



The Royal Academy
of Engineering



Engineering
Subject
Centre

**A REPORT
ON**

**NATIONAL HE STEM PROGRAMME
ENGINEERING ACTIVITY WORKSHOP**

TUESDAY, 20TH APRIL 2010

**AT
THE ENGINEERING CENTRE FOR EXCELLENCE IN TEACHING AND LEARNING
(ENG CETL)
LOUGHBOROUGH UNIVERSITY
LEICESTERSHIRE**

Program of the day

10:00 *Refreshments and Registration*

10:30 **Welcome and Introduction**

The aim of the day is to help university engineering departments get value from the National HE STEM Programme.

10:40 **Introduction to the National HE STEM Programme and Engineering activities**

Heather Hawthorne, The Royal Academy of Engineering

10:50 **Engaging Employers in the Engineering Curriculum**

Bob Pendlebury, The JCB Academy

11:10 **Workshops**

HE Curriculum Innovation & Diversity	Employer Engagement
Heather Hawthorne	Hal Igarashi
<i>In what ways can HE curriculum be made more engaging for students and develop higher skills? What can you do to widen participation? In what ways can we attract under-represented group onto engineering degrees?</i>	<i>How can the National HE STEM Programme help you with employer engagement and what kind of activities would promote sustainable engagement with industrial partners?</i>

12:15 Group feedback from workshops

12:30 *Lunch and Networking*

13:15 Engineering Proposals – the process and documentation

13:45 Question & Answer session

14:00 **Evaluating your projects**

Jane Pritchard, Associate, Higher Education Academy Engineering Subject Centre

15:00 Plenary and completion of individual contact forms

15:30 *Refreshments and Networking*

16:00 Close

Aim for the day

The aim of the day is to help university engineering departments get value from the National HE STEM Programme.

Specific objectives for the day

We hope to achieve the following objectives with colleagues by the end of the day

1. To generate project ideas for engineering activity in;
 - **HE Curriculum Innovation**
 - **Education research**
 - **Employer engagement**
 - **Engineering for Society (Diversity)**
2. To share effective practice within the HEI community
3. To set-up small working groups or make contact for collaborative projects
4. To shape ideas for Engineering Activity proposals
5. To understand how to evaluate potential projects
6. To understand the process submitting project proposals

Organisers



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List of Attendees

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Workshop Summary: HE Curriculum Innovation & Diversity

(Facilitator: Heather Hawthorne)

The key points discussed during the workshop are outlined below:

- **Engineering for Society**

Newcastle University (contact Louise McCarthy - louise.mccarthy@ncl.ac.uk)

1. monitoring better recruitment into electrical & mechanical degrees
2. Shadowing students from sixth form to HE – closely matched as possible

University of Central Lancaster (UCLAN) (contact Kaushik Nag - KNag1@uclan.ac.uk)

1. Developing a module for outreach with Burnley College; specifically targeting and looking at students who would/have not considered going onto HE or engineering at HE
2. This could be a 3 days exposure or experience at UCLAN intended to showcase engineering and university experience to these groups
3. Develop ethical practice and/or training for colleagues working on or organising activities for the 3 days experience

- **HE Innovation Projects**

1. **Brunel** (contact Chris Brown - mestcjb@brunel.ac.uk): to help with retention on foundation degrees – look at innovative ways of using PBL in foundation degree, this approach could also be used for the UG curriculum – leading to larger projects in 2nd /3rd years of UG degrees
2. **UWE** (contact Benjamin Drew - benjamin.drew@uwe.ac.uk) : innovations into teaching 1st/2nd year – look at the efficiencies and cost effectiveness for different styles of teaching e.g. group sizes / delivery / cost.
3. **Loughborough** (contact Robb Doyle - R.Doyle@lboro.ac.uk) : CAD skills assessment tools / feedback (including Standards Accreditation.)
4. **Wolverhampton** (contact Bryan Fryer - B.S.Fryer@wlv.ac.uk) Develop maths/engineering revision packs for engaging with new students who are to embark on a foundation degree, before arriving at HEI. Work on them in the summer holiday before they arrive at University.

- **Ways of using the funding at this level:**

1. Upgrade module
2. Student placements
3. Pay a student to re-design module / materials
4. Away day – open to change. Model on “Change Academy”
5. Year 1/2 projects – consolidate and evaluate.

Workshop Summary: Employer Engagement

(Facilitator: Hal Igarashi)

The key points discussed during the workshop are outlined below:

1. It is difficult for industrial partners and HEIs to find time to work together and there are organisational incompatibilities between universities and industry. University and industry do not have a common understanding of terminology which makes communicating intentions and expectations difficult.
2. The key messages with regard to engagement are the benefits to industry in getting involved with the universities. Industry needs to be more aware of the importance of their role in investing in the development of their future engineers and workforce for business advancement.
3. Continual effort is needed in opening doors and building and sustaining relationships between HEIs and employers. It was suggested that engagement with employers could be increased by working with leading industrial partners through supply chain management.
4. SMEs are driven by financial imperatives which inhibit investing time and money in to education and knowledge transfer. Building sustainable relationship with SMEs was considered to be very important.
5. HEIs need to work with SMEs to define the middle ground and the level of risk that is acceptable to the SMEs for their collaboration and design curricula and programmes which are not overly constrained to enable engagement with SMEs.
6. Making direct contact with the MDs of local SMEs to develop engagement models and incentives for employees.
7. Maintaining and developing links through alumni to develop relationships with companies or get involved with appropriate projects, special lectures, or presentation during important careers events.
8. There is a recognised need by universities for knowledge transfer initiatives to provide lecturers with practical/experiential knowledge of industry relevant to their subject which could be the basis of a sustainable HEI employer engagement practice. It was noted there were methods to do this which would not require long secondments, such as visiting professors, lecturers and supervisors schemes. It was suggested that reciprocal arrangements could be set up which meet the needs and make use of (a) Academic CPD, (b) WBL Business need, (c) Industry experts
9. Developing engagement models which depend on in kind support between HEIs and Industry is essential for a successful and sustainable relationship.
10. Organising regional employer engagement seminars will be useful to give a platform for both – employers and academics, to come together and discuss future possibilities of working together.
11. Work based learning for more mature students was suggested to be a collaborative approach for sustainable relationship. Universities should look at the way their degrees could be delivered to enable engagement from these learners. It was stated that the Open University had increased the numbers of engineering students 3 fold in the last 18 months.

12. There are a lot of funding bodies and organisations with interests in employer representation and engagement, greater clarity is needed on funding mechanisms and the various initiatives going around.

Evaluation of the event

	<i>Excellent</i>	<i>Good</i>	<i>Satisfactory</i>	<i>Poor</i>
1. Overall rating of the event	5	11	3	<input type="checkbox"/>
2. Pre-event organisation	5	14	<input type="checkbox"/>	<input type="checkbox"/>
3. Organisation on the day	8	12	<input type="checkbox"/>	<input type="checkbox"/>
4. Meals/refreshments	5	13	2	<input type="checkbox"/>
5. Meeting rooms/facilities	5	14	<input type="checkbox"/>	<input type="checkbox"/>

6. What did you hope to achieve by attending this event?

- Better understanding of the STEM call requirements
- How to submit/what to submit
- A clear understanding of the funding opportunities and bidding process
- Information on making bids and developing ideas
- Understanding of funding issues/opportunities. New ideas and current experience on employer engagement
- To look for firm guidance in writing successful bids for research funding
- An understanding of the relationship between the various strands of the STEM initiatives
- Identify potential collaborators for a project
- To learn about bid process, evaluation, etc.
- Information on how STEM might be relevant
- Understand more about funding opportunities and themes regarding STEM research
- Further collaboration with HEIs
- More understanding on the programme objectives
- Interactive discussions, new ideas, help in grant proposal
- Gain some information / advice on how to successfully apply for HE STEM funding for my project
- Understanding of HE STEM programme
- Ideas for projects as I look to take charge of curriculum development in the department in the next academic year
- To discuss more about the bidding process
- An understanding of STEM funding

7. What was the most useful or meaningful thing you learnt?

- Evaluation points
- Contacts / knowledge of aims / other initiatives
- More on the streams of funding available
- A start in the process of making a proposal
- Variety of experiences concerned with employer engagement

- Nature and scope of possible proposals and more advice on linking aims to outcomes and methodologies for projects. As a spin of some useful information on Change Academy and ambassadors
- A couple of non-STEM related things which came up in the general discussion
- A wide range of institutions have similar projects
- Funding bid writing
- That we do some of the things suggested on employer links
- In some ways, but a little vague
- HEIs continue to fund issues working with SSCs for employer engagement; seen as competition rather than collaboration
- The final presentation on the application
- Jane Pritchard's presentation on evaluation / aims / outcomes was very useful and highly informative.
- Scale of the projects
- How to write a proposal
- How to engage / manage the bidding process
- How to set out a project proposal

8. What was the most unclear point?

- Employer engagement workshop
- Relationship between different initiatives
- How collaboration will be funded, i.e. two bids for one project.
- A more precise idea of what may be funded
- What is the next step to develop a proposal
- Focus of call
- Exactly what is and is not OK to submit as a research idea, e.g. timeline, funding limits too vague
- Contradictory – Be innovative, but drawn on previous work
- All clear – nothing was unclear in the workshop
- Hard to say as attended the event at the last minute, so had few pre-conception
- Not one really
- Workshop – confusing
- The scope of the call – seems very broad
- Finding the building
- My lack of knowledge of the STEM programme

9. What might you do differently in the future as a result of attending this event?

- Make sure I will attend similar events
- Collaborate across regional boundaries
- Why there is such a variety of routes for funding very similar projects?

- Work with / contact / communicate with organisations such as HEA subject centre and other institutional colleagues
- Not sure
- I now have a pool of contacts at other institutions with similar interests.
- Bid writing and propositions with partners
- Data collection
- Focus on solutions to problems
- I will be able to make a clear distinction between project aims and intended outcomes. Hopefully, I will also write a successful proposal too!
- Consider introductory maths teaching
- Attend more workshops
- Discuss ideas with the STEM Programme Team prior to making a proposal
- Background reading of STEM

10. Please suggest one thing which could improve future events

- A bit more clarity on purpose of workshop session
- In future, bid case studies
- Less about evaluation
- Clearer brainstorming of concrete proposals
- Use a London venue
- Better guidelines on funding applications
- Wider employer engagement rather than just HEIs
- Make all presentations available in note form
- More information provided ahead of time