

TEDI-London

Strategic partnership impact report



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Summary

Forward

Engineers Without Borders UK has been working in universities since 2004, and are always looking to work with the latest, most innovative organisations in evolving engineering education. The Engineering & Design Institute London's (TEDi-London) aspirations as a new higher educator provider stand out from the crowd.

TEDI-London first welcomed students to a Global Design Engineering degree in 2021. With a new, fresh and exciting perspective on what education should be, students at TEDI-London have access to learning that is more relevant to industry practice alongside the responsibility to truly care and consider the social and environmental impact we have with engineering projects. This partnership aims to explore and develop the offering TEDI-London provides its learners and how it challenges and evolves what is viewed as normal across the industry.

In the first year (of three) of this partnership, the priority was to ensure a new team of educators at TEDI-London were equipped with the skills and knowledge to successfully implement the Engineering for People Design Challenge within the first month of the degree. Annually, TEDI-London students will join over 10,000 of their peers from 43 universities across South Africa, Cameroon, Ireland, the UK, and the USA in participating in the Design Challenge. This year the design brief was set in Cape York, Australia and shared the stories and perspectives of Aboriginal and Torres Strait Islanders.

We are looking forward to an upcoming milestone of the partnership, when TEDI-London staff and students will join the Grand Finals event hosted at UCL and attended by the top teams across 30 universities on 17 June. Good luck to team TEDI-London with their idea for a Sustainable Bio-PET Manufacturing Process.

We aim to enable a safe and just future by shaping the education of students today. There is much to be done, but by reconsidering how we educated the workforce of tomorrow we can encourage the change we must see. Together, through experimentation, we aim to challenge how engineering education can best prepare world-class graduates who can truly respond to society's needs and our future challenges.

I am so pleased TEDI-London is an option for people to study at, as it has such potential to harness and develop creativity, a much-needed skill in engineering. We are looking forward to year two of this unique partnership and expanding the activities we do together.

*Emma Crichton,
CEng MICE, Head of Engineering, Engineers Without Borders UK*

Introduction

The real challenges we face are not how many skyscrapers can we build, or how fast cars can go, it is how can people (now and in the future) truly live equitably and within the means of the planet we live on. Engineering has a critical role to play in repurposing the resources we have around us, in order to improve lives.

TEDI-London's strategic plan is underpinned by three core goals:

- Changing lives through impactful and student-focussed learning
- Engineering solutions for our global future
- Enabling diverse and supporting environments for people to flourish

The engineering industry is calling for graduates who are critical thinkers, driven by their responsibility to society and have the awareness and understanding to navigate complex real-world problems. TEDI-London is well positioned to support the evolution of engineering education, keeping pace with the role and responsibilities of professionals within society.

Engineers Without Borders UK strategic partnership model exists to allow us to increase our impact within engineering education and ensure that the call for new skill sets within the engineering profession is being translated into curriculum. The Skills for net-zero and a green recovery 2021 report by the Institution of Engineering and Technology (IET) shows only 7% of engineering companies in the UK with a sustainability strategy say they have the skills needed to fulfil it.

To ready students, it requires a transformation in how to educate future engineering workforces. We need to embed collaboration, empathy, cross-disciplinary learning, ethics, systems thinking, inclusive approaches, in addition to real-world examples alongside technical education, to provide the opportunity for engineers to learn how to produce globally responsible solutions.

Purpose of the partnership

Purpose statement

Engineers Without Borders UK and TEDI-London have a shared vision to challenge what is considered normal in engineering education.

We have established a first in kind, mutually beneficial and unique partnership, to be able to:

Innovate and experiment.

Test and pilot new ways of ensuring that graduates have the competencies and attributes required to tackle complex and critical societal problems. We will reflect, collaborate and innovate to provide evidence and showcase potential of engineering education, at a pivotal moment in time during the decade of actions towards the Sustainable Development Goals.

Create a cultural tipping point within TEDI-London, so that the culture drives for globally responsible engineering as the norm.

Engineer Collaboration.

Together we will build frameworks of key competencies required to produce globally responsible engineering. Both organisations have strategic priorities to focus internationally, together we will gain insights from working and valuing collaboration globally.

Encourage collective action.

Inspire the change in direction of engineering education. Be part of the wider conversation, and bring students into that conversation, and inspire others to commit to change.

"We're delighted to agree this multi-year partnership with Engineers Without Borders UK whose ambitions to transform the direction of engineering are akin to ours. Our partnership will afford our students' multiple opportunities for real-life project-based experiences and help them understand the social impact of the decisions and designs they make - ensuring future engineers have the skills and creativity to respond to 21st Century challenges. As a partnership, we can lead innovation in engineering education and share our knowledge and understanding to challenge current education norms and influence others to share in our vision."

Professor Judy Raper, Dean & CEO, TEDI-London

Objectives of year one

Run project-based Designathons and Design Challenges in curriculum.

Co-create real-world educational resources and accelerate training of early-career educators.

Work with educators to provide a programme of support and facilitate volunteering opportunities for a broad and diverse group of people to shape the education of hundreds of students.

Build and share globally responsible competency frameworks and learning journeys that guide learners to be capable in producing sustainable, equitable and ethical outcomes.

Showcase a new and innovative approach as part of the wider conversation on what is needed in engineering, and bring students into that conversation, and inspire others to commit to change.

Share our work, approach, and learnings broadly to influence a wider sector change.

Establish a University Chapter as a mechanism for student-led activities

Gather evidence from our partnership to track the success and failings of approaches that focus on how to take action on the need to develop socially responsible professions.

Achievements to date

Support TEDI-London's Summer School programme

Engineers Without Borders UK facilitated a workshop on power dynamics as part of TEDI-London's 2020 Summer School, as well as participating as judges.

"Ethics & Power Dynamics of working with vulnerable communities was my favourite session. It was so interesting and thought-provoking and made me think about things I never had before, from totally different perspectives."

Summer school participant, 2020

Partnership launch in April 2021 and promotion

The partnership was promoted and shared on the [TEDI-London website](#) (including [this video](#)) in June 2021 and on the [Engineers Without Borders UK website](#) in April 2021.

Mapping the wider partnership objectives

Engineers Without Borders UK ran a full day workshop on 28 April 2022 with the TEDI-London team, reflecting on the partnership and planning for the following year.

Participation in the Engineering for People Design Challenge 2021/22

In the 2021/22 academic year we had the full cohort of first-year students take part in the Engineering for People Design Challenge.

Educators involved in the delivery of the Design Challenge were supported by members of the Engineers Without Borders team through workshops and meetings during the summer months.

Offer training to educators in August/September 2021 and April 2022

TEDI-London educators attended Building Community Leaders in August 2021, an opportunity to network with other educators and students engaged in the Engineers Without Borders UK movement.

Mike Sutcliffe represented TEDI-London during a session at Building Community Leaders, where he joined Dean Raj Roy, from City, University of London, in discussing how global responsibility is being adopted within their university.

Student engagement

Engineers Without Borders UK facilitated a conversation with TEDI-London's student cohort in April 2022, understanding their experience and starting the design of the student-led element of the partnership.

Additional work

Emma Crichton participated in a TEDI-London panel discussion in December 2021 on [Debunking Engineering Myths](#).

Emma Cricton participated in a TEDI-London panel discussion in April 2022 Topic: How can engineering save the world?

TEDI-London contributed to the development of Engineers Without Borders UK [2030 strategy](#).

Provided TEDI-London the opportunity to connect with our other strategic partner, City, University of London. TEDI-London were invited to City, University of London's [National Symposium for Socially Responsible STEM professionals](#).

Members of the partnership both supported the Royal Academy of Engineering and Engineers Professors Council in the development of [ethical case studies](#).

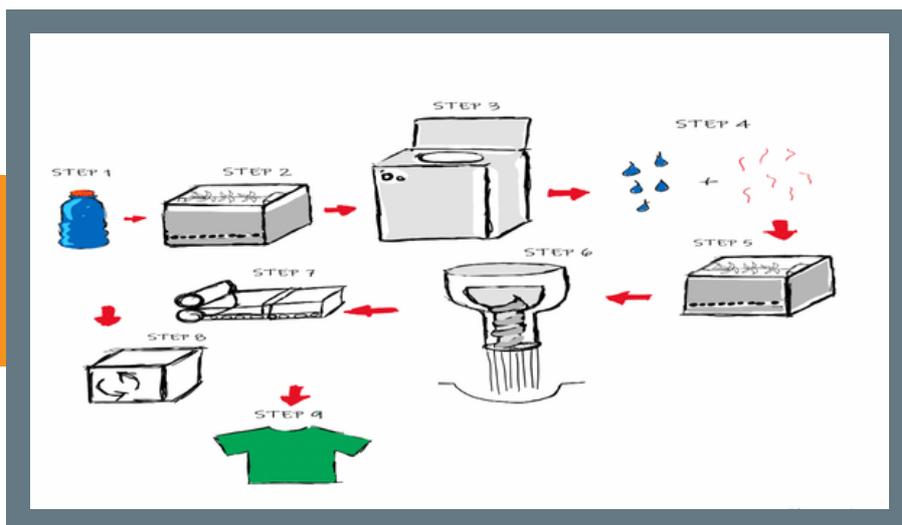
Engineering for People Design Challenge

This is the first year TEDI-London has participated in the Engineering for People Design Challenge. They have joined other universities in supporting over 52,500 students since 2011. In the 2021/22 academic year, TEDI-London delivered the Engineering for People Design Challenge to the full first-year cohort.

To support the delivery of the Design Challenge, Engineers Without Borders UK offered TEDI-London educators bespoke workshops to ensure they understood the design brief, the context of this year's community partner, Centre for Appropriate Technology, and the importance of project-based learning. The impact of these workshops was seen in the positive feedback from students at TEDI-London regarding the module and learning journey.

"[The Engineering for People Design Challenge] made me more aware of the global impact of each country, the huge waste issue we have and highlighted that there is a technology disparity between countries"

Student participant, TEDI-London, 2021/22



Designathon

In February Engineers Without Borders UK ran a student Designathon, offering students, including those at TEDI-London, an opportunity to work collaboratively to produce ideas for how we can make the engineering sector more globally responsible. We had over 130 students take part from 34 universities. The Designathon provides students with the ability to work in globally diverse teams, as well as providing them with the opportunity to be introduced to and expand their knowledge around the ideas of global responsibility.

"This Designathon was a fantastic opportunity for me to work outside of my comfort zone and work collaboratively with people from different disciplines and backgrounds. I have learnt the value of working creatively with people who can tackle problems with a different mindset, and I will incorporate this creative energy into my work going forward."

Designathon participant, 2021

Relevant work connected to the aims of the partnership

Navigating ethical decisions

Engineers Without Borders UK and TEDI-London have both been working with the Royal Academy of Engineering, with a [vision statement on ethics and new case studies now available for educators to adapt](#).

Engineers Without Borders have since developed a workshop to help learners navigate ethical issues and provides an opportunity to practice critical reflection about engineering and its impacts. It also aimed to reflect on the current views of engineering that underpin the educational experience so participants can make more informed decisions about their development. The workshop also builds on ongoing advocacy work demonstrated through the [Open Letter](#). The letter was a response to proposed updates to international benchmarks of [engineering competency frameworks](#). Engineers Without Borders UK, Engineers Without Borders Australia, and Engineering Change Lab Canada led the way in coordinating the response, with involvement from Engineers Without Borders Brazil, India, Philippines, Netherlands, USA, and South Africa.

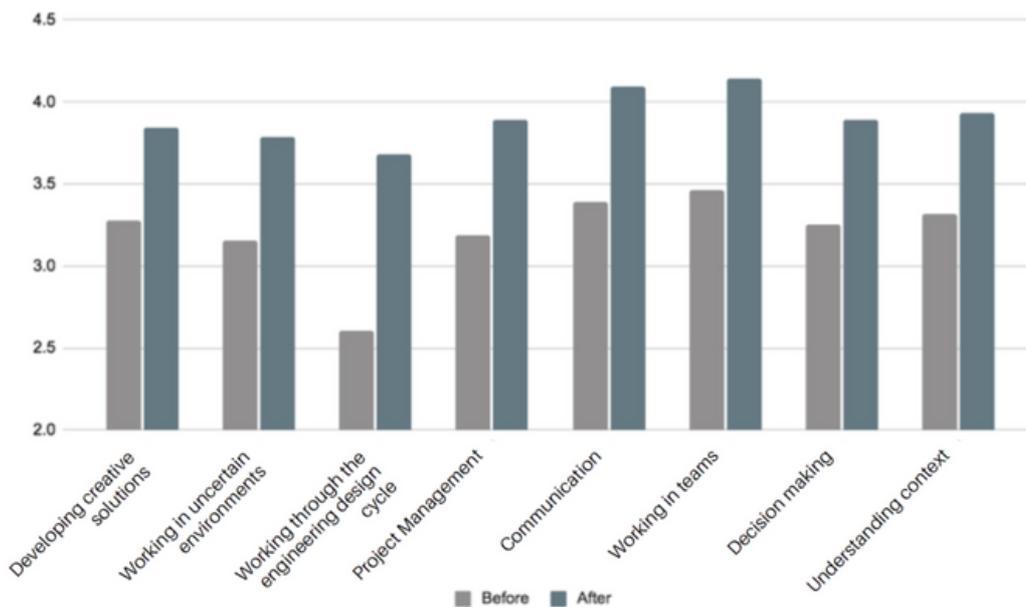
Next steps

As we move into the second year of the partnership we'd like to see developments in a number of areas.

Education

We will see the continuation of the delivery of the Engineering for People Design Challenge. Taking an average of all students who completed both surveys, what we saw was an increase ranging from 17 to 40% across these critical skills which can be seen in the graph below.

We hope to begin conversations around the implementation of the Efficiency for Access Design Challenge within TEDI-London's curriculum.



Educator-led activities

We hope to see TEDI-London and City, University of London join forces to develop and share stories on how best to interpret AHEP 4, and how to take education beyond the minimum required for accreditation. We will upskill TEDI-London with a firm understanding of the principles of global responsibility and to develop advocacy skills.

Student-led activities

As we move into the 2022/23 academic year, we hope to see the creation of a TEDI-London Chapter, allowing students to lead their own development outside of the curriculum. Interested students will be invited to attend Building Community Leaders in the summer of 2022 to meet other students engaged in the Engineers Without Borders UK movement.

'Our motivation for restarting the Loughborough University Engineers Without Borders Chapter stemmed from a feeling of incompetence. A sense that our degrees were not equipping us with the necessary knowledge, skills and network to drive positive change in the engineering sector. With the continuous support from EWB UK we have put on design challenges, workshops and networking opportunities for students, all aimed at inspiring and up-skilling the next generation of engineers. My personal highlight has been meeting like-minded peers and professionals determined to make a difference.'

Julia Whitehead, Loughborough Chapter President

Additional engagement

Emma Crichton, Head of Engineering, will be joining TEDI-London for the [Thinking Ahead](#) programme in June 2022 to deliver a keynote talk on the opportunities being an engineer offers and the challenges of the future.

The partnership will look at ways it can support TEDI-London with its student recruitment for the 2022/23 academic year, focusing on building opportunities for shared advocacy and thought leadership to raise TEDI-London's profile and what we are trying to achieve together.

Summary

The purpose of this partnership is to enhance the learning and student experience at TEDI-London, through experimenting with real world and global design projects, connecting them to a global network and effectively supporting educators to build globally responsible competencies into all aspects of learning. If successful, the story of this partnership could present a strong case across the sector, providing a tangible example of what is possible.

The achievements that have shaped the first year of our partnership have been integral in ensuring we are laying the foundation for future years. Thank you for your support during the first year of our partnership, we look forward to the journey ahead and continuing to work together to ensure we are transforming the direction and putting global responsibility at the heart of engineering.

We thank you for your ongoing support for the partnership

Acknowledgements

With thanks to the people who make it happen

Contributors:

- Prof Judy Raper, Dean and CEO
- Prof Mike Sutcliffe, Deputy Dean
- Prof Kay Bond, Academic Director
- Prof Julie Begulla, Director of Project-based Learning
- Steven Cousins, Head of External Engagement
- Cheryl Pillner-Reeves, Head of Learning Tree
- Prof Mike Bramhall, Professorial Teaching Fellow
- 29 1st year students from 2021/22 participating in the Introduction to Engineering Design module
- Katie Cresswell-Maynard, Executive Director at Engineers Without Borders International and previous Chief Executive of Engineers Without Borders UK
- Emma Crichton, Head of Engineering
- Luke Smith, Engineering Programmes Manager
- Jonathan Truslove, Education Lead
- Milly Dyer, Movement Facilitator