



Banks Avenue School

Re: DMIC Maths Programme

Dear whānau,

As a member of the Otakaro Cluster we have introduced DMIC Maths at Banks Ave in 2018. We made this decision after seeing the results achieved by other Otakaro Cluster schools in 2016 and 2017. Staff in these schools had shared the positive impact DMIC has had in lifting the maths achievement of their learners, and we knew our Banks Ave learners could also benefit based on the evidence we had seen.

Background Research

Developing Mathematical Inquiry Communities (DMIC) is a model of ambitious mathematics teaching which incorporates an advanced form of complex instruction. It was originally designed and developed by Professors Elizabeth Cohen and Rachel Lotan at Stanford University, and in mathematics by Professor Jo Boaler. DMIC in New Zealand has been developed and led by Associate Professor Bobbie Hunter from Massey University.

DMIC in a New Zealand form was initially developed more than fifteen years ago through collaboration with a group of teachers in a school in Auckland. The teachers worked collaboratively with the researcher to develop a Communication and Participation Framework ([Hunter, 2008](#)). The Framework is a tool designed to scaffold teachers to engage students in reasoned mathematical practices within communities of mathematical inquiry. Teachers can use the Communication and Participation Framework adaptively, flexibly and in culturally responsive ways. Central to the Framework is the consideration of the maths classroom to be a learning community rather than a collection of individuals. Teachers at Banks Avenue are using this Framework to guide their personal development in DMIC as a focus for their 2018 Teacher Reflective Inquiry Practice (TRIPs). This gives us the benefit of being able to support one another on the DMIC journey.

"The focus of the DMIC project has been on developing teacher expertise, pedagogical leadership, what it takes to develop in-class mentoring expertise, and conditions for sustainability and ongoing improvement. The approach views student engagement in collaborative mathematical discourse as an essential component for their learning of mathematics with understanding.

Lifts in student achievement have been part of the success of *DMIC*, but the more important focus has been on other valued outcomes including an increase in student voice and agency, increased pro-social skills, enhanced mathematical dispositions and the valuing of the mathematics within the home and cultural context." *Centre for Research in Mathematics Education (CeRME)*

Professional Development and Support

To support our staff in learning the DMIC method of teaching, the Otakaro Cluster has invested in an extensive Professional Development programme.

Actions include:

Teacher Only Days: focussed on DMIC maths

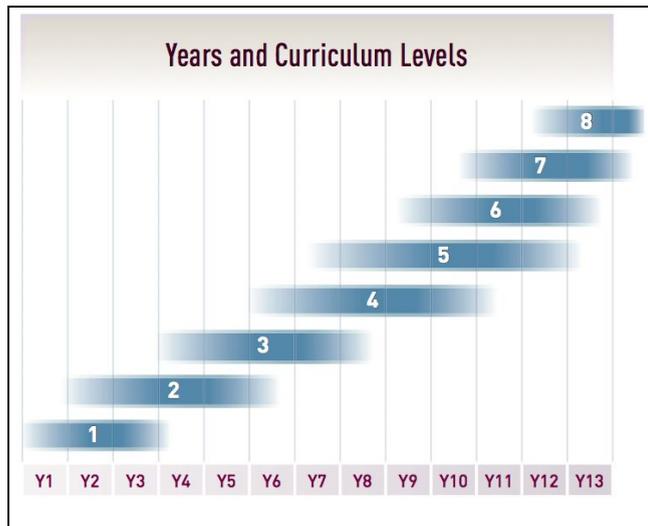
Twilight PD sessions: twice a term for cluster teachers

In-School Otakaro Cluster Kahui Ako Staff: supporting staff through a coaching model - Rhonda Aitken

In-Class Support: twice a term teacher observations in the classroom - Liana Kerry

DMIC Experts: a cluster facilitator who has expert classroom experience - Liana Kerry

How does DMIC relate to the New Zealand Curriculum?



This diagram shows how curriculum levels typically relate to years at school. Generally we would expect a child to take two years to work through a curriculum level. Broadly speaking, Level 1 is Years 1-2, Level 2 is Years 3-4 and Level 3 is Years 5-6. Many students may not fit this pattern: this includes those with special learning needs, those who are gifted and those who come from non-English speaking backgrounds.

DMIC relates directly to the New Zealand Mathematics and Statistics Curriculum and the advantage that it gives teachers is the ability to cover multiple strands through the one learning challenge. This gives us increased curriculum saturation and daily opportunities to move fluidly within and across the maths strands of: Number and Algebra, Geometry and Measurement and Statistics.

DMIC Lessons

Lessons follow a consistent sequence, i.e.,

1. **Warmup:** Getting the brain going, refining and revising understandings of concepts and embedding learning
2. **Review of norms:** Revoicing the shared understandings through reinforcing the group norms used for the inquiry stage, e.g., asking questions, listening for understanding, speaking loudly for others to hear, agreeing/disagreeing and why, contributing, challenging without criticism, using manners, caring for others learning, using HEART values
3. **Launch:** An orientation where children collaborate and work together to understand the problem-based question for the session
4. **Small group inquiry:** Children collaborating using a range of **strategies, solutions and misconceptions** to work out the intended outcomes - success criteria (*This part requires cooperation and grit*)
5. **Sharing:** Resetting the norms focus to participation and questioning, followed by children presenting and sequencing their learning (first, next, then, last), using talk moves throughout the session for observers
6. **Connecting:** Linking the learning to the mathematical 'Big Idea' (similarities/differences, generalization of the concepts, introduction of maths strategies ("I saw a group..."), highlighting and addressing misconceptions
7. **Reflecting:** Teachers recording anecdotal notes, using the Framework to reflect against as a Teacher, working out where to next?

Problem-based questions are personalised to the children in the class and developed around activities and contexts that the children are interested in. They reflect real life contexts which helps make the learning authentic and relevant for the children, e.g., pizzas, pets, athletics, everyday life situations. If you would like to view examples of the questions please see your child's classroom teacher.

Useful links to help you understand DMIC as an approach for maths learning for your child

- [Associate Professor Bobbie Hunter's New Zealand DMIC website link](#)
- [DMIC Communication and Participation Framework website link](#)
- [Professor Jo Boaler's 'youcubed' website link](#)

We thank you for your continued support as we develop as a learning community that seeks Excellence through living and learning with HEART.

Nāku noa,
Na Banks Avenue Teachers