Te Tāhuhu o te Mātauranga
Ministry of Education

He mea tārai e mātou te mātauranga
kia rangatira ai, kia mana taurite ai ōna huanga.

We shape an education system that delivers
equitable and excellent outcomes.

Te Kāwanatanga o Aotearoa
New Zealand Government

Te Huinga Kākākura Mātauranga evaluation associates

Targeted support and accelerating numeracy learning

Te Manu Ka Rere

Lynette Hay & Doreen Bailey

Karakia timatanga

Tau mai te mauri o te wānanga,
Ki runga ki ēnei pūkenga,
Kia mātāmua ai, ko te ako kounga, a te tamaiti,
Ko ia ki mua, ko ia ki muri o ēnei kōrero,
Kia puta ai ia, ki te whaiao, ki te ao mārama!
Hui e, tāiki e!

Bestow the life force of learning,
Upon these repositories,
So that aspiration of quality learning for our children is paramount,
And remains at the forefront of all of our works,
So that they may flourish and thrive,
For all eternity!

Introductions

Doreen Bailey - Rotorua | Kororāreka

Ngāti Manu, Te Aupōuri, Ngāti Tarawhai, Tūhourangi

B.Ed, DipTchg, DP SNRT

- 30+ years teaching experience across Primary, Intermediate and Secondary sectors.
- Teacher of Mathematics Years 9 – 11.
- Former Tumuaki at Te Kura Takiwa o Taipā, with leadership roles in Kāhui Ako and Far North Principals' Association.
- Leads the Niho Taniwha team at Evaluation Associates, supporting cultural capability and leadership.
- Specialises in building culturally responsive practice, bilingual education, and effective use of data.
- Accredited Facilitator (Cultural Capability) through Evaluation Associates for Ministry-funded PLD.

Introductions

Lynette Hay - Tāmaki Herenga Waka

MCE, MEd, PGCert DCL, GDipEd, HCertTESSOL, DipPTE

- 23 years teaching experience across Tertiary, Secondary and Primary sectors.
- 5 years as a Facilitator with EA
- Primary trained but Secondary subject specialisation in Digital Technologies and Computer Science
- Accredited Facilitator (Cultural Capability, Mathematics & Statistics) through Evaluation Associates for Ministry-funded PLD

Webinar Goals

Participants will be able to:

- **Clarify what "acceleration" means** in the context of NCEA Numeracy and understand how it differs from general progress or remediation.
- **Understand the distinction between numeracy and mathematics** and how this impacts acceleration strategies.
- **Identify specific factors that slow or enable rapid progress** for learners who are yet to meet the Numeracy Co-requisite.
- **Explore how all kaiako can deliver targeted support** that accelerates numeracy learning in real-world, cross-curricular contexts.
- **Select 1–2 high-impact strategies** they can implement immediately to accelerate numeracy development in their subject area within the next 3 weeks.

What Does Acceleration Mean?

What does acceleration mean?

In the context of NCEA?

Acceleration refers to targeted teaching that enables students to make rapid progress towards meeting the NCEA Numeracy Co-requisite.

It is not about teaching faster or covering more content, but about being strategic and timely with support.

Acceleration strategies are responsive, focused, and often short-term interventions that help learners catch up or meet key goals within weeks.

What Acceleration *IS*

- **Intentional and focused:** Uses diagnostic evidence to identify key capabilities students need for success in upcoming learning and assessment, and addresses them precisely.
- **Time-bound:** Targets improvement within a limited timeframe to support readiness for future learning and opportunities (e.g., NCEA Literacy/Numeracy or real-world application).
- **Success-oriented:** Supports students to strengthen core numeracy capabilities so they can confidently engage in curriculum learning and assessment—not just pass a test.
- **Embedded in meaningful contexts:** Grounded in rich, relevant learning tasks that build transferable skills, not test drills.

What Acceleration *IS NOT*

- **Remediation:** It's not about reteaching everything—just the essential capabilities that unlock access to current and future learning.
- **Unfocused:** It's not a general catch-up; it is informed by evidence and designed to strengthen specific capabilities.
- **Ongoing tutoring:** It's not indefinite support—it's targeted, short-term and designed to build learner independence and readiness.
- **Teaching to the test:** It's not about preparing students for one assessment—it's about building enduring numeracy capabilities that enable success across contexts, including but not limited to NCEA.

Reflecting on Acceleration

Examining Intervention Approaches

- *What data or evidence do you currently use to identify students who need acceleration, rather than just general support?*
- *What does "targeted support" look like in your context or subject? Who delivers it, and how often?*
- *Do your current interventions aim to catch students up, or move them forward faster than expected?*
- *When in the year do you typically begin focused support for numeracy? Is it soon enough to make a difference?*

Numeracy vs Mathematics

What's the difference and why does it matter when it comes to acceleration?

What's the difference?

🔍 Distinction Between Numeracy and Mathematics

Mathematics	Numeracy
A discipline involving abstract concepts like algebra, geometry, calculus, and reasoning.	The practical application of mathematical skills in everyday contexts (e.g., budgeting, measuring, interpreting graphs).
Often taught as a standalone subject with a structured curriculum.	Cross-curricular—it appears in science, technology, PE, and social studies contexts.
Focus is on conceptual understanding, procedures, and problem-solving strategies.	Focus is on functionality—using math skills to solve real-world problems.
Examples: Solving quadratic equations, proving geometric theorems.	Examples: Estimating cost, reading bus timetables, interpreting health statistics.

Definitions summarised from *Mathematics Hub* (mathematicshub.edu.au).

How This Impacts Acceleration Strategies

I. **Acceleration in *mathematics*** tends to focus on:
   I. Filling conceptual gaps (e.g. understanding place value, fractions).
   II. Building fluency with mathematical procedures (e.g. number operations, algebraic manipulation).
   III. Advancing through curriculum levels more quickly through compacted or tiered content.

II. **Acceleration in *numeracy*** focuses on:
   I. Improving students' **ability to apply** their mathematical knowledge in unfamiliar or everyday contexts.
   II. Emphasising reasoning, estimation, interpretation, and communication.
   III. Often tied to **functional benchmarks** such as those used in the **NCEA Literacy and Numeracy Co-requisite assessments**.

Acceleration through Targeted Support

Targeted support is **one of the most effective levers for acceleration** because it:

Feature	Acceleration Impact
🎯 **Precision**	Helps teachers address the *actual* conceptual or skill gaps, avoiding unnecessary repetition.
⏱️ **Timeliness**	Delivers support *when it's needed*, not weeks later. This prevents widening gaps.
🧩 **Relevance**	Uses real-life, contextualised tasks to make learning meaningful, improving transfer and retention.
🤝 **Responsiveness**	Adapts to the learner's pace, allowing for faster movement through the curriculum.
🤲 **Low cognitive load**	Breaks down complex problems into manageable chunks so learners can focus on reasoning.

Based on research by Timperley et al. (2007), Hattie (2008), Fuchs et al. (2012), Boaler (2016), and Sweller (1988).

"Every kaiako is a kaiako of numeracy"

Ministry of Education (2023, p. 6)

LNSiS Self Review Tool

Working towards embedding and sustaining

KAIAKO READINESS				
	Building awareness	**Planning for change**	**Implementing change**	**Embedding and sustaining**
Every kaiako is a kaiako of literacy and numeracy.	Kaiako are aware of the changes and understand their responsibility to teach literacy and numeracy to cater for the diverse needs of all ākonga.	Kaiako are planning for the changes and are contributing to a whole school readiness plan and are supported to adapt their practice to cater for the diverse needs of all ākonga.	Kura are prepared for the changes and work collaboratively to strengthen their literacy and numeracy practice to cater for the diverse needs of all ākonga.	Kaiako are supported by a whole school literacy and numeracy approach and actively support the diverse needs of all ākonga.

Excerpt from the LNSiS Self Review Tool

What might 'working towards' the goal look like?

Ministry of Education. (2023). *LNSiS guidance: A guide for regional support providers*. https://ncea.education.govt.nz

Phase	Responsibility & Action	Example
Building Awareness	Kaiako recognise that literacy and numeracy are part of everyone's role—not just specialist teachers. Focus is on understanding what the changes are and why they matter for ākonga.	A science teacher attends a staff meeting where the literacy and numeracy co-requisites are introduced. They begin to reflect on how often they ask students to interpret data or explain processes clearly.
Planning for Change	Kaiako engage with school-wide planning and identify what adaptations are needed in their own subject areas. They start aligning their teaching with the literacy/numeracy needs of students.	A PE teacher works with the literacy lead to co-plan a unit that explicitly includes vocabulary building and written reflections on teamwork—connecting to writing CAA standards.
Implementing Change	Teachers and leaders collaboratively apply literacy and numeracy strategies in day-to-day teaching. They actively trial and evaluate changes to practice.	A social studies team redesigns an assessment so that students must justify their position using statistical data, supporting both subject outcomes and numeracy competencies. They meet weekly to share what's working.
Embedding and Sustaining	The kura adopts a shared approach to supporting literacy and numeracy across all learning areas. Systems and routines are in place to maintain momentum, monitor progress, and support new staff.	The school timetable includes cross-curricular literacy/numeracy blocks. PLD is embedded annually, and a coaching model supports ongoing growth. All subject teams use common language for scaffolding reading and reasoning.

Numeracy audit

- What opportunities currently exist within your teaching programme for students to develop and apply their numeracy skills?

Share one in the chat

What Affects Success in Numeracy?

Common barriers to success in numeracy

Numeracy isn't culturally neutral. It is shaped by the learner's worldview, language, and everyday experience.

- The **Numeracy Learning Matrix** highlights that mathematics is created and used by people and communities.
- This includes **Māori and Pacific knowledge systems** – such as spatial reasoning, estimation, and pattern recognition.
- If we teach only through a **Eurocentric lens**, we risk missing opportunities to connect to students' existing knowledge.
- Examples include **Māori and Pacific navigation**, **measurement in whakairo**, and **relational reasoning in oral histories**.

Common barriers to success in numeracy

Barriers to numeracy success are often affective (confidence, mindset) and cultural – not just academic.

- Many students experience **maths anxiety** – the fear of being wrong or not understanding shuts down their willingness to try.
- Students often face **unfamiliar contexts** – if a question uses terms like "mortgage payments" or "electricity usage" and these aren't part of their lived experience, this can cause confusion and they're more likely to disengage.
- **Low confidence** is common – even when students know what to do, they may second-guess themselves or not attempt a solution at all.

Common barriers to success in numeracy

- We often see that students *don't fail because they don't know the maths*. They struggle with the **language** of the question, **multi-step problem solving**, and knowing where to start.
- For example:
  - *Students misunderstanding what "approximately how many…" means.*
  - *Confusion when data is shown in unfamiliar forms (e.g. pie charts vs tables).*
  - *Students stopping after one step when multiple are needed (e.g. calculate and then compare).*
- This tells us that the barriers are not purely about maths content – but about **navigating and communicating in numerate ways.**

Let’s unpack an example

Two groups of Year 10 students are taking part in a Design Challenge Day. Each group follows a different schedule of timed workshop rotations with fixed breaks in between.

Questions:

1.What time does each team finish their final workshop before lunch?

*2.How many **more minutes in total** does Team A spend in workshops compared to Team B?*

3.Which team spends more total time (including both workshops and breaks) in the full pre-lunch session, and by how many minutes?

Team A Schedule:

- Begins at 9:00 am
- Each workshop runs for **18 minutes**
- There is a **4-minute break** between workshops
- The team attends **5 workshops** before lunch

Team B Schedule:

- Begins at 9:00 am
- Each workshop runs for **15 minutes**
- There is a **5-minute break** between workshops
- The team attends **5 workshops** before lunch

“What barriers might affect student success in this example?” How could we support ākonga success?

Let’s unpack an example

Aroha is helping prepare food for a school hangi. She pours **2.4 litres of water** into a large pot and says it took her **3 minutes** to fill it using a tap.

Her classmate Nikau says:
“That means the tap delivers more than ***0.75 litres of water per minute****.”*

“What barriers might affect student success in this example?” How could we support ākonga success?

Question:
Is Nikau’s claim reasonable?
Use the **measurements provided** to explain your answer.

Let’s unpack an example

QUESTION:
If all the larvae survived, about how many kākahi would you expect to get from **one adult** in **8 years**?

Show the calculations you used to get your answer.

Kākahi are becoming rare in Aotearoa.

A conservation group is running a protection project to help restore kākahi numbers in local rivers.

A single adult kākahi releases between 200,000 and 500,000 larvae each breeding season.

Only one breeding season occurs every two years.

“What barriers might affect student success in this example?“ How could we support ākonga success?

NCEA Numeracy Planning Resources

Numeracy Pedagogy Guides and Numeracy Enhanced Plans

The Pedagogy Guides are a set of guides that elaborate on the Unpacking Numeracy document in specific learning areas. These may be useful when considering how you can weave numeracy into your classroom.

https://ncea.education.govt.nz/numeracy-planning-resources

There are currently guides for:

- Alternative Education
- The Arts
- English
- Health and Physical Education
- Learning Languages
- Science
- Social Sciences
- Technology

Are they ready?

- When considering whether to enter your learners into the CAAs, reflect on whether they display a level of readiness:
  - **Academically** - does formative data indicate a level of knowledge and understanding that will serve as a foundation for the student to leverage off?
  - **Emotionally** - does the student have a sense of confidence that they can engage effectively with the task?
  - **Assessment literacy** - have students developed the skills needed to access the question and know what is required of them (e.g. explain vs describe)?
  - **Digital literacy** - can your student confidently navigate the online space to engage in the task (e.g. scrolling, single word answers etc.)?

Practical Strategies to Accelerate Progress

Where do the gaps lie?

- Supporting and accelerating learner success with numeracy begins with knowing what your learner's strengths and gaps are.
- Utilising formative assessment tools i.e. e-asTTle or PATs, can help you quickly hone in on what your learner's needs are and what to focus on next.

Strategies to support numeracy

1. Teach clearly and step-by-step
2. Use diagrams and visual tools to show thinking
3. Teach students to spot patterns in problems
4. Help students think about their thinking
5. Stretch students' thinking with challenging tasks

Strategies to support numeracy

There are a few different ways which students can unpack a question. For example:

1. **RAVEN – A Strategy for Reasoning and Estimation**

   Designed for literacy and numeracy tasks where reasoning is required.

   R – **Read** the question carefully.

   A – **Ask**: What do I already know? What is being asked?

   V – **Visualise** the situation with a sketch, number line, or table.

   E – **Estimate** and calculate what seems reasonable.

   N – **Note your reasoning** using everyday language and numbers.

Strategies to support numeracy

The U.P.S. Check Strategy

The U.P.S. Check strategy involves these steps:

U — Understand

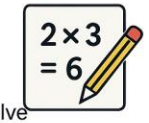
Read the problem carefully to understand what's being asked and what information is given.

P — Plan

Decide on a strategy or method to solve the problem This might involve drawing a diagram, writing an equation, or using other techniques

S — Solve

Carry out the plan and solve the problem, showing all your work



Check

Verify that the answer is reasonable and make sure it answers the original question

The CUBES Strategy

The CUBES strategy is a mnemonic (C-U-B-E-S) that helps students remember the steps involved in solving word problems.

C — Circle the numbers

Identify and circle the important numbers in the problem

U — Underline the question

Underline the question or what the problem is asking you to find

B — Box the keywords

Box the words that are key indicators of the operation to be performed (e g., "total," "sum,' "difference")

E — Eliminate extra information

Cross out any unnecessary information

S — Solve

Solve the problem using the identified information and operation

Other examples:

READS Designed to support students with estimating and evaluating.

RIDE Emphasises comprehension and strategic planning.

FAST DRAW Particularly suitable for algebra and multi-step equations.

Try it out -

Choose a strategy and give it a go. What would you need to **explicitly teach or model** for students to successfully answer this question?

(c) On average, people in Aotearoa New Zealand use about 150 litres of water per day for household purposes. The population of New Zealand is just over 5 million people.

Here is a headline from a news article:

> **DROUGHT DANGER!**
>
> **Kiwis use over 270 billion litres of water per year!**

Is the headline realistic? Explain your reasoning using the information provided in part (c).

CHALLENGE

What is one thing you could implement in the next 3 weeks?

How will you be able to check its effectiveness?

Karakia whakamutunga

Tēnei rā te whakairi ake i te kete o te wānanga,
Tōna mauri nō runga, nō Rangi, nō raro, nō Papa,
Tēnei te mauri o te mātauranga ka whakatakina ake,
Kia wātea ai ēnei pūkenga,
Hui e, tāiki e!

May we close these discussions of learning,
Whose essence is derived from both divine and earthly sources,
The life force of knowledge is reaffirmed
to allow this gathering to finish,
Forever bound!

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