value of the project.

Contact: Susan Scurlock
Tel: 01254 720650
Email: info@primaryengineer.com
Web: www.primaryengineer.com

Technology Alliance Wales (TAW)

Type: Curriculum support

Age range: 7 – 19

An organisation comprising representatives from industry, education and the Welsh Assembly Government that exists to enrich and enhance technology education. It uses four training centres across Wales to introduce new initiatives through training programmes and seminars. TAW has supported and pioneered the use of new technologies in schools to improve the quality of technology education in Wales and to encourage pupils to enter our engineering, manufacturing and technological industries.

Contact: Bob Cater

Email: Tawwaterton@aol.com

Web: www.waterton.co.uk

The Industrial Trust

Type: Industry link

Age range: 8– 21

The Industrial Trust provides educational events in the work place and other locations for groups of young people aged 8 to 21 and their teachers. The Trust uses strong links with companies to provide focused events that make learning interesting, demonstrate relevance to future careers, and provide useful career information. Teachers are relieved of much of the burden of finding suitable locations and the making administrative arrangements for this form of work related learning. The events can be themed for different educational purposes – curriculum learning (e.g. business, engineering, environment, science, technology, etc), introductions to the world of work, apprenticeship based careers, and opportunities in higher education. Tens of thousands of young people and teachers benefit from these events each year with a high level of satisfaction being expressed in post-event feedback.

Contact: John Gibbs-Newton

Tel: 01949 850750 or 07971 625612

Email: john.newton@industrialtrust.org.uk

Web: www.industrialtrust.org.uk

Sc Broad Aspects

Ma Broad Aspects

Te 1a-e, 2a-e, 4a-d, 5abc

ICT Control CAD/CAM

Enjoy and Achieve ECM3, 4

Active Role as Citizens 2a, h

Enterprise Skills 4d, 4, 5c

Development of Imagination

Practical Thought

Communication Skills

Imagineering Fairs

Type: Event

Age range: 8 – 16

The Imagineering Fairs are major annual events, consisting of stands with fun, interactive projects for young people (and their parents) provided by large and small manufacturers, universities, colleges, schools and institutions.

Contact: Joy Smith at the Imagineering Foundation.

Tel: 01562 631466

Email: joy.jcm@btinternet.com

Web: www.imagineeringweb.co.uk

Secondary

Sc OMW, OPW Broad Aspects
Projects Motivation

Ma NMM, SPM Broad Aspects
Applications

Te I&D, P, E Broad Aspects Projects

ICT Broad Aspects Applications

Eng Design and Make Unit 2 Projects

Man Assembly Unit 2 Projects

Eng Specialised Learning Level 2 (3)
Sector Related Extended Levels

ICT Specialised Learning Level 2 (3)
Achieve Economic Wellbeing ECM5

Making the Most of Ability 1a-e

Enterprise Skills 1b, 4ef, 5bc, 6a
Clubs, G&T Extending the Able
Promotion of Engineering

Young Engineers Clubs

Type: Club

Age range: 7 – 19

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Sc Broad Aspects

Ma Broad Aspects

Te 1a-e, 2a-e, 4a-d, 5abc

ICT Control CAD/CAM

Enjoy and Achieve ECM3, 4

Active Role as Citizens 2a, h

Enterprise Skills 4d, 4, 5c

Development of Imagination

Practical Thought

Communication Skills

Sc OPW Physical World
Mechanisms Motivation
Ma NMM Broad Aspects
Te I&D Systems and Control
2a, 5c, 6cd, 8d
ICT C&M Control 1c, 2cd, 3ad, 5bce
Eng Robotics Unit2
Man Robotics Unit 2
Eng Sector Related Learning
Functional Skills
ICT Generic Learning
Functional Skills
Enjoy and Achieve ECM3
Making the Most of Ability 1a-e, 2abh
Enterprise Skills 4de,5bc
Clubs And Competitions
KS4 Engagement

Sc Planning and Presenting
Sc1a, 2af Sc4 1a, 2a
Te Mechanisms, Testing 2a, 5c, 6cd, 8d
ICT C&P,C&M Programming
1c, 2cd, 3ad, 4ad, 5bce, 6ac
Eng Robotics Introduction
Man Robotics Introduction
Eng Robotics-Sector Based
Functional Skills
ICT Programming-Sector Based
Functional Skills
Enjoy and Achieve ECM3
Developing Confidence 1a-e
Enterprise Skills 4e, 5bc
Clubs, Teamwork, Presentation
International Co-Operation Motivation

Sc OPW Physical Processes
Sc1, 2f Sc4, 1a2a
Ma Broad Aspects
Te I&D Structures, Levers, Gears
2a, 5c, 6c, 6d, 8d
ICT Control, Programming
1c, 2cd, 3ad, 4ad, 5bce, 6ac
ECM3
Making Most of Ability 1a-c
Applied And Vocational 4e,5b,5c
G&T, Teamwork International
Competition Ks4 Engagement

LEGO MINDSTORMS

Type: Club

Age range: 8 to 16+ Years

Robotics is a popular and effective way for teachers to cover important areas of their Science, Technology, Engineering and Maths curricula and the LEGO® MINDSTORMS® for Schools series is tailor-made for classroom and after-school club use. It includes construction sets, programming tools and activity packs. The sets are for groups of 2 to 3 children working together in a hands-on, problem solving way. Youngsters are presented with challenges that they must solve together. The activity packs introduce them to real-life applications of automated technology and provide them with the skills they need to come up with their own solutions to problems. Activity materials are only available from a number of educational suppliers. In addition, the UK also has two LEGO MINDSTORMS Centres: one at LEGOLAND in Windsor and the other at W5 in Northern Ireland.

Contact: Linda Watson (Legoland Windsor)

Email: linda.watson@legoland.co.uk

Contact: Anke Jongen (W5)

Email: ankejongen@w5online.co.uk

Web: www.lego.com/eng/education/mindstorms

FIRST LEGO League

Type: Competition

Age range: 9 – 16

A nation-wide programme for primary and secondary children that combines hands-on, interactive robotics activities with a sports-like atmosphere using the LEGO® MINDSTORMS® NXT, RCX or Robotics Invention System. Teams consist of up to 10 players with the focus on team building, problem solving, creativity, and analytical thinking. Teams face an annual challenge emulating a real world event or situation and must undertake a Research Project and design, build, programme and test a fully autonomous robot capable of accomplishing the challenge in only eight weeks.

Contact: First Hand Technology

Email: info@firsthandtechnology.org.uk

Web: www.firsthandtechnology.org.uk

RoboFesta-UK

Type: Industry link

Age range: 7 – 16+

RoboFesta-UK is an educational robotics network open to individuals and organisations involved with hands-on robotics activities. These events may take place anywhere, such as in schools or after-school clubs, at hands-on science centres or at family learning events. The network was established to help co-ordinate robotics related events and competitions, and provide information, resources and support to everyone involved with hands-on robotics activities.

Contact: Ashley Green (UK Chair RoboFesta)

Email: a.a.green@open.ac.uk

Web: www.robofesta-uk.org

Sc Enhancement

Eng Project Unit 2

Man Project Unit 2

Eng Principal Learning
Project Level 2

ICT Principal Learning
Project Level 2

Achieve Economic Well-Being ECM5

Enjoy and Achieve 1a-e

Applied and Vocational 4e,5bc

Sc OPW Physics Motivation

Ma NMM Measuring Relevance

Te I&D, P,E Designing and Making
1a-g, 2a-e, 4a-e, 5a-g Motivation

ICT C&M Control CAD Relevance

Eng Electronics, Mechanisms
UNIT 2 D&M, T&E Motivation

Man Assembly Systems UNIT 1, 2

Eng Electronics/Mechanisms PL, SR

ICT Control PL,SR

Applied and Vocational 4e, 5bc

Developing Confidence 1a-e

Enterprise Activities/Es 4de

Teamwork,Communication Skills,
Motivation KS4 Engagement

INPUT

Type: Industry link and curriculum support

Age range: 9 – 19

INPUT (Industry Projects Understanding Technology) projects provide an interesting insight into many areas of technology, and link industry and education in exciting ways. The projects have been developed for a wide age range and can be adapted to suit a wide range of abilities. Projects varying in duration from 1–5 hours are available. For primary students, the projects usually last around an hour, but a 2–3 hour (half day) format is often used. Projects can be tailored to suit the requirements of sponsoring companies, venues or specific curriculum needs.

Contact: John Allen, INPUT National

Tel: 07785 236052

Email: jallen@btinternet.com

Web: www.input.uk.com

TrackNAVCHALLENGE

Type: Competition

Age range: 14 - 18

The TrackNAVCHALLENGE is aimed mainly at students in key stage 4 and 5 and tasks them with designing and building a radio controlled, four-wheel drive model vehicle that emulates the all-terrain capabilities of a Land Rover.

TrackNAVCHALLENGE can be undertaken by groups of 4-6 students in lessons - such as GCSE engineering, manufacturing and design and technology - or as an extra-curricular activity such as a Young Engineers club. OCR and AQA examination boards recognise TrackNAVCHALLENGE as supporting their relevant GCSE subjects. The vehicle must meet the specification devised by Land Rover designers and engineers in partnership with educational specialists.

Registration opens in the Autumn term. Please note that registration is only open to teachers, college lecturers, scout and guide leaders and youth club leaders. The regional heats take place at the end of June with the national final at the start of July.

As well as the chance to gain national recognition, there is plenty for the students to learn. TrackNAVCHALLENGE provides young people with a practical project that stimulates interest in, and experience of engineering with a real experience of the design process. In addition, it develops effective and efficient use of key skills in communication, numeracy, ICT and other areas.

Contact: Ruth Martin

Tel: 01926 648299

Email: Tracknav@landrover.com

Web: www.tracknavchallenge.co.uk

ICT Enhancement Motivation

ICT Functional Skills

Enjoy and Achieve ECM3

Developing Confidence 1a-e

Enterprise Skills 4de,5bc

Girls Achievement KS4 Engagement

Sc OPW Physical Processes

7ij, 8ij, Sc4 1a-h Motivation

Ma NMM Application of Number

Functional Skills Broad Aspects

Tech I&D, P Design, Electronics, Mechanisms 1a-g, 2a-e, 4a-e, 5a-g, 6a Engagement

ICT C&M Data Logging Functional Skills Broad Aspects Applications

Eng QCA Approved Project Unit 2

Man QCA Approved Project (Assembly) Unit2

ENG Employer Led Practical Assignment, Sector Specific Project Level 2 (3)

Achieve Economic Wellbeing ECM5

Making Most of Ability 1a-e

Applied and Vocational 4e, 5bc

Ks4, 14-19 Engagement, Clubs

WRL, AOTT Boys, Motivation

Computer Clubs 4 Girls

Type: Club

Age range: 10 – 14

Computer Clubs for Girls (CC4G) is an innovative, award-winning initiative created by 'e-skills UK' and funded by DfES. CC4G raises the standard of girls' ICT skills while transforming their attitudes to careers in IT. Popular interests such as music, fashion, dance and celebrity have been combined with elements of primary and secondary ICT curricula to deliver an engaging and fun approach.

Contact: CC4G

Web: www.cc4g.net

Greenpower F24

Type: Competition

Age range: 11– 16

For this Greenpower initiative, a special specification for an electric car is issued to secondary schools along with a 24 volt electric motor and a set of four 12 volt lead/acid batteries. Cars are designed and built within the schools with the help of teachers, co-opted engineers, parents and sponsoring companies. They then compete in a number of Greenpower run *marathon and sprint* events throughout the country, using well known motor racing circuits.

Contact: Emma Tyler

Tel: 01903 715915

Email: info@greenpower.co.uk

Web: www.greenpower.co.uk/racing/formula24.php

The Industrial Trust

Type: Industry link

Age range: 8– 21

The Industrial Trust provides educational events in the work place and other locations for groups of young people aged 8 to 21 and their teachers. The Trust uses strong links with companies to provide focused events that make learning interesting, demonstrate relevance to future careers, and provide useful career information. Teachers are relieved of much of the burden of finding suitable locations and making administrative arrangements for this form of work related learning. The events can be themed for different educational purposes – curriculum learning (e.g. business, engineering, environment, science, technology, etc), introductions to the world of work, apprenticeship based careers, and opportunities in higher education. Tens of thousands of young people and teachers benefit from these events each year with a high level of satisfaction being expressed in post-event feedback.

Contact: John Gibbs-Newton

Tel: 01949 850750 or 07971 625612

Email: john.newton@industrialtrust.org.uk

Web: www.industrialtrust.org.uk

Nuffield Foundation Secondary D&T

Type: Curriculum support

Age range 11 – 16+

This curriculum development project devised the approach to teaching and learning design & technology that was incorporated into the National Curriculum orders for the subject in England. The project has produced a wide range of curriculum materials for both teachers and pupils that are available free of charge from the project website. The approach and materials were extensively evaluated and validated during development by an independent research team from the Open University led by Professor Patricia Murphey. The project works closely with the Design & Technology Association, DCSF and QCA. The site and materials cover both National Curriculum Key Stage 3 and Key Stage 4 curricula.

Contact: Maja Melendez, Nuffield Curriculum Centre

Tel: 020 7636 6776

Email: mmelendez@nuffieldfoundation.org

Web: www.secondarydandt.org

The Nuffield bursary scheme offers up to 1000 funded places a year, so that post 16 students across the UK can get an insight into the world of science, technology, engineering and maths. For further information please see the web site www.nuffieldfoundation.org/scb or contact Jo Oladejo on 020 7636 4612.

National Teaching and Learning Change Programme: Engineering

Type: Curriculum support

Age range 14 – 19

This suite of resources aims to facilitate and support teachers and learners working together to plan learning in ways which increasingly enable learners to become 'expert learners' in engineering. Resources are developed (available online in March 2008) to complement the work of the Subject Learning Coaches and to inspire teachers and trainers to embrace the philosophy of the National Teaching and Learning Change Programme. They are devised to be used as stand alone resources and as tools within programmes. The resources will be accessible through the Excellence Gateway and will support increasing personalisation for learners.

Contact: Andre Mostert

Tel: 020 7939 7623

Email: andremostert@bdpmedia.com

Web: www.bdplearning.com

Sc OPW Physical Processes 1a-h, 7j, 8j, 9l, 9m Applications

Ma NMM HT GCSE, KS3 FWK 48, 51, 2h11, 2h2b, 2h2f, 2h3c, m.o, 2h4a Motivation

Te I&D, P PCB Design and Make CNC, Quality, KS3 1. 1b,c; 2c; 3n, o, p, q, 4g; KS4 coursework in a range of courses

ICT Control Designing with CAD Products

Eng Control and Electricity Unit 2

Man Production Processes Unit 1

Eng Additional and Specialised Project Level 2 (3)

ICT Additional and Specialised Project Level 2 (3)

Achieve Economic Wellbeing ECM4

Confidence/Responsibility 1d

Teacher Development 5a, 6a, ECT Awards

G&T Clubs, KS 4 Engagement Raising Standards

Sc OPW Physics 7ljk, 9l Motivation

Ma NMM, SPM Higher Tier Framework 2hlm, h3gl, mt, h5a Relevance

Te I&D Design and Make 1acfgh, 2a-e, 3b, 4b, c, 5a-f, 6a-c Ks4 Engagement

ICT C&M 3D Design CAD

Eng Mechanical Processes Unit 2

Man Developing Products Unit 1

Eng Additional and Specialised S&D, M, PS

Enjoy and Achieve ECM3, 5

Developing Confidence 1d

Applied and Vocational 4e, 5bc

G&T Clubs, Boys Achievement, WRL 14-19 Engagement

Electronics in Schools Strategy

Type: Curriculum support

Age range 11 – 16+

The electronics in schools strategy (EISS) aims to raise standards in electronics and communications technology learning and teaching and positively influence school improvement by engaging more pupils in learning about electronics and its applications. It also aims to transform teachers' expertise (and thereby pupils' learning) by providing high quality post graduate professional development, associated resources and the time to develop professional knowledge. The approach to professional development devised by EISS was extensively evaluated and validated during development by an independent research team from the Open University led by Professor Patricia Murphy. This initiative is managed by the Design & Technology Association and works closely with the DCSF, IET and TDA.

Contact: Sheila Newman at the Design & Technology Association

Tel: 01789 473909

Email: sheila@data.org.uk

Web: www.electronicsinschools.org

Formula Schools

Type: Competition

Age range: 11 – 16 +

A motorsports engineering concept that asks teams to work to a deadline to complete a challenge ranging from performance engineering to team marketing strategies. School teams link with a technology based company to design, build, and race their own bio-fuel or electrically powered, radio-controlled cars. All the hardware to produce two 'starter' chassis is supplied and schools then enter their final solution at the annual Race Day event to score points in categories including: power-train and chassis; body and aerodynamics; teamwork; and driving.

Contact: Rob Austin

Tel: 01869 819582

Email: info@formulaschools.com

Web: www.formulaschools.com

Sc OPW Physical Processes

Sc1, 2f Sc4, 1a2a

Ma Broad Aspects

Te I&D Structures, Levers, Gears

2a, 5c, 6c, 6d, 8d

ICT Control, Programming

1c, 2cd, 3ad, 4ad, 5bce, 6ac

ECM3

Making Most of Ability 1a-c

Applied And Vocational 4e,5b,5c

G&T, Teamwork International

Competition Ks4 Engagement

Sc Physical processes 7j,k,9i,k,l

Ma Higher tier GCSE 2Hm, H3g, l, m, t, H5a, b, d, H6f

Te Industrial practices

Design,graphics,textiles 1a-h, 2bcde, 3a-c, 4a-c

ICT CNC/CAD/speedstep Solid edge, pro-desktop

Eng Machining with CAM Unit 2

Man Batch production Unit 2

Eng Additional and specialised CAD/CAM, quality control

ICT Additional and specialised CAD, spreadsheets, speedstep

Economic well being ECM5

Working in teams 2a,4a

Applied and vocational 4e,5b,c

Gifted and talented Clubs,14-19 Engagement

RoboCupJunior UK

Type: Competition

Age range: 7 – 16+

RoboCupJunior is one of the activities offered as part of RoboFesta-UK, the UK arm of international robotics movement RoboFesta, designed to promote science, technology, engineering and mathematics through robotics activities. Teams of pupils design and build robots to perform specific tasks such as dancing, rescuing and playing football. The competition begins with regional heats and culminates in an annual international final.

Contact: Ashley Green (UK Chair RoboFesta)

Email: a.a.green@open.ac.uk

Web: www.rcj-uk.org

F1 in Schools

Type: Competition

Age range: 11 – 18

Students are given a brief to design a model CO₂-powered F1 Car of the future using a CAD (Computer Aided Design) package. These are then produced on a Computer Numerical Control (CNC) machine. Students are required to test their designs before attending a regional final, either in school or at their local manufacturing/test/race centre. Schools without a manufacturing capability can link up to a local manufacturing centre. The teams compete regionally to win a place at the national final. Overall winners of the championship season go on to represent the UK and compete at international level.

Contact: F1 in Schools

Tel: 020 7344 8449

Email: contactus@f1inschools.co.uk

Web: www.f1inschools.co.uk

Young Engineer For Britain

Type: Competition

Age range: 11 – 18

The Young Engineer for Britain competition is a national celebration of the best creative projects in the country from students aged 11– 18 providing both a regional and national showcase for engineering, technology and design achievement. Young Engineers challenges students, both as individuals or in a team, to use their imagination to create, design and develop an original idea for a commercially viable device or system that meets a useful everyday need they have identified.

Contact: Young Engineers

Tel: 01428 727265

Email: admin@youngeng.org

Web: www.youngeng.org

Sc OPW, OMW, OLW Planning, Research, Evidence

2b-efjno Enhancement

Ma NMM, SPM Application of Number Motivation

Te Planning, Communicating Designs,

1a-h,2bcde,3a-c,4a-c

ICT Presenting, Recording Data

Eng Practical Projects Unit 2

Man Projects Unit2

Eng Principal Learning Sector Led Projects

ICT PL SLP

Con PL SLP

Enjoy And Achieve ECM3,4

Developing Confidence 1a-e

Enterprise Skills 4de,5a

G&T Motivation Extending Research

BA (British Association for the Advancement of Science) CREST Award

Type: Award scheme

Age range: 11 – 19 (three categories)

This is the BA Celebrating CREativity in Science and Technology (CREST) scheme for secondary pupils. It is a nationally recognised accreditation scheme for project work in the fields of science and technology. BA CREST awards encourage students to develop their scientific curiosity, problem-solving and communication skills. It facilitates links between schools and industry or higher education through mentoring and enables students of all abilities to explore real scientific, engineering and technological problems for themselves and promotes work-related learning.

BA CREST awards are available in two subject areas - Science or Technology and at three levels: BRONZE (involving around 10 hours of project work and typically for ages 11-14); SILVER (involving 40 hours of project work, typically for students aged 14-16 and often linking with industry); and GOLD (with 100 hours of project work and typically for students aged 16+).

Contact: The BA's Young People's Programme

Tel: 020 7019 4943

Email: crest@the-ba.net

Web: www.the-ba.net

whynotchemeng

Type: Curriculum Support

Age range: 8 – 18

whynotchemeng was launched in 2001 by the Institution of Chemical Engineers (IChemE) to raise the profile of science and engineering careers, in particular chemical, biochemical and process engineering, within schools. Since then, *whynotchemeng* has been providing free resources for schools including climate change lesson resources for Key Stages 2, 3 & 4, literature for careers libraries, and posters for science labs. Our careers website at www.whynotchemeng.com contains comprehensive information for students, teachers and parents including real life case studies; Future Life cutting edge research; links to university departments throughout the UK and Worldwide; up to date employer information and company profiles, and live graduate, engineer and student blogs.

For more information or to order FREE copies of our careers literature

Contact: Claire Cooke

Tel: 01788 578214

Email: enquiries@icheme.org

Web: www.whynotchemeng.com

Sc Broad Aspects
Ma Broad Aspects
Te 1a-e, 2a-e, 4a-d, 5abc
ICT Control CAD/CAM

Enjoy and Achieve ECM3,4
Active Role as Citizens 2a,h
Enterprise skills 4d,4,5c
Development of Imagination
Practical Thought
Communication Skills

Sc OPW Physics Enhancement
Ma SPW, NMM Application of
Number Enhancement
Te P, E Electronics, Designing 1a-e,
2a-e, Enhancement
ICT C&M Control
Enhancement
Enjoy and Achieve ECM3,4
Group Work and Identity 2ag, 4a
Enterprise Skills 4de, 5b
G&T Clubs, Wrl KS4 Engagement

BA (British Association for the Advancement of Science) CREST Fair

Type: Event

Age range: 11 – 19

Celebrating creativity in Science and Technology, the annual BA CREST Science Fair is a culmination of regional Fairs that exhibit outstanding research projects by young people. The fair brings together the regional winners of BA CREST Awards (see above) and other self nominated students.

Contact: The BA Young People's Programme
Tel: 020 7019 4943
Email: ypp@the-ba.net
Web: www.the-ba.net

Smallpeice Trust STEM enrichment days

Type: In-school event and curriculum support

Age range: 12 – 14

The Smallpeice Trust visits schools for short introduction sessions designed for Years 8 and 9 students to enhance their understanding of, and aptitude for, problem solving, creativity, design, and engineering. Easy to organise, they are inspiring and fun for everyone taking part. Groups of 50 students work together in small teams on 'design and make' projects to improve their creative thinking and problem-solving skills. For students in the process of choosing Level 2 options, STEM day activities are especially geared to run as a complement to the National Curriculum in science, technology, engineering and maths. We will work with you to decide on the most suitable project work for your students. The activities are varied and range from designing, testing, and refining motorcars powered by super-capacitors to electromagnetic cranes, wind turbines, and bridges. We will fit the course around whatever rooms and equipment are available. Half-day and full-day options are available with times flexible to suit normal school hours.

Contact: Hassana Begum
Tel: 01926 333200
Email: gen@smallpeicetrust.org.uk
Web: www.smallpeicetrust.org.uk

IOM3 Schools Affiliate Scheme (SAS)

Type Curriculum Support

Age range: 11– 18

The SAS was set up in 1999 to support the teaching of the materials, minerals and mining related topics in the Science and Technology curricula and to raise awareness of careers in the fields of materials, minerals and mining engineering. The Institute of Materials, Minerals and Mining has expertise in a vast number of areas covering the complete materials life cycle, from exploration and extraction to processing and manufacture and finally reuse, recycling and disposal. The aims of the scheme are fulfilled by the provision of teaching resources, school visits (presentations and hands-on activities adaptable to suit a wide range of abilities), journals, newsletters and a Materials Information Service.

Contact: Anita Horton
Tel: 01302 320486
Email: anita.horton@iom3.org
Web: www.iom3.org/education/sas.htm

Sc OPW Physical World
Enhancement Prepare for Higher
Education

Ma NMM Use Of Number
Enhancement PRHE

Te P Design Enhancement PRHE

ICT Control and Researching
Enhancement PRHE

Eng Vocational Pathways Informed
Choices

Eng Vocational Pathways Informed
Choices

Enjoy and Achieve ECM3,5

Developing Confidence 1a-e

Extended Schooling 5bc

Residential, G&T WRL Extend the
Able.

Smallpeice Trust 4-day residential courses

Type: Industry link and curriculum support

Age range: 13 – 18

The Smallpeice Trust runs highly subsidised 4-day residential courses across the country providing young people with hands-on engineering time that could change their future. These courses cover a range of projects and skills and take place at universities and other secure venues throughout the UK. All courses are designed to take students interest in engineering a step further with emphasis on creativity, design and team working. Engineering Experience is a foundation course for Year 9 students which teams students with young engineers, handpicked from industry, who are there to guide students through every stage of product development, from initial concepts to final testing. Other courses include Electronic Engineering, Marine Technology, Materials Technology, Motorsports Engineering and Robotic Engineering. Projects and workshops are based on real-life scenarios and engineering professionals are on hand to offer advice and guidance. During the courses, students will have access to material and equipment that may not be available in school, giving them a unique opportunity to build on their existing knowledge. Students will gain experience of university and industry that will accelerate their personal development and their potential for greater academic achievement. They also find the courses very enjoyable. There is also a fully supervised social programme in the evenings ranging from go-karting to watching the latest films. The final evening usually culminates in a formal dinner and disco to celebrate the achievements of the course before saying goodbye to new friends the following day.

Contact: Hassana Begum

Tel: 01926 333200

Email: gen@smallpeicetrust.org.uk

Web www.smallpeicetrust.org.uk

Sc OPW Curriculum Enhancement
Motor Business Motivation

Ma NMM Curriculum Enhancement
Careers

Te P Curriculum Enhancement

ICT C&M Curriculum Enhancement

Eng Help With Choices

Man Help With Choices

Eng Specific Learning Sector Based
Economic Well Being ECM5

Positive Achievement 5bc

Enterprise Skills 6a,4de,5bc

Specific Career Information

Youth Engineering Show

Type: Event

Age range: 11 – 14

This lively one-hour programme covers the role of engineers in creating the world around us, from bridges, ships and software to cars, mountain bikes and mobile phones. Presented by Michael Rodd and Michaela Hyde of Tomorrow's World, the show usually runs over several days in one location, with three presentations on each day for local schools. In 2007, 82% of participants rated the show 'excellent' or 'good' and 55% said they were now more likely to choose an engineering career. The star of the show is Honda's amazing ASIMO robot, the inspiring achievement of a team of mechanical, electronic and software engineers.

Contact: Network Events

Tel: 023 9263 1331

Email: linda@networkevents.ltd.uk

Web: www.learninggrid.co.uk/yes

Sc OPW Future Thought
Ma NMM Application Of Number
Te I&D Design 1a-e,2cde,3a,4a
ICT S&R FT

Eng KS3/4 Transfer

Man KS3/4 Transfer

Con KS3/4 Transfer

Eng KS3/4 Transfer

ICT KS3/4 Transfer

Con KS3/4 Transfer

Enjoy And Achieve ECM3, 4, 5

Developing Confidence 1a-e

Enterprise/Teacher Dev. 4de, 5a, 6a

G&T, Teamwork, Communication Skills
Enterprise

Sc Broad Aspects Enhancement

Broad Aspects

Sc Data, evidence, theories and explanations: 1a Practical and enquiry skills: 2b Communication skills: 3a-c Applications and implications: 4a,b Organisms and health: 5e Chemical and material behaviour: 6a-c Energy, electricity and radiations: 7a,b Environment, earth and universe: 8a,b
Ma (Foundation) Number and algebra: 1a-c, k; 2a,e; 3a,c,e,n; 4a-d Handling data: 1a-h; 2c,d; 3b; 5a,b,j,k Breadth of study: 1a-c, f KS4 Maths (Higher) Ma2 - Number and algebra: 1a-g; 2a,c-e; 3a,c,e,j,o-q, s Ma4 - Handling data: 1a-d; 2b,d; 3b; 5a, b Breadth of study: 1a-c, f

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Young Foresight

Type: Curriculum support

Age range 13 – 14

Young Foresight is an educational initiative for design & technology within the English and Welsh National Curriculum. It is primarily designed for pupils in Year 9 but can be used with older and younger pupils. Over a term, pupils work in teams to design future products and services, developing their own design briefs and specifications. Young Foresight has been included in the Key Stage 3 strategy for design & technology. The approach and materials were extensively evaluated and validated during development by an independent research team from the Open University led by Professor Patricia Murphy.

Contact: Peter Waller, YF (Education & Training) Ltd.

Tel: 020 7793 1882

Email: info@youngforesight.org

Web: www.youngforesight.org

Rolls-Royce Science Prize

Type: Competition

Age range: Teachers of all phases

The Rolls-Royce Science Prize is an annual awards programme open to all schools and colleges in the UK and Republic of Ireland. Each year teams of three to six adults are invited to submit ideas for science teaching projects. Entries are taken in three age categories: 3-11, 11-16 and 16-19 with fifty nine schools winning cash prizes of £1000 upwards. Projects ideas can be in any area of science and a free, searchable database of all previous entries is available on-line. The closing date for submissions is the end of February each year. For further information and access to the on-line entry form, please visit the website.

Contact: Vaughan Lewis

Tel: 01332 269381

Email: vaughan.lewis@rolls-royce.com

Web: www.rolls-royce.com/scienceprize

Enterprising Science, supported by BP

Type: Curriculum support, teacher training, in-school roadshow

Age range: 14-16 (students), all science teachers

Enterprising Science is designed to inspire teachers and students in the study of energy, environment, leadership and business skills, targeting the specific subject areas of science, mathematics and enterprise. It features two components: a 'Talk Science' teacher master class focusing on debate and dialogue around contemporary science topics, developed and delivered regionally by the Science Museum; and an inspirational out-of-classroom learning experience delivered in each participating school called the 'Carbon Challenge', themed around carbon reduction and climate change.

Contact: BP Educational Service

Tel: 0870 333 0428

Email: info@enterprisingscience.com

Web: www.enterprisingscience.com

Sc OPW Physics Motivation
Ma NMM Measuring Relevance
Te I&D, P,E Designing and Making
 1a-g, 2a-e, 4a-e, 5a-g Motivation
ICT C&M Control CAD Relevance
Eng Electronics, Mechanisms
 UNIT 2 D&M, T&E Motivation
Man Assembly Systems UNIT 1, 2
Eng Electronics/Mechanisms PL, SR
ICT Control PL,SR
 Applied and Vocational 4e, 5bc
 Developing Confidence 1a-e
 Enterprise Activities/Es 4de
 Teamwork,Communication Skills,
 Motivation KS4 Engagement

Sc OPW Equipment,Projects
 Resources
Ma NMM Using Maths In Projects
 Resources
Te I&D Enhancing
 Projects/Electronics
 Resources/Project Guidance
ICT C&M Control Equipment
Eng Unit2 Unit2 Resources
Man Unit2 Unit2 Resources
Eng Generic Learning Sector Based
 Resources
ICT Control Sector Based Resources
 Economic Well Being Ecm5
 Developing Confidence 1a-E
 Teacher Development 5a, 6a
 G&T Clubs, KS4 Engagement

4x4 in Schools

Type: Competition

Age range: 14 – 16

Teams of 4–6 young people all from within the 14-16 age group are required to design and build a remotely controlled four wheel drive vehicle that can negotiate a challenging road surface, a range of obstacles and electronic tests, on a model off-road track that emulates the concept of an off-road type vehicle. The challenge is designed to provide a project suitable for GCSE Engineering (Double Award).

Contact: 4x4 in Schools Ltd (c/o Denford Ltd)

Tel: 020 7344 8450

Email: contactus@4x4inschools.co.uk

Web: www.4x4inschools.co.uk

Technology Enhancement Programme (TEP)

Type: Curriculum support

Age range: 14 – 19

TEP is supported by the Gatsby Technical Education Projects and is a registered charity. TEP develops unique and leading edge Design Technology and Engineering curriculum resources. TEP promotes sound teaching and learning, ideas and creativity with an emphasis on supporting and developing the Advanced (Level 3) Diploma in Engineering. We work closely with our member schools and colleges and a wide range of educational and industrial partners. All secondary schools and colleges can benefit through INSET/CPD, popular low cost resources and national conference activities as well as visiting the TEP website at tep.org.uk and through our termly journal TEP News and Views.

Contact: Nick Baldwin

Tel: 01992 709745

Email: nickbaldwin@enterprise.net

Web: www.tep.org.uk

Sc OMW, OPW High Achiever Motivation
Ma NML High Achiever Relevance
Te I&D High Achiever Careers
ICT Using Tech High Achiever Pathways
Economic Well Being ECM 5
Making Most of Ability 1a-e, 5b
Extended Schools/App-Voc` 4e, 5c
G&T Extension Engineering Careers

Sc Broad Aspects
Ma Broad Aspects
Te 1a-e, 2a-e, 4a-d, 5abc
ICT Control CAD/CAM
Enjoy and Achieve ECM3,4
Active Role as Citizens 2a,h
Enterprise skills 4d,4,5c
Development of Imagination
Practical Thought
Communication Skills

Arkwright Scholarships

Type: Industry link

Age range: 15 – 16+

The aim of the Arkwright scheme is to encourage and stimulate high ability 15–16 year old students to take up engineering or technological careers by awarding Scholarships during A levels/Scottish Highers which are funded by industry partners and charitable trusts. Arkwright Scholars pass a rigorous selection process and will be Ambassadors of flourishing design and technology and maths departments in their schools. The scholarships are supported by Industry, Charitable Trusts, Institutions and personal donors and scholars are actively encouraged to develop the partnership with their sponsor to gain work experience, specialist support for their design and technology project or even sponsorship through university.

Contact: Linda Scott
Tel: 01926 333210
Email: enquiries@arkwright.org.uk
Web: www.arkwright.org.uk

The IOP Schools and Colleges Lecture Series

Type: Event

Age range: 14 – 16

The Schools and Colleges Lecture has been delivered by a series of acclaimed physics communicators annually throughout the UK since 1983. The presentation takes the form of an illustrated lecture-demonstration, designed to show school pupils modern applications of physics in a fun and lively way. The tour is set up in collaboration with the Institute's regional branches.

Contact: Joanne Page
Tel: 0207 470 4800
Email: joanne.page@iop.org
Web: www.iop.org

Lab in a Lorry

Type: Event

Age range: 11 – 14

Lab in a Lorry is a fleet of mobile science labs that aim to enthuse the next generation of scientists and engineers by giving young people the opportunity to explore science through a series of hands-on experiments. The labs are staffed by volunteers- practicing scientists and engineers - who help guide visitors through the experiments on board. Lab in a Lorry is a partnership programme between the Institute of Physics, the Offshore Training Foundation and *emda*. The Schlumberger Foundation is founding partner.

Contact: Lab in a Lorry Team, Institute of Physics
Tel: 0207 470 4800
Email: labinalorry@iop.org
Web: www.labinalorry.org.uk

Technology Alliance Wales (TAW)

Type: Curriculum support

Age range: 7 – 19

An organisation comprising representatives from industry, education and the Welsh Assembly Government that exists to enrich and enhance technology education. It uses four training centres across Wales to introduce new initiatives through training programmes and seminars. TAW has supported and pioneered the use of new technologies in schools to improve the quality of technology education in Wales and to encourage pupils to enter our engineering, manufacturing and technological industries.

Contact: Bob Cater

Email: Tawwaterton@aol.com

Web: www.waterton.co.uk

Sc Broad Aspects

Ma Broad Aspects

Te 1a-e, 2a-e, 4a-d, 5abc

ICT Control CAD/CAM

Enjoy and Achieve ECM3, 4

Active Role as Citizens 2a, h

Enterprise Skills 4d, 4, 5c

Development of Imagination

Practical Thought

Communication Skills and aspects of Key Stage 2 and 3 NC

Imagineering Clubs

Type: Club

Age range: 8 – 12

Imagineering Junior Engineering Clubs are aimed at encouraging children of Primary School age to become the next generation of Engineers and Scientists. In these Clubs, children are helped to make working models from a series of kits. As well as practical skills, through their natural curiosity, they gain an understanding of how their models work and of engineering and science in general. A typical club will involve 12 children, girls and boys, with mixed skills and backgrounds making their own working model which they can take home when finished. The club will be led by two engineer partner tutors with assistance from a teacher and parent.

Contact: Joy Smith at Imagineering Foundation

Tel: 01562 631466

Email: joy.jcm@btinternet.com

Web: www.imagineeringweb.co.uk

Te KS3, CAD/CAM 1.1b; 2a,f; 3j; 4g;

KS4 integral part of coursework

ICT C&P, C&M CAD Software

Functional Skills Engineer Skills

Eng Practical Projects Unit 2

Man Practical Projects Unit 2

Con Design, 3D Drawing Unit 1

Eng Principal Learning Sector Led

Con Principal Learning Sector Led

Enjoy and Achieve ECM3

Making Most of Ability 1a-e

Applied and Vocational 4e, 5bc

Skill Enhancement

Teacher Development

CAD/CAM in Schools

Type: Curriculum Support

Age range: 11 – 18

The CAD/CAM in Schools programme was first launched in 1999, offering industry-standard software to secondary schools, 6th form colleges, and to all trainee teachers enrolled on design and technology courses. Pupils are also able to use the software at home. Teachers access the software via a training programme provided by accredited trainers, and receive ongoing advice from a network of support centres and a dedicated website. A main focus of the training is on the pedagogy related to the appropriate use of CAD/CAM within the curriculum. The programme is managed by the Design and Technology Association on behalf of the DCFS.

Contact: Carole Williams at the Design and Technology Association

Tel: 01789 473911

Email: carole@data.org.uk

Web: www.cadinschools.org

Sc KS3: 07G, 07K, 08L, 09I, 09K, 09L
KS4: Sc1 1a-c, 1d, 2a-2s; Sc4 2a, 2c, 2d,
2e, 2f, 2g, 3l, 5c, 5d, 5e

Ma KS3 Ma4 1a-j, 4a KS4 Ma4 1a-j, 4a

ICT KS3: 01, 02, 03, 10
KS4: 1a-b, 2a-d, 3a-b, 5a-e

D & T KS3: 07e, 09c

D & T KS4: 1a-g

Future Flight - Greener by Design

Type: Competition

Age range: 11-19

Future Flight Greener by Design is a free, web-based competition that invites you to design an airliner for 2050 which is both innovative and environmentally friendly. The state-of-the-art website shows you how to design a futuristic airliner in easy steps. See how it performs in terms of cost, greenhouse gas emissions and noise. Design the best future airliner and win by registering for free at www.futureflight.org

Designed by experts at the University of Southampton, in conjunction with Airbus, BAE Systems, Microsoft, Royal Aeronautical Society, amongst others, see what it takes to design tomorrow's airliners.

The free competition runs between July and December and is for youngsters aged 11-19. There are many prizes on offer, from radio-controlled aircraft and flight simulators, to trips to airshows and the Airbus A380 production line.

There are also ready-to-use lesson plans, Key Stage 3 & 4 National Curriculum teaching resources for schools, and even paper planes at www.futureflight.org

Contact: Dr Kenji Takeda University of Southampton

Tel: 023 80594467

Email: competition@futureflight.org

Web: www.futureflight.org

Sc OPW Physical Processes 1a-h,4a
Motivation

Ma NMM Data, Measuring FMK
42-45, 82-87 Application

Te P Electronics, Mechanisms
1g, 2b, 3b, 5a, b, d, e Relevance

ICT C&M Data Handling, Control

Eng Electrical, Electronic UNIT 2

Man Assembly Processes UNIT 1

Eng Generic Learning LEVEL 1 (2)

Enjoy and Achieve ECM3

Confidence & Ability 1b, d

Applied and Vocational 5b, c

G&T Extending the Able KS4
Engagement

Toyota Technology Challenge

Type Competition

Age range: 11– 16

Toyota Manufacturing UK and Rapid Electronics Ltd organise the Toyota Technology Challenge - an educational, fun and affordable school-based national, technology competition for teams aimed at younger secondary school students. There are two categories to the challenge: *Solar Power* and *PIC Microcontroller*. The challenge is to design and build an environmentally friendly model vehicle for a chance to win cash prizes, trophies, certificates and, for the best of the best in each category, a European trip.

Contact: Kelly Everett, Rapid Electronics Ltd

Tel: 01206 751166

Email: toyotachallenge@rapidelec.co.uk

Web: www.rapidonline.com/toyota/

BAE Systems Schools Roadshow

Type: Roadshow

Age range: 9 – 12

BAE Systems is committed to supporting the Science and Design & Technology curricula in schools and to helping inspire young people about careers in Science & Engineering. It has designed a special schools roadshow, which involves a 30 minute piece of theatre followed by a 1 hour practical workshop. The roadshow makes two tours each year, 1 in the Spring for Northern and Scottish schools and 1 in the Autumn for schools in the South and Wales.

Contact: Anna Swallow

Email: annaswallow@cragrats.com

Web: www.baesystems.com/education

ICT Using IT to communicate
 MS Word
Eng Unit 1 topics
Man Unit 1 topics
Eng Employer led assignment
Con Employer led assignment
ICT Employer led assignment
 Economic well being ECM5
 Making the most of ability 2a,
 Applied and vocational 4e,5b,c
 competition
 Gifted and talented
 14-19 Engagement, inspiring writing

Independent – Bosch Technology Horizons Award

Type: Competition

Age range: 14 - 18 and 19 - 24 students

The Independent – Bosch Technology Horizons Award is an essay competition which is now in its third year and challenges young people to express their views on how technology has impacted on society now and in the future. Open to young people in two age categories with attractive cash prizes plus Bosch products for schools and colleges that send in the most entries. Schools have set the essay challenge as coursework or homework in a variety of subjects including English, design and technology, science and PSHE. It has also been used as an extension activity for gifted students. The theme for the 2007/8 essay is: "How is technology and engineering driving change in a country of your choice?"

Teacher notes and application forms can be obtained by emailing Shape the Future or downloading from the website. The winning essays in each category will be printed in The Independent newspaper.

Contact: Dave Rowley, The Royal Academy of Engineering

Tel: 020 7766 0640

Email: shapethefuture@raeng.org.uk

Web: www.independent.co.uk/technologyhorizons

Curriculum links available on the IET Faraday website

The IET Faraday

Type: Curriculum support, competition, events

Age range: 11-16

The IET Faraday informs young people about the world of science, engineering and technology and inspires them to become involved in it. The engagement of young people and teachers is through a programme of specially made films, student challenges, live events, school visits and teaching resources. Resource materials are available free to all schools throughout the year through a high quality, interactive website.

Students will create their own challenge competition entry films and compete for fantastic prizes. The action-packed live FaraDay events are a full day of activities at exciting venues in the UK and will take place during National Science and Engineering Week.

Every year, the IET Faraday explores different aspects of science and engineering to highlight the diversity and excitement of this high technology profession. In 2008 the theme is healthcare technologies. Inspiring role models will reinforce the image of engineering as a worthwhile, interesting and varied career choice, while highlighting its vital contribution to society.

Contact: Education 5-19, The Institution of Engineering and Technology

Email: faraday@theiet.org

Web: www.theiet.org/faraday

Ma 1,2,3,4

Sc 1,2,3,4

Te 1a-e, 2a-e, 4a-d, 5abc

ICT Control CAD/CAM, Broad aspects

Enjoy and Achieve ECM3

Making a positive contribution ECM4

Active Role as Citizens 2a ,h

Developing Confidence 1 a-e

Making the Most of Ability 1 a-e

Enterprise Skills 4de, 5bc

Work related applied learning,
teamwork, project management,
communication skills

Teacher CPD/accreditation

Extended schooling Sc and Eng clubs

Go4SET

Type: Industry link & competition

Age range 12-14

Go4SET (an EDT scheme) links teams of six Year9/S2 pupils and their teacher with companies to offer a 10 week science, engineering and technology (SET) experience. By providing a real and live SET project, Go4SET will raise the pupils' awareness and highlight the exciting future career opportunities in SET.

Work related, project based learning within an industrial context is at the core of the Go4SET experience. Pupils will benefit from personal development education enhancing their powers of creativity and innovation whilst developing all aspects of their communication skills. Go4SET provides a launch event and a celebration and assessment day for each team project. The scheme has a competition format and prizes are awarded in a number of different categories. The majority of pupils will receive British Association CREST (Creativity in Science and Technology) Awards.

Go4SET will empower young people to make informed decisions about their Key Stage 4/Standard Grade options particularly with regard to SET subjects and courses and stimulate their interest in these subjects.

Contact: Go4SET in England

Tel: 01707 393 323 Email: enquiries@go4set.org.uk

Go4SET in Scotland

Tel: 0141 548 4152 Email: scotland@go4set.org.uk

Web: www.go4set.org.uk

WISE Outlook

Type: Industry link

Age range 13-14

The WISE Outlook programme is a three-day programme run at local FE colleges, enabling Year 9 girls to experience engineering firsthand. The girls undertake hands-on engineering projects, work in teams to develop personal awareness and skills, talk to women students and staff and meet young women engineers to find out more about their work and careers.

Contact: Terry Marsh, Director

Tel: 020 3206 0408

Email: info@wisecampaign.org.uk

Web: www.wisecampaign.org.uk

16 Plus

Sc Broad Aspects Enhancement
Broad Aspects

Rolls-Royce Science Prize

Type: Competition

Age range: Teachers of all phases

The Rolls-Royce Science Prize is an annual awards programme open to all schools and colleges in the UK and Republic of Ireland. Each year teams of three to six adults are invited to submit ideas for science teaching projects. Entries are taken in three age categories: 3-11, 11-16 and 16-19 with fifty nine schools winning cash prizes of £1000 upwards.

Projects ideas can be in any area of science and a free, searchable database of all previous entries is available on-line. The closing date for submissions is the end of February each year.

For further information and access to the on-line entry form, please visit the website.

Contact: Vaughan Lewis

Tel: 01332 269381

Email: vaughan.lewis@rolls-royce.com

Web: www.rolls-royce.com/scienceprize

National Teaching and Learning Change Programme: Engineering

Type: Curriculum support

Age range 14 – 19

This suite of resources aims to facilitate and support teachers and learners working together to plan learning in ways which increasingly enable learners to become 'expert learners' in engineering. Resources are developed (available online in March 2008) to complement the work of the Subject Learning Coaches and to inspire teachers and trainers to embrace the philosophy of the National Teaching and Learning Change Programme. They are devised to be used as stand alone resources and as tools within programmes. The resources will be accessible through the Excellence Gateway and will support increasing personalisation for learners.

Contact: Andre Mostert

Tel: 020 7939 7623

Email: andremostert@bdpmedia.com

Web: www.bdplearning.com

Sc Broad Aspects

Ma Broad Aspects

Te Broad Aspects

ICT Broad Aspects

Eng Vocational Pathways Informed Choices Enjoy and Achieve ECM3 Making a positive contribution ECM4 Achieve economic well-being ECM5

Developing Confidence 1a-e

Extended schooling 5bc Residential Realising potential Work related applied learning, Skills for life, teamwork, project management, enterprise, problem solving, creativity & innovation, preparing for higher education Teacher CPD/accreditation

Engineering Education Scheme

Type: Industry link, competition, event

Age range: 16 – 17

The Engineering Education Scheme provides a professional engineer from a company to work with a team of up to four high ability Year 12 students, and their teacher, for 5-6 months on a real engineering problem. The students get experience problem solving, team working, project management, presentation and other key skills. The scheme provides a launch event, a residential university workshop and a celebration and assessment day for each team project. The majority of students will receive British Association CREST (Creativity in Science and Technology) Gold Awards.

In England

Contact: Engineering Education Scheme in England (an EDT scheme)

Tel: 01707 393323

Email: enquiries@thescheme.org.uk

Web: www.thescheme.org.uk

In Wales

Contact: The Administration Manager, Engineering Education Scheme - Wales, Waterton Technology Centre, Bridgend, CF 31 3WT

Tel: 01656 669381

Email : admin@eesw.org.uk

Web : www.eesw.org.uk

In Northern Ireland

Contact: Bill Connor

Tel: 028 9262 7755

Email: bill.connor@sentinus.co.uk

Web: www.sentinus.co.uk

In Scotland

Contact: EDT Scotland

Tel: 0141 548 4152

Sc OPW Physics 7ljk, 9l Motivation

Ma NMM, SPM Higher Tier Framework 2hlm, h3gl, mt, h5a Relevance

Te I&D Design and Make 1acfg, 2a-e, 3b, 4b, c, 5a-f, 6a-c Ks4 Engagement

ICT C&M 3D Design CAD

Eng Mechanical Processes Unit 2

Man Developing Products Unit 1

Eng Additional and Specialised S&D, M, PS

Enjoy and Achieve ECM3, 5

Developing Confidence 1d

Applied and Vocational 4e, 5bc

G&T Clubs, Boys Achievement, WRL 14-19 Engagement

Formula Student

Type: Competition

Age range: 18+

Formula Student is run by the Institution of Mechanical Engineers (IMechE), and supported by companies such as Shell, Honda F1 and Autodesk. Formula Student promotes careers and excellence in engineering, by challenging university students across Europe and beyond to design, build, develop, market and compete as a team with a small single-seater racing car. Teams are formed by recognised academic institutions and team members must be students studying for a recognised qualification or have recently graduated. As well as developing first-rate technical engineering design, development and manufacturing skills, Formula Student competitors learn team working, marketing, project management, budgeting, presentation and many other skills.

Contact: Kate Jones, IMechE

Tel: 020 7973 1287

Email: k_jones@imeche.org.uk

Web: www.imeche.org.uk/formulastudent/

The Year In Industry

Type: Industry link

Age range: 18 +

The Year in Industry provides paid, degree-relevant work placements for students in the year out before or during their degree course. There are opportunities in all branches of engineering, science, computing and business. The Year in Industry placements provide paid, structured and fully supported work experience from which students gain career and personal development, confirm their career choice and prepare for their degree. Students are carefully matched with companies throughout the UK and placements generally last 12 months and follow the academic year. The scheme is supported by top universities and over 250 UK companies take part each year. During the placements, students receive full support from The Year in Industry including free management training and a mentoring service including on-site visits.

Contact: The Year in Industry National Office

Tel: 023 8059 7061

E-Mail: enquiries@yini.org.uk

Web: www.yini.org.uk

Sc OPW Physical World
Enhancement Prepare for Higher
Education

Ma NMM Use Of Number
Enhancement PRHE

Te P Design Enhancement PRHE

ICT Control and Researching
Enhancement PRHE

Eng Vocational Pathways Informed
Choices

Eng Vocational Pathways Informed
Choices

Enjoy and Achieve ECM3,5

Developing Confidence 1a-e

Extended Schooling 5bc

Residential, G&T WRL Extend the
Able.

Smallpeice Trust 4-day residential courses

Type: Industry link

Age range: 16 – 18

The Smallpeice Trust runs highly subsidised 4-day residential courses across the country providing young people with hands-on engineering time that could change their future. These courses cover a range of projects and skills and take place at universities and other secure venues throughout the UK. For the 16 plus age range these include Aerospace Technology, Biomedical Engineering, Nanotechnology, Sustainable Energy, Mining and minerals and Supercomputing in Engineering. These are all designed to help build on the students' interest in engineering and help them meet like-minded people. Students find the challenging experience very enjoyable. Design-and-make projects and workshops are based on real-life scenarios and engineering professionals are on hand to offer advice and guidance. During the courses, students will have access to material and equipment that may not be available in school, giving them a unique opportunity to build on their existing knowledge. There is also a fully supervised social programme in the evenings ranging from sporting activities to watching the latest films. The final evening usually culminates in a formal dinner and disco to celebrate the achievements of the course before saying goodbye to new friends the following day.

Contact: Hassana Begum

Tel: 01926 333200

Email: gen@smallpeicetrust.org.uk

Web: www.smallpeicetrust.org.uk

Sc OPW, OMW, OLW Planning,
Research, Evidence

2b-efjno Enhancement

Ma NMM, SPM Application of
Number Motivation

Te Planning, Communicating
Designs,

1a-h,2bcde,3a-c,4a-c

ICT Presenting, Recording Data

Eng Practical Projects Unit 2

Man Projects Unit2

Eng Principal Learning Sector Led
Projects

ICT PL SLP

Con PL SLP

Enjoy And Achieve ECM3,4

Developing Confidence 1a-e

Enterprise Skills 4de,5a

G&T Motivation Extending Research

BA (British Association for the Advancement of Science) CREST Awards

Type: Awards scheme

The BA CREST (Creativity in Science and Technology) awards is a nationally recognised accreditation scheme for project-based work in STEM. Students aged 16+ completing a STEM project by working with a mentor from industry or higher education can register for a SILVER (40 hours project work) or GOLD (100 hours project work) CREST Award.

Contact: The BA's Young People's Programme

Tel: 0207 019 4943

Email: crest@the-ba.net

Web: www.the-ba.net

Sc OMW, OPW High Achiever
Motivation

Ma NML High Achiever Relevance

Te I&D High Achiever Careers

ICT Using Tech High Achiever
Pathways

Economic Well Being ECM 5

Making Most of Ability 1a-e, 5b

Extended Schools/App-Voc` 4e, 5c

G&T Extension Engineering Careers

Arkwright Scholarships

Type: Industry link

Age range: 15 – 16+

The aim of the Arkwright scheme is to encourage and stimulate high ability 15–16 year old students to take up engineering or technological careers by awarding Scholarships during A levels/Scottish Highers which are funded by industry partners and charitable trusts. Arkwright Scholars pass a rigorous selection process and will be Ambassadors of flourishing design and technology and maths departments in their schools. The scholarships are supported by Industry, Charitable Trusts, Institutions and personal donors and scholars are actively encouraged to develop the partnership with their sponsor to gain work experience, specialist support for their design and technology project or even sponsorship through university.

Contact: Linda Scott

Tel: 01926 333210

Email: enquiries@arkwright.org.uk

Web: www.arkwright.org.uk

Sc KS3: 07G, 07K, 08L, 09I, 09K, 09L
KS4: Sc1 1a-c, 1d, 2a-2s; Sc4 2a, 2c, 2d,
2e, 2f, 2g, 3l, 5c, 5d, 5e

Ma KS3 Ma4 1a-j, 4a KS4 Ma4 1a-j, 4a

ICT KS3: 01, 02, 03, 10

KS4: 1a-b, 2a-d, 3a-b, 5a-e

D & T KS3: 07e, 09c

D & T KS4: 1a-g

Future Flight - Greener by Design

Type: Competition

Age range: 11-19

Future Flight Greener by Design is a free, web-based competition that invites you to design an airliner for 2050 which is both innovative and environmentally friendly. The state-of-the-art website shows you how to design a futuristic airliner in easy steps. See how it performs in terms of cost, greenhouse gas emissions and noise. Design the best future airliner and win by registering for free at www.futureflight.org

Designed by experts at the University of Southampton, in conjunction with Airbus, BAE Systems, Microsoft, Royal Aeronautical Society, amongst others, see what it takes to design tomorrow's airliners.

The free competition runs between July and December and is for youngsters aged 11-19. There are many prizes on offer, from radio-controlled aircraft and flight simulators, to trips to airshows and the Airbus A380 production line.

There are also ready-to-use lesson plans, Key Stage 3 & 4 National Curriculum teaching resources for schools, and even paper planes at www.futureflight.org

Contact: Dr Kenji Takeda University of Southampton

Tel: 023 80594467

Email: competition@futureflight.org

Web: www.futureflight.org

Sc OMW, OPW Broad Aspects
Projects Motivation
Ma NMM, SPM Broad Aspects
Applications
Te I&D, P, E Broad Aspects Projects
ICT Broad Aspects Applications
Eng Design and Make Unit 2 Projects
Man Assembly Unit 2 Projects
Eng Specialised Learning Level 2 (3)
Sector Related Extended Levels
ICT Specialised Learning Level 2 (3)
Achieve Economic Wellbeing ECMS
Making the Most of Ability 1a-e
Enterprise Skills 1b, 4ef, 5bc, 6a
Clubs, G&T Extending the Able
Promotion of Engineering

Young Engineers Clubs

Type: Club

Age range: 7 – 19

The Young Engineers club network supports over 1,500 active Young Engineer clubs spread across the UK. Clubs run in a wide variety of formats from teacher-run to student led. In some clubs all of the students work on a single project, in others several projects of varying complexity are on the go at any one time. Clubs are free to tailor their activities to suit the needs of their members and the resources that they have available. Young Engineers provides guidance on how to establish and sustain a club, where to obtain discounts, an activity bank of suitable activities and a whole host of other useful services. Club achievements are celebrated via the Club of the Year competition and the regional showcases.

Young Engineers also provides a selection of exciting national engineering challenges that aim to stimulate development, team and individual skills.

These include the BAA Challenge and the Royal Navy Challenge for secondary students and the Airbus challenge for both primary and secondary students.

Contact: Young Engineers
Tel: 01428 727265
Email: admin@youngeng.org
Web: www.youngeng.org

Engineering your Future

Type: Careers event

Age range: 17 – 18

Engineering Your Future is a joint careers event established to provide an opportunity to see that engineering is a career worth pursuing. It is jointly co-ordinated and sponsored by the Institution of Mechanical Engineers, the Institution of Civil Engineers, the Institution of Engineering and Technology and the Institute of Marine Engineering, Science and Technology. The day is split into 5 sessions providing insights into Civil, Electrical, Mechanical and Marine engineering in which attendees learn about these areas of engineering from companies. The last session is called 'Routes into Engineering' and is hosted by a graduate engineer and an apprentice engineer. The sessions are designed to be practical and interactive and to provide an insight into life as an engineer.

Contact: Susanna Wisborg, SETPOINT London East
Tel: 020 8983 1277
Email: susanna.wisborg@btinternet.com

Young Engineer For Britain

Type: Competition

Age range: 11 – 18

The Young Engineer for Britain Competition is a national celebration of the best creative projects in the country from students aged 11–18 providing both a regional and national showcase for engineering, technology and design achievement. Young Engineers challenges students, both as individuals or in a team, to use their imagination to create, design and develop an original idea for a commercially viable device or system that meets a useful everyday need they have identified.

Contact: Young Engineers
 Tel: 01428 727265
 Email: admin@youngeng.org
 Web: www.youngeng.org

Te CAD/CAM integral part of coursework
ICT C&P, C&M CAD Software Functional Skills Engineer Skills
Eng Practical Projects Unit 2
Man Practical Projects Unit 2
Con Design, 3D Drawing Unit 1
Eng Principal Learning Sector Led
Con Principal Learning Sector Led
 Enjoy and Achieve ECM3
 Making Most of Ability 1a-e
 Applied and Vocational 4e, 5bc
 Skill Enhancement
 Teacher Development

CAD/CAM in Schools

Type: Curriculum Support

Age range: 11 – 18

The CAD/CAM in Schools programme was first launched in 1999, offering industry-standard software to secondary schools, 6th form colleges, and to all trainee teachers enrolled on design and technology courses. Pupils are also able to use the software at home. Teachers access the software via a training programme provided by accredited trainers, and receive ongoing advice from a network of support centres and a dedicated website. A main focus of the training is on the pedagogy related to the appropriate use of CAD/CAM within the curriculum. The programme is managed by the Design and Technology Association on behalf of the DCSF.

Contact: Carole Williams at the Design and Technology Association
 Tel: 01789 473911
 Email: carole@data.org.uk
 Web: www.cadinschools.org

Sc OPW Physical Processes 1a-h, 7j, 8j, 9l, 9m Applications
Ma NMM HT GCSE, KS3 FWK 48, 51, 2h11, 2h2b, 2h2f, 2h3c, m.o, 2h4a Motivation
Te I&D, P PCB Design and Make CNC, Quality, coursework in a range of courses
ICT Control Designing with CAD Products
Eng Control and Electricity Unit 2
Man Production Processes Unit 1
Eng Additional and Specialised Project Level 2 (3)
ICT Additional and Specialised Project Level 2 (3)
Achieve Economic Wellbeing ECM4
Confidence/Responsibility 1d
Teacher Development 5a, 6a, ECT Awards
G&T Clubs, KS 4 Engagement Raising Standards

Sc Broad Aspects
Ma Broad Aspects
Te 1a-e, 2a-e, 4a-d, 5abc
ICT Control CAD/CAM
Enjoy and Achieve ECM3,4
Active Role as Citizens 2a,h
Enterprise skills 4d,4,5c
Development of Imagination
Practical Thought
Communication Skills

Electronics in Schools Strategy

Type: Curriculum support

Age range 11 – 16+

The electronics in schools strategy (EISS) aims to raise standards in electronics and communications technology learning and teaching and positively influence school improvement by engaging more pupils in learning about electronics and its applications. It also aims to transform teachers' expertise (and thereby pupils' learning) by providing high quality post graduate professional development, associated resources and the time to develop professional knowledge. The approach to professional development devised by EISS was extensively evaluated and validated during development by an independent research team from the Open University led by Professor Patricia Murphy. This initiative is managed by the Design & Technology Association and works closely with the IET and TDA.

Contact: Sheila Newman at the Design & Technology Association
Tel: 01789 473909
Email: sheila@data.org.uk
Web: www.electronicsinschools.org

Technology Alliance Wales (TAW)

Type: Curriculum support

Age range: 7 – 19

An organisation comprising representatives from industry, education and the Welsh Assembly Government that exists to enrich and enhance technology education. It uses four training centres across Wales to introduce new initiatives through training programmes and seminars. TAW has supported and pioneered the use of new technologies in schools to improve the quality of technology education in Wales and to encourage pupils to enter our engineering, manufacturing and technological industries.

Contact: Bob Cater
Email: Tawwaterton@aol.com
Web: www.waterton.co.uk

Sc OPW Equipment,Projects Resources
Ma NMM Using Maths In Projects Resources
Te I&D Enhancing Projects/Electronics Resources/Project Guidance
ICT C&M Control Equipment
Eng Unit2 Unit2 Resources
Man Unit2 Unit2 Resources
Eng Generic Learning Sector Based Resources
ICT Control Sector Based Resources
 Economic Well Being Ecm5
 Developing Confidence 1a-E
 Teacher Development 5a, 6a
 G&T Clubs, KS4 Engagement

Sc OPW Physics Motivation
Ma NMM Measuring Relevance
Te I&D, P,E Designing and Making 1a-g, 2a-e, 4a-e, 5a-g Motivation
ICT C&M Control CAD Relevance
Eng Electronics, Mechanisms UNIT 2 D&M, T&E Motivation
Man Assembly Systems UNIT 1, 2
Eng Electronics/Mechanisms PL, SR
ICT Control PL,SR
 Applied and Vocational 4e, 5bc
 Developing Confidence 1a-e
 Enterprise Activities/Es 4de
 Teamwork,Communication Skills, Motivation KS4 Engagement

Technology Enhancement Programme (TEP)

Type: Curriculum support

Age range: 14 – 19

TEP is supported by the Gatsby Technical Education Projects and is a registered charity. TEP develops unique and leading edge Design Technology and Engineering curriculum resources. TEP promotes sound teaching and learning, ideas and creativity with an emphasis on supporting and developing the Advanced (Level 3) Diploma in Engineering. We work closely with our member schools and colleges and a wide range of educational and industrial partners. All secondary schools and colleges can benefit through INSET/CPD, popular low cost resources and national conference activities as well as visiting the TEP website at tep.org.uk and through our termly journal TEP News and Views.

Contact: Nick Baldwin
 Tel: 01992 709745
 Email: nickbaldwin@enterprise.net
 Web: www.tep.org.uk

TrackNAVCHALLENGE

Type: Competition

Age range: 14 - 18

The TrackNAVCHALLENGE is aimed mainly at students in key stage 4 and 5 and tasks them with designing and building a radio controlled, four-wheel drive model vehicle that emulates the all-terrain capabilities of a Land Rover.

TrackNAVCHALLENGE can be undertaken by groups of 4-6 students in lessons - such as GCSE engineering, manufacturing and design and technology - or as an extra-curricular activity such as a Young Engineers club. OCR and AQA examination boards recognise TrackNAVCHALLENGE as supporting their relevant GCSE subjects. The vehicle must meet the specification devised by Land Rover designers and engineers in partnership with educational specialists.

Registration opens in the Autumn term. Please note that registration is only open to teachers, college lecturers, scout and guide leaders and youth club leaders. The regional heats take place at the end of June with the national final at the start of July.

As well as the chance to gain national recognition, there is plenty for the students to learn. TrackNAVCHALLENGE provides young people with a practical project that stimulates interest in, and experience of engineering with a real experience of the design process. In addition, it develops effective and efficient use of key skills in communication, numeracy, ICT and other areas.

Contact: Ruth Martin
 Tel: 01926 648299
 Email: Tracknav@landrover.com
 Web: www.tracknavchallenge.co.uk

The Industrial Trust

Type: Industry link

Age range: 8– 21

The Industrial Trust provides educational events in the work place and other locations for groups of young people aged 8 to 21 and their teachers. The Trust uses strong links with companies to provide focused events that make learning interesting, demonstrate relevance to future careers, and provide useful career information. Teachers are relieved of much of the burden of finding suitable locations and making administrative arrangements for this form of work related learning. The events can be themed for different educational purposes – curriculum learning (e.g. business, engineering, environment, science, technology, etc), introductions to the world of work, apprenticeship based careers, and opportunities in higher education. Tens of thousands of young people and teachers benefit from these events each year with a high level of satisfaction being expressed in post-event feedback.

Contact: John Gibbs-Newton

Tel: 01949 850750 or 07971 625612

Email: john.newton@industrialtrust.org.uk

Web: www.industrialtrust.org.uk

ICT Using IT to communicate
MS Word

Eng Unit 1 topics

Man Unit 1 topics

Eng Employer led assignment

Con Employer led assignment

ICT Employer led assignment

Economic well being ECM5

Making the most of ability 2a,

Applied and vocational 4e,5b,c
competition

Gifted and talented

14-19 Engagement, inspiring writing

Independent – Bosch Technology Horizons Award

Type: Competition

Age range: 14 - 18 and 19 - 24 students

The Independent – Bosch Technology Horizons Award is an essay competition which is now in its third year and challenges young people to express their views on how technology has impacted on society now and in the future. Open to young people in two age categories with attractive cash prizes plus Bosch products for schools and colleges that send in the most entries. Schools have set the essay challenge as coursework or homework in a variety of subjects including English, design and technology, science and PSHE. It has also been used as an extension activity for gifted students. The theme for the 2007/8 essay is: "How is technology and engineering driving change in a country of your choice?"

Teacher notes and application forms can be obtained by emailing Shape the Future or downloading from the website. The winning essays in each category will be printed in The Independent newspaper.

Contact: Dave Rowley, The Royal Academy of Engineering

Tel: 020 7766 0640

Email: shapethefuture@raeng.org.uk

Web: www.independent.co.uk/technologyhorizons

Sc Broad Aspects

Ma Broad Aspects

Te Broad Aspects

ICT Broad Aspects

Eng Vocational pathways Informed choices Enjoy and Achieve ECM3 Making a positive contribution ECM4 Achieve economic well-being ECM5

Developing confidence 1 a-e

Extended Schooling 5bc Residential Realising potential Skills for life, team working, careers/HE awareness, motivation self esteem, communication skills

Headstart

Type: Industry link

Age range: 16 – 17

Headstart (an EDT scheme) runs four-day residential experience courses held at major national universities that involve participation in practical problem solving activities, lectures and presentations, visits to local companies, experiencing university life as an undergraduate and learning about the challenges and rewards of science, engineering and technology. Headstart courses are residential and take place every year in July.

In addition to a wide range of broad-based engineering courses, *Focus* courses concentrate on a single discipline, *Insight* courses are designed for girls only, with *Science, Technology and Society* courses intended for those with a general scientific interest. Dragonfly modules for Year 9/S2 girls and *Spectrum* modules for all students from ethnic minorities provide opportunities for younger students to participate, helping to demonstrate the importance of diversity in the workplace.

The *Insight* programme for girls starts at 13/14 years with Dragonfly (girls-only), *Spectrum* and First Edition then at 15 years (*Insight* summer schools) and again at 16/17 where in Year 12/S5 they have the choice to continue learning in the girls-only format or participate in Headstart's wide range of co-educational summer-schools.

This planned continuum ensures that having participated once and encouraged to consider SET, girls are provided with options each year to develop that interest.

Contact: Headstart
Tel: 01707 871505
Email: enquiries@headstartcourses.org.uk
Web: www.headstartcourses.org.uk

Schools Aerospace Challenge

Type: Competition

Age range: 16 – 18

This long-running competition organised in partnership with the Institution of Mechanical Engineers is open to teams of four from schools, colleges and youth organisations around the UK. Each year a new brief is set focusing on aircraft design with a prize of £5,000 (shared between team members and the sponsoring school/youth organisation) up for grabs.

Contact: John Farley
Email: johnfarley@tiscali.co.uk
Web: www.aerospacechallenge.org

Further Information

Other organisations providing course and careers directories, educational support materials and other information include:

General

The Engineering and Technology Board
www.etechb.co.uk

The Learning Grid
www.learninggrid.co.uk

The Best Programme
www.raengbest.org.uk

WISE - The WISE Directory of Initiatives
www.wisecampaign.org.uk

The UK Resource Centre for Women in Science, Engineering & Technology
www.setwomenresource.org.uk

STEMNET (Science, Technology, Engineering and Mathematics Network)
www.stemnet.org.uk

The Association for Science Education
www.ase.org.uk

The Design and Technology Association
www.data.org.uk

The National Association of Advisors and Inspectors in Design and Technology
www.naaidt.org.uk

The Scottish Executive
www.scotland.gov.uk

The Welsh Assembly Government
www.wales.gov.uk

The Northern Ireland Office
www.nio.gov.uk

Guidelines for Developing and Evaluating Resources for Schools, EEA Report, 2005
www.the-eea.org.uk

NOISE (New Outlooks In Science & Engineering)
www.noisemakers.org.uk

Careers

General engineering and technology careers information
www.ingenuity.org.uk

Careers Scotland
www.careers-scotland.org.uk

Careers Wales
enquiries@careerswalesassociation.co.uk
www.careerswales.com

Careers Service Northern Ireland
www.careersserviceni.com

Apprenticeships
www.apprentices.co.uk

The Engineering Institutions' Engineering Education Alliance
www.the-eea.org.uk

N-geneering West Midlands
www.ngen.org.uk

Role Models

SCENTA Role models
www.scenta.co.uk/rolemodels

Science and Engineering Ambassador (SEAs)
www.stemnet.org.uk

SEAs are also available by placing a request to a local SETPOINT (www.stemnet.org.uk). SETPOINTS are local organisations that hold a contract with STEMNET to provide learning support services and activities in science, technology, engineering and mathematics (STEM).

Access Fund

Shape the Future is a campaign to help bring coherence to the promotion of engineering and technology in schools. As part of this campaign, Shape the Future has created an Access Fund to enable schools that have no recent involvement in any of the schemes and initiatives featured in the directory to participate when otherwise they would be excluded on the grounds of cost alone. It is available to both primary and secondary schools.

Administered by an independent steering committee, the Access Fund is set up to make small grants to schools wanting to get involved with engineering activities for the first time. The maximum grant is £500 for any one school and the process is deliberately designed not to be onerous or require reams of supportive paperwork from teachers. STEMNET and the appropriate local organisation acting as a SETPOINT will be contacted to endorse the schools bid for funding.

For an application form and guidance notes on how to apply see www.shapethefuture.org.uk

Shape the Future STEPS at Work

The Royal Academy of Engineering has teamed up with the National Education Business Partnerships Network (NEBPN) to offer professional development opportunities for STEM teachers, careers specialists and lecturers in all phases of education. Professional Development Placements (PDPs) within industry are an effective way for teachers to enhance their teaching and learning, gain vital work-related experience and case studies for the classroom and update business and careers knowledge.

If you would like to find out about the placement opportunities in your area please contact the National EBP Network.

Tel: 01635 279914
Email: office@nebpn.org
Web: www.nebpn.org

Notes

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More copies of this directory may be ordered via shapethefuture@raeng.org.uk

shape the future