2012 Funded Projects

An Untapped Resource

NYBEP
North Yorkshire
Secondary School Activity

This project aims to look at the viability of using small scale generation schemes using a number of different technologies such as water wheels, water turbines, Archimedes screws, wave oscillation systems etc. The project incorporates an environmental aspect in the choice and location of the chosen technologies.

A fully working model of the chosen technology will be produce as well as a presentation as part of a proposal that would be aimed at convincing local residents and planners to adopt the proposed system.

Bloodhound Project

Defence Engineering and Science Group
Bristol
Primary School Activity

The Project is a collaborative programme with the objective of promoting STEM activities within primary school children in the Bristol area, and will involve recently graduated Engineers working within the MoD going into local primary schools to deliver an activity based on the Bloodhound supersonic car project.

Following the Project in schools the best from each school will be invited to a celebration day in order to compete against each other, this will also give the children the opportunity to see other designs they may not have considered and demonstrate their understanding to judges. This event will have media coverage and VIP's will be invited such as Wing Commander Andy Green, current land speed record holder.

Bright Sparks

Greater Manchester STEM Centre
Manchester
Primary & Secondary School Activity

Bright Sparks is a KS2/3 science transition programme delivered to schools across Greater Manchester by STEM professionals.

Primary school pupils use unique, custom made circuit boards and resources to increase their understanding of electricity and the safe handling of electrical components. These resources allow practical hands on investigations of the electricity topic including series and parallel circuits. Aligning with their feeder high school, KS3 students will design, manufacture and maintain these circuit boards as part of an extra-curricular STEM club or in class as part of design and technology schemes of work. These resources will be held by the high school for KS3 science teaching and for loan to their primary schools.

Y6 teachers will receive training in the curriculum enhancement these resources provide by participation in a professional development session or receive a visit of the KS2 Bright Sparks day in school.

This project enhances primary secondary science transition and provides opportunities for increased co-operation between science and design and technology departments.

Education
The Institution of Engineering and Technology
Fund

Bringing the IET and STEM to Western Scotland

Explore Science Scotland
Scotland North
Primary & Secondary School Activity

This project will promote the use of IET materials in schools in the Western Isles and help give teachers the confidence to run future engineering activities themselves.

Half day workshops will be run in schools throughout the islands, providing access to all S1/2 pupils throughout the Western Isles, and also to P6/7 pupils in Barra, North and South Uist, Benbecula and Harris. The workshops will focus on one of the activities from the IET Faraday website and allow pupils to work together in groups to solve practical problems. Workshops will cover a wide range of experiences and outcomes from the science, maths and technology curriculum.

Cumbria Big Bang

Cumbria STEM Centre Ltd
Lancashire & Cumbria
Secondary School Activity

A Science and Engineering Fair that will provide opportunities for young people in Cumbria to experience exciting and inspiring STEM related activities. This will be a 'hands-on' experience and will encourage participating pupils and students to consider STEM related careers for the future.

DNA Fingerprinting Techniques & Analysis

The Highfield School
Bedfordshire & Hertfordshire
Primary & Secondary School Activity

A year 6 Forensics Day for all incoming students, which acts as a taster event for the students coming to The Highfield School the following year, easing transition to Secondary School. We are aiming to include DNA fingerprinting using Gel Electrophoresis so that students will be able to produce their own gels using the kits, with classic "DNA fingerprints" like they see on CSI Miami.

Secondary students will run workshops with the year 5 students at feeder primary schools to give support to science lessons at Key stage 2, and A-level students will use the kits to will carry out experiments which will allow them to see first-hand what biochemical engineering is like.

Engineering - Think Outside the Box

STEMFirst Ltd
Lancashire & Cumbria
Secondary School Activity

Engineering – Think Outside the Box is an engineering awareness project in a box which will be delivered by engineers and technicians to a wide range of students in order to improve understanding of what engineering is about.

The Box will provide hands-on activities, case-studies, stimulate discussion, questioning and raise awareness of engineering. Students will cover topics on Engineering - what it is, who are engineers, where could it take me and what is it all for. Utilizing a range of currently available resources, linking them together with lesson plans and hands-on activity to enable teachers to 'join the dots', creating synergy between existing opportunities in order to give a comprehensive, inspiring Engineering Session for their students. The Box will also include information about where to go next to gain further insight into engineering and STEM Careers for both students and teachers.

IET Education The Institution of Engineering and Technology | Fund

Engineering Your Future
Engineering Your Future Organising Committee
London
Further Education Activity

Engineering Your Future London is a series of one day careers carousel events. Each event will feature four or five interactive sessions hosted by young professional engineers from a variety of engineering disciplines, as well as a speed networking session where students meet face to face with young engineers, university graduates and apprentices from various disciplines.

This is a joint project involving the IET, ICE, IMechE, Ealing & Hillingdon EBP and London South STEMNET.

Engineering Your Future
Brinsworth Comprehensive School
South Yorkshire
Primary & Secondary School Activity

500 Y9 students will participate in an intensive weeks of activities and visits. Students will be involved in a visit to either an engineering company or a University engineering department, and a half-day activity in school. Prior to the week, students will attend an assembly about engineering and complete a questionnaire about their interests and aspirations so that they can attend the activities that best match their interests. The activities in school will involve mechanical, environmental, sports, chemical, forensic, robotic, computer and electronic engineering.

There will also be a Family Learning evening with activities delivered by Y9 students for parents and students from Y5, 6 &7.

Engineering Your Future
Northwest Joint Institutions Group
Manchester and Lancashire & Cumbria
School Activity

Engineering Your Future (EYF) will consist of six one-day events that will be held across Cumbria, Lancashire, Greater Manchester and Merseyside, the purpose being to provide students with the opportunity to see first-hand that engineering is a career worth pursuing.

The events consist of STEM Ambassador led presentations, with each event split into five sessions providing insights into civil, electrical/electronic, chemical, nuclear and mechanical engineering. Students will learn about the specific areas of engineering from STEM Ambassadors representing local, regional and national companies.

Each event is introduced by a talk from a young engineer, representing his or her company and one of the engineering Institutions. Together with the 'five workshops', this gives six 'engineering experiences', covered by the six institutions supporting the events, ie: The IET, IMechE, ICE, BCS, IChemE and the Nuclear Institute.

Education
The Institution of Engineering and Technology
Fund

Faraday Challenge

Caldicot School
South East Wales
Secondary School Activity

The school run an enrichment week every year where pupils are taken off timetable to allow them to undertake activities that are not usually part of the everyday curriculum. The organiser of this week came to see the Faraday Challenge that Caldicot School hosted in 2011 and was so impressed by what she saw that she wanted it to run as part of this week.

The purpose of the bid is to allow us to pay for the external providers to run the activity, allowing Monmouthshire teachers to see how it is run so that we can continue to run it in house in subsequent years using the Faraday in a Box resource available from the IET Faraday website.

Get into Engineering Initiative

The Prince's Trust
Gloucester
Further Education School Activity

Get into Engineering is a new and exciting awareness and basic training programme in engineering delivered over two weeks by The Prince's Trust, in partnership with the manufacturing industry in Gloucestershire. The course will benefit disadvantaged young people from the local area who come from challenging backgrounds and who may not have had the inspiration or ability to gain such practical engineering experience through the conventional education system.

The course will open up new career opportunities for the participants and meet the UK engineering industry's needs by offering access to a previously untapped resource that could help to redress the current shortfall in skilled engineers.

The course will be based on The Prince's Trust's well established 'Get into' model which has an eight year proven track record of supporting disadvantaged young people to develop sector specific skills and move on to find work in that area. 'Get into Engineering' in Gloucestershire promises to be extremely successful, given the demand from young people that is being generated by high youth unemployment levels, and the excellent reputation of the local manufacturing industry.

Once it has been piloted successfully in Gloucestershire, the longer term aim will be to roll out the programme nationwide.

Gloucestershire Primary Computing Competition

STEMworks Limited
Gloucester
Primary School Activity

This project is aimed at creating a workshop to develop the students' understanding of computing and to develop their programming skills. The project is run as a competition amongst local primary schools in which students will be required to program a robot to complete an assault course.

Workshops will be run in 10 primary schools in areas of social disadvantage and need, and the best team from each school will be invited to take part in a county final to be held at a local engineering company. Parents will be encouraged to attend the final, offering an opportunity to spread the message of Engineering. IET STEM Ambassadors will be involved with all the activities and be encouraged to talk about their jobs, ensuring the students get a better understanding of the role of engineers in society.

IET Education The Institution of Engineering and Technology | Fund

IET/Raytheon Techno Games
Adam Smith College
Scotland
Primary School Activity

The IET/Raytheon Techno Games has been held annually since 2003, for the purpose of fostering a community wide interest in engineering and technology by given an exciting celebration of technology to highlight the on-going Technology Roadshows that visit the schools in Fife.

This event brings together teams of 4 pupils and a school teacher to participate in a day of engineering construction and technological competition under the inspiration, instruction and assistance of our guest Roboteer. The teams are required to build radio controlled robots from basic materials and component parts that are capable of participating in one of three competition categories: Sumo, Assault Course and Football. The competitions are arranged to provide winners and runner up teams for each category for which both a collective school prize and individual team prizes will be awarded.

The requested funding will cover the cost of bringing in a national celebrity to lead the day's events as the Roboteer. This is of great importance to the children as it lends substantial significance to their experience and provides a talking point for them to relay to their school and local communities.

Introduction to Microprocessors
610 (City of Chester) Squadron Air Training Corps
Mersey & West Cheshire
Secondary School Activity

A short course on an introduction to microprocessor and how they are programmed is to be run by 610 (City of Chester) Squadron Air Training Corps. The course will cover electronic and programming terminology, the use of flow diagrams, the use of programming tools; how to programme a microchip using Assembler language; an overview of electronic components used during the course and hands-on activities in programming and seeing how their programmes work.

The course will culminate in a day long activity where the students will make and program a simple timing device which on completion becomes their own property. The course will be run as a STEM activity by the IET Merseyside and West Cheshire local network.

Introductory Engineering Workshop
South West Scotland Local Network
South West Scotland
Primary School Activity

This is a project to engage pupils in STEM subjects in an exciting way with well-designed kits using LEGO. The kits will be used to provide a structured developing STEM curriculum through P5/P6/P7, and teachers will develop confidence in using STEM topics to deliver the new curriculum for excellence and should be able to do these activities on their own after a year or so.

The use of Lego Educational Kits will bring the teaching of basic STEM ideas to a wide audience of pupils and teachers. The kits will allow the teachers to use bright well designed equipment to cover a number of basic engineering ideas using modern equipment and methods. The packs are supplied with informative resource packs which can be used on modern White Boards.

Education
The Institution of Engineering and Technology
Fund

Invent an App Challenge

University of Brighton
Sussex
Secondary School Activity

Half day workshops at the University of Brighton's Digital Media Labs for teachers and Key Stage 3 pupils, covering the basics of mobile phone application design and development using the AppInventor toolkit for Android phones. Pupils will generate their own app concepts, design screens and script interactivity and functionality such as animating images, sending text messages and other simple functions. Participants will be able to use their apps on their own phones, if they have Android devices, or on phones supplied by the University for the event. The apps will be showcased in an online portfolio to enable the event to reach other students in the schools.

Supporting STEM Ambassadors from the IET, industry and the university will set the learning in context and raise awareness of related career paths.

The focus of the activity will be on enabling the involved teachers to address the requirements of the new ICT curriculum.

Isaac Newton Science Club

National Trust (Woolsthorpe Manor)
East Midlands
Secondary School Activity

Creation of a science club based at Woolsthorpe Manor, home of Sir Isaac Newton. The science club aims to provide exciting hands-on workshops and experiences that stimulate the students' interest in science and engineering. Using Woolsthorpe as a base, and drawing on the volunteers, college students and apprentices' passion and dedication, we aim to inspire the students to study science at school and follow a career in engineering.

Live Lab Schools' Challenge

At-Bristol
Bristol
Primary & Secondary School Activity

At-Bristol aims to develop and deliver the 'Live Lab Schools' Challenge', a suite of challenge activities specifically targeted at Key Stage 2 and 3 students that explore science, engineering, design and technology. The activities will inspire a deeper level of engagement, empowering teams of students to lead their own scientific investigation and explore the design, build, test and modify process.

The challenges aim to give students a first-hand insight into the process of science and engineering and the creative, problem solving approach required. Activities will be delivered within 'Live Lab', a live presentation space that brings practical science to the centre of At-Bristol's exhibition floor. Activities will be launched during National Science and Engineering Week 2013 and will be supported by a diverse range of STEM experts (including IET members) who will share their expertise and passion with students providing an insight into the diverse range of STEM careers. We aim to reach c1, 500 students and c50 teachers during the week. Beyond the project the activities will become part of At-Bristol's annual calendar of events for schools.

IET Education The Institution of Engineering and Technology | Fund

Liverpool Festival of Science & Technology 2012

Maestro (Services) Ltd
Mersey & West Cheshire
Secondary School Activity

The Liverpool Festival of Science and Technology, incorporating the Big Bang North West, is a fun and exciting regional event set to inspire the scientists, technologists, engineers and mathematicians of the future. Through the provision of interactive workshops, inspirational talks, project displays and exciting hands-on activities students will have the opportunity to experience the excitement of STEM at first hand and be inspired to study STEM related subjects and consider pursuing a STEM related career.

Northern Ireland Junior First LEGO League

W5
Northern Ireland
Primary School Activity

Junior First Lego League (JrFLL) is an international event which aims to inspire young people about science, technology and engineering, introducing them to design and research techniques related to a real world theme that is both topical and relevant to them. With support from the IET, W5 aim to pilot this programme in Northern Ireland. Funding will allow us to provide 5 schools with a WeDo Lego class set so that they can participate in Jr FLL this year and also in subsequent years.

Norwich Science Olympiad (2012)

CAST Education
Anglian & Coastal
Primary & Secondary School Activity

The objectives of the Norwich Science Olympiad are to stimulate the interest of school pupils in science and engineering and increase understanding of education in these subjects.

The Olympiad is an annual festival of competitive activities in science for pupils In Year Groups 3 - 12 comprising practical events for each Year Group, an Internet-based quiz competition (*Top Class in Science)* and a prestigious demonstration lecture. The practical events and the lecture take place over two whole days in the University of East Anglia and involve a thousand pupils from fifty primary and secondary schools. The quiz competitions comprise matches between whole classes of pupils in different schools, and are structured into preliminary rounds that lead up to grand final stage shows before large audiences in a theatre. Each quiz competition involves 20 - 30 schools and a thousand or so pupils. This funding is for development of a programming quiz activity for Year 6 pupils.

Power From the People

Edinburgh Science Foundation
Scotland
Primary School Activity

Generation Science is Edinburgh International Science Festival's touring education programme, which each year visits children in primary schools throughout Scotland with 16 inspiring science workshops and shows.

'Power from the People' is a new workshop in the Generation Science Programme and is designed to enable children in p4-7 to learn about how we make electricity, look at ways of generating green electricity, and enable them to explore how to make their own electricity through fun games and experiments with specially designed hand-powered generators. With the support of the IET Education Fund, 10 schools in the East of Scotland will be given the opportunity to experience 'Power from the People' in their school, directly benefitting up to 300 children.

Education
The Institution of Engineering and Technology
Fund

Railway Robots
Museum of Science and Industry
Manchester
Primary School Activity

The Education Department at MOSI are developing a Robotic Programming workshop based on the introduction and engineering of the railway line between Manchester and Liverpool and the trains which competed to run along it. MOSI is based in the historic buildings of the world's oldest surviving passenger railway station and as such are an ideal venue for telling this story. The classroom where our workshop will be held overlooks the train track and provides a brilliant context for this session. This workshop will be for Year 1 – 4 pupils, who will work in small teams to programme a toy robot called a Bee-Bot through a series of 3D obstacles representing the obstacles and route of the Manchester to Liverpool railway. These Bee-Bots will be decorated to represent each of the trains that took part in the trails. Pupils will be developing their ICT skills through gaining knowledge about the introduction of the railways.

Robo Jam
Euxton St Mary's Catholic Primary School
Lancashire & Cumbria
Primary School Activity

Use of the Scratch programming environment developed by MIT together with Robotics to inspire young children's interest and demonstrate the practical application of science, technology, mathematics and engineering.

3 primary schools, one high school and an industry partner will work together, with the industry partner develop a hands on support training programme for teachers and support staff to be delivered as part of their in-service training (INSET), covering Scratch, Pico Boards, LegoNX and the Robonova. The industry partner will assist in the development of project exercises for the children including devising simple interface networks to work with the Pico boards.

RoBoe Days
Sentinus
Northern Ireland
Secondary School Activity

RoBoe Days is a series of ten one day interactive robotics activities for pupils in Years 7, 8 and 9 at primary and secondary schools in Northern Ireland. Presented within the context of space exploration, each day comprises a series of practical computer programming activities. The activity is designed to introduce young people to computer programming, control and robotics within a fun and challenging environment and to contextualise classroom learning in ICT and Technology. It will also raise awareness of potential career opportunities in the area.

Pupils work in pairs, supported by a team of trained sixth form mentors, to write programmes which they download to an autonomous robot to allow it to perform a series of tasks. Each team of two pupils is assigned a computer and robot for use throughout the session to allow them to carry out the RoBoe Challange.

Education
The Institution of Engineering and Technology
Fund

ROBOT at Dundee Science Centre
Dundee Science Centre
Scotland
Primary & Secondary School Activity

ROBOT at Dundee Science Centre is an expansive project, which aims to excite the community and schools about robotic engineering and technology.

Consisting of an interactive exhibition, public events, and schools programmes, ROBOT will engage a wide audience totalling 30,000 people from across Scotland. With the kind support of IET, Dundee Science Centre will support Curriculum for Excellence through tailored hands-on robot activities for Early Years and P5-S2, giving pupils access to experiences otherwise not available in schools. Additionally, STEM Ambassadors and IET members will engage with schools, providing engineering professionals with professional development, and pupils with the opportunity to meet 'real' experts and role models from engineering and technology careers.

SCI-FUN at the Dundee and Dunbar Science Festivals
University of Edinburgh
Scotland
Secondary School Activity

The SCI-FUN Roadshow, based at the University of Edinburgh and supported by the Scottish Government, will be taking the experience of a science centre – including interactive presentations and a range of hands-on exhibits – to the Caithness and Dunbar Science Festivals, as well as schools in Tayside, in early 2013.

Included within our usual format will be a new engineering outreach project, which comprises an interactive tabletop renewable energies exhibit and a renewable energies presentation. These will be used to describe the challenges of the options currently available, and also to highlight the role of engineering in solving these issues for the benefit of wider society.

Our engineering project will be piloted during the British Science Festival and the Orkney International Science Festival in September 2012. This IET project will enable these materials to be also used within our attendance at the Caithness and Dunbar Science Festivals later in our 2012/13 programme.

SMart Futures Super Grid
HETA - Humberside Engineering Training Association
Humber
Secondary School Activity

Smart Futures Super Grid is an activity that allows pupils to take part in renewable energy generation and distribution. Pupils make decisions, investigate, build and manage their turbine station, they sell their power at the best available price and generate when they think they can get the best return. They learn about the electricity distribution networks and they realise the challenges facing power generation and distribution on a pan European scale. The supergrid is a concept that will be delivered across Europe, this project gives pupils a heads up on what they can look to be involved in during their careers and it educates learners about the place of maths and science in the energy industry. Based on the European nature of the Supergrid, this programme could ultimately stimulate transnational collaboration with other European schools.

IET Education The Institution of Engineering and Technology | Fund

Sports Engineering Challenge

Education Business Solutions (EBS) Ltd
Manchester
Primary & Secondary School Activity

Greater Manchester's school students get to grips with sustainable sports materials and technology in this challenge. Set by the business world, the task is to design and test a new item of sports equipment. Students from primary school through to sixth form are invited to research different materials and demonstrate the 'cradle to cradle' lifetime of an item of sports clothing. Considering both the needs of athletes and the environment, students will have to think about the long term consequences of their choices – and this may lead them far beyond the initial sports equipment brief. Along the way they have the help of a science and technology ambassador to bounce ideas off and to ensure they adopt a suitably scientific approach to research and development.

Sustainable Science

Glasgow Science Centre
Scotland SW
Primary & Secondary School Activity

Sustainable Science at Glasgow Science Centre (GSC) explores the engineering and technology behind renewable energy, through interactive activities. Shows, workshops and meetings with practising renewable energy professionals cater for differing learning styles.

GSC's 'hands on, minds on' technique of immersing pupils in the designing of renewable technologies encourages them to employ science techniques to explore, measure, investigate and problem solve to find optimum solutions. The project is sustainable both in its subject matter and in the way it confers skills on participants that they can bring to other subjects.

Technology Industry

STEM Teach East
Cambridge
Secondary School Activity

This project encompassed workshops and talks to pupils, held at IWM Duxford, Cambridge University, Anglia Ruskin University, University of Bedfordshire. Working on the basis that young people are technology natives and therefore are not intimidated by the novel, we will use their ease with technology to run a number of industry led talks and workshops at which pupils and teachers get to understand in depth the use of microprocessors and computer programming. For the workshops we will use the Arduino platform and the open source software. We would also hope to purchase a set of Raspberry Pi devices and work with those in a number of workshops.

The Evolution of Technology

Graphic Science
Somerset & West Wiltshire
Secondary School Activity

This activity is to address the historically low levels of STEM ambassador engagement in Somerset, a region noted for its high achievements in Maths and Science A-Levels. The aim is to use current university students from Bristol and Bath and early career professionals to inspire a cohort of students to considering studying STEM subjects.

An interactive, media-driven workshop on technology evolution (including sports technology), will target all abilities and both sexes. This will be delivered by IET members as STEM ambassadors, and will focus on 10 schools in the area that do not currently engage in any STEM activity.

The materials developed will be available to others to continue the benefit of this work without further IET funding.

The Mersey STEM VEX Challenge

MerseySTEM
Mersey & West Cheshire
Secondary School Activity

The MerseySTEM VEX Challenge is a hands-on robotics activity day. Three events, including a 'Girls Allowed' event, will be held across the region. Schools will bring teams of three to build a robot & compete against each other in a robot challenge.

The activity crosses over all four strands of STEM and brings together STEM Ambassadors and the engineers of the future, providing an inspirational opportunity for teachers & students to work with exciting kit & to benefit from the professional knowledge of robotics experts.

The Race to Save the Planet

Upton by Chester High School
Mersey & West Cheshire
Secondary School Activity

A project for Chester High School students and those at schools across Cheshire, year 8 pupils are invited to design, make and market super capacitor cars and will compete in a race testing accuracy, distance and consistency.

The event will form part of the year 8 How Science Works Day for the year 8 syllabus at the end of the summer term July 2012. Pupils will work in teams of 3 and have to design a car, build it and design a logo for it, as well as give an awareness of alternative powered vehicles i.e. the importance of the electric / hybrid and other powered cars as an alternative to petrol as part of the selection process.

Overall the day and other activities will inspire pupils to think about studying STEM subjects to a higher level and really gain an appreciation of what companies who design different types of transport have to consider. Links to Vauxhall will be an exciting partnership for the event and provide some real role models for the pupils to share experiences.

Welcome to the Future

Restech Ltd
Bristol
Primary & Secondary School Activity

Provision of Robotics equipment and fund free taster sessions for a not for profit social enterprise that delivers Robotics Educational Courses to Schools, allowing it to work with more schools and students.

Work Related Experience

Techniquest
South East Wales
Secondary School Activity

The aim of this project is to develop and deliver an innovative Key Stage 4 (14 -16 year olds) engineering outreach workshop, developed in partnership with Cassidian.

Pupils will explore real life applications of engineering, the uses and potential uses of engineering by local STEM employers and use and experiment with engineering technology and props. Pupils will also explore different engineering careers associated with a range of scenarios and solve a real life engineering related problem through a challenge activity.

The workshop will be designed to enthuse and motivate students with STEM (Science, Technology, Engineering and Maths) and will offer a career related session where the students will learn about the wide range of careers involved in STEM and how important engineering is to daily life.

The programme will be taken direct to schools, which are located in disadvantaged communities, and post visit resources will be provided to teachers to enable them to extend the learning following the workshop.