

Engineering Education Hubs

Engineering e2e's exploration of engineering education hubs over several years has led to a feasibility study and pilot hub.

A need identified

In 2016, Engineering e2e published **Creating Engineers – Climbing the Educational Staircase**, an investigation into staircasing and pathways as viable strategies and mechanisms for progression into, or within, engineering careers.

Authors Dr Greg Frater and Associate Professor Nigel Grigg identified the need to address the issue of “lack of feedback and communication and control” within the engineering education supply chain, and proposed the setup of regional education groupings in the form of “hubs” or “cooperatives”.

What do we mean by ‘engineering education hubs’?

We envisage hubs as collaborative, regionally-based centres for engineering education which involve employers, high schools, universities, institutes of technology or polytechnics (ITPs) and industry training organisations (ITOs). They would develop popular and effective pathways into engineering and offer a single entry point for engineering qualifications. Hubs would support students to make good decisions about their courses of study and allow them to staircase between qualifications.

Hubs would run secondary-tertiary pathways projects, cadetships, scholarships and work experience. They would implement new initiatives, including co-created and taught curriculum and degree apprenticeships. Importantly, hubs would support initiatives that raise awareness of engineering.

Preliminary research

In 2017, Engineering e2e engaged Dr Greg Frater, Professor Nigel Grigg and Dr Ishani Soysa to examine regional hubs that would establish popular and effective pathways into engineering and offer a single entry point for engineering qualifications.

Their report **Regional Engineering Education Hubs** identified two main functions for hubs:

- Facilitation and leadership – bringing stakeholders together to develop a unified approach to engineering education, identifying opportunities for collaboration and innovation, and providing feedback to national policymakers
- Service – advising and informing students, providing liaisons between students, institutions and industry.

The authors recommended a pilot hub be trialled in one region, based around an identified need, to validate the mechanisms for hub governance, cooperation, physical location and delivery.

Hub Committee formed in response to need

Since 2008, there had been concern in Canterbury over a decline in the number of electrical engineering students at Ara Institute of Technology and University of Canterbury. A group of local engineering educators, secondary school teachers

and industry representatives met in 2017 to discuss the issue, forming the Hub Committee to consider potential solutions.

Feasibility study

Engineering e2e funded a feasibility study into a pilot regional engineering hub in Canterbury. In their 2019 report **Canterbury Engineering Hub Proposal** Professor Phil Bones and Shayne Crimp, University of Canterbury, recommended a Canterbury Engineering Education Hub focused on electrical engineering be established.

Two key purposes

The proposed hub would aim to:

- Get those involved in the region's engineering education together, to facilitate pathways into and within the system.
- Act as a one-stop shop for people to learn about pathways into engineering, with no one provider seen to have a vested interest.

Targeting potential engineering students

The Hub will target three types of potential engineering student:

- School-based learners: there is little coordination of extra-curricular STEM programmes and activities for school students, something a Hub facilitator could work on.
- Community-based learners: providing opportunities for those completing a basic trades qualification to move on to study towards the New Zealand Diploma in Engineering (NZDE) or Bachelor of Engineering Technology (BEngTech) in a way that is compatible with their continuing employment.
- Under-represented learners: there is potential for the Hub to collaborate with existing initiatives to reach women, Māori and Pasifika.

Reaching the community

The Hub is looking at opportunities to potentially collaborate with community groups; for example, using the Creative Space at Tūranga (Christchurch Public Library) to work with students and others on STEM-related activities.

Extending the scope

If the Hub initiative proves successful, as measured by increased numbers of students enrolling to study engineering, especially the NZDE and BEngTech, the scope could be broadened to include other disciplines.

FIND OUT MORE...

Progress reports on all Engineering e2e initiatives can be found at www.engineeringe2e.org.nz