

WORK WITH US TO ACHIEVE THE GOVERNMENT GOAL OF INCREASING ENGINEERING GRADUATES BY 500+ PER ANNUM FROM 2017

IN THIS ISSUE ... we look at Engineering E2E's research report on apprenticeships 'Stepping into One Another's World'

IN LAST MONTH'S ISSUE we reported on the Engineering E2E Talking with Employers workshop held in Wellington in June. Participants made five recommendations to the Steering Group:

- Change the curriculum to incorporate the Framework, the opportunity for experience across engineering disciplines, and entrepreneurial experience.
- Improve staircasing opportunities for students, potential students and those in employment.
- That an engineering graduate study based on the Framework be replicated in the New Zealand context.
- Follow-up with participants on ideas for contributions to a public awareness campaign.
- Form a reference group to act as a conduit for ongoing advice and guidance from workshop participants.

Consideration is being given to all of these recommendations. Already, discussion is underway with Emeritus Professor Geoff Scott to scope replicating the engineering graduate study in New Zealand. TEC is exploring the possibility of commissioning a report which considers the importance and value of staircasing to students and employers, and discusses a range of options for improvements to the staircasing opportunities currently available. An employer reference group will be formed to provide the Engineering E2E Steering Group with advice and guidance on its upcoming activity, including a public awareness campaign and further employer engagement.

Earlier this week, I wrote to Minister Joyce updating him on recent activity and indicating that the Steering Group will follow up their strategic update 'Engineering Change' with a second update in September.

Engineering E2E activity is moving into a new phase and we need your advice and guidance as we begin to implement activities as a result of our research to date. Please contact us at engineeringe2e@tec.govt.nz

SIR NEVILLE JORDAN

Chair, Engineering E2E Steering Group

Initiatives undertaken through the Engineering E2E programme contribute directly to the achievement of the Government's Business Growth Agenda priority of building a more productive and competitive economy.



Apprentice degrees the way of the future?

RESEARCH: 'Stepping into One Another's World: Apprenticeships – Transforming Engineering Technologist Education in New Zealand'

Engineering E2E has recently published important research on the viability of apprenticeship models to educate degree-level engineering technologists, undertaken by Associate Professor Jane Goodyer and Dr Greg Frater of the School of Engineering and Advanced Technology, Massey University.

After an international review of learning models with high levels of employer involvement, and interviews with tertiary providers involved in delivering new degree apprenticeships, the authors found that there is a resurgence of apprenticeships as a model for delivering higher education.

They strongly endorse apprenticeships as a viable learning model for educating engineering technologists, and provide a compelling case for apprentice degrees as the key to delivering a more rounded engineer, more suited to the challenges of the future.

The report concludes that to develop a viable model within the New Zealand education environment would require effective collaboration between employers and educationalists at the design and planning stage, and clear pathways to higher levels of education. Employers have to be in the driving seat, specifying degree standards that are outcome-based and occupation-driven.

The recommendations of the report make powerful reading, and are therefore outlined in detail as follows:

RECOMMENDATIONS FROM THE REPORT

Degree apprenticeships should be implemented as a viable learning model to educate engineering technologists

The report concludes that well-designed apprenticeships are excellent models for preparing engineers that can cope with the challenges of the future. It recommends that employers engage

with educationalists to ensure effective learning and that the Bachelor of Engineering Technology is delivered exclusively through an apprenticeship model.

Government should co-fund these apprenticeships by giving money directly to employers.

The New Zealand economy and society at large will benefit from an injection of skilled labour at the engineering technologist level. The report suggests that the Government as a stakeholder bears responsibility for ensuring a viable programme is initiated, and that employers as beneficiaries must also be prepared to invest in it. Employers specify the skills, knowledge and attributes they expect in a new employee and, in exchange, they participate in the training of apprentices and contribute to their wages. Students must be bonded so as to contribute to the New Zealand economy for an appropriate period of time.

Apprenticeships should be specified by standards, developed as sector- or occupation-defined outcomes and targeted towards helping the economy grow. The outcomes should link to sectors with fast evolving technology.

Apprentice standards may specify a minimum number of hours (on and off the job) but the main focus should be the achievement of skills, knowledge and behaviour. We recognise an opportunity to specify new areas of skill capability required to grow New Zealand's economy.

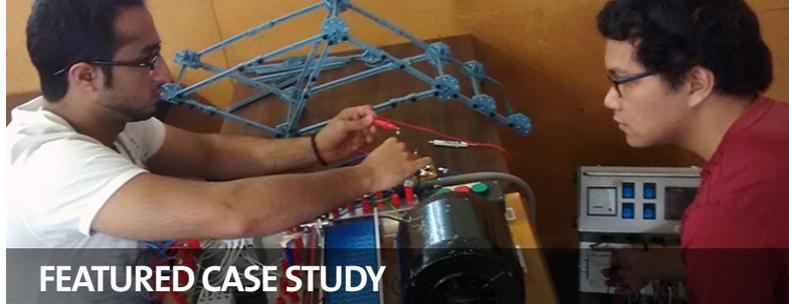
A collaborative approach, between employers, professional bodies and Institutes of Technology and Polytechnics (ITPs), should be used in the planning and design of these apprenticeships.

The report suggests that a similar model to the UK's Trailblazer project be trialled in New Zealand. In this pilot scheme operating over 2014/2015 and 2015/2016, groups of employers and professional bodies specify and lead an apprenticeship scheme for a particular sector. The aim is to create a range of new apprenticeship standards and assessment approaches in different sectors and occupations.

The report recommends that employers consist of a representative sample of the sector or occupation, including SMEs, and that the process be initiated by a government call for standards to be developed by employers, professional bodies and ITPs. The design and implementation of these apprenticeships should follow a carefully planned and considered process. To ensure success, adequate time should be given to the planning phase. The identification of key players and the timing of their involvement is crucial.

Degree apprenticeships should have clear pathways to higher-level qualifications.

The report emphasises that commitment to a degree apprenticeship must be seen as a means to progress to higher learning and that enrolment in an apprenticeship degree must guarantee access to higher degree programmes. Collaboration with universities is therefore



FEATURED CASE STUDY

**MULTIDISCIPLINARY PROJECT MODELLING
WORKPLACE COLLABORATION**

A course being trialled at Waikato Institute of Technology (Wintec) has Mechanical and Electrical engineering students modelling a 'real world' task for their Bachelor of Engineering Technology, to help bridge the divide between theory and practice that challenges graduates joining the workforce.

engineeringe2e.org.nz/Employers/Case_study.cfm?ID=29

critical. It acknowledges that competition between universities and ITPs is a potential problem. Consideration should be given to 'how and when' (in the design process) ITPs and universities reconcile and agree on pathways. There are two problems that would need to be resolved:

- Attractive apprenticeship degrees may reduce university first year enrolments.
- Without university collaboration the pathways to higher-level degrees may not eventuate.

It recommends that the Government considers incentives for universities to staircase these degrees, ideally with courses designed as complete entities with exit points at diploma, degree, Honours, Masters and PhD levels.

Degree apprenticeships should be marketed as a new Gold Standard for educating engineering technologists.

Apprenticeships provide a value proposition to the employer, the student, ITPs and the Government that can be easily marketed. Employers are in control of what they will be getting, providing employees with higher-level skills. Earning an income whilst completing a degree, avoiding hefty student loans and gaining valuable industry experience are some key benefits that will attract young people and increase enrolment of engineering students. ITPs can strengthen their links with employers and see growth in student numbers. By following this strategy the Government will create a catalyst for economic growth and reduce student debt.

Degree apprenticeships should be named 'sponsored degrees'.

Finally, having delivered its recommendations using the term 'apprenticeship', the report advocates that the term 'sponsored degree' be used instead to avoid possible stigma.

FIND OUT MORE...

See the full report at: www.engineeringe2e.org.nz/Documents/Stepping%20into%20one%20another's%20world.pdf