Module 4 - Scholarly teaching – a reflection

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So I've always been passionate about education. I think that since I was little I always wanted to explain things I was learning to other people. And after starting a postdoc I was invited to co-teach a first year physics course and we were heavily inspired by some work in the literature from North Carolina called the SCALE UP model, where they did a longitudinal study on how you could better teach people physics, over about 10 years. And they found that problem based learning, active learning, enquiry based learning, all of these sort of terms, really enhanced learning. And it was something that I think that we intuitively understood in physics. That when we got people to do stuff rather than just talk at them, they learnt better. And so we took over this first year class and flipped it on its head and this was before the term 'flipped' was sort of in my vocabulary. We just wanted to make people do more hands on learning.

So we asked them to sit down in groups and solve a problem with no real instruction. So there was a task at hand and we had a bunch of resources in the room. So tools and things to build and make stuff and they had to design their experiments, centred on a concept was taught each week.

That was back in 2012 and every year we would assess how students were doing compared to previous years. We used concept tests, sort of pre and post. I guess as physicists we often like really hard numbers and coming to the scholarship of learning has been quite interesting for me for me because I've realized that it's more of a social science but we're always looking for that sort of really hard hitting piece of evidence. It has been an interesting experience for me to realise that sometimes the evidence isn't that hard and it's kind of squishy and soft, but nevertheless it guides what you might try next time and so on.

We've always used a lot of surveys and that's helped a lot in terms of figuring out whether things are working. We've also looked at student engagement. We've brought in things like online tutorials and we've found that students are more engaged when they can choose when the tutorial is. And when they are engaged they do better with their homework problems and their overall grade goes up.

In terms of how it's impacted my career, we were lucky to be supported by some of the support staff at ANU that showcase excellence in teaching and they encouraged us to apply for teaching awards and present at small local conferences within the university community. And so we sort of worked our way up through getting a College of Science award, and then a Vice Chancellor's award, and then we were successful in an OLT Citation. And that all happened around the time that my post doc was finishing up. I had pretty much decided that the traditional, I have an atomic physics background, that that kind of world research wasn't what I was super interested in. It was a fantastic training ground but I wanted to make a bigger impact. I really liked being able to influence 100 students every semester or more and also to further this kind of learning. So I was really pushing quite hard to try and find a role that I could fit into, which is pretty hard in an intensive research university like ANU. But I was fortunate that I got a promotion that year and then I won a teaching award and we had a new director who liked what we'd been doing and realized that it would be crazy to let me go. So I was given a five year appointment to keep doing that sort of work.

In particular we wanted to expand that idea to all aspects of the university so I really wanted the campus to have what's called a Maker space. Some people are starting to learn this term now, it's becoming quite a buzz word. So over the last few years I have been trying to continue to improve my teaching and learning in a formal

setting. But now we have an informal environment which we call the ANU maker space which has a bunch of equipment but also a community of peers that like to help each other. So students helping each other and it's open to anyone on campus. So there are artists and scientists in the same room helping each other.

Now we are actually starting to engage with the scholarship of that activity. Just a few weeks ago there was the second international conference on these kinds of spaces. And people are only just trying to figure out how you assess what's happening in there. It's not a programmed environment. There are no exams. You are basically looking for case studies and skills sets that are developed organically.

Students have a project that they want to do but they have to learn how to program. They are not doing a programming course but there's an arts student being taught how to program by an engineering student, and she's learning that and it's great to see and we have to figure out how to demonstrate its efficacy and importance.

That's kind of where I am at now. And I think that I wouldn't have got to where I am without the scholarship of teaching and learning but also without just the passion and intuition that I've always had for it, and a lot of luck.