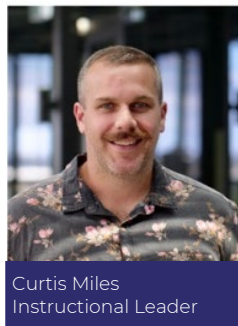


# Using research to inform teaching practice and increase engagement in mathematics.

## Case study – Embedded Instructional Leader Pathway, Mathematics Growth Team

Byron Bay High School, located 25km north of Ballina on the NSW North Coast, is home to Embedded Instructional Leader (EIL), Curtis Miles. Working with colleagues and students, Curtis is based at the school to support, challenge, and improve the pedagogical and assessment practices of mathematics educators in both primary and secondary contexts.



Curtis Miles  
Instructional Leader

The Embedded Instructional Leader Pathway (EILP) is a core element of the Mathematics Growth Team, aiming to improve student outcomes in mathematics and redefine the mathematical mindsets of children, parents and communities (Anderson, Boaler and Dieckmann, 2018). Being school-based and continuing to teach within the school allows team members to maintain currency with constraints and challenges faced by teachers. It also improves their ability to provide personalised professional learning at the point of need for relevant individuals and teams of teachers (Martinovic et al., 2017).

Embedding the Pathway into schools also enables mentoring and coaching with staff over a sustained period of time, which is a crucial part of implementing long-term changes in teaching practice (Cartwright, 2020).

At schools where the EILP operates, teachers of mathematics participate in a range of contextualised professional learning formats. These include lesson observation, structured discussion on pedagogy, reflection on practice and action research.

### Case in point: Byron Bay High School

Byron Bay High School is a comprehensive secondary school located in Byron Bay in Northern New South Wales with a student population of 745. As a school community they are proud of the excellent academic, sporting, performing arts and wellbeing outcomes of our students. The school site was gifted for the purpose of education by the local Arakwal people of the Bundjalung nation. Staff and students recognise the importance of being next to the national park and our shared responsibility to look after the local environment.

## Key focus areas for the EILP at Byron Bay High School

### Focus 1

#### Improving professional learning opportunities for staff

The EILP at Byron Bay High School enables tailored and integrated professional learning where support is provided to trial research-based teaching methods. Staff engage throughout the process of learning, researching, designing and implementing new teaching strategies for their students.

Professional learning focused on challenging staff perceptions of learning with the aim of improving the students' ability to work mathematically.

An emphasis has also been placed on providing teachers with the time to implement strategies with support tailored to their individual needs.

### Focus 2

#### Targeted teaching practices to increase student engagement

With the support of Jacqui Lyon, Curtis' Mathematics Growth Team Trainer, Curtis has worked with his faculty to investigate improvements in teaching practice, drawing on a strong evidence base to specific teaching practices for students at Byron Bay High School.

A variety of pedagogical practices are being used in the classroom including:

- Actively promoting mathematical discussions, through tasks such as worked examples.
- Vertical learning using whiteboards, to improve students' mathematical collaboration and communication.
- Goal-free problems with a focus on problem solving.

“The materials provided by Curtis and the Mathematics Growth Team have not only made complex mathematical concepts approachable but have also sparked a renewed enthusiasm for learning amongst both students and teachers alike. This has elevated the quality of education within our school and inspired a sense of shared purpose amongst faculty members.”



**Phoebe Kiddle, Mathematics teacher**

### Focus 3

## Building an effective mathematics network

Curtis researched how to create an effective network across schools to help teachers collaborate, share expertise and develop new learning activities.

Teachers' understanding of research and differences in school contexts has deepened. Teachers shared tasks and practices, then modified the learning activities created by the network to suit their school's needs.

## Observable impacts

The impact of the EILP at Byron Bay High School is visible through a wide range of different elements including:

- **Increased collaboration in the staffroom.** Staff engage in regular discussions about how to support students learning. Curtis has provided individualised support for teachers to reflect on their own practices. Faculty time is used to investigate evidence-based teaching practices.
- **Active participation in lessons.** Staff utilise vertical whiteboards and group activities in their lesson design. This has increased the discussion of mathematical concepts amongst students.
- **Increased engagement with research.** Staff engage with mathematical research and share their ideas during professional learning sessions at faculty and network meetings.
- **Improvement in assessment practices.** Investigation tasks take place regularly with a focus on student interests. Staff provide quality feedback to students. This is evident across all stages of the mathematics curriculum.

- **Implementation of formative assessment.** Staff implement formative assessment practices with an emphasis on outcome-based reporting. The mathematics faculty incorporate student and parent feedback into this process to provide accurate and timely feedback for parents regarding their children's understanding of mathematics.
- **Increased student voice.** Students review new teaching practices using surveys. This was used to highlight practices that have helped them succeed this year.
- **Increased access to professional learning.** Curtis provides professional learning to all staff at Byron Bay High School. The school's executive team have been utilized to highlight teaching practices that could be adjusted to suit all subject areas and create a continuity throughout the school.

“The Mathematics Growth Team embodies the elements of high-quality professional learning. It is informed by global research, that supports the professional growth of all teaching staff to deepen teaching practice for ongoing growth in student progress and achievement. At Byron Bay High School our staff reported that the initiative greatly increased their confidence in the pedagogy of teaching mathematics. The evidence of positive impact for our students because of the enhancement in pedagogy is witnessed daily in the mathematics classrooms. Students are taking charge of their learning and helping each other to unpack new learning.”

**Janine Marcus, Principal  
Byron Bay High School**

## Find out more

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