

Engineering Professors COUNCIL

The voice of engineering academics

Annual Review May 2017

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President's Report Prof Stephanie Haywood

The continuing rapid change in the external landscape of HE has led to an extremely eventful year for EPC. With the referendum vote, the passing of the HE & Research Bill and the introduction of TEF, the need for EPC to represent Engineering HE views in an authoritative manner to government has never been greater.

With this in mind we have continued our response to key government consultations, seeking the views of the broadest possible cross-section of the membership to feed into these.

One particular area in which EPC has been able to influence debate was the Commons Science & Technology Select Committee examination of 'The implications and opportunities of leaving the EU for science and research.' As well as submitting written evidence, we were invited to give oral evidence to the committee in early January and, thanks to the work of our executive team – especially our capable Policy and Research Officer, Dr Inês Direito – I was able to draw on the *EPC Briefing paper: Leaving the EU* in order to outline implications and opportunities for science and research when giving evidence to the committee.

This event led to several other requests for comment, including from US and German engineering publications and of course to the final report of the committee in which EPC received a number of mentions.

Other important areas to which EPC has responded are: the Teaching Excellence Framework: technical consultation for year 2; the Consultation on the second Research Excellence Framework; and the consultation on the Industrial Strategy Green Paper. You can find all these responses and others on the EPC website.

For me personally, my second year as President was particularly busy as I was also Congress Convenor. We welcomed over 80 attendees and speakers to Hull for Congress 2016, which was chosen to coincide with the Amy Johnson Festival.

The theme of the Art of Engineering was chosen to highlight the role of creativity and design needed in engineering skills for the future. For the first time we also held an Early Career workshop at Congress as a



Prof Steph Haywood giving evidence, on behalf of the EPC, to the House of Commons Science & Technology Select Committee's inquiry on Brexit

result of the massive response we had received to a poll of engineering-based early career researchers suggesting they would value engagement with their peers in other institutions. This has also been central to plans for the future strategy of EPC.

The EPC's growing strength is not only in national policy impact, but also direct support for our members.

Other major events have included this year's EPC Recruitment and Admissions Forum which took place in November at the Institution of Mechanical Engineers in London. It offered a packed and informative programme convened by Recruitment and Admissions Sub-Committee chair, Prof Mike Bramhall, and Deputy Chair, Dr Georgina Harris. Thanks are due to the hard work both they and our Executive team put in to this.

The results of the EPC's annual 'Early Enrolments Survey', for both undergraduate and postgraduate taught engineering courses, were presented at this meeting and received THE coverage. This data is an example of something EPC can uniquely offer, as the survey provides the first snapshot of numbers of new engineering students long before official figures are published.

The EPC's growing strength in recent years has not only been in building the impact we have on national policy on your behalf, but also in the ways that we support our members directly.

One example is two new toolkits – on Contextual Learning and on Degree Apprenticeships – that have developed by two working groups established by the EPC's Engineering Education and Employability Skills Sub-committee and led by Prof Mike Sutcliffe and Prof Simon Hodgson respectively.

However, we'd like to do even more – and with a new President taking over and a new Chief Executive in place, we've been taking a close look at everything we do and how we do it.

Many of you contributed to the EPC Strategic Review survey and also to discussions at the Retreat held in January this year. The result is *Making Waves*, the new EPC Strategic Plan.

Please take a look and give us your opinions both of the content and of the branding. A major driver behind both has been our new CEO, Johnny Rich.

This time last year, with the imminent departure of our highly capable executive director, Sue Kay, I was concerned that it might not be possible to recruit anyone able to fill her shoes. In the event, from a strong shortlist, we appointed Johnny, already well known in HE through his work as a director of the Higher Education Academy and his development of brands such as Push.

It's exactly 10 months since Johnny joined EPC and already he has had a huge positive impact. As I stand down as President, I would like to thank Johnny and the rest of the Executive team – Inês Direito and Vicky Elston – as well as the EPC Committee and Directors, for all their support and for the significant achievements they have made possible over the past two years.

I am confident that we have an excellent basis for the further development of EPC and we are well-placed to implement our new strategy and re-organisation.

I wish the in-coming President, Prof Sarah Spurgeon every success for her term of office and I'm sure we will see EPC increase its influence and effectiveness still further.

The year at a glance

Events

- Annual Congress 2016, hosted by the University of Hull, 4-6 Sep 2016, with the theme 'The Art of Engineering'
- Recruitment and Admissions Forum, hosted by the Institution of Mechanical Engineers, 9 Nov 2016
- EPC Retreat, hosted by Manchester Metropolitan University, 9-10 Jan 2017
- New Approaches to Engineering Higher Education, IET/EPC Conference, 22 May 2017

Representation

2017

- BEIS, Building our Industrial Strategy Green Paper
- HESA, NewDLHE: The future of graduate outcomes data
- HEFCE – Consultation on the second Research Excellence Framework

2016

- Education Committee – The impact of exiting the European Union on higher education inquiry
- Business, Innovation and Skills Committee (BIS) – Inquiry on industrial strategy
- House of Commons Science and Technology Committee – Leaving the EU: Further call for evidence
- Department for Business, Innovation and Skills – Accelerated courses and switching university or degree
- Department for Business, Innovation and Skills – Teaching Excellence Framework. Technical consultation for year 2
- Department for Business, Innovation and Skills – Review of the Research Excellence Framework
- OfQual AS and A Level Electronics consultation on Conditions and Guidance
- Department for Business, Innovation and Skills – Higher education: teaching excellence, social mobility and student choice
- OfQual AS and A Level Mathematics and Further Mathematics consultation on Conditions and Guidance

Resources

- Degree Apprenticeships toolkit
- Contextual Learning toolkit

Events



Annual Congress 2016

The Annual Congress is the EPC's flagship event for networking, and sharing and developing insights into policy and innovative practice.

Coinciding with the Amy Johnson Festival in Hull, the most recent Congress explored the creativity and spirit of adventure in engineering, and how engineering is more like the roots of a tree – spreading itself beneath other disciplines and shoring them up – rather than the trunk, standing alone.

Among the highlights of the Congress was the dinner at The Deep, Hull's world-leading aquarium, which is a feat of engineering that extends from the harbour under the sea.

The dinner featured the award of the 2016 EPC Prize for the best students' essay, sponsored by the Incorporation of Hammermen of Glasgow.

The competition invited students to detail six things they would tell their primary school selves about what it means to be an engineer.

The winner was Jon Runyon of Cardiff University (PhD), with his essay 'Roads?'

Where we're going, we don't need roads: A Back to the Future Guide to Inspiring the Next Generation of Engineers', inspired by quotations from the classic film franchise.

Runner-up prizes went to George Anderson (MEng) of Southampton University, Andrew Popadynec of Coventry University (BEng), and a High Commendation to Abdil Basit Ghias of Glasgow University (MSc).



Winner and runners-up of The EPC Student Essay Prize, sponsored by the Incorporation of the Hammermen of Glasgow

Recruitment & Admissions Forum 2016

The annual Recruitment and Admissions Forum took place at the Institution of Mechanical Engineers on 9th November 2016 convened by EPC Recruitment and Admissions Sub-Committee chair, Prof Mike Bramhall, and Deputy Chair, Dr Georgina Harris.

The Forum started with presentations by Dr Peter Main (Kings College), Kevin Lord (Further Maths Support Programme) and Dr Geoff Parks (University of Cambridge) on the changes to mathematics and physics, as well as future implications for recruitment to engineering courses.

This was followed by the results of the EPC's 2016/17 early survey of enrolments, for both undergraduate and postgraduate taught, presented by Dr Inês Direito, EPC's Policy and Research Officer. The last session of the morning was presented by Dr John Davies (University of Glasgow), on the flow of students across the UK nations and focusing on Scotland universities; and Dr Andrew

Thorn (Trinity St David University, Swansea), on the implications of leaving the EU.

EPC Chief Executive Johnny Rich delivered a presentation on how students choose, based on his work as Chief Executive of student advice and outreach organisation Push. Anita Sandham and two international students, showcased Sheffield Hallam University recruitment strategies based on different students needs and expectations.

Finally, Dr Rob Lawlor (University of Leeds) presented the *Engineering in Society* eBook and highlighted the importance of providing a wider perspective of the engineering profession to encourage a broader range of students to consider studying engineering.

The speakers' presentations may be downloaded from the EPC website and members may access a range of student enrolments, application trends and analysis in the members' area of the site.

IET/EPC Conference

NEW APPROACHES TO ENGINEERING IN HIGHER EDUCATION

As this Annual Review goes to press, final preparations are underway for a landmark Conference that the EPC is running in partnership with the IET at its headquarters at Savoy Place overlooking the Thames.

The *New Approaches to Engineering in Higher Education* Conference is chaired by Professor John Perkins, former BIS Chief Scientific Adviser and author of the 2013 BIS Review of Engineering Skills, and features a host of exponents of innovative strategies in the teaching of engineering.

The Conference is intended to kickstart a radical rethink of whether our conventional approaches are as effective as they could be. Given the critical skills shortage in engineering and the difficulties in attracting a sufficient pipeline of students – not to mention a sufficiently diverse intake – clearly we need improvement. The Conference is asking whether that is possible and how.

In a joint press statement, the EPC and IET are calling for three key changes:

- Entry criteria to UK HE engineering courses should not create a roadblock for students who have studied humanities or arts subjects rather than maths and physics to an advanced level at school. Many EPC member universities have led the way in opening up admissions, but

sometimes unwarranted obstacles still exist – or are thought to by applicants.

- The higher education curriculum in engineering should be refocused away from abstract theory to creating practical solutions to build a better world. This will entail ensuring a wider offering of internships, placements and work-related learning opportunities during degree courses.
- To create a more diverse profession, positive steps are needed to make courses more appealing and accessible to students of all backgrounds, particularly women and mature students.

In the statement, Prof Sarah Spurgeon OBE, the incoming EPC President is quoted: "The academic community of engineers sits at the frontier of creating solutions to the challenges of the real world. Now we need to turn our expertise on our own profession to meet the impending skills emergency in this country."

"You need Maths and Physics to be a good engineer, but these are things we can teach and they are not all you need. We need students with the imagination to dream a better world and the skills to build it."

The proceedings of the Conference will be available on the EPC website afterwards the event.

The year ahead

Events

- Degree Apprenticeships Forum, in collaboration with Royal Academy of Engineering, 7 July 2017
- EPC Annual Congress, 'Beyond Borders', Coventry University, 11-13 Sep 2017
- Recruitment and Admissions Forum, Nov 2017

New initiatives

- Implementation of the 'Making Waves' Strategic Plan
- Roll-out of the new EPC brand identity
- Working Group on Degree Apprenticeships
- Working Group on the Higher Education Hub for Engineering
- Launch of the Engineering Academics Network
- Establishing new community groups for early career staff and others
- New structures to ensure democratic engagement, consultation and representation
- A new website with added member services

Resources

- Degree Apprenticeships Green Paper
- Further toolkits
- Signposting widget for high-quality resources that support professional practice

The EPC Enrolments Survey

canvasses EPC member institutions on the actual numbers of student admitted to their engineering courses within a few weeks of them starting.

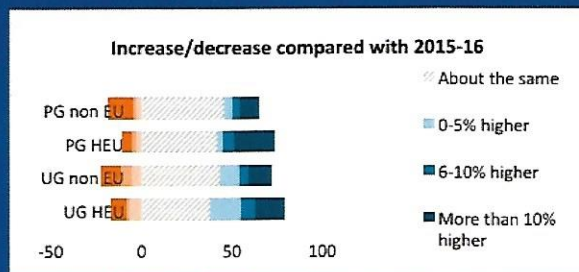
This provides EPC members with benchmark and sector data well over a year before comparable data is released by HESA.

The survey in 2016 received responses from 56 Higher Education institutions – of which 43 were in the Russell Group – amounting to a total of 100 separate departments.

The survey revealed that, overall, international engineering students are developing increasingly elitist approaches to choosing where to study in the UK. Engineering departments in

non-Russell Group universities reported widespread falls in the number of students coming from outside the EU. Meanwhile, most Russell Group universities saw increases.

The findings have been shared with the All-Party Parliamentary Group on Students and the House of Commons Education Select Committee.



Your EPC

Directors

- **President:** Prof Sarah Spurgeon OBE
- **Immediate Past President:** Prof Stephanie Haywood
- **Honorary Treasurer:** Prof Jim Yip
- **Honorary Secretary:** Prof David K Harrison

Committees

- The Executive Board is chaired by the President and includes the Directors, elected and coopted members, the chairs of the sectoral groups (representing different engineering disciplines), the Congress Convenor and the executive officers.
- **Engineering Education and Employability Skills Committee:** chaired by Prof Henri Huijberts
- **Recruitment and Admissions Committee:** chaired by Prof Georgina Harris
- **Research, Innovation and Knowledge Transfer Committee:** chaired by Prof Eann Patterson (standing down)

Executive officers

- **Chief Executive:** Johnny Rich, j.rich@epc.ac.uk
- **Policy & Research Officer:** Inês Direito, i.direito@epc.ac.uk
- **Administration Manager:** Vicky Elston, v.elston@epc.ac.uk

The EPC would like to extend its thanks to the many individuals who have served on EPC Committees and working groups over the past year, contributing their time, expertise and enthusiasm.

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Communities

The EPC represents and supports engineering academics in HE across all disciplines and at every stage in their career. To do this effectively, we recognise the need for specialist communities of interest and practice.

As well as establishing a network for **early careers staff** which will be a key focus over the next year, the EPC currently recognises seven sectoral groups covering different engineering disciplines: AAU (Aerospace); ACED (Civil Engineering); COMEH (Manufacturing); CPHC (Computing); HCEUK (Chemical Engineering); PHEE (Electrical & Electronic Engineering);

PHOMME (Mechanical Engineering).

Each sectoral group has its own programme of activities and events. Among the many highlights in the past year that the EPC has been delighted to support are:

In January, the **PHEE/PHOMME Annual Conference** was held at the IMechE and featured high-profile speakers including Baroness Julia King and Paul Blomfield MP.

The presentations at the **ACED Annual Conference (in collaboration with ICE and IStructE)** focused on wider participation, employability and TEF, and included, among others, Prof Les Ebdon, the Director of the Office Access.

Resources

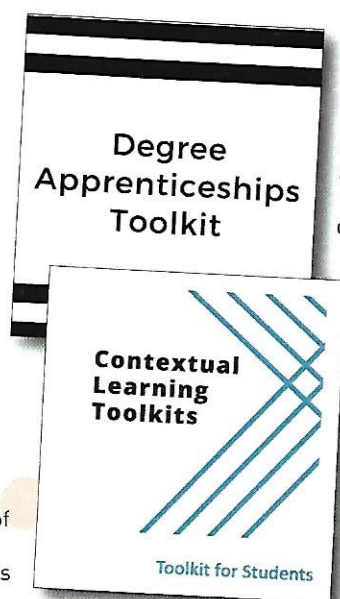
Over the past year, the EPC has added two key resources to our already extensive collection all of which can be accessed on the EPC website.

A major project is also underway – working with the Royal Academy of Engineering, the Higher Education Academy and others – to create an innovative widget to enable EPC members to identify high quality resources for pedagogy, teaching or research.

This ambitious initiative, dubbed HEHE (the Higher Education Hub for Engineering) is at an early stage but scheduled for launch in 2018.

This work and the two toolkits launched this year are thanks to the efforts of working groups of the EPC's Engineering Education and Employability Skills Committee (EEES).

The working groups were set up to address the recommendations of the Perkins Review of Engineering Skills on the importance of developing new models in contextual learning, and investing in apprenticeships to create highly qualified engineers.



Placements & Accreditation

Led by Prof Mike Sutcliffe (Kingston University London), the working group developed the **Contextual Learning Toolkits** based on the report of the research conducted by EPC to explore engineering students' placement experiences and case studies.

A PDF version for students will be available soon.

Higher Education in the Workplace

The **Degree Apprenticeships Toolkit** was created by the working group, led by Prof Simon Hodgson (Teesside University), to support university departments, academic staff and prospective course leaders tasked with developing higher and degree apprenticeships.

Prof Mike Sutcliffe has now taken over the lead of this group which is now working on a Green Paper to outline concerns about degree apprenticeships from the academic perspective that should be considered by employers, government, professional bodies and other stakeholders.

A Forum to discuss these ideas will be held on 7 July 2017.

As well as being available on the EPC website, these resources are both now part of the Engineering Workwith, a NCUB's hub of information for employers on how to work with university engineering departments to provide work experience opportunities and other forms of collaboration to enhance the workreadiness of students.

Impact and collaboration

The EPC brings together the voices of all engineering academics, making us louder and more influential. We are louder still when we join with others whose goals we share.

The EPC has this year established many new collaborations and strengthened existing ones. We have held events in collaboration with the IET, IMechE, RAEng and individual universities. We have been

an active member of the E4E (Education for Engineering) group responding as a sector to consultations such as on the Industrial Strategy. And we have launched collaborative projects with NCUB, the HEA, the Engineering Council and the All-Party Parliamentary Group on Engineering.

As a result our impact has been felt more widely. For example through evidence we gave to a Select Committee Inquiry on Brexit, wider media coverage and contributions to policy debates.