Realigning Curricula for the Future

Engineering and Sustainability

27th February 2024

Convenor: Kathrin Möbius

Agenda

12:00 Introductions

12:10 Elizabeth Robertson & Scott Strachan: Engineers without Borders and VIP4ESD at University of Strathclyde

12:25 Kathrin Möbius: Top Tips for Building Services Engineering & Summary of Human Capabilities for Engineering and Sustainability

12:35 Mapping exercise

12:40 Open discussion and your stories

12:55 Conclusions and close

The EAUC

- EAUC = Environmental Association for Universities and Colleges – Sustainability!
  - All of your institutions are members!
  - Mailing lists, Topic Support Networks, Resources, Advice, Conferences
  - Operations, Teaching, and Research

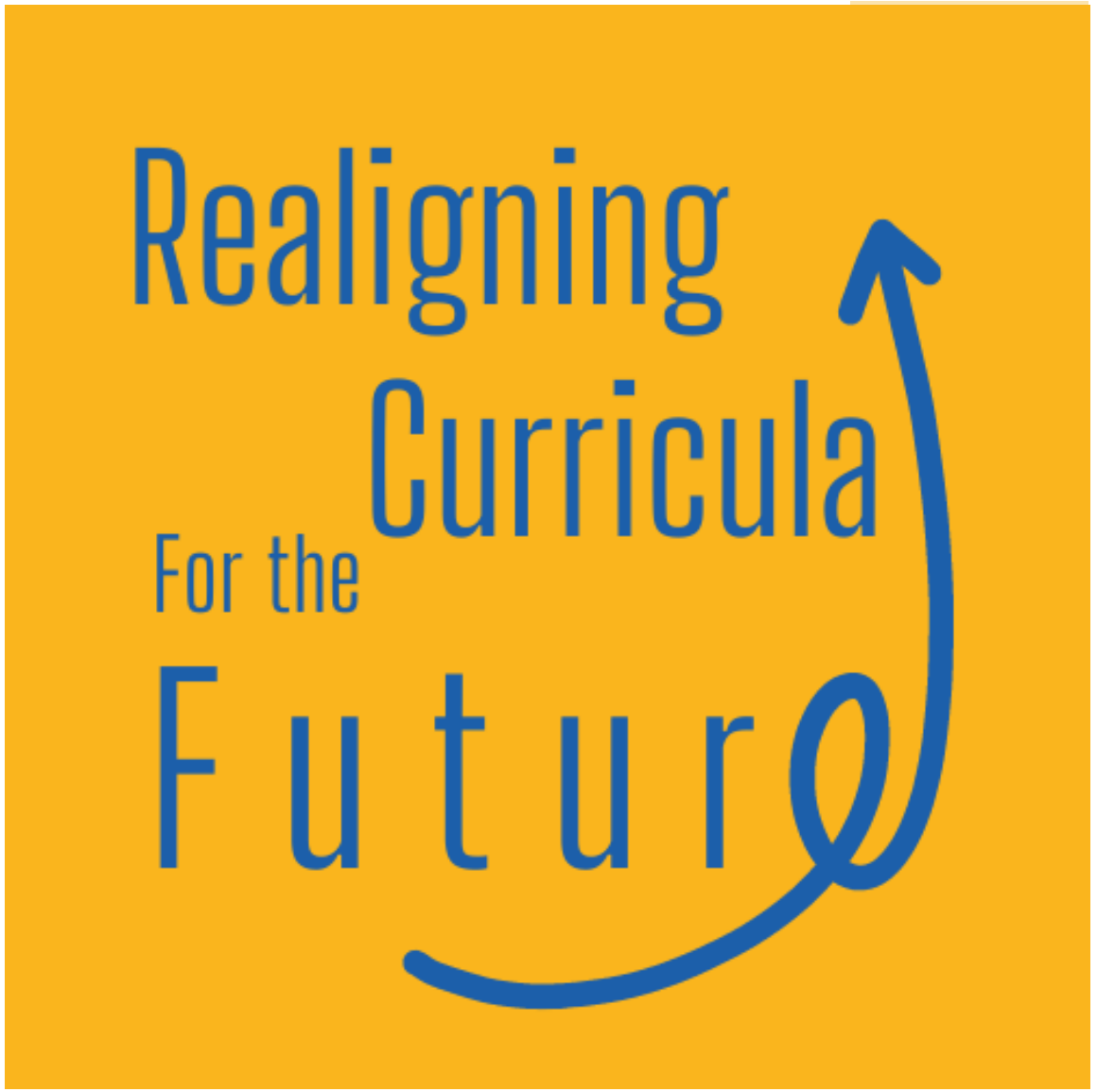
- Learning & Teaching support:
  Jiscmail, events, resources, community.

This series

Realigning Curricula for the Future:

bringing together people leading on or interested in integrating sustainability into teaching in specific subject areas

21st March, 1-3pm: Monitoring ESD in Colleges – Online Workshop



Hi!

What's your name?

Which institution or organisation are you from?

What's your role and how do you relate to engineering and sustainability?

Engineers without Borders and VIP4ESD at University of Strathclyde

Elizabeth Robertson, Teaching Fellow in Electronic and Electrical Engineering

Scott Strachan, Principal Teaching Fellow. Electronic and Electrical Engineering.

Building Services Engineering and Sustainability

Samuel Thompson, Curriculum Manager & Glasgow Kelvin College SQA Senior Verifier: Building Services Engineering

A recap and invitation to get in touch!

Building Services Engineering & Sustainability

- Current apprenticeships: adapted annually based on the needs of industry and government.

- Realigning curricula based on business case and through top-down approaches
  - Spoke to many people to align curricula as a senior verifier
  - Mandatory frameworks: Have integrated e.g. Enviro legislation
  - New apprenticeship next

- Technology is not all new:
  - Has been used in other vocational qualification for years, particularly in refrigeration. But it is now coming into the domestic market, while it has been in commercial qualifications for a longer time.

Sam's top tips

- **Awarding bodies** you are aligned with: Challenge them! What is their prerogative?
- **Build in an understanding** of aspects like environmental legislation, Reduce reuse recycle, etc.
  - Can be assessed! E.g. through Case study and assignment level!
  - Where does this fit into a plumbing and heating framework – accredited prior learning.
- **Simple measures** count too, if you can't fully upgrade your facilities
  - For example, look at material use and disposal with the students.
- **Collaborate** with others?
  - Schools, Universities, Industry,
  - Awarding Bodies, Other Organisations and collectives like Energy Savings Trust and Energy Skills Partnership

Human Capabilities for Engineering and Sustainability

A white paper by Enginuity and The Green Edge – a summary

Competences and capabilities

- **Occupational competence:** Ensuring tasks are done well and effectively – specific technical skills
- **Occupational capability:** More about their growth trajectory, not just about what they can do now but also what they will be able to do in the future – evolving, adapting, enhancing their skillset
- **Human capability:** capacities and potentialities of individuals, including the cognitive, emotional, social and physical abilities
  - which also cross over into other aspects of life such as personal development and wellbeing. Often also called transferrable skills, or sometimes soft skills.
  - They overlap with occupational capabilities but go beyond them.

Frameworks

- Specific technical competence frameworks, vs capability frameworks
- Examples include
  - Meta skills (E.g. Skills Development Scotland)
  - GreenComp (European Commission)
  - ESD competencies (UNESCO)

- **The importance of skills, knowledge – and sustainability values:** e.g. support for equity and social justice, reflection on personal values, acknowledging that humans are part of nature – are important values but may not necessarily be supported by the education they received.

“integrating technical competency with human capability frameworks can cultivate professionals who **excel in their specialisations while remaining versatile** in communication, critical thinking, and problem-solving across various domains.”

“an integrated approach offers **numerous benefits**, from nurturing a comprehensive set of required skills to enabling **continuous learning**, promoting cross-disciplinary **collaboration**, and **aligning** technical efforts with sustainability goals”

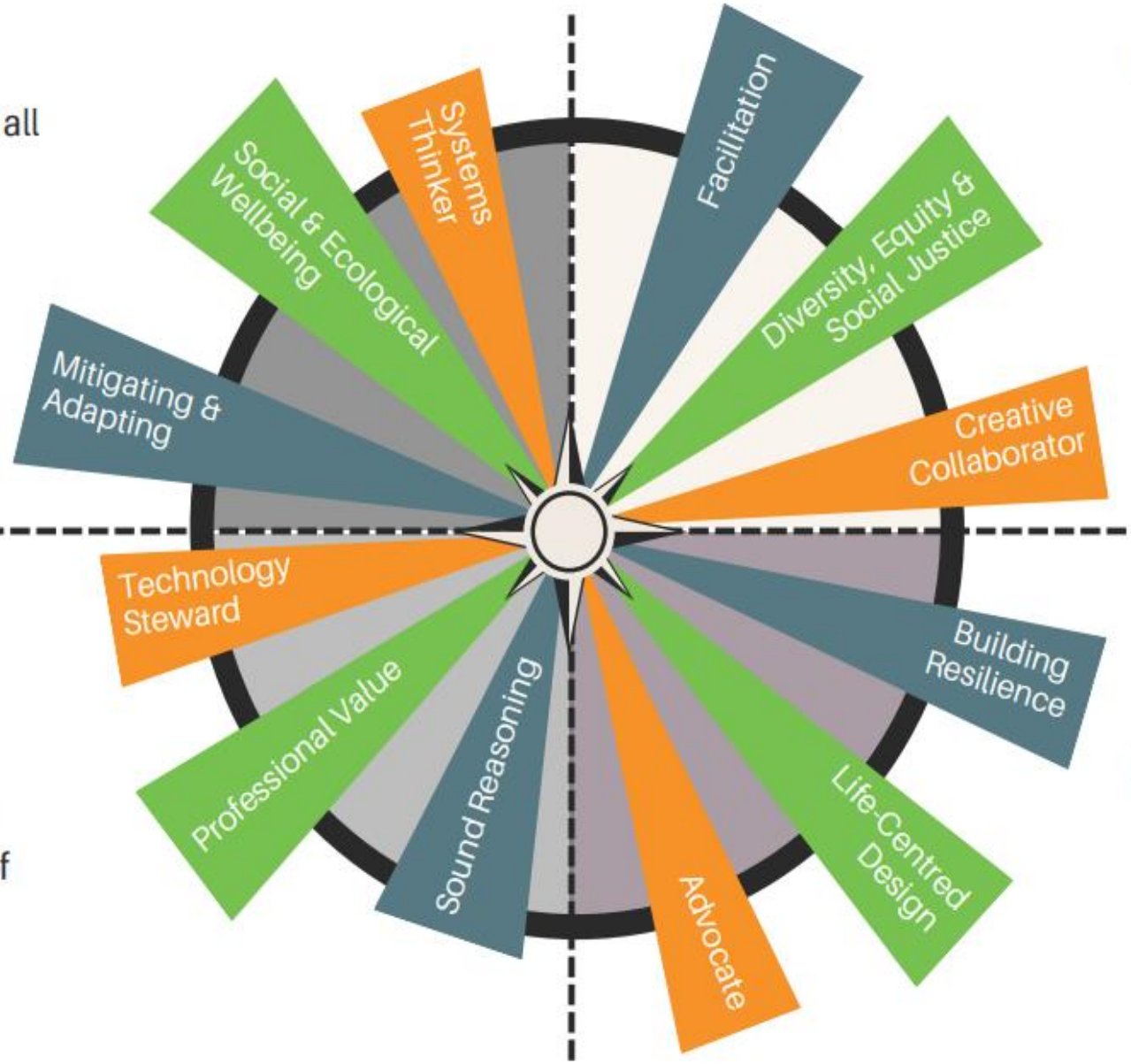
https://www.ewb-uk.org/global-responsibility-competency-compass/

Regenerative

To maximise the ability of all living systems to achieve and maintain a healthier state and naturally co-evolve.

Inclusive

To ensure diverse viewpoints and knowledge are included and respected in the engineering process and outcomes.



Responsible

To meet the needs of all people within the limits of our planet.

Purposeful

To shape outcomes to be equitable and ethical throughout engineering and the life cycle of any project.

Being **Regenerative**

...to maximise the ability of all living systems to achieve and maintain a healthier state and naturally co-evolve

requires an engineer to be a...

Systems Thinker

who

Explores patterns; takes a holistic view; sees the relationships between living systems and focuses on improving these systems, rather than solving problems in isolation.

Being **Responsible**

...to meet the needs of all people within the limits of our planet

requires an engineer to be a...

Technology Steward

who

Shapes technology to benefit all; navigates complex relationships and inherent tensions to ensure sustainable and equitable results.

Being **Purposeful**

...to shape equitable and ethical outcomes throughout engineering and the life cycle of any project

requires an engineer to be an..

Advocate

who

Acts as a change agent and leads by example; constructively challenges established practices and behaviours that are unsustainable, unethical or unjust; and works effectively with others to bring about positive change.

Being **Inclusive**

...to ensure diverse viewpoints and knowledge are included and respected in the engineering process and outcomes

requires an engineer to be a..

Creative Collaborator

who

Seeks opportunities for experimenting, partnership and collaboration at all levels and with a broad range of actors who represent a range of perspectives, worldviews, demographics, and expertise to accelerate progress and find inclusive, evidence-based solutions.

Quick SDG Mapping Exercise

https://www.eauc.org.uk/file_uploads/sdg_mapping_worksheets.zip

SUSTAINABLE DEVELOPMENT GOALS

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01:00

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The Alliance for Sustainability Leadership in Education

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Realigning Curricula For the Future

Your stories & open discussion

Conclusions