Connecting with the World of Engineering Education

In July 2019, people from all over the world gathered in Cape Town to participate in the Research in Engineering Education Symposium (REES 2019), an event co-hosted by the global Research in Engineering Education Network (REEN) and the South African Society for Engineering Education (SASEE).

The participants were researchers investigating engineering education in local, national and global contexts; educators who teach engineering students everything from fundamental mathematics to the professional communications skills they’ll require to become professional engineers; technicians and technologists; academic support staff who work hard to help students and lecturers in crafting effective, efficient, innovative and equitable learning opportunities.

We even had engineering students alongside lecturers participating in a workshop where researchers juxtaposed approaches to decolonisation relevant to engineering in San Diego, CA, USA with those in Cape Town, RSA. Over the few days we met, I was struck by the similarity in challenges facing engineering education across the globe.

The fundamentals of engineering science have not changed significantly over the past 20 years, however the number of students in our classes has grown dramatically. Our students’ educational, socio-economic and cultural identities are far more diverse, and the challenges that they face are those related to the rapidly changing context of our global society, and the uncertainty and unpredictability of the future of humanity, exacerbated by Covid-19.

At the same time, there has been innovation to teaching and learning in engineering education over the past couple of decades. We use the internet, smart phones, teamwork projects, project-based learning – basically any innovative idea that we can access in order to reach the many students in our classes. Furthermore, we no longer teach classes of 50 students, but up to 500.

Modern academic
The number of students in our classrooms who are first-generation university goers has increased dramatically; there are more than five girls in our graduating classes; we know that some students learn well through pictures, others through discussions and groupwork, others through reading. The days of a lecturer standing in front of a class for 50 minutes, three times a week, and speaking to the class non-stop, are gone.

Many universities across the world now require the modern academic to submit a teaching portfolio showcasing their reflection on and practice in teaching and learning, as well as their disciplinary research excellence in order to move up the academic ladder. Within this productivity driven environment, it is understandable that lecturers are gathering to share practices and ideas that relate to both engineering and learning.

In South Africa, SASEE (founded in 2011) has been instrumental in building this community of practice and creating opportunities for engineering education stakeholders to work together to navigate the complex world of building knowledge, transferring skills, and preparing young engineers for industry. 

Collaboration
The REES 2019 conference provided an exceptional opportunity for our South African community to collaborate and share their experiences with colleagues from Europe, North America, Asia, Australia, South America and the rest of Africa. What was encouraging to observe was the quality of engineering education in South Africa, the dedication of the educators and researchers who are truly invested in growing engineers for our country, and to recognise that the issues we struggle with resonate with those experienced by our colleagues across the globe.

And the uncertainty and unpredictability of the future of humanity, exacerbated by Covid-19

What we missed at the conference was the voice of the industrial and commercial engineering community, a critical stakeholder in the engineering education project. Each of our SAIMechE members studied engineering somewhere. We are living in the same dynamic and challenging world for which engineering educators are trying to prepare our student engineers. SASEE would like to invite and encourage our mechanical engineering community to get involved in shaping the engineers of our future.

Despite all the complaints that we make about our educational systems and the difficulties we face with our economy, we have so many vibrant, intelligent and dedicated young people who want to become engineers, who want to grow our country and our engineering community. It is our duty to work together to create a fertile academic environment in which they can grow and succeed.

Stay Home and Stay Safe
Prof. Deborah Blaine
SAIMechE National President 2018-2020