Australia’s premier conference for engineering education was held in Brisbane in 2019. The theme of the 2019 conference was “Educators Becoming Agents of Change: Innovate, Integrate, Motivate”. The presentation streams revolved around these three sub themes.

Macquarie University was represented by three papers. These papers covered the changes made in MECH401, ENGG200/300/600 and ELEC342. I was involved directly in the latter two papers. All three papers were well received at the conference, with multiple attendees requesting additional information and further discussion about what was presented.

The conference was very timely with many different institutions moving away from the traditional lecture/lab style of teaching. The School of Engineering at Macquarie appears to be well advanced in its thinking compared to some other institutions, with several years of results.

Discussions with other attendees also brought to light the tentative steps by the G08 universities towards these approaches, including a long discussion with staff from the ANU about their trials of small portable labs. These trials were well received by the students but anecdotally received resistance from academic members of staff.

One of the presented papers that may be pertinent to Macquarie University was a paper by Nathan Bunbar and Avinda Weerakoon, “Integrating Experimental Engineering and English Tasks in a Second Language Medium Programme” where a joint program with a Chinese university did not live up to expectations due to the problems with language comprehension and teaching expectations. The students did not have a sufficient grasp of technical English, and were expecting a different teaching style to that presented. Both of these factors decreased engagement and the end result was poor performance by the students. We should be aware of this result in our continued interaction with Chinese universities and ensure adequate technical proficiency in English before the start of the class, and also ensure that the students clearly understand what is expected of them at the start of the unit.

A common theme amongst several papers was reflective learning. How to ensure students were reflecting on the lessons learnt is emerging as a topic of consideration. Macquarie will ensure this occurs through the SPINE units. Other relevant notes for the SPINE are that other studies found that students did not understand the importance of reflection in their e-portfolios, assuming it was not relevant to industry and not relevant to their GPA. A presentation by Dr Peter Cafe from the University of Sydney indicated that students at risk were notable in that their self reflections focused on reasons rather than causes.

Discussions were held with Dr Cafe about identifying at risk students early through student results from reflective assessment tasks. Both using this as an indicator marker, and then using reflective tasks to change the student’s behaviour so they were no longer at risk. His experience with at risk students mirrored local experience with at risk students. Ethics questions have been raised, and ethical considerations need to be addressed before anything definitive comes out of this idea.

An emerging trend that is noteworthy is the increase in big data and AI trying to both personalise learning through chat-bots and other interactive systems, but auto prediction of student progress through submitted work analysis. Macquarie University could investigate these areas to see if their adoption would facilitate our pedagogy.