

# Global Engineering Challenge: A curriculum innovation to inspire rather than assess

**Rachel Horn**

Department of Civil and Structural Engineering

**Trish Murray**

Learning Support Officer

University of Sheffield Faculty of Engineering



The  
University  
Of  
Sheffield.

# The next 20 mins...

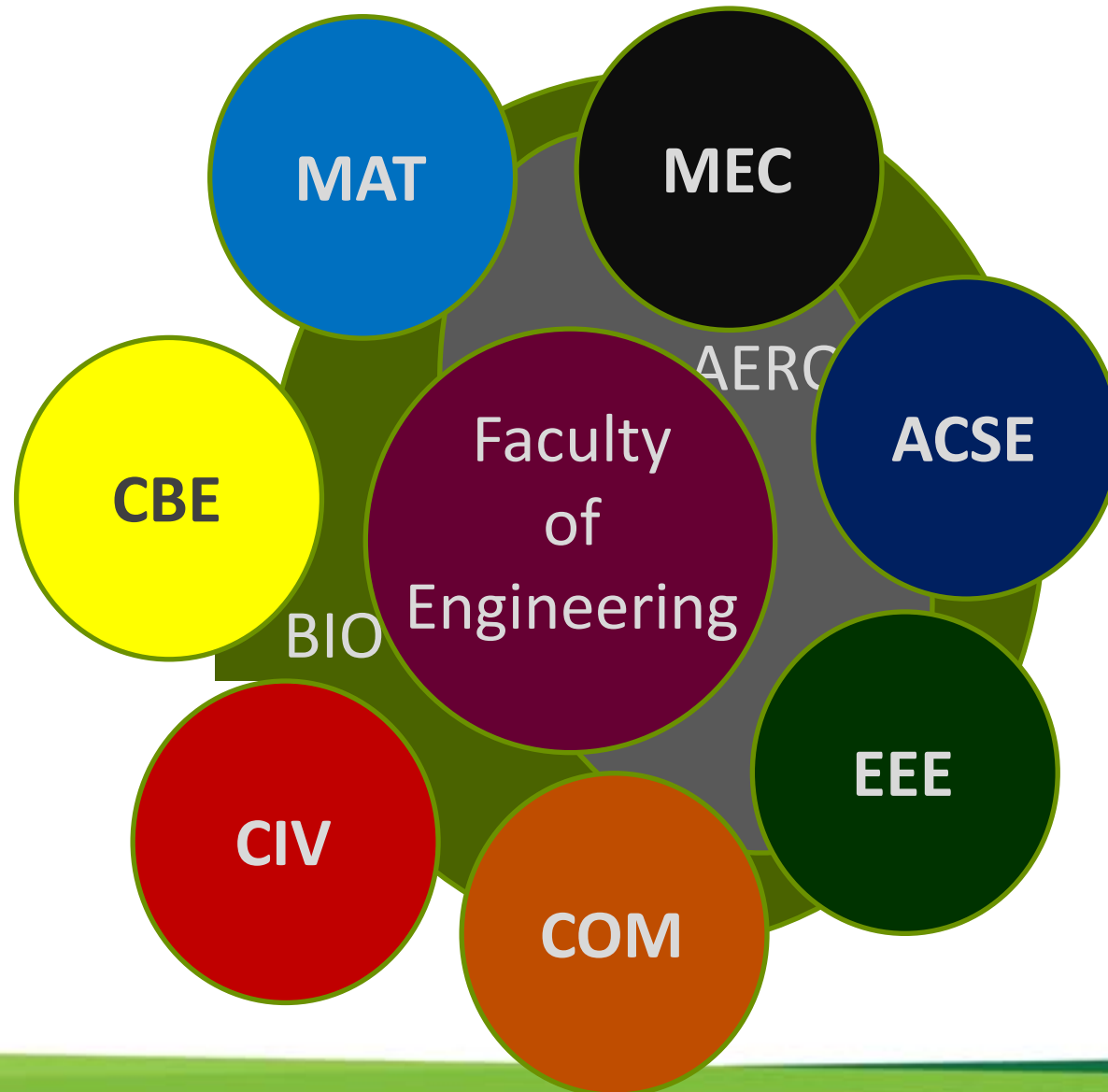
- The project idea:
  - drivers
  - aims
  - obstacles
  - Outline solution – The Global Engineering Challenge
- Developing the week to inspire and motivate
  - What happened
- Evaluation:
  - What we think
  - What the students think
- What we have learned – developments for next year...

# A curriculum innovation - Drivers

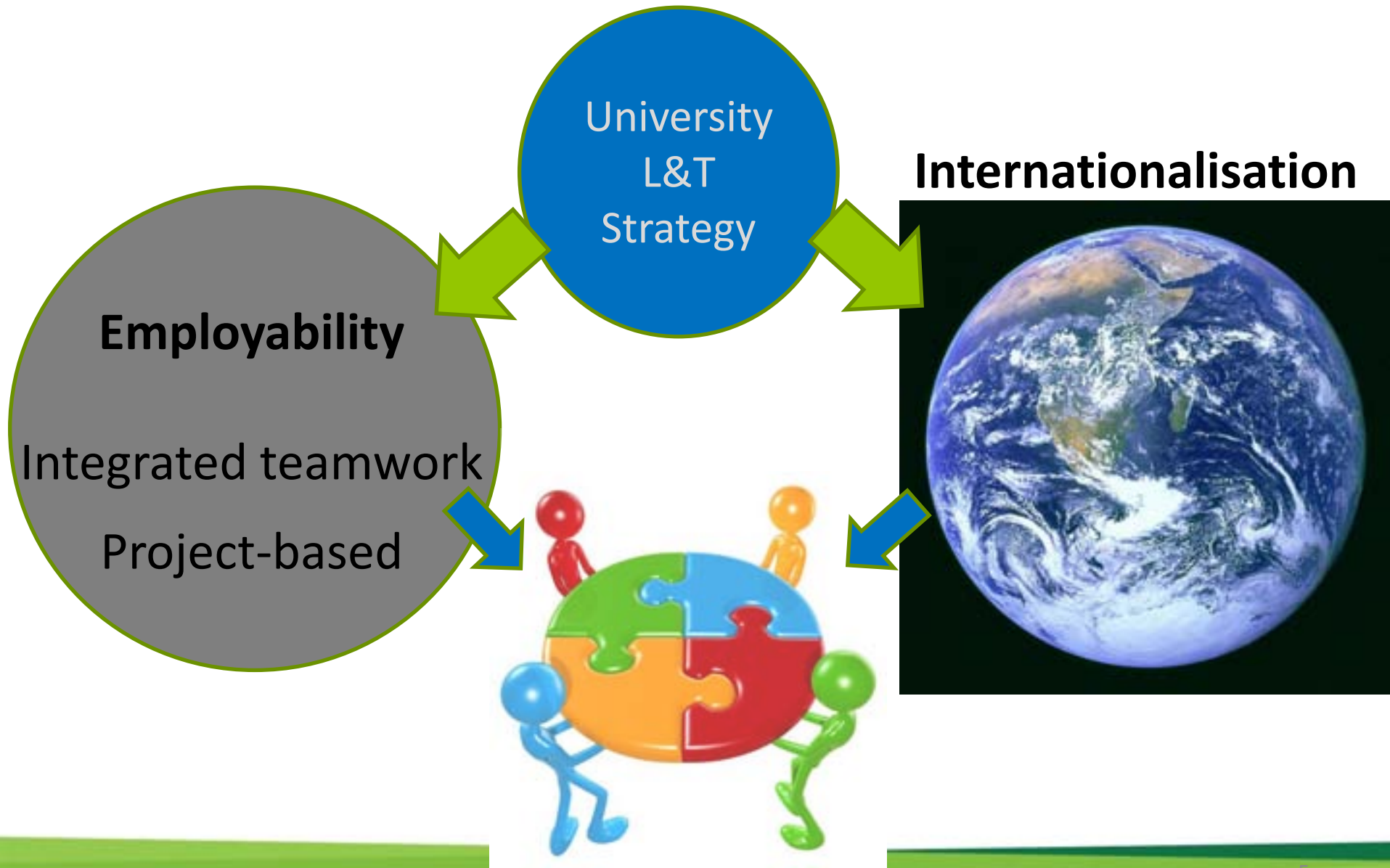


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# A curriculum innovation - Drivers



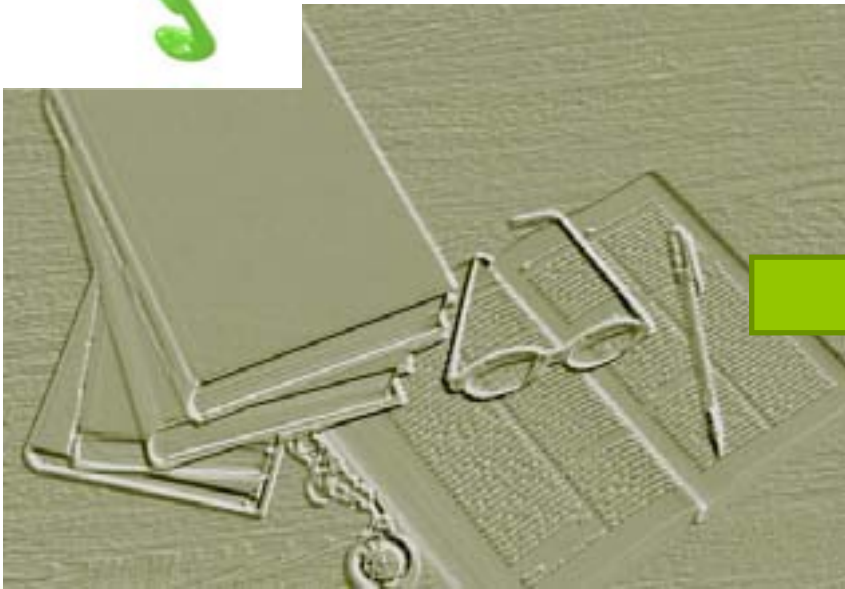
# A curriculum innovation - Drivers



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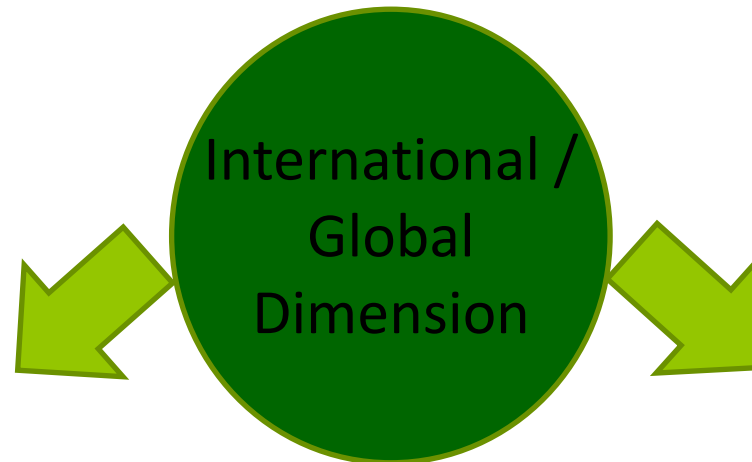
Employability  
& skill  
awareness



**Curriculum  
Vitae**

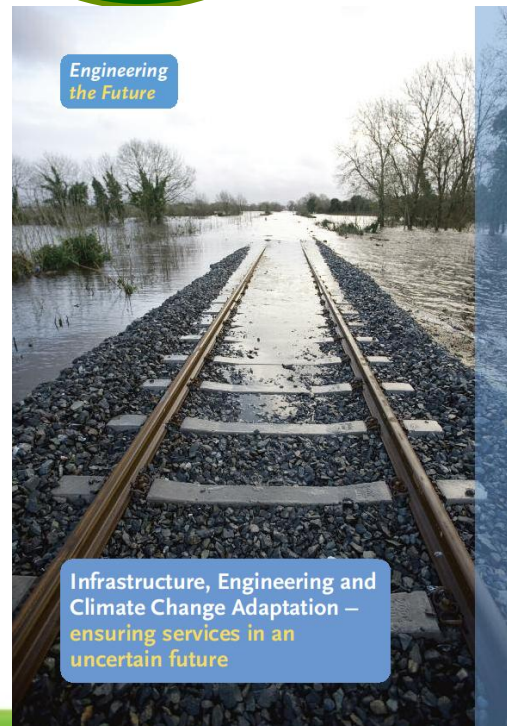
**?**

# A curriculum innovation - Drivers



## UK SPEC - E

Make a personal commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.



# A curriculum innovation – Drivers & Aims





# Global Engineering Challenge

1 week (January) - compulsory  
900 students

## Aims:

- Develop good engineers
  - Integration & multi-disciplinary working
  - Professional approach
  - Awareness of “global” issues
  - Awareness of employability skills

# Obstacles

- Space
  - 900 students – project space & IT requirements
  - Timetable - removal of the

- A vehicle for the skills development
  - EWB Challenge project

- Not onerous for staff
  - Use post graduates as faculty
  - Not credit bearing

- Support (financial and other)
  - 10k for setup
  - 30k for running costs

- Co-ordination and agreement
  - Steering group from all departments

## Inspire the students!

- Topic (EWB projects)
  - inherently of interest
- Relevant (employability, sponsorship)
- Set it up well
- Pacey, interactive and FUN
- Encourage competitiveness (prizes)
- Follow through from the week (EWB National competition)

# Global Engineering Challenge Week: Organisation

- ~900 students
  - groups of 6 working in hubs of 36 (150 groups and 25 hubs)
  - Groups: mixed by department and home/international
- Hubs led by dedicated PG facilitators
  - Selection & training
  - Resource development
- Project based on EWB Challenge
  - Sustainable development theme - appropriate for global and professional issues
  - Adapt project specifications
  - Develop assessment criteria

# Making it happen

- Small team (4) - highly committed individuals with shared vision and different / overlapping areas of responsibility
- Employed 3 undergraduates as “resource developers” over the summer
- Tested materials on students and reworked
- All L1 students in 2011 were issued with individual “clickers”
- Staff buy in

# The Global Engineering Challenge: the week itself

- Mon-Fri 9-5!
- Intro and finale (1hr each): 3 large LTs
- Thereafter in hub rooms
- Time divided equally between facilitated sessions and project working
- Involvement of 22 alumni and 5 external speakers
- “Assessment” by group presentations
  - peer marking using “clickers” in two categories “Best communicated solution” & “Best overall solution”

# Global Engineering Challenge Week: Motivating & inspiring skill development

## Project

- Independent learning

## Interactive facilitator-led sessions

- Multi-disciplinary team-working
- Problem-solving
- Professional issues:
  - global issues / sustainable development / cultural awareness
  - Professional responsibility & ethical awareness (incl plagiarism!)
- Communication / presentation
- Understanding the purpose of and using feedback
- Career planning
- Reflection on own learning & skills audit

# How did it go?



# Further evidence

- 120 students completed an online form on actions to enhancing their employability
- Demand for sessions on summer placements after the week



# What we think went really well

- The students were very engaged (largely)
- The team working
- The mid-week alumni session
- The quality of the final presentations
- Attendance at 4pm on a Friday!
- The facilitators

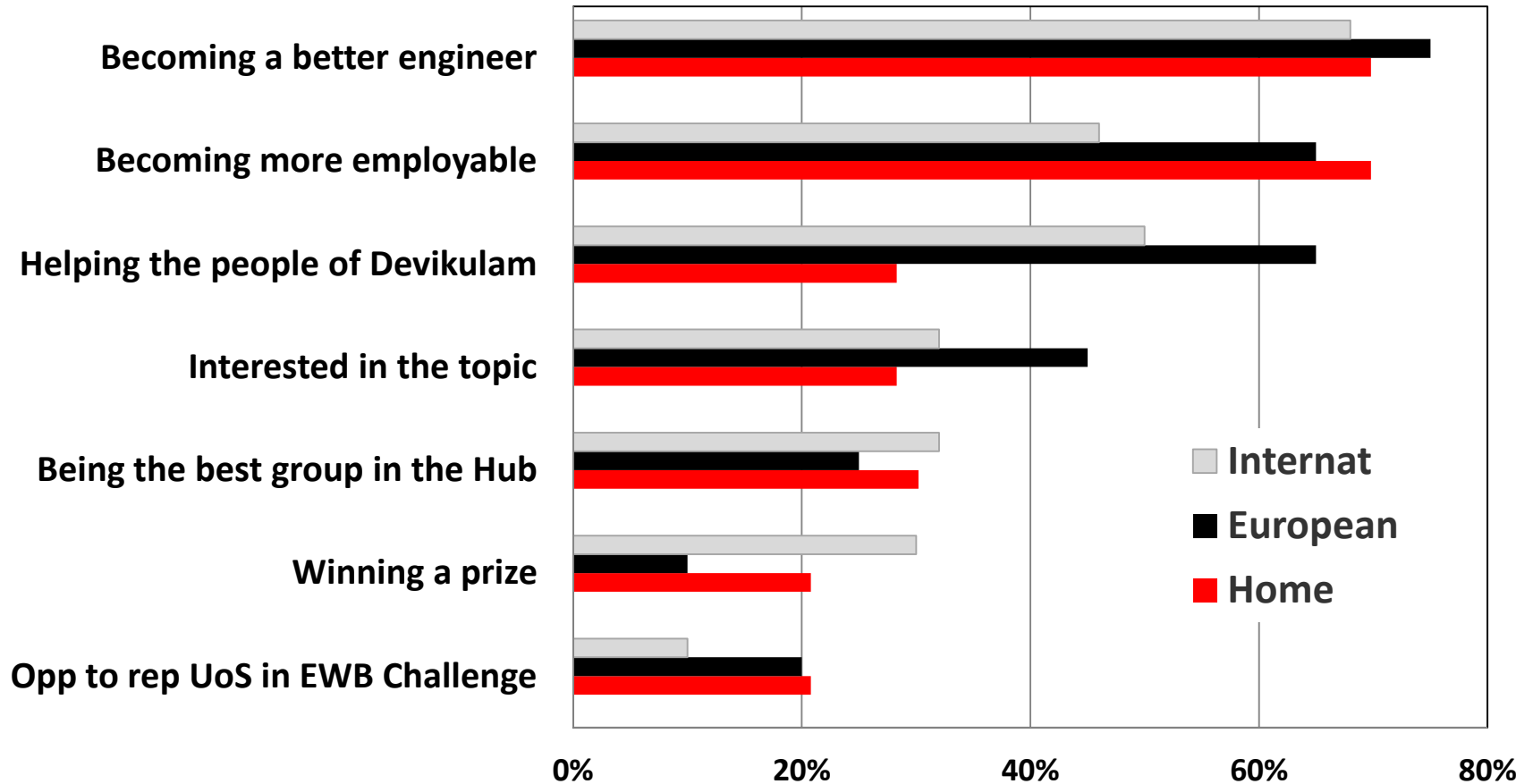
# Student Evaluation

- Before and after
  - Blackboard
  - Clickers
- Questionnaire
- Focus groups

# Motivations

# What motivated you in the GEC week?

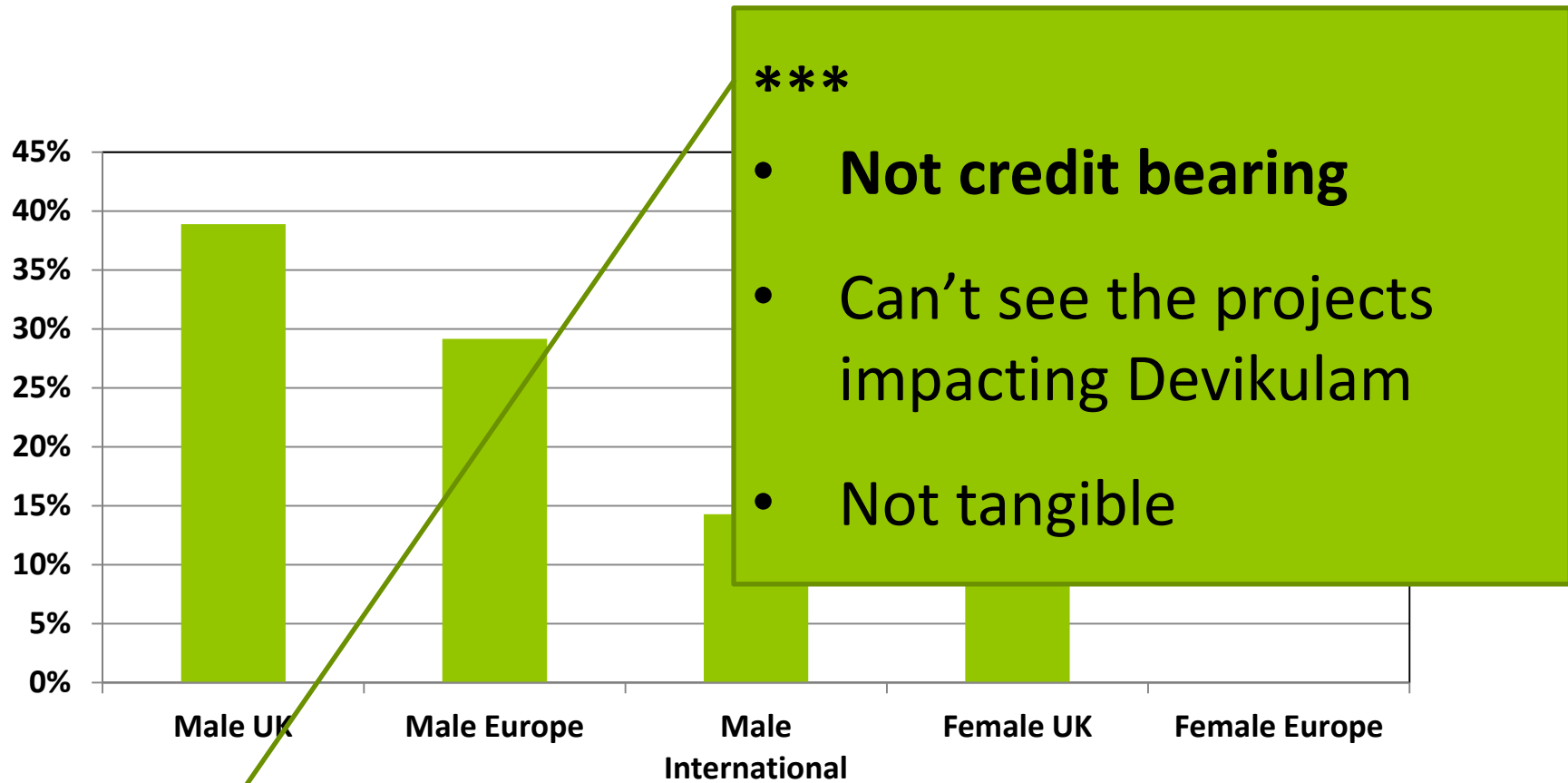
(select as many as is appropriate)



# Motivations

- All students are motivated by becoming a better engineer
- Home students (UK and European) also by becoming more employable
  - \*\*\*International students: already stand out by virtue of studying overseas
- UK students less interested in “Helping people of Devikulam”
  - \*\*\* Don’t believe that the projects will help Devikulam

# 47/184 students were unmotivated; and as a proportion of the demographic groups...



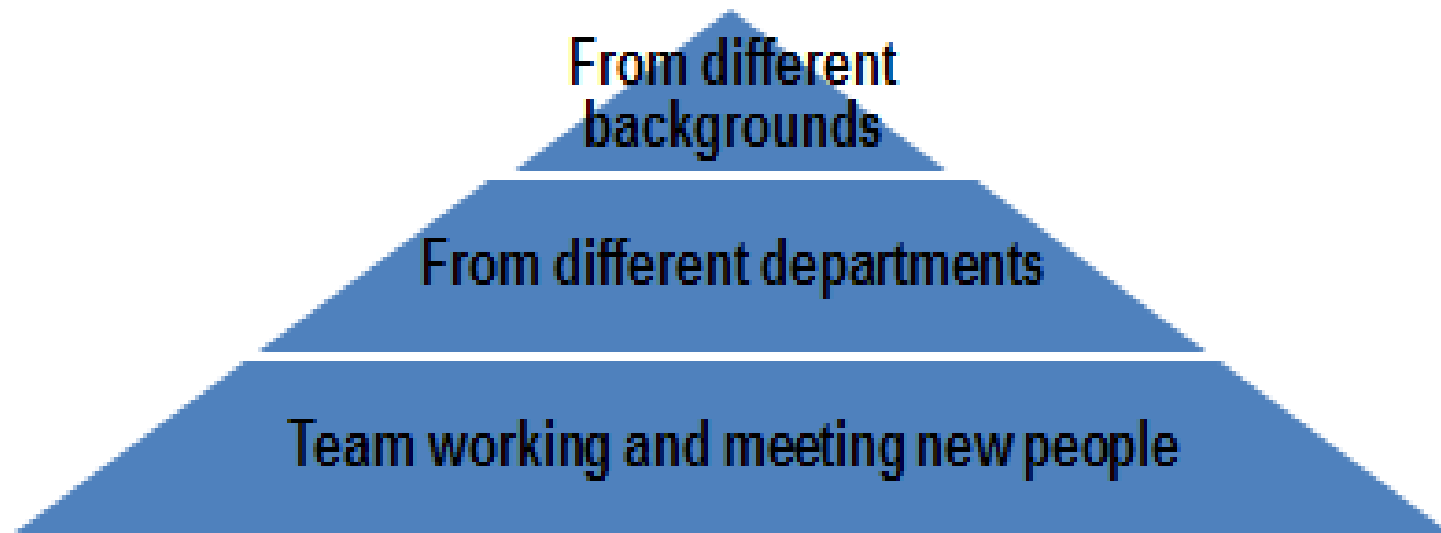
- Why?

# What the students found useful

- All students found project working useful
- UK students:
  - found giving presentations the most useful
- International students:
  - Found more sessions useful
  - Team working useful
    - \*\*\*more appreciated to aid in integration in the team
    - \*\*\*less prior experience
  - Global issues and Problem solving and Project design useful
    - \*\*\* more globally aware

# What was the **best thing** in the week (free text response)?

- “team working and meeting new people”  
(over 50% of responses)



- “working on real problems” (second significant response)



# Summary – what went well

- Overall very well received by students (as well as facilitators & staff)
- Multi-disciplinary group working
- Project-basis of the week
- Selecting & training PG facilitators
- Employing UG resource developers
- Involvement of Alumni

# + The strategic benefits

- UK Spec Learning Outcomes
- Learning and Teaching Strategy
- Developing links with alumni
- Much interest from other faculties and other universities

# What we will do differently

- Better communication with students and staff
- Improve the “sell”: need to better demonstrate how the projects inform the community
- Address non-engagers/disrupters
- Increase professional focus - becoming a better, rounded engineer
- Bolster the assessment with addition of a group wiki

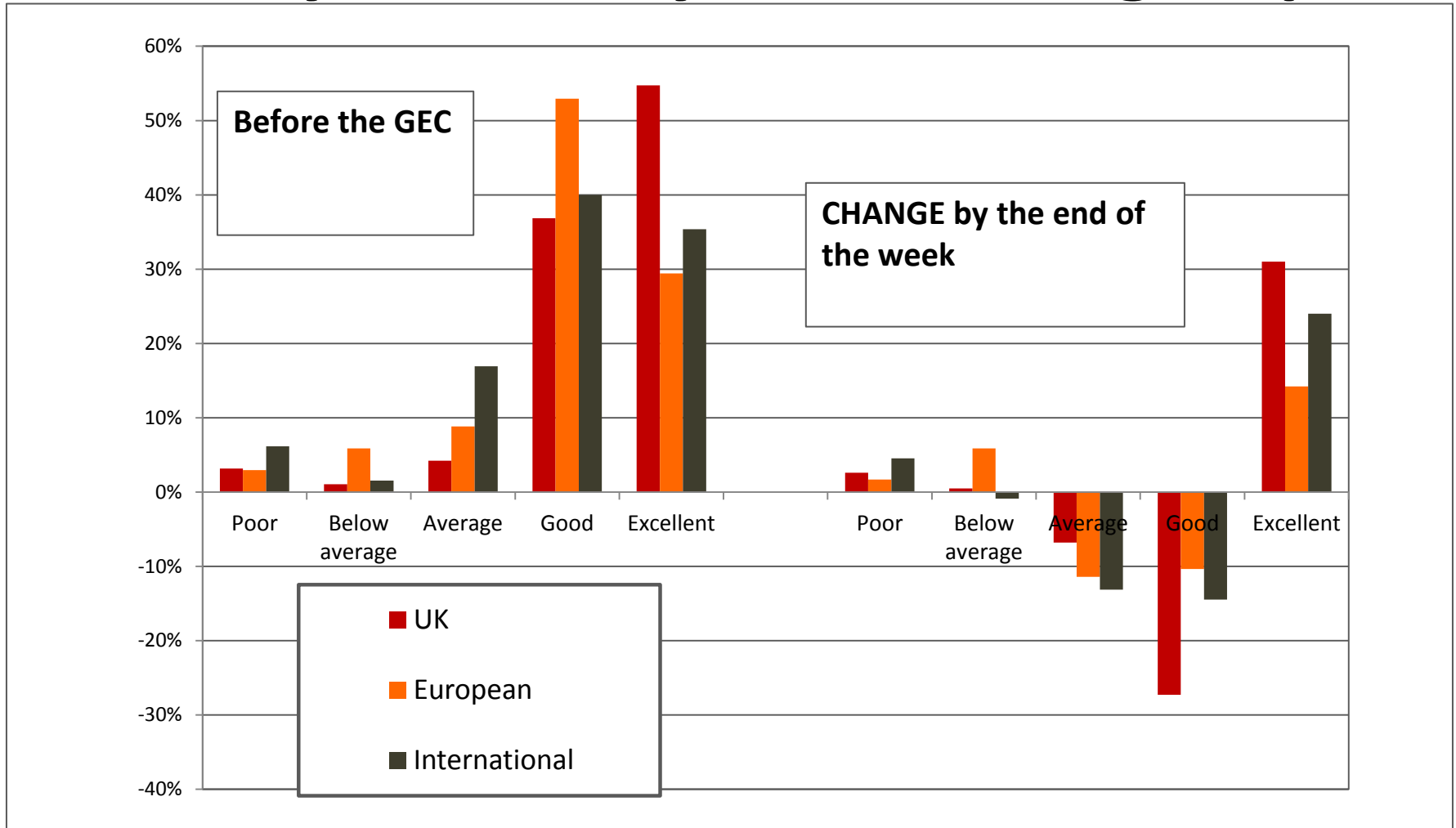
# Conclusion

- Overall worth it – positive feedback, buzz in final presentations
- Some re-development, but it will be going ahead next year
- Also a L2 project week



# The learning:

## Rate your ability to work in groups



# The usefulness of the sessions

“Which sessions/activities do you think will **BE USEFUL** in terms of your future as a student engineer and as a graduate engineer (you can select more than one answer)?”

