

Complex problem solving to align DMIC with the refreshed mathematics curriculum

We did not abandon DMIC. We sharpened it so every learner could access the strengths of inquiry-rich mathematics within a year-level, explicit, coherent curriculum.

1. Identify

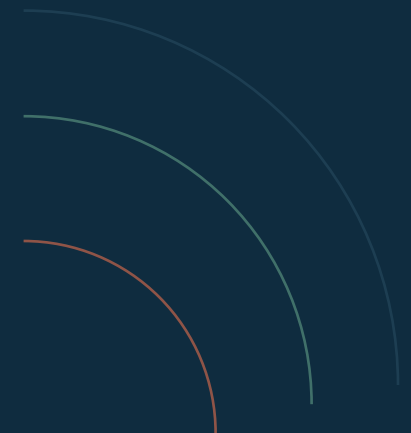
2. Investigate

3. Design

4. Implement

5. Evaluate

Using the Collaborative Complex Problem Solving framework to move from good intentions to coherent practice



DMIC
×
Refreshed NZ Maths

Why alignment mattered now

Three truths we had to hold at the same time

DMIC brought real strengths

- rich tasks and multiple entry points
- mathematical talk, reasoning and student agency
- learning through collaboration and shared sense-making

The refreshed curriculum sharpened expectations

- year-by-year teaching sequences
- all students experience year-level learning
- explicit teaching and rich tasks work together

So the leadership question changed

- How do we keep the power of DMIC while tightening coherence, fluency and assessment?

The shift we put in front of staff

Old false choice

Either inquiry-rich maths
or clear curriculum coverage



What the refresh clarified

Explicit teaching, practice and rich
tasks are dynamic partners



Our response

Sharpen DMIC so every lesson
visibly serves year-level learning

Why this was complex, not technical

Curriculum change sat inside people, systems and habits

What makes alignment complex?

Teacher beliefs

What counts as good maths teaching?

Curriculum knowledge

How secure are we with the year-level sequences?

Task design

Are rich tasks tightly linked to intended maths?

Coaching and monitoring

Are leaders using one common lens?

Student equity

Are all ākonga getting access to year-level ideas?

The leadership implication

We could not solve this with a new programme alone.

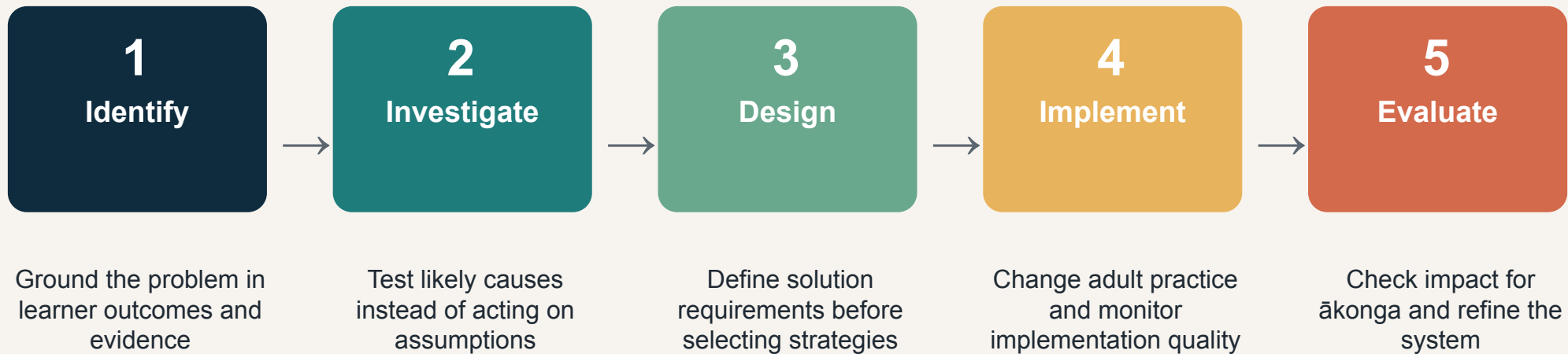
We needed a process that helped us:

- define the actual problem
- test assumptions with evidence
- agree non-negotiables before choosing strategies
- monitor adult implementation, not just intentions
- evaluate whether ākonga outcomes really shifted

This is exactly why CCPS mattered

The five-stage improvement process we used

Collaborative Complex Problem Solving became our organising framework



Why it worked for us

It gave leaders and teachers one shared language for inquiry, decision making and accountability. Instead of debating preferences, we kept asking: What is the evidence? What is causing it? What must a workable solution include?



Stages 1 and 2: what the evidence showed us

The issue was coherence, not commitment

What the data and classroom evidence showed

- engaging tasks were not always tightly linked to the intended year-level mathematics
- student discussion was often rich, but teacher connection back to the core maths was inconsistent
- fluency, consolidation and assessment checks varied widely across rooms
- leaders were using different coaching lenses, so expectations sounded different classroom to classroom

What was really driving it

- uneven understanding of the refreshed teaching sequences
- confusion about how explicit teaching fits inside inquiry-rich maths
- too much assumption that a rich task automatically meant curriculum alignment
- inclusion sometimes interpreted as easier work rather than supported access to year-level ideas

Our diagnostic phrase: a coherence problem, not a people problem

Stage 3: the design principles we agreed

Before we changed practice, we agreed on the non-negotiables

1 Year-level clarity

- Every unit had to show the exact year-level sequence statements being taught.

2 Explicit teaching

- Every sequence needed clear modelling, prompts, questions and teacher explanation.

3 Rich task purpose

- Tasks were used to motivate, apply, extend and transfer learning, not replace teaching.

4 Fluency and consolidation

- Practice, revisit and consolidation were protected instead of being left to chance.

5 Access for all ākonga

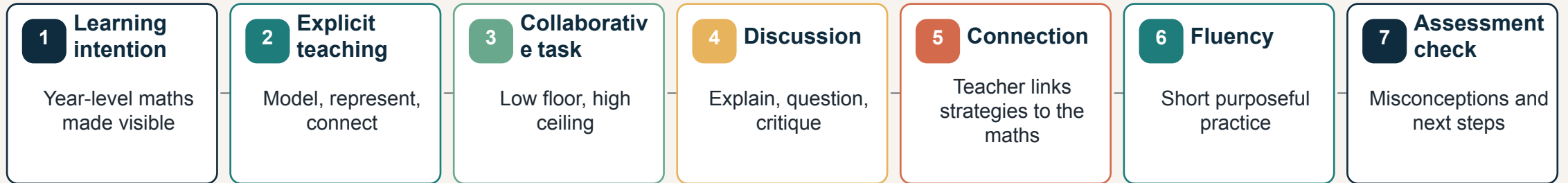
- Support meant access to the same conceptual pathway, not a lowered mathematical diet.

This was the hinge point. We stopped arguing philosophy and started designing for coherence.

What changed in classroom practice

DMIC stayed. The sequence became tighter and more deliberate.

A curriculum-aligned DMIC lesson architecture



What stayed the same

student voice • multiple representations • collaborative reasoning • mathematically productive struggle • culturally connected contexts

What became stronger

tighter year-level alignment • clearer teacher explanations • sharper connections back to the maths • more consistent fluency and formative assessment

Stages 4 and 5: implementation and impact

We monitored the adult system as carefully as student outcomes

Implementation moves

- co-constructed a shared observation lens for leaders and teachers
 - revised planning templates so year-level sequence links were visible
 - used team planning, peer observation and teacher inquiry to refine practice
 - monitored implementation quality in classrooms, not just attendance at PLD
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Evidence of impact we looked for

- clearer planning and tighter links between tasks and intended mathematics
- students explaining and justifying with more precision
- stronger fluency and consolidation where it mattered most
- better use of formative assessment to identify misconceptions and next teaching steps
- greater consistency across classrooms and teams

**Monitor implementation
→ then evaluate impact**

Pitfalls when DMIC and the refresh drift apart

These were the traps we learned to name early

Rich task = coverage

- Interesting tasks can still miss the intended year-level mathematics.

Talk = learning

- Discussion matters, but it must be connected back to precise mathematical ideas.

Inquiry or explicit teaching

- The refresh does not ask schools to choose one over the other.

Inclusion = easier work

- Support should widen access to year-level learning, not lower expectations.

PLD = implementation

- People attending training does not mean classroom practice has changed.

Engagement = progress

- A lively lesson is not the same thing as secure conceptual and procedural growth.

The risk was rarely DMIC itself. The risk was loose enactment.

Final takeaways

“We did not solve this by choosing between inquiry and structure. We solved it by leading both with clarity.”

Complex curriculum change is not solved by quick fixes. It is solved when leaders create the conditions for disciplined inquiry, shared responsibility and coherent action.

Start with evidence, not assumptions

Let the curriculum define the non-negotiables

Protect the strengths of DMIC while tightening coherence

Monitor implementation quality and learner impact together