



# STEM TEAM Cambridgeshire

## Secondary Newsletter

### STEMTEAM Duxford 2009



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Over 300 pupils from all over Cambridgeshire came to our STEM TEAM Duxford 2009 event in June. Cambridge University Engineers took pupils through an engineering task to construct and test a crane. Royal Navy Officers challenged pupils to design, construct and test a catamaran. Engineers from Mott McDonald worked with pupils to design a bridge using a CAD programme and build one from paper tubes. Graduate trainees from Perkins helped pupils investigate aerodynamics and streamlining in a wind tunnel. Pupils heard a talk on sound and ultrasound by an Ultrasonics Consultant. RAF Officers and Crew ran a strategic planning activity and pupils investigated buoyancy by making a self ballasting self righting buoy with a member of the Institute of Physics.

*'Superb-we will be back next year.'* - *'Excellent.'* - *'Overall a very enjoyable learning experience for the majority.'* - *'Excellent team building exercise.'* - *'Made the students think and they enjoyed working it out'.*

Please register your interest for 2010 at [stempoint@stemteamcambridgeshire.org.uk](mailto:stempoint@stemteamcambridgeshire.org.uk)

# STEM TEAM Cambridgeshire



## STEM TEAM Cambridgeshire News

### STEM Ambassador Awards and Opportunities for Schools

STEM TEAM Cambridgeshire holds the contract for STEM Ambassadors in Cambridgeshire and we currently have over 600 Ambassadors. We are really proud to announce that three of our Ambassadors and one company we work with have been recognized in the National STEM Ambassador Awards.

We'd like to send our congratulations to **Christopher Cleaver** from The Engineering Department at the University of Cambridge who won the Best Activity Award. This rewards the Ambassador who has developed their own activity that has really engaged students about STEM

Christopher worked with sixth form students at Abbey College and the Leys School to develop a Carbon Footprint activity. This was delivered to a total of 260 Year 9 students at Abbey College. As a result of the activity, governors at Abbey College have now agreed to commit at least £20,000 and a 5% annual CO<sub>2</sub> emission reduction which really

demonstrates what an impact this activity has had!

See Page 3 of this newsletter if you would like to be involved in the next stage of this activity.

**Claire Cockcroft** from the Babraham Institute was highly commended for the Support and Development Award. **Susan Foord** from The British Antarctic Survey received a commendation in the Inspirational STEM Ambassador Award and **Napp Pharmaceuticals** were highly commended in the Most Dedicated Company Award.

Contact us if you would like Ambassador support at your school. Our Ambassadors can help with talks, career events and activities.



## STEMTEAM Cambridgeshire News

### What are your school's sustainability aspirations?



#### Opportunity

The Centre for Sustainable Development, Cambridge University has collaborated with local teachers to develop a novel learning day focused on Sustainability. This STEM Enhancement and Enrichment opportunity engages pupils in the consultation process of making the real and difficult sustainability choices for their school. The Centre is inviting schools with aspirations for sustainability – be it energy saving, greener transport or renewable energy - the chance to participate in the first year of this programme.

It will be run in partnership with STEM TEAM Cambridge and schools will be offered printed materials, active support during delivery, and a platform to share successes with other schools, local government and NGOs.

#### Contact

Please contact us for more details  
[elizabeth@stemteamcambridgeshire.org.uk](mailto:elizabeth@stemteamcambridgeshire.org.uk)

#### Benefits

##### For the School:

Meets requirements for teaching through themes, deep-learning days.  
 Platform for sharing success and learning with other schools.

##### For pupils:

Engagement with a global issue.  
 Learning about sustainability choices.  
 Opportunity to consolidate learning and formalise to a presentation.

##### Commitment

1. In-school planning meeting (between October - November 2009).  
 At least three teachers recommended, with support from senior management.  
 Preparation of basic energy and materials consumption information (e.g. utility bills).
2. Delivery of deep-learning day for a whole or part year group (3-19 Dec 2009 or 3-13 Jan 2010).
3. Presentations and reflections event for group of teachers and pupils at Department of Engineering (March 2010).

*Does your school have aspirations to be more sustainable? Come and find out how.*



### Cambridge Computer Science Teacher's Forum

A new teacher's forum has been set up to discuss how to increase the uptake of computer science into ICT and mathematics within schools.

If you are interested in finding out more about this forum please contact us.

[Elizabeth@stemteamcambridgeshire.org.uk](mailto:Elizabeth@stemteamcambridgeshire.org.uk)

We are working with our Ambassadors to develop new activities focused on Computer Science to bring into schools.

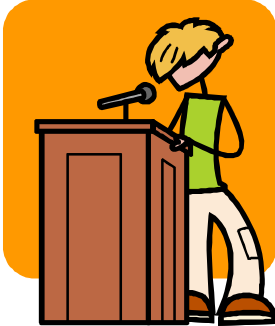
We will be publishing more information about this in our next newsletter. Please contact us if you have any comments or suggestions.

# STEM TEAM Cambridgeshire



## STEM Activities from STEMTEAM Cambridgeshire

### The Great Cambridgeshire Science Debate!



Being able to present your work in science and all STEM subjects is essential for today's scientists. So join the Great Cambridgeshire Science Debate and get your pupils talking!

Debating helps develop skills in research, critical thinking, presentation, public speaking and persuasion. And you have to keep calm and think quickly under pressure.

To help and encourage more young people to develop these skills, STEM TEAM Cambridgeshire will be holding science debates in schools throughout the county next year.

We'll be providing science topics for your pupils to research and discuss and time with Ambassadors to learn both more about the subject itself and how to formulate an argument that people will take notice of.

Please register your interest now and we'll provide more details in our next newsletter.

email:

[Elizabeth@stemteamcambridgeshire.org.uk](mailto:Elizabeth@stemteamcambridgeshire.org.uk)

### Want more information about public speaking and debating?

The BBC programme **The Speaker** encouraged young people to improve their public speaking skills. The show is now finished but the website still contains lots of

really useful information and tips on how best to speak in public and get your views across.

[www.bbc.co.uk/speaker/improve/](http://www.bbc.co.uk/speaker/improve/)

### I'm a Scientist Debate Kits—IVF



Need some more help to get you started? Free debate kits are available from I'm a Scientist to help you prepare for our Great Cambridgeshire Science Debate.

**Activity:** Role play on IVF

**Kits contain:** Character cards, lesson plan, background info, wallet holder

**Time:** Approx 1 hr

**Age:** Designed for KS4, used for ages 11-18

**Aim:** Promote discussion skills.

The activity is a role play where students are given different character cards with a short background and position in the debate.

Free order a copy online at:

<http://imascientist.org.uk/debate/>

Other debate kits are planned. Please check the I'm as Scientist website.

## STEM Activities from STEM TEAM Cambridgeshire

### Digital Design and Technology Teachers Workshops

We at STEM TEAM Cambridgeshire are developing resources to help teachers with practical aspects of design and technology using the latest technology, focusing particularly on soft electronics for textiles and interactive circuits.

*This course is ideal for those schools taking up the engineering diploma but also of great benefit to D&T lessons.*

#### Pro ENGINEER—Support for D&T and the Engineering Diploma

Pro-Engineer has been identified as the CAD software to support the Engineering Diploma.

STEM TEAM Cambridgeshire ran two discounted training courses this year.

The Pro-Engineer licence is available free to schools and colleges when an appointed teacher attends the workshop and completes the associated coursework.

If you are interested in finding out more about Pro-Engineer and the necessary training course please contact us.

[Elizabeth@stemteamcambridgeshire.org.uk](mailto:Elizabeth@stemteamcambridgeshire.org.uk)



#### One Day course on Digital D&T and Circuit Wizard PIC Software

Contact us for more information on a one day course on **23rd September** giving an overview regarding what is happening with the new National DATA funded activity called Digital D&T and a hands-on update, working with New Wave Concepts PIC development software—Circuit Wizard Genie.

This is a highly recommended course, involving hands-on activity.

It is suitable for KS3 Systems and Control, KS4 Electronic/Systems and Control Products, and National Diploma Engineering Levels 1 & 2.



# STEM TEAM Cambridgeshire

These following sections give information on some of the schemes and enrichment opportunities available to schools.

Please let us know if you use this material or even research it.

We need to evaluate interest and record uptake for our brokerage service to schools and colleges in Cambridgeshire. Please also let us know if there is any particular area of STEM enrichment you would like us to research and evaluate for you.

As we build up a picture of each schools' interests and needs we can help you further and more effectively.

Many thanks!



## STEM Activities from The University of Cambridge

### stemNRICH

stemNRICH is an exciting new area of the NRICH website containing a wide range and variety of mathematical problems, articles and guidance for anyone interested in school science or thinking of studying science, engineering or applied mathematics at University.

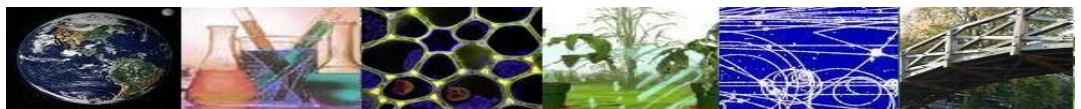
Mathematics is vital to the study of the sciences, technology and engineering. The stemNRICH philosophy is that a richer understanding of the mathematics will lead to a richer understanding of the science. stemNRICH is organised into four application nodes, each contains a selection of tasks exploring the mathematical ideas underlying topics in biology, chemistry,

physics and engineering. These tasks can be used in the classroom or for self-directed learning.

<http://nrich.maths.com/stemnrich>

NRICH is part of the family of activities within the Millennium Mathematics Project at the University of Cambridge.

Millennium Mathematics Project  
<http://mmp.maths.org/>



## STEM Activities from Other Providers

### Web Videos for Teaching

The Public Understanding of Science email list has recently been discussing web videos for use in schools. Here, in no particular order, are a selection of those mentioned.

**Survival Rivals for Secondary Schools**  
[www.survivalrivals.org](http://www.survivalrivals.org)

**Routes** - videos (and games) on genetics aimed at 14-19s+ [www.routesgame.org](http://www.routesgame.org)

**From the Wellcome Trust:**

**The Tree of Life** - flythrough of evolution of animal life featuring David Attenborough  
[www.wellcometreeoflife.org](http://www.wellcometreeoflife.org)

**Public Views on Darwin and Evolution**  
<http://www.wellcome.ac.uk/Achievements-and-Impact/Initiatives/Public-engagement/Darwin-200/Your-views/index.htm>

**BBC's Class Clips** resource—searchable short videos on various subjects including science, and they are marked as suitable for various age groups, with tips on how they could be used in the classroom  
[www.bbc.co.uk/learningzone/clips/](http://www.bbc.co.uk/learningzone/clips/)

**Big Picture Series**—post 16 resource exploring issues around biology and medicine. Includes print and online versions. The online version contains video and audio files, games and animations. The latest Big Picture is on Climate change and Health.  
<http://www.wellcome.ac.uk/bigpicture>

**Science Made Fun**  
<http://sciencemadefun.podbean.com/>

**Science Museum**  
[www.sciencemuseum.org.uk/educatorsresources](http://www.sciencemuseum.org.uk/educatorsresources)

**KS3 area**—KS3 Materials to find the films, and other free classroom activities, which have all been developed in consultation with teachers and students. There are five films, each showing 3-minute demonstrations on the theme of materials:

**Nutty Putty** - demonstrates non-Newtonian fluids by experimenting with silly putty.

**Happy Nappy** - looks at super-absorbent materials such as those used in nappies.

**Newton's Nemesis** - looks at non-Newtonian fluids such as cornflour (it has a

really nice demonstration where the slime dances on a loud speaker).

**Plastic Fantastic** - looking at polymers and making nylon.

**Total Recall** - looks at the properties of smart materials such as shape-memory metals.

Each film has a web page of teachers' notes with extension activities.

**Join the Pod—Climate Change** Information packs in the "Learn" areas for Energy and Transport have some information on climate change. These were written with the Eden Project as part of the London 2012 Olympics Education Programme.  
[www.jointhepod.org](http://www.jointhepod.org)

**Climate Change Explorer** For a range of climate change videos produced by and for secondary school students see the Climate Change Explorer website:  
[www.climatechangeexplorer.org.uk](http://www.climatechangeexplorer.org.uk).

You can also find a link to a digital 'e-book' called 'As Seasons Change' produces by artist Lorraine Berry.

The **Future Morph** website has a set of 10 videos featuring people who use science in their work ranging from a glass artist to a physiotherapist. Each is linked to a lesson plan but can also be used to promote discussion around a range of topics.

[http://www.futuremorph.org/teachers/introduction\\_to\\_resources/science\\_teaching\\_resources.cfm](http://www.futuremorph.org/teachers/introduction_to_resources/science_teaching_resources.cfm)

**Vega Science Trust** <http://vega.org.uk>  
**Particle Physics**  
[www.collidingparticles.com](http://www.collidingparticles.com)  
<http://labreporter.com>

**Research Councils UK** have produced a set of short (10 min) video podcasts around evolution topics, of which all but one feature interviews with researchers.

[http://www.darwin.rcuk.ac.uk/203/all/1/Topics\\_\\_Questions.aspx](http://www.darwin.rcuk.ac.uk/203/all/1/Topics__Questions.aspx)



## STEM TEAM Cambridgeshire

### STEM Activities from Other Providers

Apple, Nintendo, Wallace and Gromit:  
What do they have in common?

# Technology!



The Cambridge Rotary Club, with the support of STEM TEAM Cambridgeshire, are organising a one-day Design and Technology Challenge as part of the National Rotary Technology Tournament for schools in the Cambridge area on Saturday February 6<sup>th</sup> 2010.

Teams of four pupils aged between 13 and 14 years are given a previously unseen technology challenge to solve. They will analyse, plan, create, construct, test and demonstrate their solution to a panel of judges. The challenge enhances the curriculum and gives pupils the opportunity to develop teamwork and communication skills.

Schools can enter more than one team.

Prizes will be awarded in number of categories.

All entrants will receive a Technology Tournament certificate and students will be eligible to apply for a **British Science Association Bronze CREST Award**.



The judging panel will include Rotarians and STEM Ambassadors.

More information at:

[http://www.cambridgerotary.org.uk/stranka.php?idf=512&id\\_klubu=3](http://www.cambridgerotary.org.uk/stranka.php?idf=512&id_klubu=3)

[www.stemteamcambridgeshire.org.uk](http://www.stemteamcambridgeshire.org.uk)

Please register your interest at: [stempoint@stemteamcambridgeshire.org.uk](mailto:stempoint@stemteamcambridgeshire.org.uk)

STEM Ambassadors are working STEM Professionals who volunteer their time to inspire and enthuse young people about Science, Technology, Engineering and Mathematics and inform them about the career opportunities available.

More details at: [www.stemnet.org.uk](http://www.stemnet.org.uk)

## STEM Activities from Other Providers

### GO4SET from the Engineering Development Trust

Go4SET links teams of 6 Year 9 pupils with companies and universities for a 10 week SET experience. By providing a real SET project, Go4SET raises pupils awareness and highlights exciting future career options in SET. Work related learning within an industrial enterprise context is the core of the Go4SET experience. For more information about the Engineering Development Trust and Go4SET see:

This year three schools in Cambridgeshire have joined the Go4SET scheme. Your school could be among next year's group,

We work with Nada John, the regional coordinator for Go4SET to engage employers. We provide STEM Ambassadors with CRB clearance and insurance cover.

<http://www.go4set.org.uk/EDT.html>  
<http://www.go4set.org.uk/>

Most importantly for the pupils, the Ambassadors inspire and encourage them to achieve the best learning outcomes.



### National Science and Engineering Week

National Science and Engineering Week (NSEW) is a 10 day celebration of science, engineering and technology run through the British Science Association. The full evaluation is now available to read online at: [www.britishscienceassociation.org/web/nsew/NSEW\\_archive/NSEW+2009/report2009.htm](http://www.britishscienceassociation.org/web/nsew/NSEW_archive/NSEW+2009/report2009.htm)

Next year National Science and Engineering Week is from 12-21 March.

**Small Grant Scheme for Schools**  
The British Science Association run a small grant scheme for schools to help them run STEM activities during NSEW. [www.britishscienceassociation.org/web/nsew/SchoolsandCollegessection/index.htm](http://www.britishscienceassociation.org/web/nsew/SchoolsandCollegessection/index.htm)

We ran a number of events during NSEW including our extremely successful Physics of the Bicycle Activity at Cambridge Science Festival. This event was funded through an Institute of Physics Public Engagement Grant.

The scheme opens in September and the website contains information on how to apply and examples of schemes that were funded in 2009.



# STEM TEAM Cambridgeshire

## STEM Activities from Other Providers

### British Science Festival—Bursaries for Schools



The annual British Science Association's British Science Festival is one of Europe's largest science festivals. This year it takes place at the University of Surrey, Guildford between 5-10 September. The event is packed with activities, lectures and debates involving the cream of the British scientific community. The Science and Technology Facilities Council (STFC) is offering secondary schools the opportunity to apply for bursaries to help with attending the event.

Monday 7th September  
100 years of Atomic Nuclei  
Wednesday 9th September  
A Physicist's Guide to Dating  
The Universe from the Bottom Up  
Thursday 10th September  
Antimatter

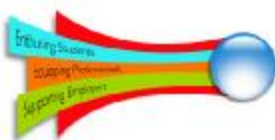
The bursary can be used toward the cost of registration and transport costs.

To apply for the bursary please send an email to Chris Woolford at [chris.woolford@stfc.ac.uk](mailto:chris.woolford@stfc.ac.uk) providing your contact details, the nature of the group you wish to take (e.g. number, age, course of study), the session you anticipate attending and how you would benefit from the bursary.

<http://www.britishecienceassociation.org/web/BritishScienceFestival/index.htm>



### Careers Education Information Advice and Guidance Pack



The Careers Education Information, Advice and Guidance pack is now available to download from the STEM Subject Choice and Careers Digital Store-cupboard:

Please register with the store-cupboard to download resources, you will receive automatic updates when new resources are available.

<http://digitalstorecupboard.tintisha-web.co.uk/home>

### Association for Science Education

The Association for Science Education East of England Area Conference will be held at the John Innes Centre in Norwich on the 10th October 2009.

The theme of the conference is **Practical Work without Labs**.

Sessions will include:  
QCA on assessment  
Astronomy  
Earth Sciences  
Science Clubs.

For more details contact:

Jane Giffould ASE Field Officer  
email: [janegiffould@ase.org.uk](mailto:janegiffould@ase.org.uk)  
phone: 01787 476700

The full programme will be available on the ASE website from August 2009.

[www.ase.org.uk](http://www.ase.org.uk)



## STEM TEAM Cambridgeshire

STEM TEAM Cambridgeshire works in partnership with STEM businesses and educational organisations. As a registered charity (No. 291332) we provide resources and deliver STEM activities in schools, Continued Professional Development for teachers and manage a number of national schemes for the county. We organise and run annual science fairs and competitions as part of both national and local networks.

We are the local arm of STEMNET as the STEMPoint contract holder 2008-2011 for Cambridgeshire and managers of the National STEM Ambassador scheme for the county.



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