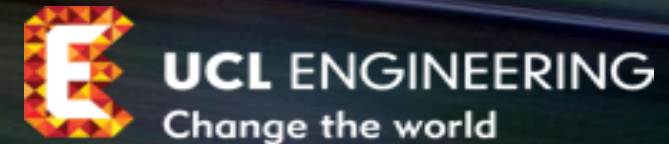


Jan Peters & Emanuela Tilley
Katalytik Ltd UCL

REFRAMING AND EMBEDDING DIVERSITY IN ENGINEERING





Achieving diversity in engineering

Aims:

1. To ensure everyone has the opportunity to choose engineering
2. To ensure those who choose can succeed
3. Engineers provide solutions, products, services that meet a global user base



Approaches to increasing diversity

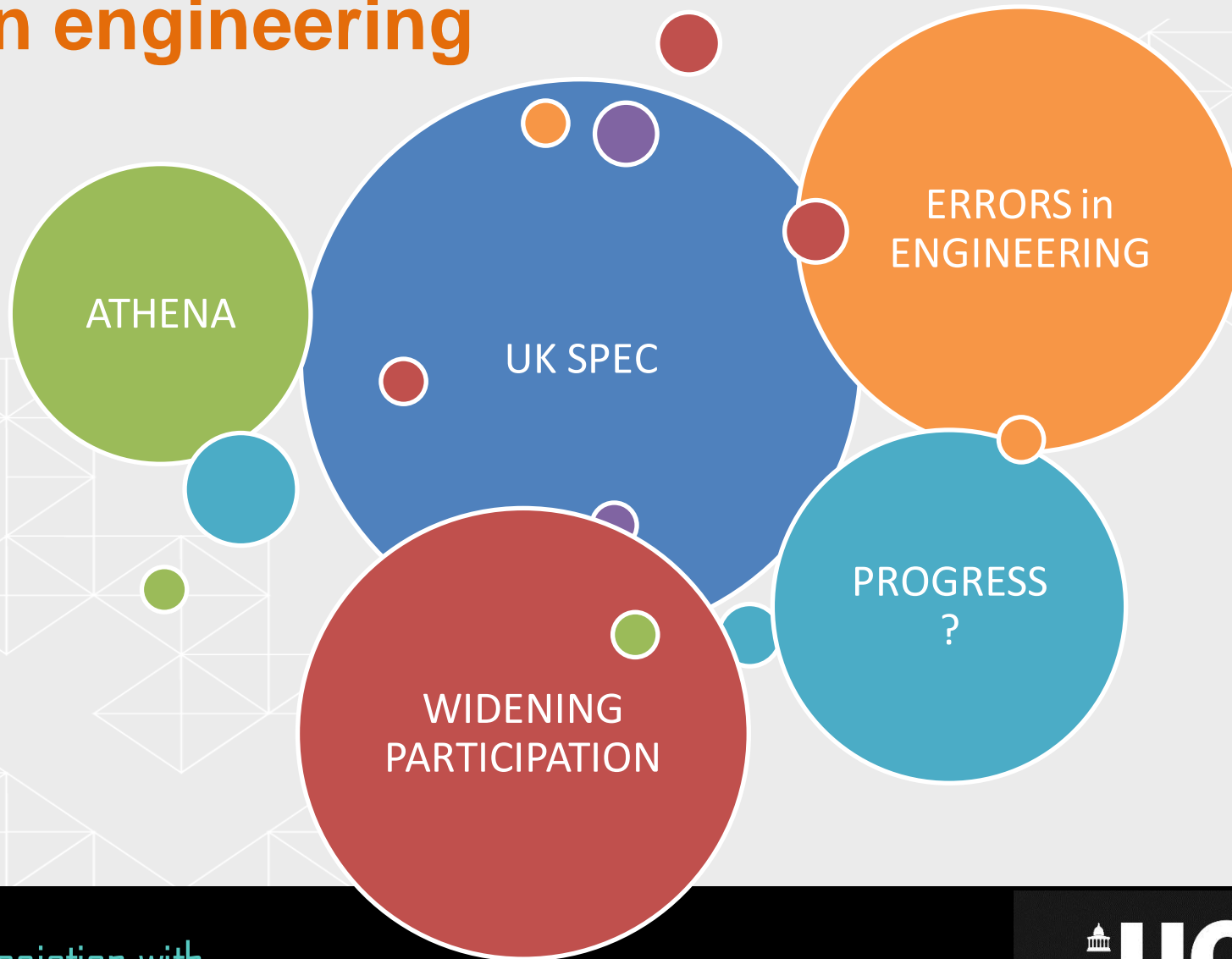
Representation:
increasing numbers of
underrepresented
groups

Practical action: to
deliver inclusive
education

Ideological approach: adopt
(management) systems and
processes that enable minority
groups to contribute

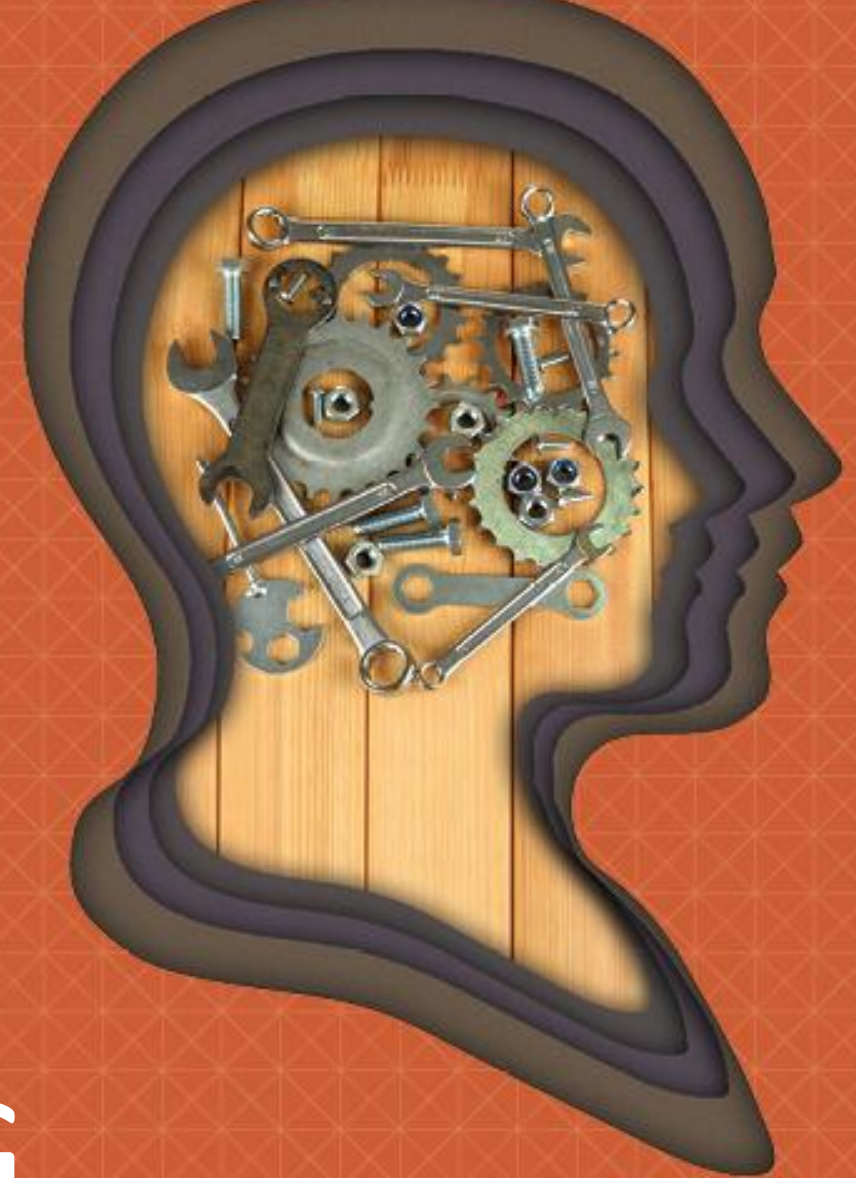
Based on Soudien 2014

Drivers in engineering



**TO CHANGE THE
WORLD, YOU NEED
TO BE TAUGHT
DIFFERENTLY.**

SHIFTING THINKING....



UCL ENGINEERING
Change the world

What is Engineering?

“....the art and practice
of
changing the physical world
for
the use and benefit of all”

Prof Chris Wise, UCL Civil, Environmental and
Geomatic Engineering and Expedition Engineering

What is the Integrated Engineering Programme at UCL?

- Authentic learning
- Problem based pedagogy
- Global perspective
- Professional skills
- Embedded inclusion from the start
- Review discussion process



Teams



Disrupt student groupings to prevent self selecting like-minded students working together

Introduce self-reflection

Aim for a critical mass of 25-30% by gender in teams.

If it means some teams are all male, fine.

Vocabulary for different



Introduce an industry standard tool as a vocabulary to talk about different ways of thinking, interacting and getting things done.

We use CliftonStrengths for students

Peer assessment



Peer assessment allows students to make judgements about other's work while reflecting on their own

Liberating the curriculum in engineering

Cross departmental discussion & dialogue

- 3 Case studies
- 3 Illustrations
- 3 New ideas to try

Visible institutional leadership

Equity/diversity policies
and practices

Inclusive culture
and curriculum
developments
and embedding

Evaluation
of progress

Faculty
development

Fostering inter-
department and
cross-institution
collaboration

Coordinated
women/minority
-in-engineering
programmes or
similar

Ongoing
research

**What can
you do?**

**Act
across all
of these
areas**

Model for inclusive engineering / STEM education model

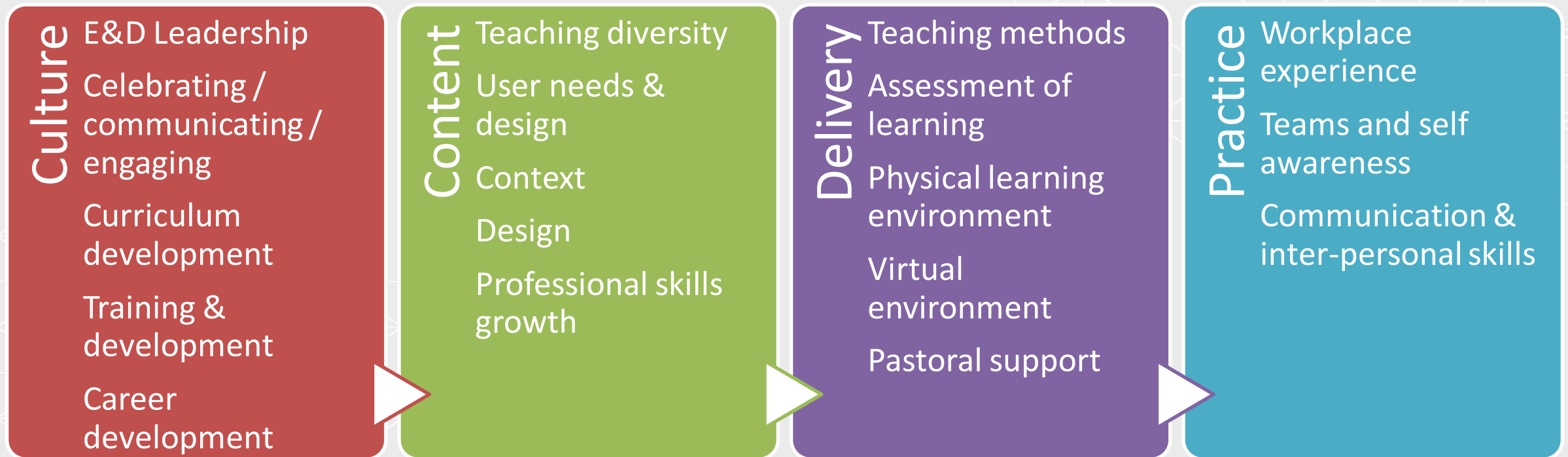
Culture The matrix in which you work and deliver your education programmes

Content What content you teach on your courses and how it bears relevance to the wider community and world

Delivery How you are teaching, embracing new methods and reaching and supporting diverse students

Practice Providing the opportunity to practice and reinforce professional skills – often called employability – it's wider than that.

Inclusive engineering model



The power of the question

1. Staff benchmark and peer assess lesson plans to ensure diversity of content and targeting.
2. Peer assisted learning is used to support and assess students' work

SCORE:

A Fully embedded

E: Not at all, not relevant

Discuss diversity

Students have the opportunity to explore and practise how diversity can influence the designs and outcomes of their projects.

SCORE:

A Fully embedded

E: Not at all, not relevant

Call to action

When was the last time you had a discussion in engineering about diversity and how did it go?

Do you know what types of questions to ask? Ask us!

Take a perspective on your approach to diversity and inclusion across the four areas and start doing just one thing in each domain.



Collaborators

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