Enabling graduate engineers to become global citizens – initiatives in HE, both for staff and for students

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Enabling graduate engineers to become global citizens...

- Address under two themes:

- Theme 1 - Developing the curriculum and the pedagogy; enhancing the experience for UK and international students; engaging students with becoming global

- Theme 2 - Local action through extra-curricular and co-curricular activity in ESD and citizenship through volunteer and charitable organisations.

Enabling graduate engineers to become global citizens…

- **The "what" (the need)**
  - for all graduates to become more globally aware,
  - to develop students' global skills as undergraduates
  - to take forward those skills into their working lives as responsible citizens
  - for academic staff to be equally enabled toward attaining global competences in the teaching of students.

- **The "how"**
  - engineers "can make a difference",
  - recognition of the significance of programme accreditation in engineering
  - lessons to be learnt from prior topics…
  - The GDEE Project

Sustainable Development and Ethics

- Sustainability and Ethics have been around for years

- Both have become part of the taught curriculum for engineers:
  - Employer aspirations of graduates (F4F, RAEng)
  - Accreditation expectations (EC/UK-SPEC)

- Introduction by "bolt-on", embedding, integrating into the curriculum

- An overcrowded curriculum
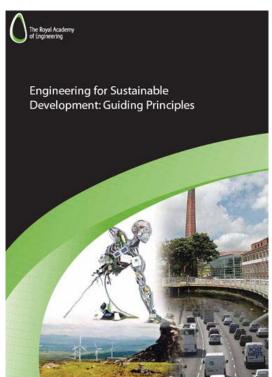
- Need for inter-disciplinarity

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Examples in Sustainable Development and Ethics

- RAEng Visiting Professors' Scheme, Guiding Principles in Sustainable Development

- Research and implementations
  at HEIs:
  - Northumbria, Manchester, Cambridge, Bournemouth, Loughborough
  - IDEA CETL at Leeds
  - Casework at Imperial

- RAEng Survey of Teaching Ethics,
  Statement of Ethical Principles,
  Curriculum Map

The move to become globally aware

- Short (2008):

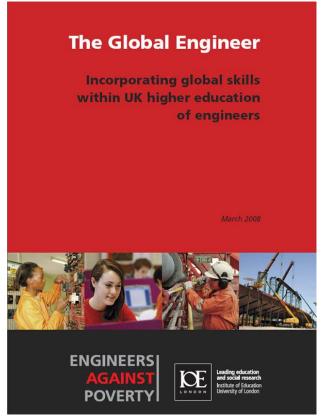 *"…sustainability goes beyond the environment, …it is not purely an engineering problem".*

  "…work needs to be done that will consolidate the topic of sustainability with further skills and capabilities that will enable engineering graduates to become globally aware, and to work as global citizens in the future".

- Bourne and Neal (2008): *The Global Engineer:*

  – surveyed engineering academics, asking them what the term "global dimension" meant to them (examples)

- Penlington (2007), Montgomery (2011):

  – Sought student views on sustainability and globalisation (examples)

The Global Engineer

- A report written by Bourne and Neal, produced by Engineers Against Poverty/Institute of Education, University of London:
- sought views of academic staff
- also canvassed wider communities
- made recommendations for:
  - HEIs, government, professional bodies, employers, and civil society as a whole (volunteer, charity and NGOs).
- the report recommended the establishment of a government -funded project around the concept of the "global engineer"

The Global Engineer

Incorporating global skills within UK higher education of engineers

March 2008

ENGINEERS AGAINST POVERTY

IoE LONDON
Leading education and social research
Institute of Education
University of London

Lessons learnt…

- The need for:
  - establishing a framework by which the need for the topic could be brought into HE
  - recognising that the topic may covertly already exist in the curriculum,
  - attaining recognition for its more formal introduction into the curriculum,
  - integrating the topic into the curriculum rather than simply introducing as a "bolt-on",
  - enabling staff to acquire appropriate resources (both pedagogic and teaching) in order to deliver the topic,
  - and
  - to recognise the student view and that students' engagement is important to its successful adoption/inclusion.

The Global Dimensions (GDEE) Project

- Proposal for a three-year multi-partnership project, funded by UKaid at the Department for International Development (DFID) in 2009

- Specific remit to explore and develop pedagogic approaches and provide resources in developing global skills for HE engineering staff to use with their students

- Managed by EAP, with the Engineering Subject Centre, the Institute of Education at the University of London, the Engineering Council, the Engineering Professors Council (EPC), and Engineers Without Borders (EWB-UK)

- This partnership forms the Project's Steering Group, with a focus group of 5 HEIs who are engaged in piloting the work of the Project [Liverpool, Plymouth, Northumbria, Derby, Queens Belfast].

The work of the Project (2009 – 2012)

- A detailed project plan with identified work-packages and deliverables,

- a steering group of the partners who work closely with the member HEIs,

- a developing community of interest and practice,

- a national workshop series run by the Engineering Subject Centre in 2010/11, facilitated by invited internationally-recognised experts in various aspects of globalisation,

- a growing repository of pedagogic and teaching resources,

- a website that provides a focal point for the Project's activity – see www.engsc.ac.uk/global-dimension/,

- the commissioning and support for new areas of work that engage with a further, wider network of HEIs and academic staff.

Student-focussed work

- The GDEE Project aspires to provide both pedagogic and teaching resources in developing global skills for HE engineering staff to use with their students

- The need for student engagement in achieving this

- Support, by a funded Mini-Project from EngSC, to pilot a derivative to the EWB Challenge held in Australia

- The EWB-UK Challenge is a partnership between EWB-UK and academic staff leading at Liverpool and Nottingham

- The pilot phase has mapped an approach from the Australian version of the Challenge to a UK derivative.

- The GDEE Project has since funded the subsequent development that includes engagement with up to 12 partner HEIs – see the Challenge Finals event

The legacy of provision

- A selected Toolkit of the most useful and recommended resources, which will highlight a pathway for someone new to the topic

- A database of experts, who can be contacted by the community for specific support on their specialist aspect(s) of the globalisation agenda.

- A repository of pedagogic and teaching resources, searchable by educational classification, keyword and type,

- A book that captures examples of commissioned work (case studies, projects) at UK HEIs

- A dissemination event (Spring 2012) where the work of the Project was put into context, with opportunity to discuss the global dimension and to reflect on highlighted aspects of the learning from the Project – see GDEE Conference @ UCL (26th March)

Engagement at HEIs

- Commitment from a cross-section of HEIs to the project, at Kingston, Brighton, Derby, Northumbria, Coventry, Liverpool

- Presentation at a senior management forum, to brief on the GDEE Project and to derive an Action Plan for staff; for example:

  - To establish and facilitate a workshop for staff that explores the global dimension in their teaching, from the Action Plan

  - To undertake relevant investigative and developmental studies to achieve the Action Plan to implement a global dimension in the curriculum

  - To develop bespoke resources and pedagogic approaches for the delivery of global dimension topics in the existing curriculum/new curricula

- Write-up as a reflective log → case study, on the experiences of following an Action Plan on globalisation into the curriculum

- Become a member of a Special Interest Group (SIG), funded by the HEA and working with the Steering Group of the GDEE Project, that will look at the future development of globalisation into the curriculum [possible workshop(s), resources, a network...]

An Action Plan…

- <u>Familiarisation</u> with the curriculum….
  - What do we have/do already in our curricula that can be considered part of globalisation?

  [globalisation is considered the inclusion of topics of global significance, that are enablers for a graduate engineer to become a globally-aware citizen]
    - Sustainable development
    - Ethical Values
    - Socio-economic development
    - Diversity and Rights
    - Conflict
    - Social justice
    - Professionalism
    -
    -

- <u>Development</u> of the curriculum….
  - What would we like our curricula to include that is part of the topic of globalisation?
- <u>Enabling</u> this development….
  - How might we go about enabling this to happen?
    - Staff awareness, development
    - Student engagement/activity

- <u>A timescale</u> ….and responsibilities.

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