

# From the ground up

■ ELENI GKELI MEngNZ

## ***Educating the next generation of geotechnical and engineering geology professionals.***

Conversations in the industry in Australia and New Zealand have highlighted challenges related to the education of geo-professionals (geotechnical engineers and engineering geologists), industry expectations of university graduates, and a severe workforce shortage.

In response, a panel discussion at the Australia and New Zealand (ANZ) Conference on Geomechanics, in Cairns, Australia, in July aimed to understand the perspectives of different stakeholders and to formulate a plan, supported by the Australian Geomechanics Society (AGS) and the New Zealand Geotechnical Society (NZGS). It also formed the two countries' contribution to the International Society of Soil Mechanics and Geotechnical Engineering Heritage Time Capsule project, which shows the Society's history and current goals. The panel included a young geotechnical professional (YGP), an industry representative and an academic from both Australia and New Zealand. The discussion was focused on the geotechnical and engineering geology fields, but similar problems may apply to other engineering disciplines and similar debates may be stimulated.

A fundamental question was posed: Is geotechnical engineering/engineering geology education and training meeting the needs of graduates and the industry?

The connection of curriculum for geo-education with industry practice was discussed, with courses in Aotearoa influenced by the Professional Body of Knowledge and Skill for geotechnical engineering and engineering geology prepared by the NZGS.

Universities have to balance financial pressures with setting minimum standards and expectations, finding the right balance of technical and soft skills. Technical content is reduced if more soft skills content is added. Students are now also working more in industry while completing their studies. This may be to the detriment of their learning, diverting attention away from the development of fundamental skills.

Master's degrees could provide the specialised education industry requires, particularly with engineering geology. However, the offering of some of the relevant master's degrees in Australia and New Zealand is limited, and these programmes involve significant investment, for which universities would like satisfactory return.

Improving retention in the geotechnical workforce is fundamental. Providing inclusive work environments with fulfilling careers for all, and especially for people in minorities – including gender – that are widely underrepresented within geo-professionals were suggested as key factors for workforce retention.

The YGP panellists carried out informal surveys among their colleagues, asking how well education prepared them for

the workforce. While limitations of these surveys are acknowledged, the surveyed YGPs consistently considered courses teaching the fundamentals, field courses and postgraduate studies as the most useful and applicable parts of their education. They also recommended more overlap between geotechnical engineering and engineering geology, and more training on relevant standards/guidelines.

The industry is seen as contributing to the training and development of the workforce at a reasonable level. In-house developed training programmes are well established in bigger consulting firms, representing an important investment by the industry, improving culture, engagement, job satisfaction and retention. Smaller firms rely more on training from external providers such as NZGS. This highlights technical societies' important role in upskilling the industry. Suggested improvements included more collaboration between industry and universities, and shifting the focus of career progression away from years of experience and towards level of expertise.

Session attendees engaged in an interesting discussion with a range of international views. This conversation will continue, to develop a vision, mission and strategic goals. The AGS and the NZGS support these activities, with regional and national sessions under development.

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