

Micro-credentials in engineering education: finding ways forward in a New Zealand context

WHAT ARE MICRO-CREDENTIALS?

Micro-credentials are packages of learning designed to meet specific learner needs. They are generally smaller than conventional qualifications and are emerging as an important part of the mix of alternative credentials. They validate skills and learning linked to specific workforce demands. Alternative credentials include industry training, skills-based short courses, massive open online courses (MOOCs) and other online credentials. These credentials are often competency-based and can include pathways such as recognition of prior learning and recognition of current competency.

WHAT IS ENGINEERING E2E DOING?

We engaged with engineering education providers, employers of engineers, professional associations and policy agencies, and commissioned the research report **Micro-credentials: A model for engineering education** (published in July 2017). It found that many of the elements needed for micro-credentials to succeed are in place in New Zealand.

Engineering e2e has agreed to fund eight micro-credentials feasibility studies in 2018 (see overleaf). Lead organisations for the feasibility studies have developed project plans and are now setting up project teams and commencing stakeholder engagement. The Tertiary Education Commission (TEC) has engaged consultant Brenden Mischewski to lead this work.

There is a common process for each feasibility study:

- Project establishment (Jan/Feb)
- Stakeholder engagement (Feb/Mar)
- Needs analysis (Mar/Apr)
- Initial proposal development (Apr/May)
- Proposal for delivery (May/June)
- Final reporting (June).

HOW ARE WE SUPPORTING THE FEASIBILITY STUDIES?

Engineering e2e is working alongside the feasibility studies to promote the concept of using micro-credentials to grow the number of people pursuing the New Zealand Diploma in Engineering (NZDE) and other engineering programmes.

We are providing direct support, including advice on their project approach, coordinating stakeholder engagement, developing a community of practice, identifying and addressing regulatory and funding issues and monitoring the progress of the feasibility studies.



WHAT ARE OUR IMMEDIATE PRIORITIES?

We have begun the work of improving coordination between the feasibility study leads and encouraging a coordinated approach to stakeholder engagement where possible.

Stakeholder engagement is central to the success of the feasibility studies. Common stakeholders identified include the New Zealand Board of Engineering Diplomas (NZBED), Engineering New Zealand, employers, providers of engineering education, and learners. Early opportunities that require testing with the stakeholder groups include workshops with NZBED and Engineering New Zealand.

Shared learning is also important. We are looking for opportunities to bring the feasibility study groups together to review their project approaches, share the results of needs analysis and test their findings. We are considering options for workshops in March and June.

Collective action is a key success factor. We acknowledge the need to promote the concept and share the progress made. We presented to the **Vocational Education and Training Research Forum**, and several feasibility study leads presented on their progress and plans at the National Engineering Forum at Weltec.

HOW CAN YOU HELP?

We are grateful for any feedback on the approach that we are taking. In particular, we would like to hear about how you would like to be involved, any questions you may have and any contributions you might like to make to the feasibility studies.

EIGHT FEASIBILITY STUDIES FOR ENGINEERING E2E MICRO-CREDENTIALS PILOTS

Engineering e2e agreed to fund eight feasibility studies to provide options for the piloting of micro-credentials in engineering education.

Our Steering Group recommended that the Tertiary Education Commission (TEC) fund these feasibility studies to help shape the implementation of micro-credentials in New Zealand and promote more responsive and innovative engineering education.

Using micro-credentials to refresh engineering education curricula

Otago Polytechnic is looking at the feasibility of applying the **Edubits** micro-credential model to the NZDE. This study will assess what micro-credential models might best suit the needs of learners working toward the NZDE/NZDEP and align with the NZDE graduate profile.

Using micro-credentials to develop a Fire Engineering stream for the NZDE

The Fire Engineering industry has identified gaps in the training options available in New Zealand. Their particular focus is improving the transition from secondary school and offering flexible opportunities for advanced technical training.

Manukau Institute of Technology and Fire NZ are collaborating to develop a new stream of the NZDE in fire engineering design as a curated set of micro-credentials.

Augmenting the NZDE with green building micro-credentials

The Skills Organisation is collaborating with industry to contribute to sustainable building practices and use of renewable energy for the Wynyard Quarter development.

This feasibility study is exploring the development of 'bolt-on' micro-credentials for people who have completed or are working towards the NZDE.

Using micro-credentials to strengthen professional development for electrical engineers

The Electrical Engineering Association is using micro-credentials as a vehicle to validate existing professional development programmes against the New Zealand Qualifications Framework and give employers greater confidence in and more clarity about the professional development programmes.

Using micro-credentials to simplify recognition of prior learning

Downer has identified the need for more flexible training options for their study. The company is assessing the feasibility of a curated set of engineering mathematics micro-credentials to understand whether this approach might improve uptake of the NZDE by their employees.

Simplifying the NZ Diploma in Infrastructure Asset Management through micro-credentials

The Institute of Public Works Engineering Australasia sees incorporating micro-credentials into the flagship Level 6 qualification for managers of infrastructure assets as a way to promote uptake of the qualification. This initial design phase investigates how best to configure and integrate micro-credentials into this unit-standard programme.

Improving the relevance of the NZDE using micro-credentials

This study focuses on improving the relevance of the NZDE Civil Engineering stream by reorganising learning so that graduates can, after the first year, have the skills required to function as entry level engineers in the land development design or construction fields of the civil engineering industry.

Using micro-credentials to improve Pasifika participation in engineering education

This feasibility study brings together the AIMHI (Achievement in Multicultural High Schools) group of schools and Manukau Institute of Technology to improve the pathways from secondary school to engineering education.

This feasibility study aims to offer micro-credentials in mathematics and other curriculum areas necessary for success in engineering education to senior secondary school students in the AIMHI group of schools, and to trainees participating in the Auckland-based Māori and Pasifika Trades Training (MPTT) initiatives.

FIND OUT MORE...

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