Install the following app…

Responseware

Or goto…

www.rwpoll.com

GEC Video:

- Global Engineering Challenge 2012
  http://youtu.be/8UUrGjFtkXc

Two faculty-wide project weeks:
a spiral curriculum approach to enterprise and project-based learning

Dr Trish Murray
(University Teacher in T&L, Faculty of Engineering)

Dr Rachel Horn
(Senior University Teacher, Department of Civil Engineering)

The session…

Context

- Who are our students
- The student journey (in terms of enterprise)
- The big picture: drivers/aims
- More details about the weeks
- Have we achieved our aims?

Some examples of teaching materials

Evaluation

What would *you* like to hear more about?

Who are our students?

Faculty Of Engineering.

The Achievement Of Excellence.
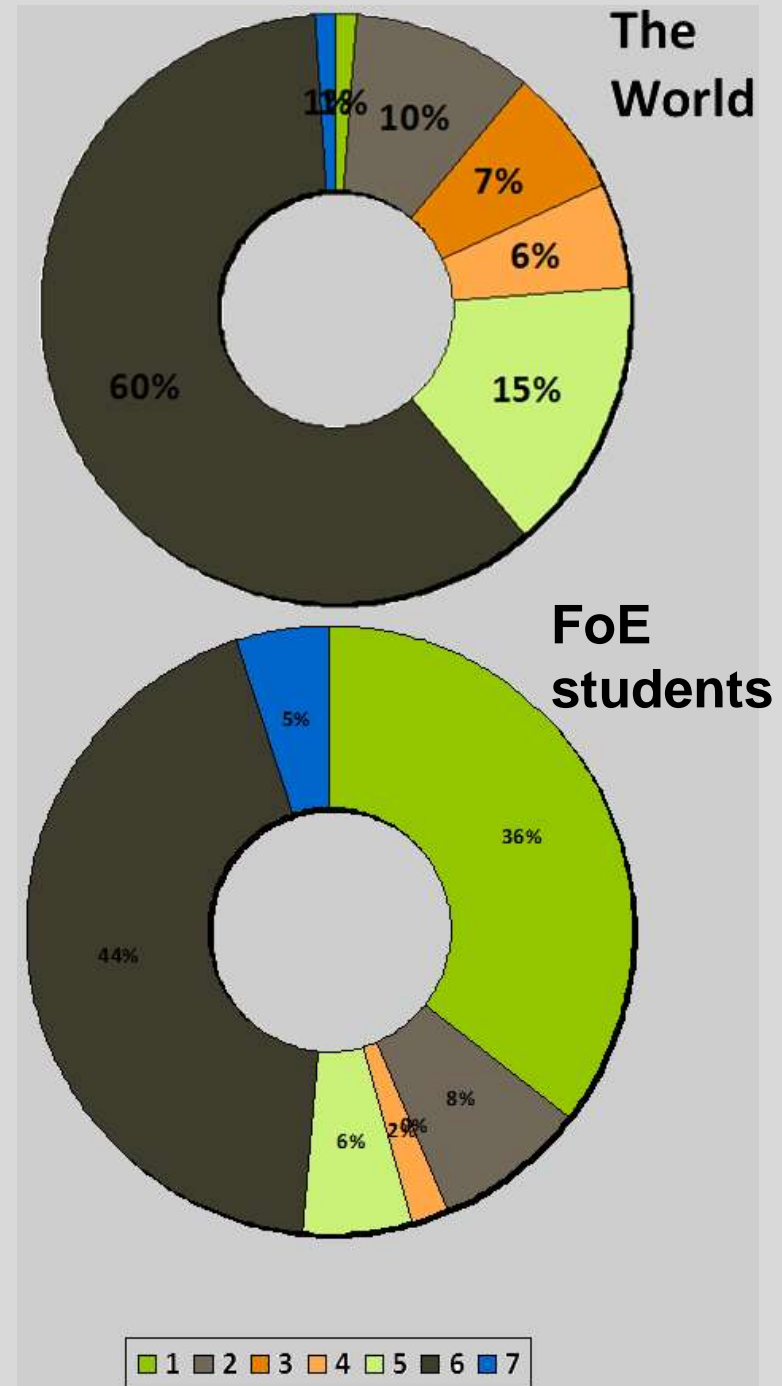
"A" levels

Foundation Year

Variety of Quals

Sheffield International College

Where do you come from?

1. The UK
2. Other parts of Europe
3. North America
4. Latin America/Caribbean
5. Africa
6. Asia (including the Middle East)
7. Oceania

The World

FoE students

60% 1% 1% 10% 7% 6% 15%

44% 5% 36% 8% 2% 1% 6%

1 2 3 4 5 6 7

The student journey

(in terms of enterprise skills)

L3/L4: Individual/Group projects

- *Knowledge*:
    - Disciplinary & technical, Complexity of real world problems, Commercial/ business awareness, Estimation & engineering judgement.
- *Skills*:
    - Multi-disciplinary, multi-cultural group working, Creative problem solving & innovation, Independent learning & research, Presenting and defending, Project management
- *Context*:
    - Open-ended, real world engineering problems, Employability & professional development

L2: ??

L1: ??

Drivers/Aims

More details about the weeks…

Project weeks

- The Global Engineering Challenge
  - All 900 1st years

- Engineering You're Hired
  - All 900 2nd years

Features of both weeks

Students

- Work in multi-disciplinary, multi-cultural groups

- Challenged with real world projects

- Time split: taught sessions/group working

- Development through the week by

  - taught sessions

  - + regular external feedback

  - + internal group review

- Groups "assessed" presentation/written work

Features of both weeks

Students helped by..

- PhD student facilitators
  (one per "hub" where a hub is 6 groups i.e. 36 students)

- Staff

- Industry

The Global Engineering Challenge

- Groups devised randomly across faculty

- Projects based on the "Engineers Without Borders" Challenge. In 2013, based in Vietnam, projects include:

  - A method for storing and filtering rainwater, Electronic Disaster Warning System

- Taught sessions on:

  - Engineering (sustainability, ethics, project planning)

  - Generic skills (communication, feedback)

- Group review at end of each day

- Employability: Employers in opening plenary, alumni session including "what I wish I'd know in my 1st year" and skills audit

Engineering You're Hired

- Groups devised by discipline according to project needs
- Projects suggested by Industry. Examples…
  - Energy from Sewage, Remote healthcare, Robots for construction.
- Taught sessions on:
  - Engineering (project planning, costings and IP, & feasibility)
- Groups led by team leader report to the "Board" at end of each day
- Employability:
  - Industry: opening plenary speech, "mentors" through the week, in board rooms and for final assessment.
  - Daily pitch to be team leader based on the "skill of the day"; Answer app form questions.

EYH Video:

- Engineering You're Hired 2013
  http://www.youtube.com/watch?v=aBTJPLvaL8E

Enterprise in detail

- Progression and how enterprise through project-based learning is embedded within the degree

L1: Global Engineering Challenge

- *Knowledge*:
  - Global sustainability & ethics,
  - Complexity of real world problems.
- *Skills*:
  - Multi-disciplinary, multi-cultural group working,
  - Creative problem solving & innovation,
  - Independent learning & research,
  - Presenting,
  - Project management
- *Context*:
  - Open-ended, real world sustainable development problems,
  - Employability & professional development
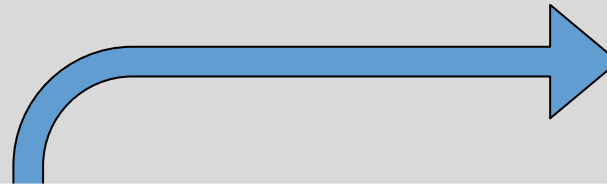
L2: Engineering You're Hired!

- *Knowledge*:
  - Disciplinary,
  - Commercial/business awareness,
  - Estimation and engineering judgement
- *Skills*:
  - **Inter**-disciplinary, multi-cultural group working,
  - Presenting and **defending**
- *Context*:
  - Open-ended, real-world **engineering** problems

L3/L4: Individual/Group projects

- *Knowledge*:
  - Disciplinary, technical. **DEPTH.**
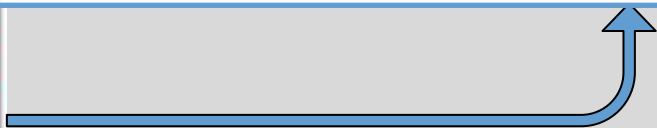- *Skills*
- *Context*

L3/L4: Individual/Group projects

- Knowledge: Disciplinary, technical. **DEPTH.**
- Skills
- Context

L2: Engineering You're Hired!

- *Knowledge*: **Disciplinary, commercial/business awareness, estimation and engineering judgement**
- *Skills*: **Inter**-disciplinary, multi-cultural group working, Presenting and **defending**
- *Context*: Open-ended, real-world **engineering** problems

L1: Global Engineering Challenge

- *Knowledge*: Global sustainability & ethics, Complexity of real world problems.
- *Skills*: Multi-disciplinary, multi-cultural group working, Creative problem solving & innovation, Independent learning & research, Presenting, Project management
- *Context*: Open-ended, real world sustainable development problems, Employability & professional development .

L3/L4: Individual/Group projects

L3/L4: Individual/Group projects

- Knowledge: Disciplinary, technical. **DEPTH.**
- Skills
- Context

- *Knowledge:*
- Disciplinary, technical. DEPTH.

- *Skills* commercial/business awareness.

Level 3: Engineering You're Hired!

- *Knowledge:* Disciplinary, commercial/business awareness, estimation and engineering judgement
- *Skills:* **Inter**-disciplinary, multi-cultural group working, Presenting and **defending**
- *Context:* Open-ended, real-world **engineering** problems

- *Context:*
- Inter-disciplinary, multi-cultural group working,
- Presenting and **defending**

- *Context:* Global Engineering Challenge
- Open-ended, real-world **engineering** problems
- *Skills:* Multi-disciplinary, multi-cultural group working, Creative problem solving & innovation, Independent learning & research, Presenting, Project management
- Employability & professional development
- *Context:* Open-ended, real world sustainable development problems, Employability & professional development .

The spiral curriculum

- Revisit ideas as progress through levels of study, each time introducing increasing levels of complexity.

Have we achieved our aims?

Ability to articulate skills

Global context/ awareness

Skills development

School approaches to learning

Cultural agility

Faculty
Of
Engineering.

Ability to articulate skills

Global context/ awareness

Skills development

School approaches to learning

Cultural agility

Ability to articulate skills

Open ended, real world sustainability/engineering projects

Global context/ awareness

Skills development

Cultural agility

School approaches to learning

Ability to articulate skills

Global context/ awareness

Skills development

Cultural agility

School approaches to learning

Ability to articulate skills

Inter-disciplinary, multi cultural team working

Global context/ awareness

Skills development

School approaches to learning

Cultural agility

Ability to articulate skills

Global context/ awareness

Skills development

Cultural agility

School approaches to learning

Ability to articulate skills

Giving Presentations, defending decisions, acting as team leader

Global context/ awareness

Skills development

School approaches to learning

Cultural agility

Ability to articulate skills

Global context/ awareness

Skills development

Cultural agility

School approaches to learning

Ability to articulate skills

Skills audit,
answering application form qs,
interacting with Industry

Global context/ awareness

Skills development

School approaches to learning

Cultural agility

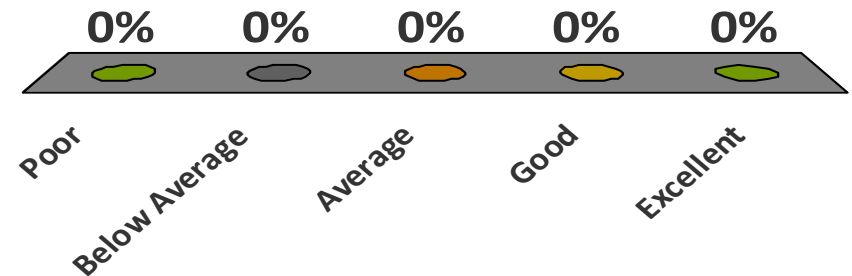# The Global Engineering Challenge

Global Issues

The Employers View

The Engineers Without Borders Challenge

The Global Engineering Challenge

Rate your understanding of Global Issues

A. Poor

B. Below Average

C. Average

D. Good

E. Excellent

0% 0% 0% 0% 0%

Poor Below Average Average Good Excellent

In October 2011, the world population reached 7 b

It took until 1800 for the world ...lation to 1 billion

How will this impact on you?

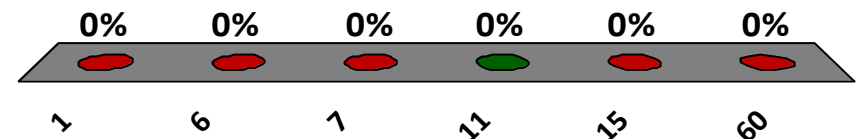The UN fore... by 2100, the population will have tripled in "high fertility" countries and have fallen in "low fertility countries".
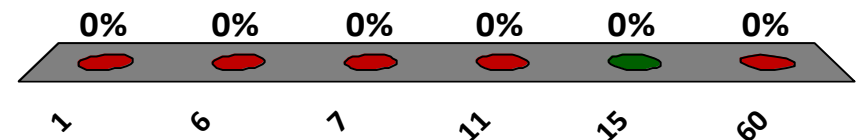
...illion will be added in 13 years

If the world population were 100 people, **how many would live in Europe?**
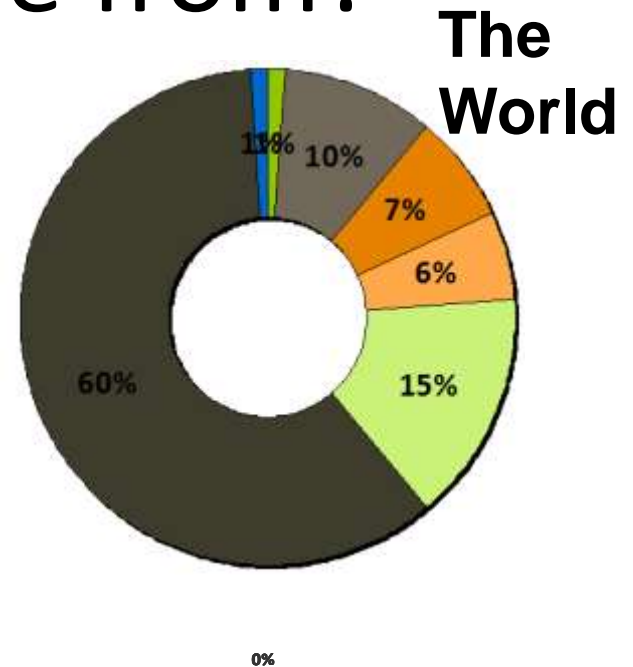
A. 1

B. 6

C. 7

D. 11

E. 15

F. 60

0%   0%   0%   0%   0%   0%

1   6   7   11   15   60

If the world population were 100 people, **how many would live in Africa?**

A. 1

B. 6

C. 7

D. 11

E. 15

F. 60

0%   0%   0%   0%   0%   0%

1   6   7   11   15   60
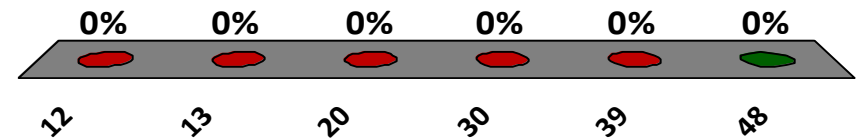
Where do you come from?

A. The UK

B. Other parts of Europe

C. North America

D. Latin America/Caribbean

E. Africa

F. Asia (including the Middle East)

G. Oceania

The World

☐ A. ☐ B. ☐ C. ☐ D. ☐ E. ☐ F. ☐ G.

If the world were represented by 100 people, how many would live in absolute poverty (<2$ a day)?

A. 12

B. 13

C. 20

D. 30

E. 39

F. 48

0%	0%	0%	0%	0%	0%
12	13	20	30	39	48

Facts: Wealth

- The richest 2% of adults in the world own > 50% of the global wealth

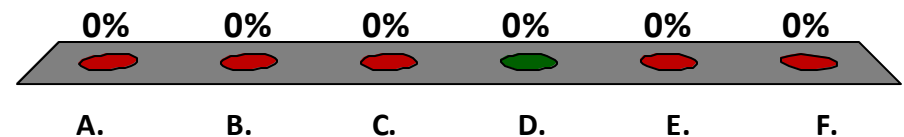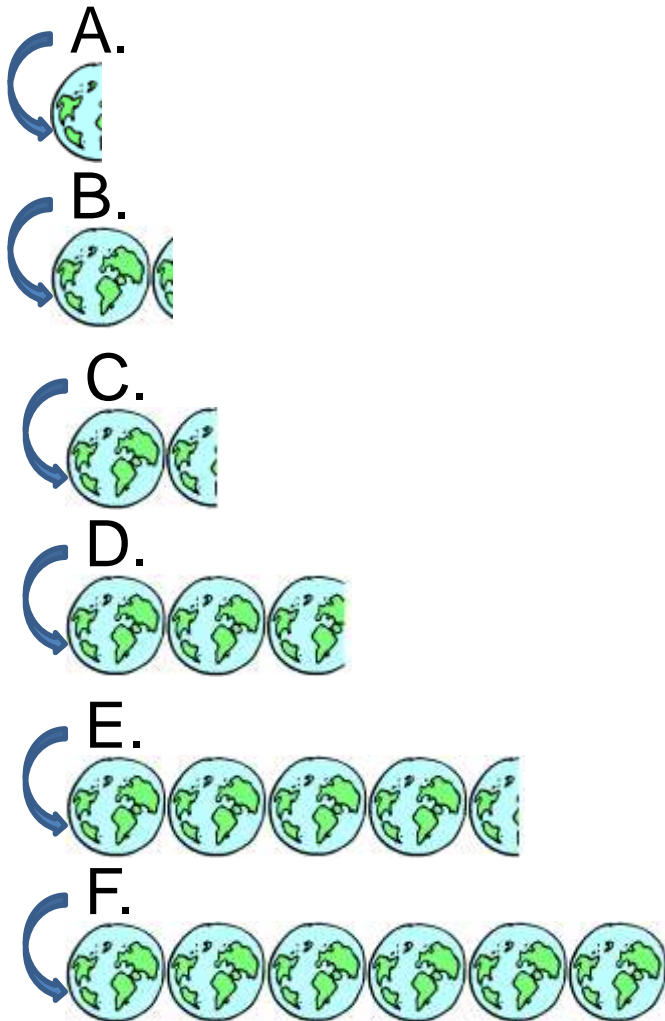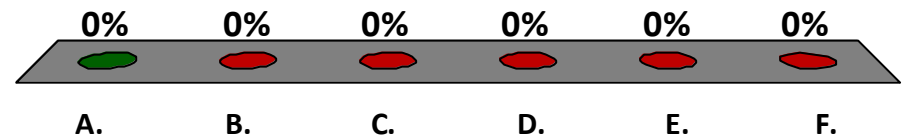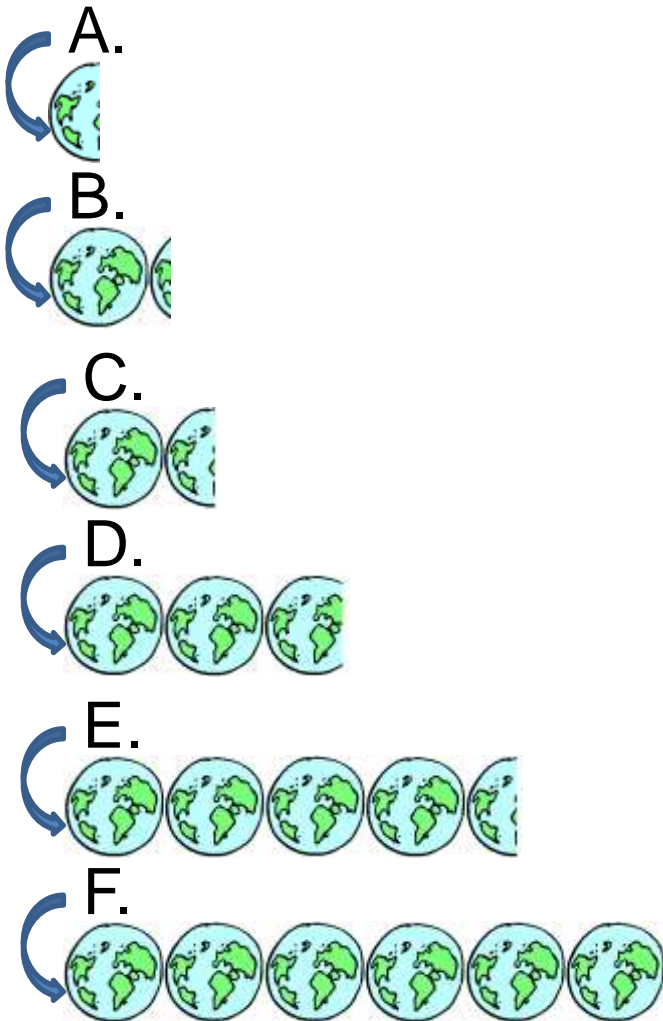- The poorest 50% of adults in the world own 1% of the global wealth

How sustainable is our lifestyle?
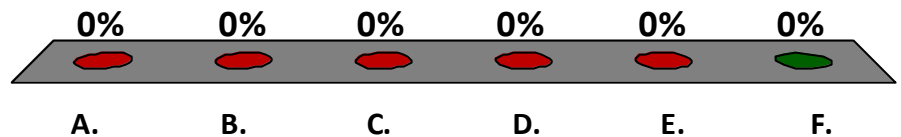
How many planets are needed to support the UK?

A.

B.

C.

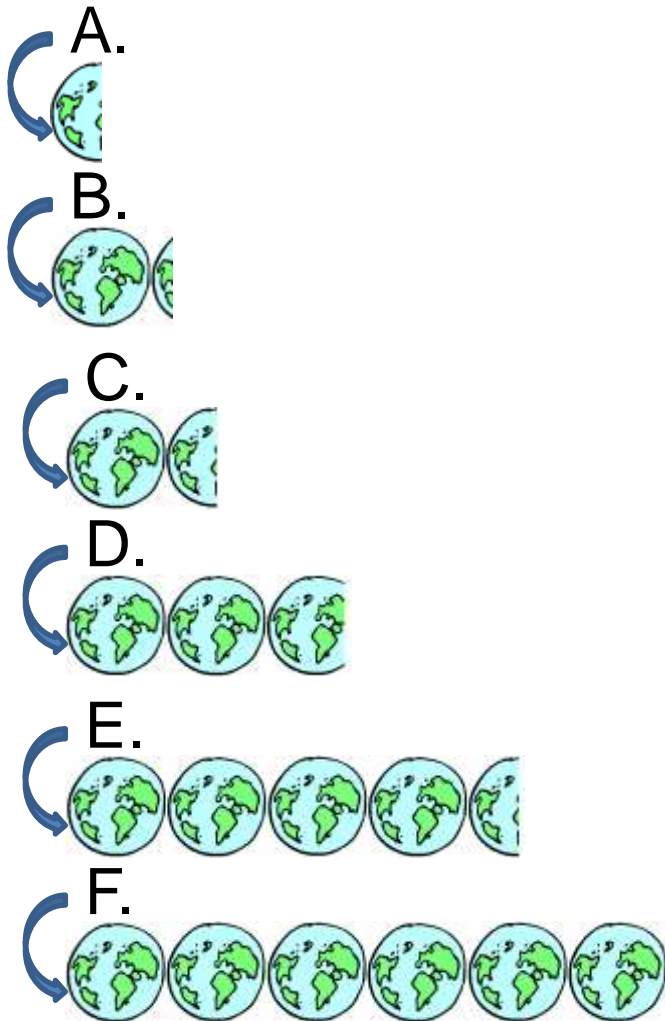D.

E.

F.

| 0% | 0% | 0% | 0% | 0% | 0% |
| A. | B. | C. | D. | E. | F. |

How many planets are needed to support India?

How many planets are needed to support the United Arab Emirates?

A.

B.

C.

D.

E.

F.

0%	0%	0%	0%	0%	0%
A.	B.	C.	D.	E.	F.

Rate your understanding of Global Issues

A. Poor

B. Below Average

C. Average

D. Good

E. Excellent

0% 0% 0% 0% 0%

Poor Below Average Average Good Excellent
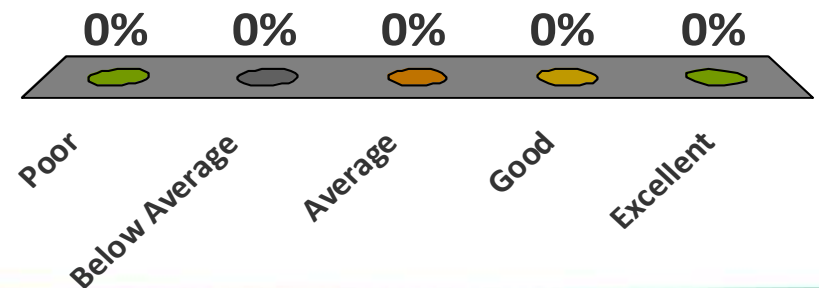
# Rate your understanding of Global Issues

Effective Communication

How to present with Impact and Empathy

Fears

Prioritise your biggest fears (worst first)!

A. Mind going blank
B. Nerves
C. Speaking English when its not my 1st language
D. Everyone looking at me
E. Being boring and people switching off
F. Lack of confidence
G. Being asked questions I can't answer
H. Talking too fast
I. People not understanding my accent

0%	0%	0%	0%	0%	0%	0%	0%	0%
A.	B.	C.	D.	E.	F.	G.	H.	I.
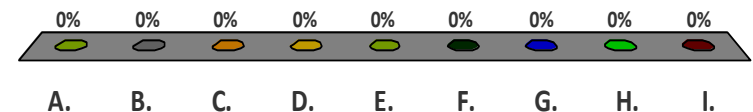
1. Mind going blank

- Use prompts e.g. cards with key points.

- Don't try to read a script - it appears wooden.

- Use your visual aids as prompts.

- Learn your presentation **structure,** and this should help you not get lost. Know when and where the new sections are and learn the content in association with the sections.

Click the arrow…

2. Nerves

• Remember everyone suffers from nerves

Robbie Williams suffers from stage fright which in 2006 led him to cancel performances.

2. Nerves

- Some nerves are good, they will keep you on your toes.
- Disabling nerves are bad
- Learn how nerves affect **you** and prepare:
  - Do you talk too fast initially?
  - Do you get a dry mouth and need water?
- What works for you?
  - Imagine the audience is naked
  - Remember that you know more than they do
- Prepare and practice:
  - Visit the room first and get comfortable in it
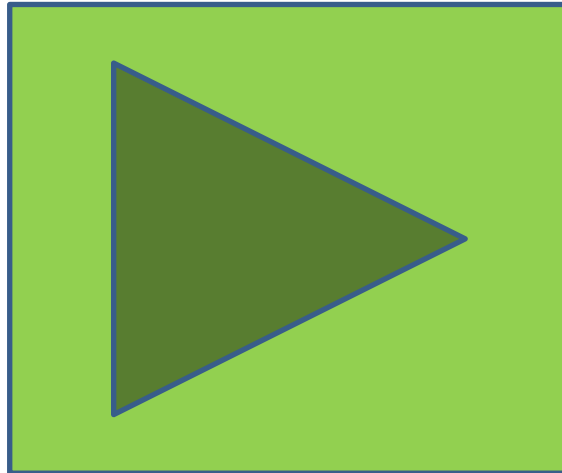 - Check the IT
  - Prepare answers to obvious questions

Professor Elena Rodriguez-Falcon
Professor of Enterprise and Engineering Education
Director of Enterprise Education in the University of Sheffield
Faculty Director of Women in Engineering

Click the arrow…

3. Speaking English when its not my 1st language

- Remember that a presentation is about communication and is not a language test
- The presentation itself …
  - Keep it simple
  - Speak slowly
  - Know your key ideas and reiterate them
  - If there is a particular word you struggle with .. is there an alternative?
- Practise on native English speakers and ask them to tell you when/if they don't understand.
- Take up opportunities to do presentations. You will improve with experience!

I come completely clean. When I lecture, I say to the students "I am from Mexico, if I say things that you don't understand, please tell me. That way we are both learning and my English will improve".
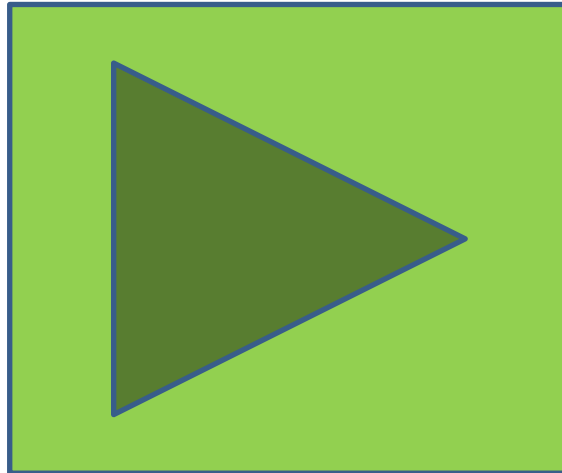
Professor Elena Rodriguez-Falcon
Professor of Enterprise and Engineering Education
Director of Enterprise Education in the University of Sheffield
Faculty Director of Women in Engineering

Click the arrow…

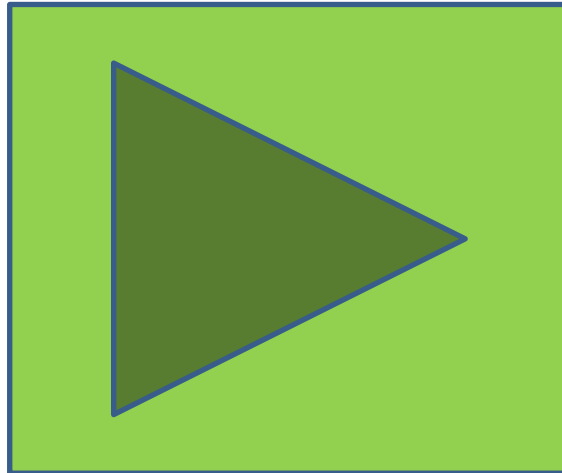# 4. Everyone is looking at me

- Give them something else to look at!
  - A PPT slide, a prop, a Poster

Click the arrow…

5.   Being boring and people switching off
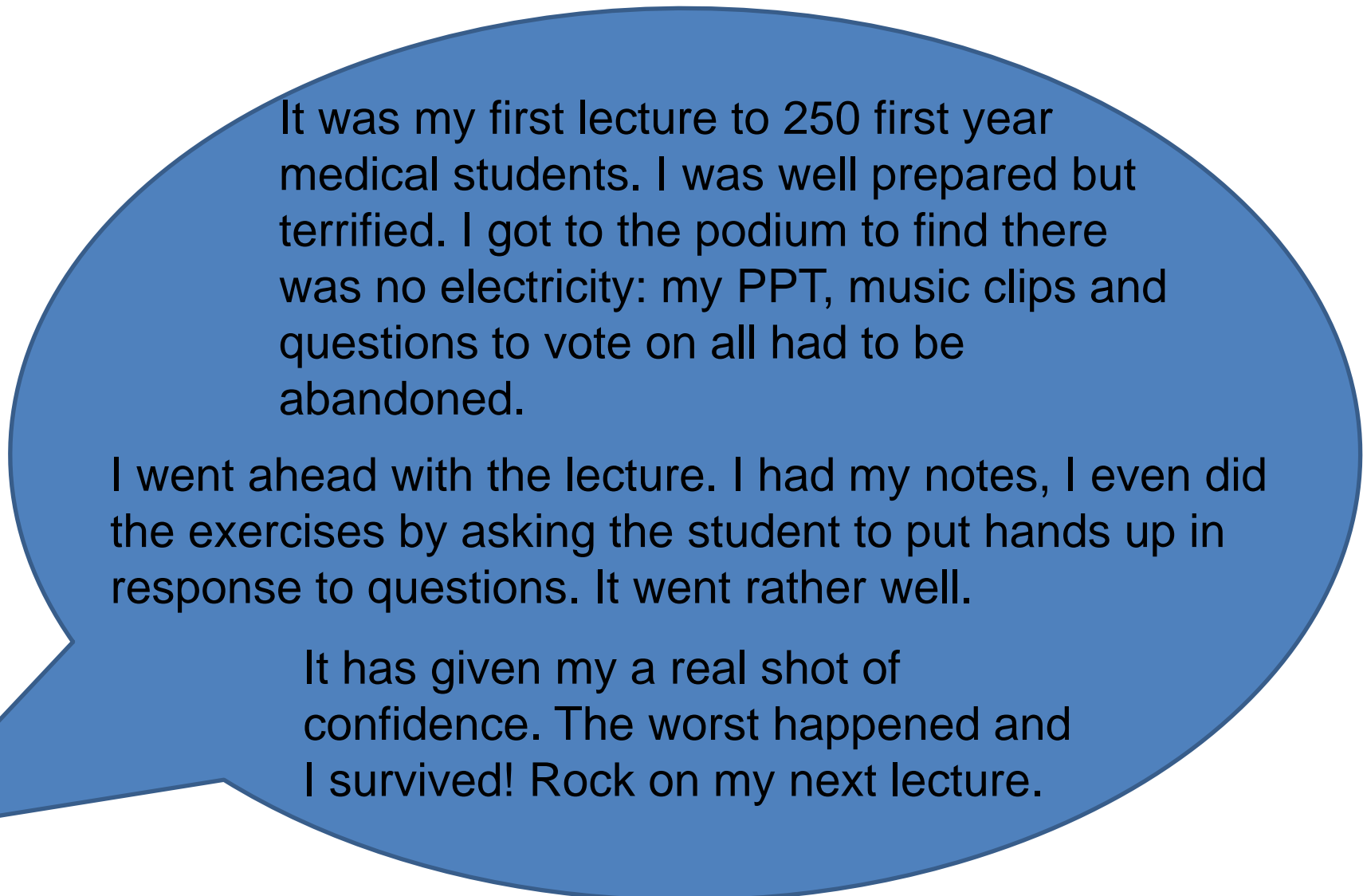
- Follow the guidance today and hopefully not!
- Inject some energy:
  - Move
  - Walk out to the audience.
- Is your voice monotone?
  - Vary the pitch
  - You should be conveying the grammar with your voice: Raise the pitch for a new sentence, pause at a comma. How do you convey a new topic?
- Introduce some interactivity:
  - Ask them a question/ a show of hands/ a vote.

Click the arrow…

6. Lack of confidence

- Be topic prepared!
  - Remember you know more about the subject than the audience does
  - Try and question predict
- Be practically prepared!
  - Check and familiarise: Visit the room, check the IT works and know where everything you need is (light switches etc.).
  - Practice
- Confidence improves with experience so seek out opportunities to build up experience

It was my first lecture to 250 first year medical students. I was well prepared but terrified. I got to the podium to find there was no electricity: my PPT, music clips and questions to vote on all had to be abandoned.

I went ahead with the lecture. I had my notes, I even did the exercises by asking the student to put hands up in response to questions. It went rather well.

It has given my a real shot of confidence. The worst happened and I survived! Rock on my next lecture.

Report of the experience of a lecturer being observed for the Certificate in Teaching and Learning at UoS by **Dr Trish Murray**.

Click the arrow…
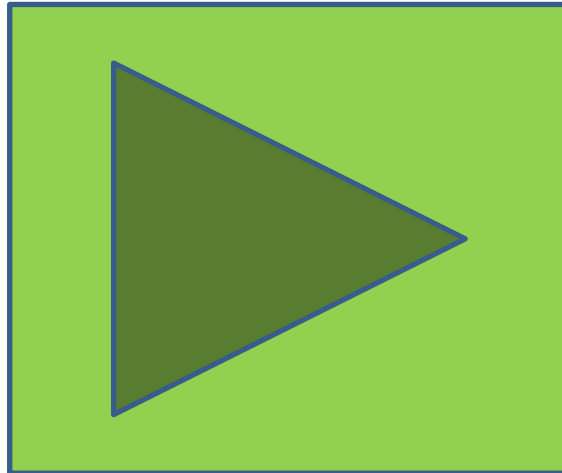
7.   Being asked questions I cant answer

- Before you give your presentation, think about likely questions and construct some answers. You should be able to predict about 40% of potential questions.
  But nobody knows everything and you are not expected to know everything!

- Don't pretend you know if you don't. This will lose you credibility. Own up.

- Bounce it out:
  - to colleagues
  - to the audience
  - Back to the asker and convert it to a discussion

- Depending on the importance of the question
  ask for an email address and follow up with an answer.

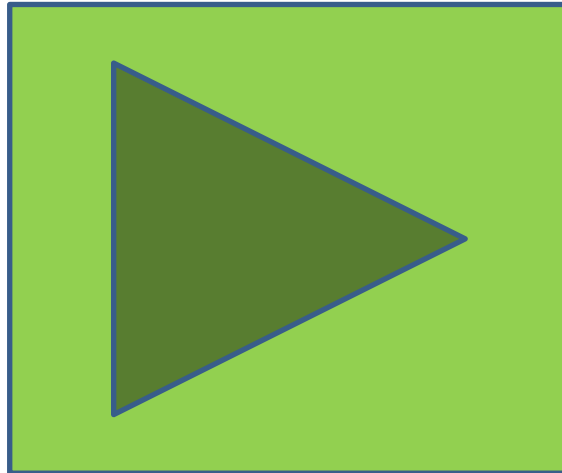"Good question … would anyone in the audience like to answer that?"

Click the arrow…

8. Talking too fast

- Often a problem in the first 5 mins (when most nervous)

- Practise talking slowly and pacing the first bit of the talk.

- Keep an eye on the time and adjust your speech rate accordingly

Click the arrow…

9.   Talking with an accent

- Variety/accents are good

  – Provided you can be understood?

- Any problematic words?

- What about the speed of your speech?

- …Get some feedback

- Think about your audience and unless you know they are all from a particular local area, avoid local words or phrases (colloquialisms and idioms)

"Champion presentation, canny lass"

"Don't get cold feet [about your presentation], just stick to your guns and you will hit the nail on the head".

To Conclude: Top Tips

- Do not overcomplicate the content or pack in too much content.

- Think about everything from the perspective of the audience.

- Tell them what you're going to tell them, tell them and tell them what you've told them!

- Use your body (language and position) and your eyes to communicate with your audience.

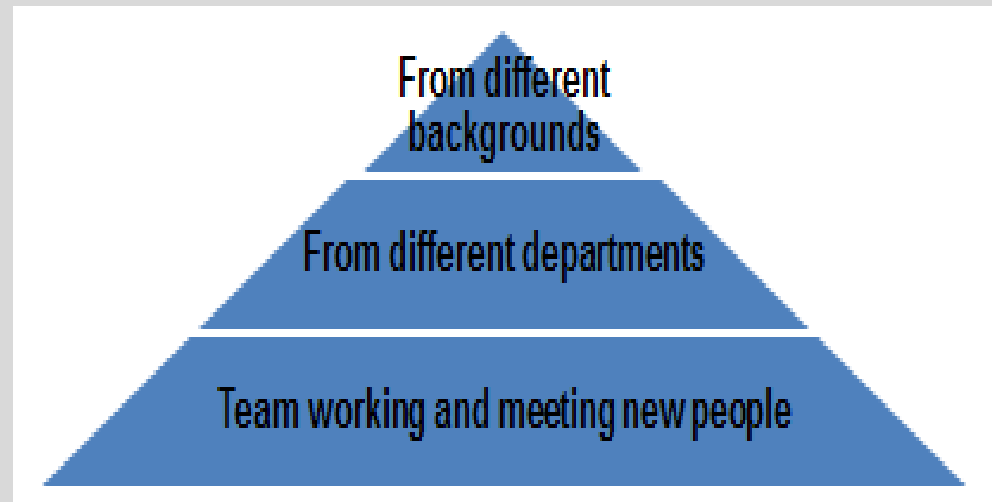# Back to the weeks and some student evaluation

GEC students

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

1. "team working & meeting new people"
(over 50% of responses)

From different backgrounds

From different departments

Team working and meeting new people

2. "working on real problems"
(second significant response)

EYH Feedback

"Working with expert engineers from industry such as Siemens gave us a brilliant opportunity to find out about future careers and get a really helpful insight into what challenges we may face.
Taking part in [...] *really good for* [...] *experience."*

"The general standard of the presentations were very good and bearing in mind they only had a week to develop their plans etc., the contributions from the students in the 'Q & A' after their presentations were very entertaining and I hope my comments / questions were seen as being constructive rather than negative. The theme of the week is ideal for engineers to sample how life will be in most engineering companies once they have graduated."

Scott Belamy
Projects Manager, Siemens plc.

What is innovative?

- The scale

- Cross faculty inter-disciplinary teams

- Inspiri...

- Using ... facilitators

Unique!

- Involvement of industry

- Embedding and giving context to enterprise & employability

- Spiral curriculum

What would you like to know more about?

A. Costs
B. Engaging the students
C. Engaging the staff
D. Cascade teaching using PhD students
E. Enablers
F. Constraints
G. The work involved
H. What we plan on doing differently

0%	0%	0%	0%	0%	0%	0%	0%
A.	B.	C.	D.	E.	F.	G.	H.
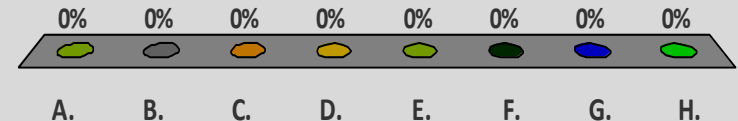
What you would like to know more about (keywords)

Rank	Responses
1	
2	
3	
4	
5	
6	

The end and
Thank you for listening!