

Action Research Episode 1: Peer assessment in Mathematics

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Hello and thank you for downloading this podcast from Teacher. I'm Danielle Meloney. Welcome to the first episode of our series on school-based action research, where we chat to teachers on the ground about the process of action research, and the impact that it has made in their school. Today, I'm with Mark Sivills from Don College in Tasmania. In 2013, Mark and his colleagues sought to discover whether introducing peer assessment into the school's Year 11 and 12 Foundation mathematics course could result in improved outcomes and pass rates.

Danielle Meloney: Mark Sivills, welcome to *Teacher*.

Mark Sivills: Thanks very much for having me.

DM: What was the situation before you implemented your action research?

MS: Okay, well we're a Year 11 and 12 College and we have seven maths courses split across year 11 and 12. The Level 3 and 4 courses were going very well, but the Foundation course, completion rates were quite low and, for those that did complete, the pass rates were quite low. This was back in 2012 - we had about a 60 per cent pass rate and we wanted to do something about it.

... So we analysed the results over those few years. We had a completion rate of 77 per cent, a pass rate of 60 per cent, and some of the causes we knew about: students had generally failed maths at Year 10, and in many cases that was their only experience; they weren't very enthusiastic; there were some attendance [and] behavioural issues. So we took some action in 2013, introducing team teaching and some new techniques and things improved, but we still wanted to do a bit more.

DM: Can you tell me a bit about the process you undertook in the action research?

MS: Yeah. So, what we did, we had a look at some things that we'd had success with in the higher level maths courses, which was implementing assessment for learning techniques in 2013 and 2014. What we decided to do was try it with this Foundation course. So we had three classes. In one, the teaching methodology remained the same across the three units.

In another class, in the middle unit the students were introduced to 'traffic light self-assessment' of their assignments. [That is] a peer-checking procedure using a checklist, where they gave feedback to one another, and then had time to improve their assignment and resubmit it for the second deadline.

And we had a third class ... the students were introduced to the self-assessment and the peer-checking, but they were also given an additional activity where they

identified questions that they found difficult and had a go at designing and solving some of the questions, which they then tested each other on. So they, in effect, became the teachers.

DM: You've mentioned double deadlines. Could you expand on that term and exactly what it meant for your piece of research?

MS: The idea with the double deadline is that rather than setting a piece of homework or an assignment and simply saying 'this is when it's due' and students bring it in, sometimes they do, sometimes they don't. Particularly at Foundation level, they often don't or it was incomplete.

What we did, initially we trialled this at higher level, and then repeated it in the Foundation course. We set two deadlines. The first due date had specific things that we needed them to do – usually an attempt at each question, and we gave them a breakdown of what we expected for that first one. And then the second deadline was the one where they really submitted it, when it was expected to be a highly polished piece of work. So it was kind of like a drafting of maths work.

So it's not something that usually happens. It might happen a lot in other [Humanities subjects], but it was something that we were embedding in maths as well.

DM: Now, what data and evidence do you have to show the impact that the research has made?

MS: Well in our control group, where we didn't use any different techniques, there was no significant change across the three units. Students on average got the same results across those three units. In the partial group, which did the traffic light, peer checking activities, on average in that middle unit they improved by 0.3 grades, which was an effect size of 0.38. And the group that did the traffic light self assessment, the peer checking and the designing questions activity as well, had a grade improvement of 0.5 grades, which is an effect size of 0.73.

There's only four grades available – A, B, C and T – so half a grade was very significant and very much the difference between passing and failing. So that's led us to build those activities in from the very start of the year in 2015.

DM: Taking the results from this research, what are the implications for the future? What would you change and what have you learnt from it?

MS: Well at the start of, or rather at the end of 2014, we met together as a team, we had a look at the results and then we came back together at the start of 2015 and agreed to implement these techniques across all units. So that right from the very beginning, in particular these three activities (the traffic lighting and the peer checking activities and some version of the students designing questions) ... the idea was that we would have that built into the fabric of our planning. So, we looked at our year plan and built that in. We built time in for double deadlines, time in for peer checking, time in for students designing questions and things like that.

DM: Are there any plans to bring this form of assessment into other subjects?

MS: Well ... it has taken off quite a bit in other subjects as well. Since then, this year

[2015] we have launched teacher learning communities across our whole college. So, all teachers are now involved in embedding assessment for learning techniques. And the double deadline technique has been quite a popular one – popular with students as well. Students like and appreciate the opportunity to get some feedback on their work, whether it's from the teacher or from a peer, before they have to submit it as finally finished.

DM: If you look back now, was there anything that you found difficult in the process?

MS: ... Well one of the challenging things initially was, would this work? Would this work with the Foundation students? That was really how we ended up doing it in three different ways, with trying it a little bit, trying it quite a lot, and not trying it at all.

Getting the students to actually do the activities it turns out was quite straightforward and easy. That was something we were concerned about, we didn't know if they would do it or not. But it turned out that they were quite happy to do it, in fact they were very good at doing it. They were just as able to do, what you would think was quite high level reflection analysis and giving feedback, as the more academic students.

DM: Finally, what advice would you have for other teachers who are looking to conduct action research in their school?

MS: I think it sometimes can be quite hard to isolate the single thing you want to investigate or check. We're often trying lots of new things at the same time. The biggest piece of advice is probably, try to create a simple question that you want to answer. I think ours was probably still a bit too complex but it was basically, 'Can students in Foundation maths who have only ever achieved 'Ds' before engage in peer and self assessment? And, does it lead to improved outcomes?' And we were able to answer those questions, 'yes' and 'yes'.

The other thing really is to make sure that you collect baseline data so that you have something to compare it to, otherwise it's really hard to interpret.

DM: Mark Sivills, thank you for taking the time to speak to *Teacher* today.

MS: Thank you very much.

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- ***Mark Sivills was one of the presenters at the 2015 EPPC ([Excellence in Professional Practice Conference](#)). EPPC 2016 will be held in Melbourne on 19-20 May. The theme is [Collaboration for school improvement](#). Click on the link for registration details.***