

# Working with SLSOs to improve outcomes in the mathematics classroom

## Embedded Instructional Leader Pathway, Mathematics Growth Team

Coonamble High School is home to Embedded Instructional Leader and Mathematics teacher, Sophia Yang. Working with colleagues and students, Sophia supports, challenges, and improves the pedagogical and assessment practices of mathematics educators and learning support staff.



Sophia Yang  
Instructional Leader

The Embedded Instructional Leader Pathway (EILP) is a workstream of the Mathematics Growth Team (MGT), comprising secondary teachers who participate in structured mentoring and coaching from the MGT to build skills to support, challenge, and strengthen teaching and assessment practices of educators within their school context. Through this work, they gain experience in improving student learning outcomes within their KLA. They also play a role in redefining the mindsets of students, teachers, school and local communities.

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 individuals and teams of teachers (Martinovic et al., 2017). Embedding the Pathway into schools enables staff to be mentored and coached over a sustained period, which is a crucial part of implementing long-term changes in teaching practice (Cartwright, 2020).

At schools where the EILP operates, teachers 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: Coonamble High School

Coonamble High School (CHS), a Connected Communities co-educational school with 180 students, including 80% Indigenous students and a Support Unit of four classes, is located in a town of 3,000 residents, 160 km north of Dubbo.

Guided by its vision, “Empowering students to be the best they can be and lead a life of learning,” CHS focuses on fostering student growth. Numeracy is a key area for development, with reading and writing prioritised in the School Excellence Plan to support high achievement in NAPLAN and the HSC.

Despite its small size, CHS serves a diverse range of learners, offering differentiated learning opportunities and working with three primary partner schools to ensure smooth student transitions. All students have personal learning plans tailored to their needs.

As a Connected Communities school, CHS emphasises culturally relevant learning experiences and collaborates with groups like the School Reference Group, AECC, P&C, Clontarf Foundation, and the Girls Academy. These partnerships provide students with meaningful learning opportunities and help achieve high-level outcomes.

CHS also prioritises professional learning by dedicating time to mentoring, coaching, induction, and technology skills. This ensures continuous growth for all staff.

### Key focus areas for the EILP at Coonamble High School

#### Focus 1

#### Improving professional learning opportunities for SLSOs

With the support of Jacqui Lyon, Sophia’s MGT Trainer, Sophia worked with SLSOs at Coonamble High School to build their capacity in supporting thinking within classrooms. Tailored professional learning sessions equipped SLSOs with strategies to facilitate group discussions, encourage perseverance, and guide students through rich mathematical tasks.



Jacqui Lyon  
MGT Trainer

The professional learning process encourages SLSOs to reflect on their practices, collaborate with peers, and adapt strategies to meet the diverse needs of students. This collaborative approach ensures that SLSOs are confident and effective partners in fostering dynamic and inclusive learning environments.

**Focus 2****Engaging with research and bringing effective practice into the classroom**

At Coonamble, the EILP enabled tailored and integrated professional learning, providing support to trial research-based strategies in the classroom. Drawing on professional learning experiences such as the MANSW Regional Conference in Young, the International Congress for Mathematics Education, and the MANSW Annual Conference, Sophia developed a deeper understanding of innovative teaching strategies. Central to this work is Dr Peter Liljedahl's *Building Thinking Classrooms*, a framework designed to prioritise student thinking and problem-solving through dynamic, inquiry-driven learning environments.

This framework, combined with research such as Professor Dianne Siemon's *Big Ideas in Number*, guides the use of thinking tasks that foster engagement and deeper reasoning. Strategies also include Dr Chris Matthews' *Goompi Model* for embedding cultural contexts, Michael Pershan's *Teaching with Worked Examples* for guided problem-solving, and Dr Paul Swan's *Teaching Maths Through Story* for making mathematics engaging and relatable.

In the classroom, these pedagogical practices are brought to life through strategies such as thinking boards, goal-free problems, storytelling, mathematics thinking puzzles, and outdoor hands-on activities. Students are encouraged to collaborate, explore multiple pathways, and articulate their reasoning, fostering both individual and group problem-solving skills. Tasks are designed to deepen conceptual understanding, creating opportunities for students to connect mathematical ideas and apply their knowledge in varied contexts.

*The EILP project has been pivotal to the development of new teaching programs with the introduction of the new maths syllabuses. The support Jacqui [Sophia's MGT mentor] has provided has helped the school plan and implement new teaching strategies and reflective learning exercises to best improve student engagement and outcomes. Aligned to the school plan, the project has been valuable for student engagement and teacher development.*

Peter Walker, Head Teacher

**Find out more**

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**Observable impacts**

The impact of the EILP at CHS is visible in a wide range of ways, including:

- **Increased student participation:** Students exhibit greater confidence and active engagement in tackling mathematics problems, including non-routine problems. Strategies such as thinking boards, goal-free problems, and storytelling encourage collaboration, exploration of multiple pathways, and articulation of reasoning. This shift from answer-focused to concept-focused learning fosters both individual and group problem-solving skills.
- **Improved formative assessments:** Teachers and SLSOs have embraced formative assessment practices including the Focus Five, providing timely and meaningful feedback that supports student progress and deepens understanding. These practices are now integrated into lesson planning and classroom interactions.
- **Increased engagement with research:** Teaching practices at CHS are increasingly informed by mathematics education research, including strategies from Building Thinking Classrooms and other evidence-based frameworks. These approaches are tailored to meet the specific needs of CHS students, ensuring relevance and impact.
- **Tailored professional learning for SLSOs:** Tailored sessions focusing on positive dispositions, questioning, and storytelling have significantly enhanced SLSOs' skills and understanding. These sessions equip SLSOs with practical strategies to support students in dynamic and inclusive learning environments.
- **Increased SLSO confidence:** SLSOs report a notable increase in their confidence and capacity to contribute to classroom learning. They actively facilitate group activities, guide discussions, and help students persevere through challenges, enriching the overall learning environment and student experience.

*Sophia has showcased group activities in maths lessons; increasing the discussion of mathematical concepts amongst students and thus heightening their understanding. It is exciting to see students showing initiative in their own learning and helping each other to better understand concepts.*

Jo Scott, Principal