# Cross-Cultural Communication and Engineering Education
## *A collaboration between Newcastle and Tokyo Universities*

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# Project background

- Engineering education traditionally focused on 'hard-skill' technical knowledge BUT demand of 'soft skills' increasing rapidly (Gilleard & Gilleard, 2002)

- Work practices of graduate engineers increasingly international and intercultural (Yu, 2011)

- Need for engineering graduates to function effectively in a global context (cf. US National Academy of Engineering, 2004; UK Royal Academy of Engineering, 2007)

- Vital engineering students acquire skills and knowledge about intercultural communication
  - We use 'inter-' and 'cross-' cultural synonymously here, although there is some debate about distinctions between the two (Gudykunst 2003)

# Project objectives

1. Develop links between Newcastle University (NU) and the University of Tokyo (UT) – funding from NU Global Excellence Fund, UT, JSPS.

2. Build NU-UT interdisciplinary research capacity by connecting leading and early-career researchers from the fields of cross-cultural communication and engineering

3. Address NU and UT internationalisation agendas

4. Investigate opportunities and challenges for cross-cultural communication in the global engineering profession

5. Investigate pedagogical approaches to the development of cross-cultural competencies in engineering students

# Project stages

1. **March - July 2015:** Needs analysis among engineering students and staff at NU and UT related to intercultural communication as a graduate attribute (part 1 – surveys)

2. **July 2015:** UT-based project team visit Newcastle

3. **July 2015 - March 2016:** Needs analysis (part 2 – focus groups)

4. **March 2016:** NU-based project team visit UT

# Intercultural communication as a graduate attribute: A needs analysis among engineering students and staff at Newcastle University

# Research Questions

1. How do engineering staff and students frame 'global engineer' and 'intercultural communication'?

2. How important to engineering students and staff is intercultural communication? How do students perceive their own skills?
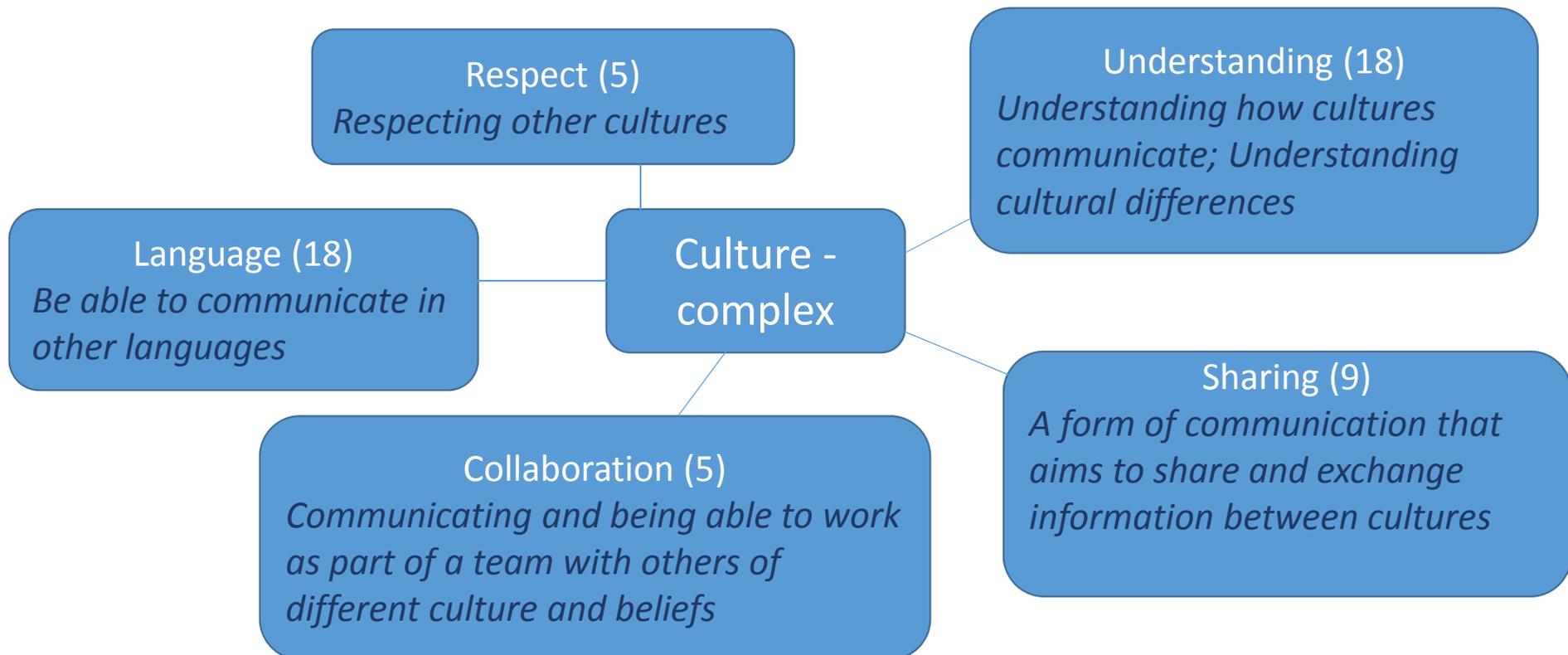
# Methods

1. Self-report survey with chemical engineering students (N = 150; 70% male, 30% female; 95% 18-21 years of age) *- today's seminar...*

   a. 20 five-point Likert scale questions on intercultural communication as a graduate attribute (adapted from Diamond et al., 2011) - descriptive statistics

   b. 2 open questions on the terms 'intercultural communication' and 'global engineer' - thematic analysis (Braun and Clarke, 2008)

2. Focus groups *– under analysis...*

   a. Engineering staff (N = 5)

   b. Engineering students (N = 7)

# What do you think a 'global engineer' is?

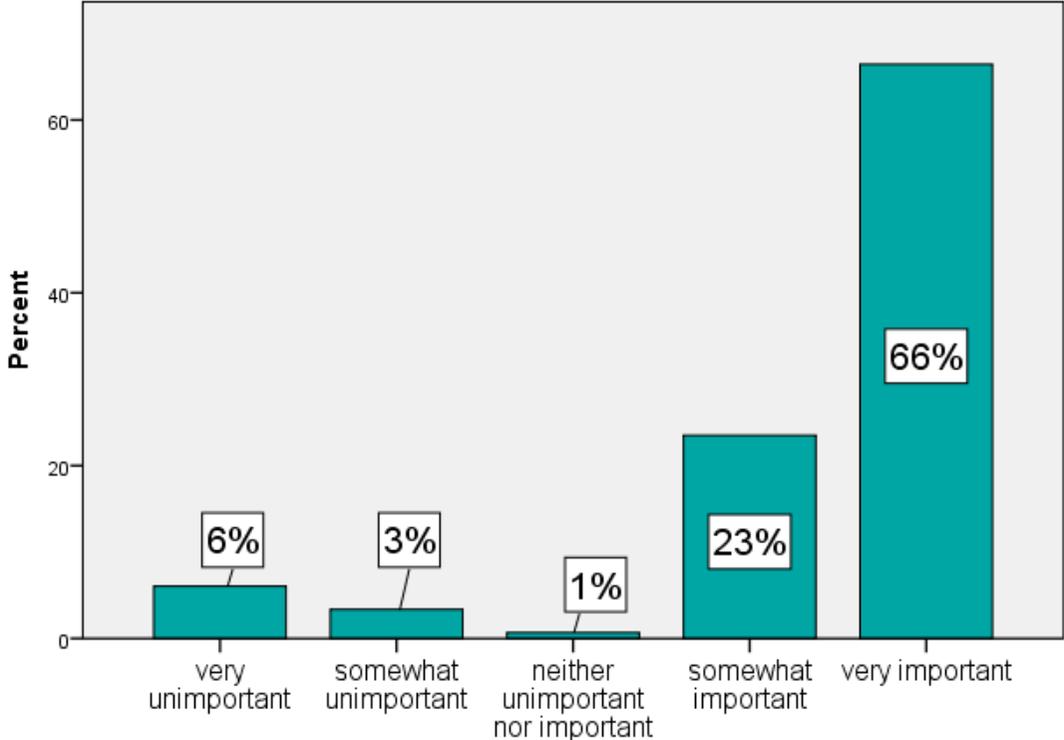| | |
|---|---|
| **Mobility (56)** | *An engineer who travels for work; An engineer that works around the world* |
| **Ability to adapt (20)** | *Engineer who can work in various environments; An engineering professional who has the ability to adapt to changing surroundings* |
| **Language and communication (18)** | *Someone who is an engineer that communicates with people around the world; Multi-literate* |
| **Global perspectives (15)** | *An engineer able to understand the issues in the global community; An engineer that has an impact on the world* |
| **Collaboration (7)** | *Working with lots of different people; An engineer that can mingle and work with other groups of people* |
| **International company (4)** | *An engineer who works for an international firm; Engineer in an international company* |

# How would you define 'intercultural communication'?

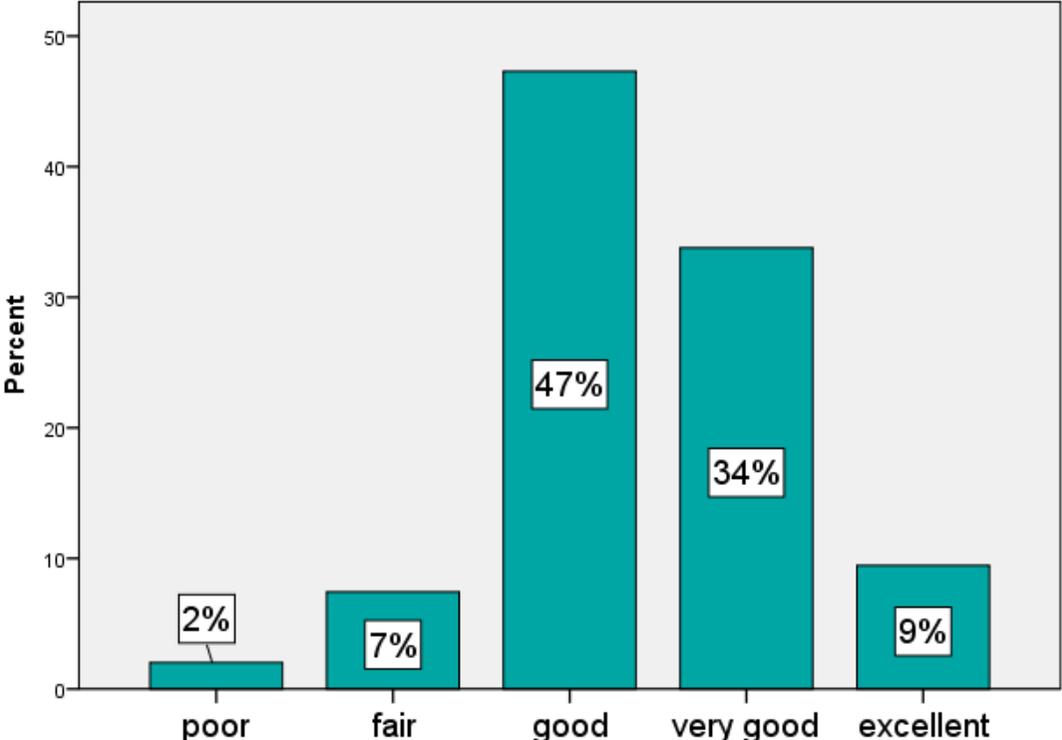Culture – simple (51) - *Communication between different cultures* (20)



Respect (5)
*Respecting other cultures*

Language (18)
*Be able to communicate in other languages*

Culture - complex

Understanding (18)
*Understanding how cultures communicate; Understanding cultural differences*

Collaboration (5)
*Communicating and being able to work as part of a team with others of different culture and beliefs*

Sharing (9)
*A form of communication that aims to share and exchange information between cultures*

# Communication…

**How important will communication be in your future career?**

Percent

- very unimportant: 6%
- somewhat unimportant: 3%
- neither unimportant nor important: 1%
- somewhat important: 23%
- very important: 66%

**How would you rate your communication skills?**

Percent

- poor: 2%
- fair: 7%
- good: 47%
- very good: 34%
- excellent: 9%
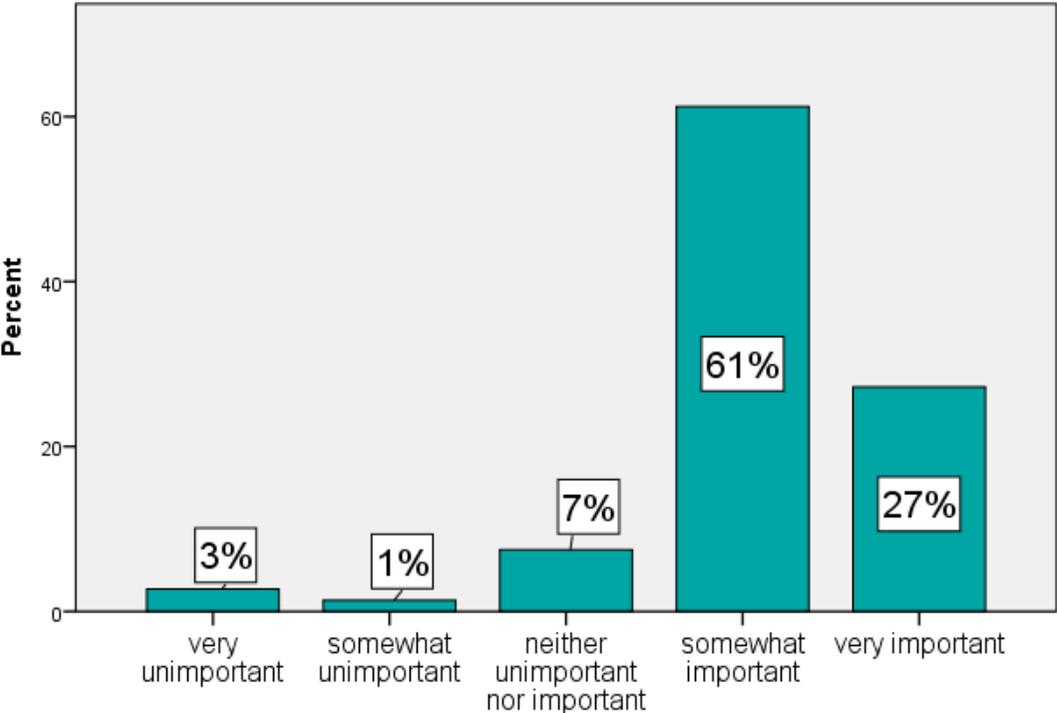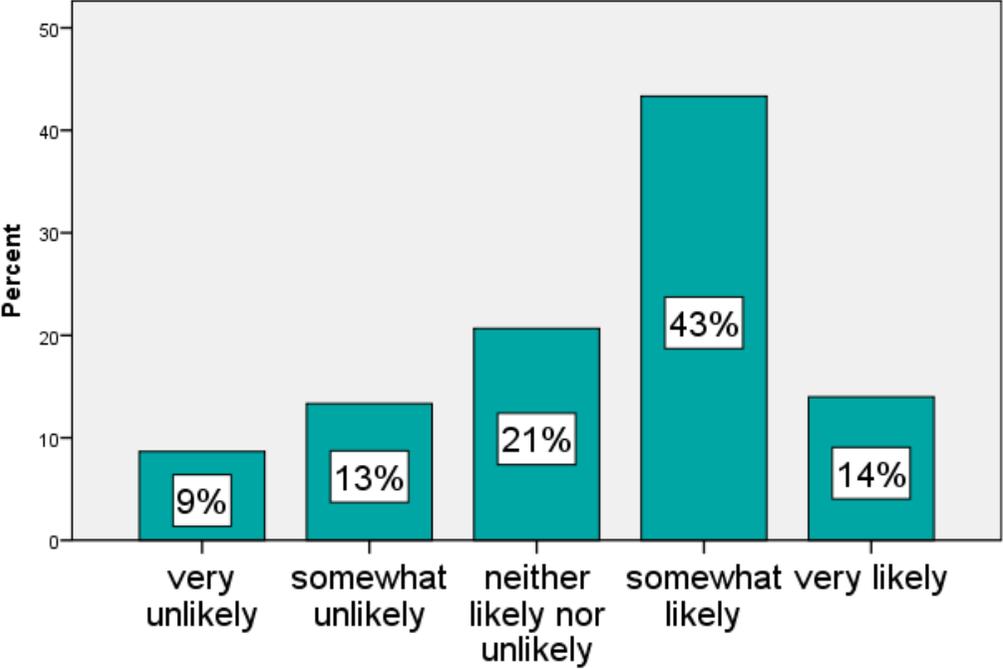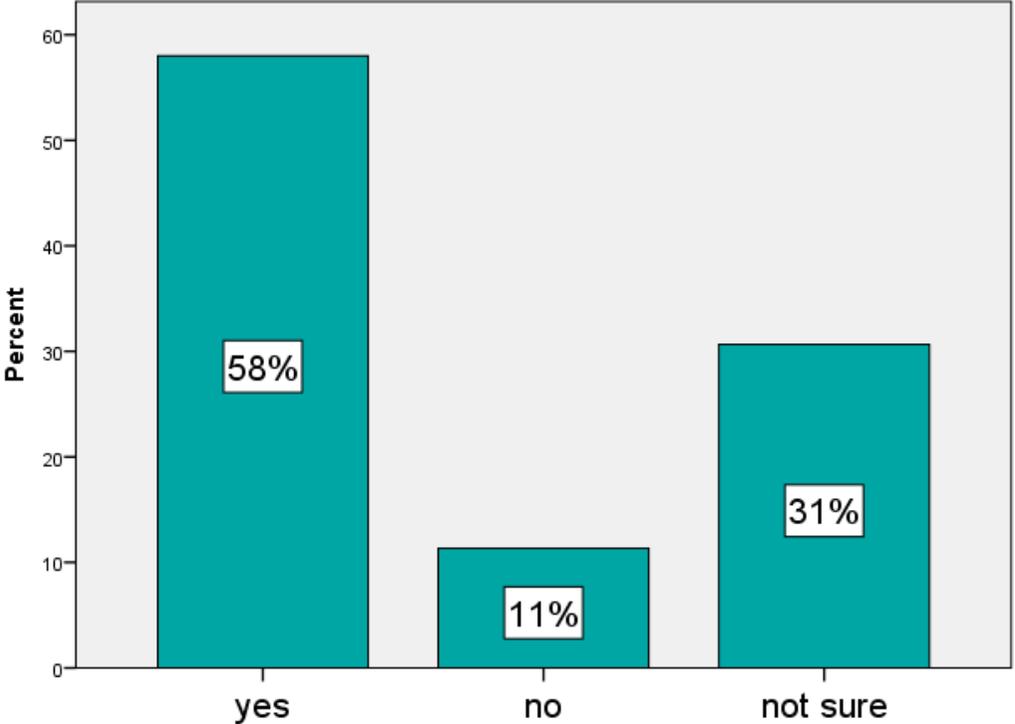
# Intercultural Communication…

# Working abroad…



**In your future career, how likely is it that you will work outside your home country?**



In your future career, do you want to work outside your home country?

# How important, do you think, will the following be in your future career?

| Item | % of students rating this as 'very important' |
| --- | --- |
| An ability to work effectively as part of culturally diverse teams | 4.41 (SD=.81) |
| An ability to embrace multiple perspectives | 4.37 (SD=.76) |
| An understanding of international issues and events | 4.27 (SD=.78) |
| Openness to new experiences | 4.26 (SD=.90) |
| An understanding of one's position and role within a global context | 4.15 (SD=.78) |
| Understanding one's own culture | 3.75 (SD=.97) |
| An ability to be linguistically competent in at least one language other than one's own | 3.66 (SD=.95) |

1=very unimportant, 2=somewhat unimportant, 3=neither unimportant nor important, 4=somewhat important, 5=very important

# How would you rate your own ability for each of these attributes?

| Item | % of students rating their ability as either 'poor' or 'fair' |
|---|---|
| An ability to be linguistically competent in at least one language other than one's own | 56% (28% 'poor') |
| An understanding of international issues and events | 23% |
| An understanding of one's position and role within a global context | 15% |
| Understanding one's own culture | 8% |
| An ability to embrace multiple perspectives | 5% |
| Openness to new experiences | 4% |
| An ability to work effectively as part of culturally diverse teams | 2% |

# Discussion

1. 'Global engineer' framed in terms of mobility; language and communication issues not at the forefront

2. 'Intercultural communication' framed in both 'simple' and 'complex' ways

   - Difference between intercultural communicator as powerful and privileged vs. intercultural communicator as not powerful (e.g. operating outside L1, not 'the boss' at work, etc.)?

3. Overall, engineering students attach considerable importance to different aspects of intercultural communication and rate their skills fairly highly, BUT

   - Communicating in a foreign language seen as least important – assumption about universality of English?

   - In terms of skills, foreign language ability rated poorest – implications for engineering curricula?

# Ways forward…

- Needs analysis at UT *– under way…*

- Comparison between NU-based and UT-based students

- Comparison between NU-based and UT-based staff

- Data to inform a collaborative online project between NU and TU students?

- Data to inform research into consequences of 'culture-simple' / 'culture-complex' for professional interaction

- European-wide project on global engineering and ICC

# Our questions…

- From what we have said:

  - How might Japanese and UK engineering students collaborate, and learn from the collaboration?

  - What do you think are the major concerns of Japanese engineers working internationally?

# Thank you

Your questions/comments...

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