Striving to improve mathematics learning for every student, Ocean Grove Primary School Principal Darryl Diment and Mathematics Leader Chelsea Hair participated in Bastow’s Leading Mathematics course, together with two other teachers from their school, Emily Kaiser (classroom teacher) and Kristy Hannan Cuthbertson (grade 1 support).

‘Darryl believed that the course was a fantastic opportunity for me, as the acting maths leader at the time, to work with a team through Bastow to really look at how maths is going at our school and implement new strategies to improve outcomes,’ says Chelsea. 

A key goal for the team was to improve planning and management of student learning goals in mathematics. Very quickly, the participants found themselves embarking on a journey that would transform mathematics teaching and learning at their school.

As an experienced teacher—including 11 years at Ocean Grove Primary—Chelsea already knew that an important part of building her capacity to lead change would involve developing a deeper awareness and understanding of herself as a learner, teacher and leader.

As well as giving her the time to do this, the Bastow course offered Chelsea opportunities to closely examine and understand key concepts that are essential to mathematics learning and teaching, reigniting her passion for mathematics and giving her practical ideas to implement an improvement strategy, which she developed with her principal and colleagues.

As a result, Chelsea emerged from the course as both an identified leader of the school’s mathematics curriculum—something that had previously been missing from the school—and the key driver of a considerably different teaching model to the existing one.

With a clear vision and the tools to effectively collaborate with other teachers, the team were able to develop a realistic change strategy that has put the school on a clear path to success.

Investigating the local context

Leading Mathematics’ participants undertake a number of in-school investigations. The first involves a close examination of what is unique about their school context to determine exactly what is needed to improve mathematics learning and teaching.

Having done more prescriptive professional development in the past, the Ocean Grove team really appreciated that the learning at Bastow was based on gaining an understanding of what would work specifically at their school.

‘Before we started, we actually thought it would be another ‘sit-and-get’ presentation,’ says Darryl.
‘Darryl believed that the course was a fantastic opportunity for me, as the acting maths leader at the time, to work with a team through Bastow to really look at how maths is going at our school and implement new strategies to improve outcomes.’
‘The strength of the new approach is closely based on the contemporary research around mathematics teaching and learning that the team were exposed to at Bastow.’
The school’s new approach included addressing this, and the fact that students were not always being given the opportunity to learn using different ways of working.

‘We found that often teachers would teach things using one strategy that has always worked for them, such as fractions, when we know that some students need a different approach and really benefit from being able to show their understanding in multiple ways,’ says Chelsea.

The teachers now regularly ask themselves, ‘What other ways can we teach this concept?’ and students are encouraged to use their own strategies.

‘It’s about having strategies that are accessible for them … as long as they are effective and efficient, that’s what we’re after,’ says Darryl.

Closely examining teaching methods and what teachers thought about mathematics revealed some interesting views.

‘We were surprised that teachers liked the pedagogy of teaching maths because there is always a right and wrong answer. But we also found that there were some deep-seated beliefs that needed to be shifted,’ says Darryl.

Some of these beliefs were based around using closed questions in assessment — where students are asked for one answer, usually only one way to get the correct answer, such as fill-in-the-blank and multiple choice questions. This assessment can be ‘quite routine and boring’ for students and are generally not a reliable indicator of mathematical understanding.

The reality, however,’ adds Chelsea, ‘was that they offered us information and then asked targeted questions to get us thinking about our context and what’s next for us, what we need to change.’

The team was immediately inspired to use the close examination of current practices as a way to really understand what was working well and what wasn’t.

Chelsea and Darryl realised that for things to really progress, there also had to be a ‘big mind shift around ways of teaching’.

‘I think it is important to attend to the attitudes, the beliefs, the assumptions first,’ says Darryl. ‘We’ve come a long way with this, and it will ultimately have an impact on the greater student learning.’

Students driving learning

The school has also developed a very structured common approach to assessment and recording student data, which means that teachers can systematically track students’ progress and adapt teaching to ensure they are learning. Students are also encouraged to set their own learning goals.

‘And their goals really drive their learning. The students are very aware of what their goals are, and it’s very individual,’ says Chelsea. ‘This also means we can very clearly communicate to parents about their child’s learning.’

The strength of the new approach is closely based on contemporary research on mathematics teaching and learning and the four proficiencies from the Victorian Curriculum—Problem Solving, Reasoning, Understanding and Fluency—which the team explored together at Bastow and adapted to suit their needs.

‘What Bastow is doing really well is evolving,’ says Chelsea. ‘They’re not resting on teaching the same things in the same way … they are really up there with current thinking and practice.’

And although Darryl and Chelsea are quick to point out that it’s early days, the school’s hard work has already had a powerful impact on student outcomes.

A united front

With the principal, Darryl also attending the course and highly supportive of change, Chelsea immediately felt comfortable and confident to communicate what she was learning at Bastow with other staff.

‘It was great to watch Chelsea’s skills develop and see her present in such an engaging way at staff meetings, this was all a result of the Bastow course,’ says Darryl. ‘It was also the opportunity for her to really step up and progress to that next level of leadership.’

Participating in the course as a connected learning team also meant that each member approached tasks from a different perspective and had a distinctive experience.

‘Darryl, as principal, was looking at how he could offer an environment where leaders such as myself could thrive,’ says Chelsea. ‘Then I was looking at best practice and how I could get what I was learning through to the
teachers at the school, and the teachers were looking at what their role was going to be to make it all come together in the classroom.’

For Chelsea, this variation in experience resulted in ‘really in-depth and worthwhile conversations’ about what they were learning and a united front for making changes back at school.

‘It wasn’t just me trying to change things on my own,’ says Chelsea. ‘I had a group to bounce things off, and I think that’s where all the rich discussion, connections and innovation came from, from all of us talking about it.’

Time away from the school also gave the team really valuable breathing room and thinking space.

‘Having a chance to sit down together and really talk about “our work”, that’s what Bastow courses are also really great for,’ says Chelsea.

Team discussions then moved into staff meetings and it wasn’t long before everyone saw the possibilities.

‘With this close collaboration and the knowledge from the course, we came up with ways we could build proficient mathematicians at our school, and these came directly from the staff.’

**Staffroom to classroom**

Having developed a clear approach and goals for improvement, the team was able to harness the enthusiasm and input of their colleagues to develop a school-wide mathematics improvement strategy.

‘When you give teachers buy-in, they feel valued,’ says Chelsea. ‘Their thoughts and opinions are heard. We work with very intelligent and passionate teachers who each helped me along with this project, it definitely had a lot of lift-off from the word go because everyone had their chance to shape it.’

Chelsea used their regular staff meetings not only as time to discuss the strategy, but also as the chance to model different ways to teach maths in the classroom.

‘I really wanted to frame maths positively because, as most teachers know, we can kill a lesson in our delivery. If we’re not excited about our lesson or not confident in our skills then it’s very hard to sell it ... that absolutely doesn’t happen now because we’ve got a positive language around maths, a curiosity for it and enthusiasm to learn across the school.’

One of the Leading Mathematics’ workshops gave the team the chance to be ‘students for a day’ and in doing so, it made them look at learning and teaching from a completely different perspective.

‘This gave everyone great insight into what was happening in our classrooms, what it was like to be a learner in our school,’ says Chelsea.

This also enabled Chelsea and her colleagues to directly connect identified student learning needs to school-wide priorities.

‘From this experience we learned that collaboration plays a massive role in learning mathematics, and this was one of the things we went on to encourage with teachers, almost immediately afterwards.’

‘Collaboration is also one of our school values, and students are now encouraged to collaborate all the time with one another,’ says Chelsea.

They also resolved that ‘hands on’ was essential for mathematics learning.

‘There was a general reluctance with students in grade 3 and upwards to use concrete materials as manipulatives in maths,’ explains Chelsea. ‘They often saw it as being uncool or junior stuff.’

‘So we worked with senior and middle school teachers and put a huge emphasis on children being able to use concrete materials whenever and however they needed. We needed to destigmatise it, making their use common in the classroom by having them available all the time.’

The teachers were encouraged to involve students in ‘labelling, sorting and classifying everything into resource kits’ and to regularly refer to the materials and model using them.

The students now clearly understand they can use the materials in a very practical, hands-on way. As a result, they are more engaged in learning because they are able to more readily conceptualise abstract ideas and processes, develop a common language to communicate with the teacher and other students, and use different reasoning and problem-solving methods.
'This gave everyone great insight into what was happening in our classrooms, what it was like to be a learner in our school.'