National HE STEM Programme

newsletter

SUMMER 2010

Introduction from Michael Grove, National HE STEM Programme Director

Welcome to the first issue of the National HE STEM Programme's newsletter. The purpose of this newsletter is not only to share details of the activities of the Programme, but also to disseminate wider information that aligns with its aims and objectives and that will be of interest and value to the Higher Education STEM sector. If you have information you would like to share we would be delighted to hear from you.

The National HE STEM Programme supports Higher Education Institutions in encouraging the exploration of new approaches to recruiting students and delivering programmes of study within the Science, Technology, Engineering and Mathematics (STEM) disciplines. It enables the transfer of best practice across the Higher Education STEM sector, facilitates its wider adoption, and encourages innovation. Through collaboration and shared working the Programme focuses upon sustainable activities to achieve a long term impact within the Higher Education sector.

As we start the new academic year, the Programme will shortly be making available a number of significant opportunities for HEIs to work as part of the Programme team. Details will be made available on our website **www.hestem.ac.uk,** and I encourage you to register your details in order to ensure that you are sent information as soon as it becomes available.

Programme activities take place across three related strands:

1. Widening participation within the STEM disciplines at university level, by working with those currently within the school and FE sectors;
2. Higher Education curriculum developments focusing upon course delivery and design and student support, to enhance student knowledge, progression and skills;
3. Encouraging those currently within the workforce and society without a prior university-level qualification to engage with further study to develop enhanced knowledge and skills.

Better motivated better prepared applicants

Better retention and progression

Improved employability

The Programme adopts a holistic approach by considering the progression of students from school, through university and into the workplace.

Key Achievements:

76 delegates attended the Programme's Diversity in STEM Conference held on 8 June 2010 and at the time of going to print more than 50 have registered for the Outreach in STEM Conference on 28 September 2010

20 collaborative proposals are underway involving 29 HEIs to transfer and embed good practice

Transfer and embedding of proven practice relating to mathematics support within 5 HEIs: Central Lancashire, Kent, Lincoln, London Metropolitan, and York. In all cases matched funding was provided by the HEI

17 curriculum innovation projects are underway in Engineering and the Mathematical Sciences. Projects involve the Universities of Bradford, Aston, Birmingham, Coventry, Loughborough, Brunel, Nottingham-Trent, Salford and Imperial College, London

Community network established in the South West to promote and support chemistry and to embed outcomes from the pilot project, Chemistry for our Future, into the region

Programme engagement with regional and national Big Bang fairs

New Technology Strategy Board platform (_*connect*) utilised to create the National HE STEM Programme network, which will be launched in September/October 2010

Six regional STEM focused outreach projects initiated as part of the London Engineering Project rolled out and established by working with Spoke HEIs

Major regional project underway within the North-East to transfer practice between HEIs and develop collaborative approaches to support looked after young children

Continued growth of the Integrated Sciences programme at the University of Leicester, the launch of an Integrated Sciences degree at London South Bank University and development of an Integrated Sciences programme at the University of Bradford

Soft roll-out of Repackaging Physics work at the University of Salford has seen an 80% increase in applications for 2010 entry

Publications from Stimulating Physics pilot project to disseminate best practices in relation to teacher fellowship schemes, industry visits, and marketing physics degrees in the 21st century

Creation of an Education Special Interest Group at the University of Birmingham. A series of STEM education briefings to disseminate research findings is in progress, and development of STEM education synopses is underway

10 HEI events to disseminate the pilot project More Maths Grads 'Maths in a Box' resource

Extensive Programme engagement with HEIs, in particular at regional level. All HEIs in Wales with STEM provision have agreed to nominate a senior representative to sit on the Wales Spoke Steering Group, the North East Spoke has engaged with all HEIs with STEM provision, and South West Spoke Programme Officers have consulted over 30 academics and support staff in the spoke STEM departments and over 40 academic and support staff at 6 regional HEIs since April 2010

News from the programme:

Programme partners

The Royal Society of Chemistry (RSC)

have rolled out equipment produced via the pilot project 'Spectroscopy in a Suitcase' across the country and have appointed both this year's Teacher Fellows, who will be hosted at Bath University and Durham University, where their principal areas of work will be assessment and developing problem-solving skills respectively.

The Royal Academy of Engineering (RAE)

The London Engineering Project has won an award at the London Education Partnerships for Inspiring journeys: excellent professional practice for curriculum support in STEM. The RAE have also announced the successful bids to the funding call which closed on May 16 2010.

The Institute of Physics (IOP)

have developed a comprehensive marketing strategy based on findings from market research which examined the perception of physics among young adults. Material has been produced for students at various stages of education that emphasises the benefits of continuing their studies in physics. A guide for physics departments has also been produced which gives advice on marketing physics degrees in an innovative and interesting way. The IoP are also working with Salford University to redevelop its physics degree w/ef 2010/11, and during a soft launch of the new programme the applications to Salford's physics department rose by 80%. A new interdisciplinary degree, Integrated Sciences, allowing students the freedom to study a wide range of science subjects to bachelor or masters degree level, has been successfully introduced at Leicester University.

The Institute of Mathematics and its Applications (IMA)

are enjoying a very positive response to their roll out of pilot project activity 'Opening the box'. The entire resource 'Maths in a box' (a collection of electronic and paper resources, including posters, DVDs, booklets containing careers profiles and even a book of magic tricks) is available to download free from **http://www.mathscareers.org.uk/viewitem.cfm?cit_id=382988.**

Spokes

The Yorkshire and North East spoke are holding monthly regional seminars on the dissemination and sharing of good Widening Participation practice between HEIs and FECs. They have also set up a database of organisations available to fund ongoing project work once the National HE STEM Programme has finished.

The North West spoke are working on a number of initiatives, including a series of discipline specific workshops, 'Meet the Scientist' demonstrations, and reviews of existing WP and Employability initiatives in the area. They are keen to hear from anyone who is able to contribute to their core mission of improving HEI involvement in STEM outreach, enrichment and enhancement, widening participation, careers advice and guidance, transition from year 13 to undergraduate study, undergraduate curriculum, higher skills for graduates, workforce up-skilling and development, and lifelong learning.

The Midlands and East Anglia spoke are seeking to collate examples of good practice in developing the higher level skills required by the workforce in the region. A series of events to facilitate the sharing of good practice in outreach are in preparation.

The London and South East spoke are engaged in mapping the wealth of excellent practice which already exists in STEM Schools and Departments across London and the South East in terms of encouraging and supporting more students from under-represented groups to apply to study STEM subjects, and in supporting them in the transition to university learning.

The South West spoke have developed a Widening Participation Good Practice database which gives details of outreach and WP activities across the SW region: including information on the practicalities of implementation, challenges encountered and lessons learned.

The Wales spoke are working with Career Wales to set up two new Discover Science Clubs with HEI support for more able and talented year 9 girls in north Wales, and with the Royal Academy of Engineering on a Welsh HE-centred engineering outreach project for girls in primary schools, centred on the Bloodhound Primary Challenge, which will build on the experience of the Welsh Engineering Project with the Engineering Education Scheme Wales and Swansea University as partners.

Programme partners

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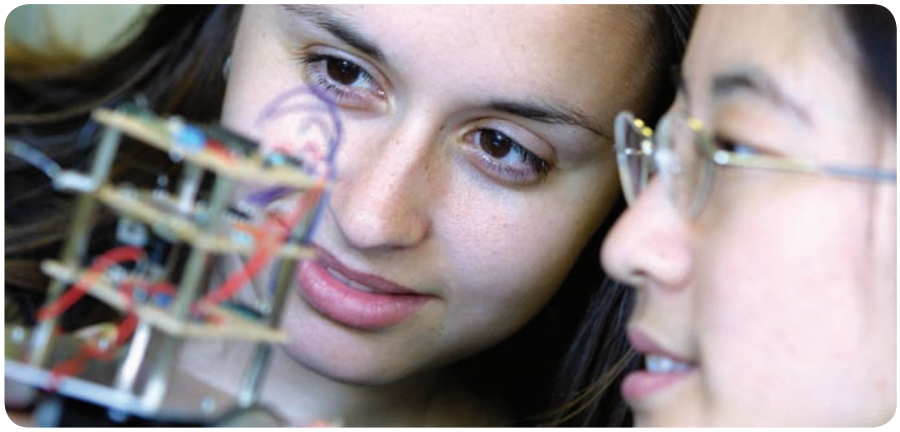
Reviews

The Big Bang 2010

Manchester Central Conference Centre 11–13 March 2010

Sponsored by The National HE STEM Programme



The Big Bang 2010 was a a sell-out success with over three times as many attendees as the inaugural Big Bang in 2009. More than 15,000 children, 4,000 teachers, parents and guardians and 110 organisations from across the private, public and voluntary sectors came together to explore topics as diverse as welding with chocolate, mapping the human genome and the hospital of the future. There were 120 activities in total, together with 48 interactive workshops, 18 headline performances and 9 shows including Sky One's Brainiac, the BBC's Bang Goes the Theory and the Royal Institution's Christmas lectures.

Meanwhile, The Big Bang careers awareness programme offered opportunities for careers networking and speed dating events, an interactive careers quest, careers resources, and a series of live panel debates with National STEM Careers Co-ordinator Kate Bellingham, Managing Director of Siemens UK Industry Sector Juergen Maier, and Chief Executive of Cogent Joanna Woolf. Information, advice and guidance, study hints and tips, interactive quizzes, games and activities were provided for children, parents and teachers alike, together with showcased examples of the desirability of STEM careers. Lord Mandelson presented 'UK Young Engineer of the Year' to Shawn Brown for a bamboo framed electric trike using sustainable and reusable material and 'UK Young Scientist of the Year' to Thomas Hearing for mapping Monmouth beach and the eroding ammonite pavement.

The Big Bang 2011 will be held at ExCel in the ICC in London from 10 to 12 March, and will once again be open to teachers, parents and guardians as well as children and young people up to the age of 19. To find out more, go to **www.thebigbangfair.co.uk**

John Halton, Engineering UK

Diversity in STEM Conference

London, 8 June 2010

On 8 June the National HE STEM Programme held its first conference at the Institute of Physics (a pleasant stroll from Euston!) with the title 'Diversity in STEM'. More than 70 delegates from across Great Britain met to discuss a range of issues on the subject of broadening access and widening participation in HE STEM. Keynote speakers included Professor John Storan, Co-Director of Action on Access, Professor Geoff Whitty, Director of the Institute of Education, and Sarah Howls, Head of Widening Participation at the Higher Education Funding Council of England. Breakout groups focussed on aspirations and inclusive approaches; E&D toolkit and barriers to STEM; engaging with schools and marketing Physics; getting girls and women into Physics and Engineering; understanding the participation of BME students in Physics and Chemistry, and attracting girls and ethnic minorities into Mathematical Sciences. The second National HE STEM Programme conference, on the topic of 'Outreach in STEM' will take place in London on 28 September.

(– And on a personal note, as a non scientist myself it continues to amaze me how much you can learn by hanging around with chemists. As a result of doing so at another event in March I now know how to poison someone with arsenic and get away with it, and at the Diversity in STEM Conference I discovered that turning lead to gold, (the dream of mediaeval alchemists everywhere, to say nothing of Percy in *Black Adder*) is a genuine possibility (…albeit one so disappointingly expensive that it would work out far cheaper just to buy the gold…))

Rebecca R Rosewarne,
National HE STEM Programme

HEI Resources:

National STEM Centre E-Library

The National STEM Centre in York provides support for STEM teachers and lecturers as part of its leading role within the government's STEM Programme, and via a large library of teaching and learning resources. The Centre holds the largest accessible collection of such resources in the UK for STEM subjects across the 5–19 age range.

These collections include multimedia, print, practical teaching materials, and research publications. In addition to contemporary resources the National STEM Centre is building a sustainable archive of resource materials from the 1960s onwards. The Centre's library can thus provide a treasure chest of inspiration for schemes of work, to inform curriculum development, and to support the implementation of STEM across a school or college. The physical library is open to teachers and STEM partner organisations, with on-site accommodation available for visitors. In addition, from 2010 onwards selected resource collections are being made available online through the Centre's eLibrary.

Resources from the four pilot projects: Chemistry for our Future, the London Engineering Project, More Maths Grads and Stimulating Physics will be made available from the eLibrary in due course

The National STEM Centre is funded by the Gatsby Charitable Foundation and the Department for Education. For more information explore the Centre at **www.nationalstemcentre.org.uk**.

Ed Mather, National STEM Centre

Funding calls

There is now a calendar of all known live funding calls in STEM subjects at **http://www.hestem.ac.uk/Fundingcalls/tabid/128/Default.aspx.**

(If you are aware of any live funding calls not represented on the above, please contact the **National HE STEM Programme Information Officer** on r.r.rosewarne@bham.ac.uk)

In our WINTER newsletter:

Questions for Marcus du Sautoy – the current Simonyi Professor for the Public Understanding of Science, Marcus du Sautoy, has kindly agreed to answer questions from the national HE STEM Community in our winter newsletter. If you have a question you would like to ask Marcus, please email it to r.r.rosewarne@bham.ac.uk by **Friday 8 October.**