2011 Funded Projects

An Embedded Technology Project

STEM TEAM Cambridge
Cambridge Local Network
Secondary School Activity

Support for the development and delivery of a pilot scheme in conjunction with ARM and two Cambridgeshire Colleges.
ARM have developed a robotics kit which allows students to explore programming, sensors, feedback and control systems with WiFi, RFID and line following. This funding will allow development of worksheets and learning guides for exploring 7 areas of learning for key stage 3 and 4 students. The kits, worksheets and learning guides will be trialled with year 8,11 and 12 pupils in five schools. Teachers will be able to undertake initial training advertised locally via the Design and Technology Association, and kits and worksheets will be available for loan from STEM TEAM Cambridgeshire.

Bright Sparks

Greater Manchester STEM Centre
Manchester Local Network
Primary and Secondary School Activity

Bright Sparks is an existing Electricity Awareness programme delivered to schools across greater Manchester by science practitioners. Keys stage 2 pupils use custom made circuit boards to increase their understanding of electrical components and explore fault finding in circuits. Funding has been granted to widen participation and increase the sustainability of the programme by aligning with three High Schools whose students will design, manufacture and maintain the circuit boards as part of their year 7 and 9 electricity coursework.
The boards and extension resources will be held by the High Schools for loan to their feeder primary schools, and teachers at participating primary schools will be able to attend a professional development session at the High School as well as receive a Bright Sparks day delivered by a science practitioner.

Chemistry Connections

Hartlepool Sixth Form College
Teesside Local Network
Secondary School Activity

Year 7 and 8 students from Hartlepool schools will attend four workshops at two local sixth form colleges. Students will explore a different facet of chemistry and chemical engineering at each workshop, following the themes: Chemistry in Your Shopping Basket, Chemical Reactions, Cosmic Chemistry and the Chemistry of Saving Lives. All workshops will be led or supported by STEM Ambassadors, and include hands on activities to encourage experiential learning. The workshops incorporate careers information on STEM careers and local industries. Teachers will receive resources to expand upon the workshops in the classroom.

Computer Control in Primary Schools

Stemworks Limited
Gloucestershire Local Network
Primary School Activity

Pupils at six Gloucestershire schools will construct a fairground model with lights controlled by computer modelling software, using control station and K'NEX construction kit.
Each school will be given a site licence copy of the software to use with future classes and the control kits (control station and K'NEX construction kit) will be available to local teachers for two week loans.

Durham Schools Engineering Challenge

Derwentside Enterprise Agency
Durham Local Network
Secondary School Activity

After school activity for year 9 students across Durham. Four teams of four students from 15 local secondary schools will design and manufacture prototype products to meet engineering specifications for an electric remote controlled car, a PLC control unit and an aluminium bridge.
Teams will work in weekly, two hour sessions, with support from industrial mentors from local engineering companies. The project will culminate in a competitive final where each team's products are judged and prizes are awarded in several categories.

Electrotastic

Edinburgh International Science Festival
Scotland
Primary School Activity

Circuit building workshops to be held at schools across Scotland as part of Generation Science, the Edinburgh Science Festival outreach programme.
Children will learn to make simple circuits, and can choose to make either a flashing lighthouse, morse-code machine, wire game or revolving roundabout to make and keep.
Teacher's notes are provided prior to the workshop with supplementary information and classroom activities that can be incorporated into class work both before and after the workshop.

Engineering is Fun!

Wrexham and District National Eisteddfod of Wales
Wales North Local Network
Secondary School Activity

Funding to support four activities taking place within the science pavilion at the 8 day National Eisteddfod of Wales 2011. The activities are:
PIG in the Pipe team challenge - festival goers will be challenged to design and construct a pipeline inspection gauge ("pig") from K'NEX that can transverse a one metre transparent pipe at all angles.
Hovercraft team challenge - visitors will design and make a working hovercraft from material s such as plywood, plastic sheeting and a leaf blower. The hovercraft should support the weight of one person and will involve 20 students in teams of five on a daily basis
From Sunlight to Electricity - Students will make their own dye sensitised solar cells and measure the current produced. The best cells will then be used in series to power devices such as a small electronic calculator.
Junior Electronics - basic electricity and electronics exploration. Children will investigate using various citrus fruits to power simple devices and circuit design, and will be able to make a simple hoop and wire game. Static Electricity experiments will also be demonstrated.

Engineering Isn't a Dirty Word!

Brinsworth Comprehensive School
South Yorkshire Local Network
Secondary School Activity

Year 9 students from two schools will work on hands on activities over two days prior to making GCSE choices, working in groups alongside engineers either in schools or in the workplace. Pupils will also learn about engineering careers in a variety of disciplines at an evening event with engineers representing several companies. A further evening event run by Sphere Science Ltd will provide a science and engineering evening for parents and students, allowing families to work together to develop their science and engineering investigative skills.
The organisers plan to engage some of the year 9 students to take the activities to the local primary schools.

Engineering Your Future

North West Joint Institutions Group
Manchester and Lancashire & Cumbria Local Networks
Secondary School Activity

Seven careers carousel events which provide opportunities for year 12 students to learn about various engineering disciplines. Five STEM Ambassador led sessions will be held at each event, focusing on civil, electrical/electronic, chemical, nuclear and mechanical engineering.
These events are jointly funded by the ICE, IMechE, IChemE, INE, and IoP with support by STEM delivery organisations for Cumbria, Lancashire, Greater Manchester and Merseyside.

Engineering Your Future

Engineering Your Future Committee
London Local Network
Secondary School Activity

Engineering Your Future London is a series of one day careers carousel events. Each event will feature of 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, SETPOINT London East, Ealing & Hillingdon EBP and London South STEMNET.

Enginuity Challenges

Careers South West Ltd
Devon & Cornwall Local Network
Secondary School Activity

Two events for year 8 students at Exeter University and Plymouth University. Students will receive a short presentation on the development of wind power and are challenged to build a wind turbine from basic materials. The teams will be judged on their use of materials, design, construction and power output, with certificates for the winning team.
The equipment and materials produced for the days can be re-used for future wind turbine challenge days and activities in individual schools.

HET Athletes

Humberside Engineering Training Association
Humber Local Network
Secondary School Activity

A robot building activity provided by HETA, the engineering training provider and STEM Ambassador programme contract holder for Humber.
Students from five Humber secondary schools will invent machines capable of undertaking one of five challenges akin to throwing, running (speed), jumping, football or weightlifting, using Meccano.
The project to be designed by male and female apprentices, with support from a HETA instructor, STEM Ambassadors (IET members and apprentices) and with feedback from local teachers. Teachers and STEM ambassadors will be offered free twilight sessions to enable them to deliver the project, and the equipment will be available to borrow. HETA plans to expand the project to include five additional schools in year two.

IET Energy Watch

STEM Sussex
Sussex Local Network
Secondary School Activity

IET Energy Watch will focus of energy production, usage and waste. During a 2 hour workshop supported by STEM Ambassadors, key stage 3 pupils will learn about energy, energy transfer and energy needs in the context of a home or school environment. Pupils taking part in this activity will develop an awareness of current UK energy sources, be able to describe how energy in the form of electricity is transferred between the energy provide and end user, and understand how control systems and insulation can be used to optimise energy consumption.

IET/Raytheon Techno Games

Adam Smith College
Scotland SE Local Network
Primary School Activity

Teams of four pupils and one teacher will participate in a day of engineering construction and technological competition under the instruction of a guest Roboteer. Teams will be 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 events take place at schools in Fife, typical attendance over years past is 120 students and 31 teachers in 31 schools.

Key Stage 4 Sustainability Workshop

At-Bristol
Bristol Local Network
Secondary School Activity

Pilot workshop for key stage 4 students from two secondary schools. Students will be introduced to principles of sustainability in business and will conduct individual investigations. Students will collect, monitor and evaluate data, learn about energy consumption and innovative technologies to increase energy efficiency. The workshop will become a core At-Bristol offering for secondary schools following the pilot and subsequent evaluation.

Light and Sight!

Museum of Science and Industry
Manchester Local Network
Primary School Activity

Funding for the development and trialling of a workshop at the Museum of Science and Industry, including purchase of reusable equipment. Children will explore the electromagnetic spectrum, electrical sources of light, reflection and refraction, colours, lasers and the working of the human eye. The workshop will then become part of the museum's schools programme for children aged 7-11.

Lighting up the Curriculum for Excellence

Scottish Council for Development and Industry
Scotland Local Network
Primary School Activity

Expansion of a scheme to provide primary schools with circuit kits which they can use to explore electronics. The custom-designed circuit kits include basic soldering equipment, tool kit, safety glasses and 60 ZOT circuit boards and components. The three PIC programmed circuits allow flexibility in incorporating flashing, twinkling, flickering and rainbow colours into a wide range of projects.
The project also includes half day training sessions for teachers, and ad hoc workshops at science festivals.SELEX Galileo, Young Engineers and Science Clubs Scotland also support this project.

LT Racer Build Activity

STEMNET
SW Scotland Local Network
Primary School Activity

Students in two schools will work in teams to design and build propeller driven racers, supported by engineers. The project will take place on a weekly basis, culminating in an open day where students share their designs and experiences.

Making Tracks

Techniquest
Wales South East Local Network
Secondary School Activity

Outreach workshop to be taken to 44 secondary schools across South Wales. Eight groups of students at each school will design and build a car from Lego components, according to set criteria. The components must be purchased within budget and the cars are tested and scored according to their performance against the criteria.
Pre and post workshop resources will be available so that teachers can expand upon the activity in class both before and after the workshops.

Primary Science Fair

Portsmouth and SE Hants Education Business Partnership Ltd.
Solent Local Network
Primary School Activity

Children will participate in a variety of activities in rotation at Portsmouth's Historic Dockyard, aboard HMS Warrior and at Action Stations. The activities will be provided by local science and engineering companies and will include testing the impact of a boat's shape and principles of buoyancy, investigating the working of a periscope, testing the payload of spacecraft and investigating metals and other materials. The fair will also incorporate interactive sessions with FE and HE institutions which explore the routes into STEM related careers.

Rampaging Chariots

Scottish Council for Development and Industry
Scotland Local Network
Secondary School Activity

A team of volunteer engineers and graduates from SELEX Airborne Systems, Edinburgh, many of whom are IET members, have developed radio-controlled featherweight sporting robot schools activity kits. Teams can use the completed kits to compete against each other, and to compete in regional championships using the Rampaging Chariots portable arena.
Schools are currently provided one free kit and can purchase further kits at a heavily subsidised £100.00 each. This funding is to supply additional free of charge kits to schools.

Recycled Electronics

The Oxford Trust (Science Oxford)
Oxfordshire Local Network
Primary and Secondary School Activity

Funding for the development, piloting and evaluation of a recycled electronics workshop.
Students will recover basic components from broken or unwanted consumer electronics products and use them to build simple electronic circuits. The workshops will be facilitated by STEM Ambassadors, and the project, including kit, will be available for loan, and will be part of Science Oxfords family activities and outreach programme.

Robot Challenge

Robogals
London Local Network
Primary and Secondary School Activity
Amounted requested: £4611.41.00 - Amount granted: £3750.00

Robogals is a student-run organisation that aims to increase female participation in engineering, science and technology. This grant is to fund robot building and programming equipment to support activities coordinated by students at Imperial College London. Children aged 10-18 from local schools are invited to Imperial College to take part in workshops, and Robogals attend events such as the Big Bang fair.
Robogals have a strong emphasis of encouraging the understanding of the careers options in Engineering to girls, however all of the activities are open to both girls and boys.

Robotics Workshop

INTECH Science Centre & Planetarium
North Hampshire & Solent Local Networks
Primary and Secondary School Activity

INTECH is the STEMNET contract holder for Hampshire, as well as being a science and learning centre, and has been involved in supporting local schools taking part in the First Lego League competition. This funding will provide enough equipment to run a series of workshops where students will learn to design, program and control fully functional robotic models, using Lego Mindstorm NXT 2.0.

Schools Summit

Techniquest & School of Engineering, Cardiff Uni
Wales South East Local Network
Secondary/HE Activity

One day summit bringing together multiple organisations including 10 secondary schools teaching A-level Electronics and Physics, Further Education and Higher Education organisations, Industry representatives, Careers Wales, STEM Ambassador contract holder (Techniquest), the Welsh Electronics Forum, UK Electronic Skills Foundation and SEMTA, with industrial support and input from National Instruments UK & Ireland.
The summit will allow discussion of a coordinated approach to promoting electrical and electronic engineering across the STEM curriculum, and development of in-class experimental use of an electronic measurement device to support the current curriculum.
Phase two of the project will see teachers using the measurement device in classroom learning, practical lab sessions and after school clubs in the new academic year, with support from the School of Engineering, Cardiff, IET Wales SE School Liaison Officer and STEM Ambassadors.

Smart Energy

Northern Ireland LN & Sentinus
Northern Ireland Local Network
Primary School Activity

This is the final year of a three-year project encouraging primary students at schools across Northern Ireland to explore renewable energy sources. Students will investigate energy sources and usage in a series of activity sessions, and conduct experiments based around their schools. They will build on these experiences to produce ideas on what their Smart Energy school might look like, incorporating existing and potential technologies, and present their findings and ideas to the school management team. The programme concludes with a celebration day at Sentinus Young Innovators where schools will present their school of tomorrow.
Schools will be supported by trained STEM Ambassadors and will be supplied with a kit of materials to undertake the activities.

Solar Power Locomotive Challenge

North Yorkshire Business Education Partnership (NYBEP)
North Yorkshire Local Network
Secondary School Activity

2 day solar locomotive building project hosted by the North York Moors Railway. Initial research and development activities will take place prior to the event, with teams determining the initial design of their locomotive prior to attending the event. At the workshop teams will receive a kit of material with which to build their locomotives, and build, test and refine their designs. Teams are judged on the design dossiers prepared prior to attending the workshop as well as their final product.
The project description, research materials and locomotive kits will be available to schools.

STEM in Action

Humber Local Network
Humber Local Network
Primary School Activity

Green STEM workshop at an event run by HETA, STEMNET contract holder for Humber. Children will make wind turbines as part of the overall theme of Harvesting Earth's Energy, drawing links to the wind turbine building industry locally. The activity will be facilitated by IET STEM Ambassadors, and will be promoted to Humber primary schools.
Materials for the activity will be made available to teachers to use in class.

STEM to Work

Chaucer Technology School
Kent Local Network
Secondary School Activity

This project includes engineering problem solving activities, careers information and a speed networking event in conjunction with Cummins Inc, one of the larger engineering companies in Kent. Cummins will provide site visits, problem solving activities set by engineering staff, onsite and offsite talks and shared development of teaching resources.
The project organisers are working towards development of resources and a support network that can be used to deliver a much larger scale programme of events with support from local universities.

Surrey SATRO Problem Solving Challenge

Surrey SATRO
Surrey Local Network
Secondary/HE Activity

Interschool competition for secondary schools in Surrey. Students will be supplied with a set of materials and given an engineering challenge to design, build, test and refine. The challenge will culminate in a final during National Science and Engineering Week.
Sector specific STEM Ambassadors will support the challenges and final, and the resources will be available to teachers, along with information on integrating the challenges into the curriculum for whole year groups.

Sustainability Challenge

STEMNET
Coventry & Wawickshire Local Network
Primary and Secondary School Activity

Workshops to be held at Secondary schools, for primary students. Students will be challenged to research, design and create a product for the House of Gadgets using a set of materials provided. The product must be sustainable, environmentally friendly and use renewable energy sources. Pupils will work together as a team to create their product, and must also design a company and logo and consider the sector in which they specialise. Teams will give a presentation to "sell" their product to the House of Gadgets.
The workshops will be supported by STEM Ambassadors, including many who are IET members.

Sutton Primary Science & Engineering Challenge

London Borough of Sutton
London Local Network
Primary School Activity

All primary schools in the borough of Sutton, London, will be invited to participate in this event, following on from a similar event run last year. The theme of the event will be engagement in engineering, and links between the activities and engineering will be illustrated throughout the day.
The presenter will recap the basic principles of electrical circuits and introduce the children to the principles of building strong structures. Students will participate in challenges to control a pre-made buggy by making electrical circuits, and to make shelters large enough to accommodate all members of the team out of rods of newspaper.
The students will also be introduced to a range of careers in engineering through displays and brief talks with STEM ambassadors. Teachers will be offered the opportunity to sign up for a STEM Ambassador visit to their schools and will be encouraged to affiliate to a STEM Club Network.

Understanding Electronics

STEMNET
Coventry & Warwickshire Local Network
Secondary School Activity

Funding to support the purchase of Cambridge Brainbox electronics kits and development of challenges based on these. The kits and challenge resources will be made available to Coventry & Warwickshire schools, supported by STEM Ambassadors.