**Differentiation in maths**

Jodie Parsons:

My name's Jodie Parsons, and I'm an Educational Leader at Sunshine College and in charge of curriculum from seven to 12. So at Sunshine College, all our maths classes are differentiated from year seven to 10.

Tim Blunt:

Differentiation plays a really important role in the program here at Sunshine College. We know that if we want our students to work within their zone of proximal development, that the tasks have to be just right for them.

Jodie Parsons:

I was working in a year seven class alongside another teacher, so not in the same classroom, but we had adjoining classrooms next to Yvonne. And you could see that there was clearly different things happening in our classroom. I had the top end students as such and Yvonne had a more of a numeracy class. So Yvonne and I decided to join our classrooms up together. So in fact, it really did enhance student learning, but it enhanced our teaching practice as well, because it meant that I could be working with a range of students over a range of abilities and the same as Yvonne and it gave us a potential to have much more of a greater professional conversation.

Tim Blunt:

This program came about because of the need to improve our outcomes for students. The precursor to the NAPLAN results was the AIM Data here in Victoria. And we looked carefully at those, and we knew that we needed to address the low outcomes for our students. And I was lucky enough to have two teachers come to me and say they would like to try something new. So I gave them the go ahead to start a new approach.

Jodie Parsons:

And what we found really, really worked was the developing lessons based on our students. So finding out really what our students were capable of and finding out that range of students in our classrooms, and then designing lessons around those. Once we have developed enough curriculum to meet all our students needs and all classrooms needs, we actually removed the textbook.

Tim Blunt:

We trialled the program within one campus, and then we outsourced it to the other campuses. A lot of ongoing refinement to the program over time. And I think you'll find that the program isn't stagnant, at the moment, that we are trying to improve it at every opportunity we get.

Jodie Parsons:

Today's lesson was about students collecting data as a means of looking at fractions, decimals, and percentages.

Jodie Parsons:

"Okay, so today's activity in maths, we're going to look at creating valid surveys, okay. Just like the learning intention states. And then we're going to look at how we can represent that using mathematics."

Jodie Parsons:

Each differentiated maths lesson at Sunshine College begins with a warm-up. The main intent of the warm-up is for engagement.

Speaker 3:

"Okay. Next work, higher or lower than a four?"

Jodie Parsons:

The differentiated approach is when a teacher will walk into the classroom with one activity, but pitched at a minimum of three levels. So they'll have the one learning outcome that all students will be learning towards. However, the activities that teacher takes in there are at a minimum of three different levels, providing all students an opportunity to learn.

Jodie Parsons:

"To help you decide whether you want to pick a one star task, a two star or three star. I want you to think about the types of skills that we might be using in that. So if you are beginning to collect data and write a good valid question, maybe a one star task is a good option for you. Two star tasks are for students who are really good with fractions, okay. Starting to understand their fractions quite well. Three star for students who can convert between fractions, decimals, and percentages."

Jodie Parsons:

During that time, students will be working in pairs or in threes on a specific learning outcome. And the teachers will walk around the classroom teaching at the point of need.

Jodie Parsons:

"If you've got to survey 25 people, what happens if 24 people have something different?"

Students:

"We could have like an option called other?"

Jodie Parsons:

"Brilliant. You could have an option called other."

Jodie Parsons:

Students who were doing a three star task could not collect either a 10, a 20 or a 25 pieces of data, because we wanted them to work from numbers that were a little bit more difficult for them and students who were working on a two star task needed to collect 25 pieces of data.

Students:

"What is your favourite sport?

Jodie Parsons:

"Volleyball."

Jodie Parsons:

Once they'd collected their data, they filled in their fractions, decimals, and percentages table. Students then needed to represent their percentages that they'd collected on that strip graph.

Jodie Parsons:

"So your 25 centimetre strip, how many pieces do you need to divide it into?

Students:

"Five"

Jodie Parsons:

Why five?

Students:

"Because there’s five options."

Jodie Parsons:

"Okay. It does need to have five different options. Are they going to all be the same size?"

Students:

"No."

Jodie Parsons:

"No."

Jodie Parsons:

The question we get asked often is “how do you make sure that students don't pick a task which is too easy for them?" And we actually find it's the opposite. Students will often choose a task that's too difficult for them, if at the end of a lesson a student writes a reflection and they might say, well, I've not learned anything that day. It gives me as a teacher an opportunity to have a discussion with them about the choices that they made at the beginning of the lesson in order to enable them to learn.

Jodie Parsons:

"So if you've just made a discovery or just had an idea, I want that to be your reflection."

Jodie Parsons:

So at the beginning of each unit students fill in their student capacity matrix. We also assess our students four times a year using the on-demand testing. Over time we are able to track our student progress using this on-demand data, using our NAPLAN data, and also using this student capacity matrix. Our students are improving at a rate which is greater than expected. When we compare our students to the average Victorian student, our students are improving at a greater rate than they are.