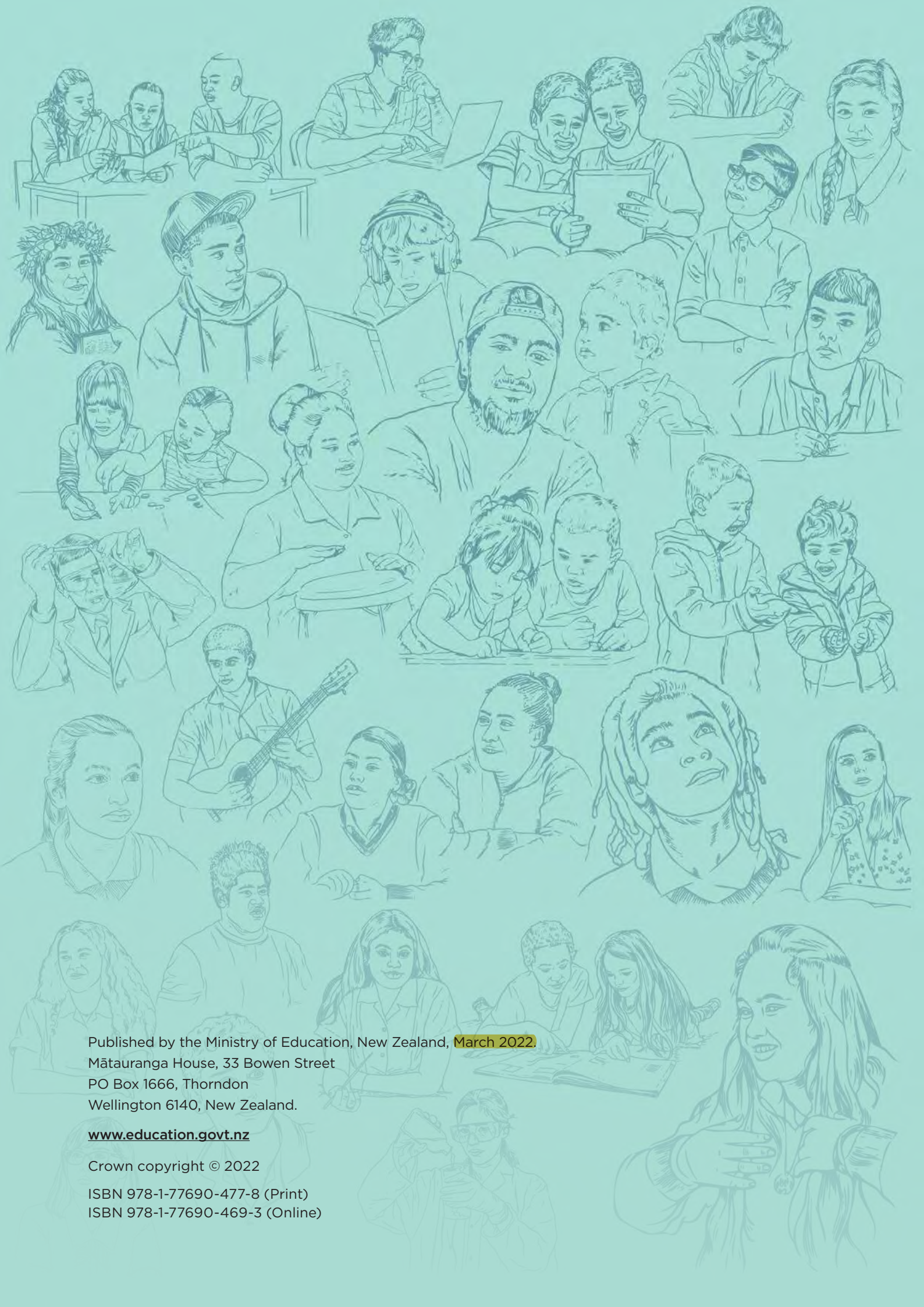


# Literacy & Communication and Maths Strategy

MARCH 2022





Published by the Ministry of Education, New Zealand, **March 2022.**

Mātauranga House, 33 Bowen Street  
PO Box 1666, Thorndon  
Wellington 6140, New Zealand.

[www.education.govt.nz](http://www.education.govt.nz)

Crown copyright © 2022

ISBN 978-1-77690-477-8 (Print)  
ISBN 978-1-77690-469-3 (Online)

# Contents

<b>Associate Minister’s foreword</b>	<b>4</b>
<b>Purpose of this strategy</b>	<b>5</b>
<b>A journey towards equity and excellence</b>	<b>8</b>
Our system has strengths, but it is not yet working for all.....	8
People are clear about what they need to be different.....	10
This strategy guides the way towards Te Pae Tawhiti.....	11
<b>Literacy &amp; Communication</b>	<b>14</b>
A strategic approach to strengthening Literacy & Communication.....	16
Overview of strategic actions for Literacy & Communication.....	18
<b>Maths</b>	<b>20</b>
A strategic approach to strengthening Maths.....	22
Overview of strategic actions for Maths.....	24
<b>Better support for kaiako and teachers</b>	<b>26</b>
<b>Teaching and learning that fits each learner and their family</b>	<b>28</b>
<b>Approach to implementation</b>	<b>30</b>
Working and learning together.....	30
<b>Understanding our impacts</b>	<b>31</b>
<b>Annex: References</b>	<b>32</b>

# Associate Minister's foreword

**Literacy & communication and maths are foundational areas of learning which are key to all learners' progress, achievement, wellbeing, and participation. They allow our children and young people to participate in learning across the curriculum from early learning through schooling; to access great education pathways; to contribute to the life of their community and country as engaged citizens; to explore and understand the world; to achieve positive health, wellbeing, and employment outcomes; and to realise the dreams and ambitions they have for their lives, communities, and nation.**

Aotearoa New Zealand is the only place where tamariki and rangatahi Māori are tangata whenua, and our population of learners is becoming increasingly diverse. As our children and young people navigate their way through the challenges and opportunities life brings up, we want them to be secure in their identities, languages, and cultures. We also want them to have the resilience and creativity needed to thrive in a rapidly changing world, to confidently navigate their digital environments, and to work together in innovative ways for a better global future.

Kaiako, teachers and leaders are doing outstanding work every day providing for the future of our learners. But, as a system, we have not yet been able to address persistent inequities for some groups of learners. Evidence also shows a long-term slide in achievement levels compared with other countries. It is time to reimagine how our early learning and schooling system supports the teaching and learning of literacy & communication and maths, so that each kaiako and teacher feels confident and each learner has every chance to experience success.

Over the coming years, this strategy will shape a cohesively designed early learning and schooling system that produces world-class literacy & communication and maths outcomes for children and young people. These are important foundational skills and when children aren't enjoying their learning, or don't feel like they're

succeeding, it can impact on their attendance and engagement. So this strategy is also about helping make early learning and schooling a place that learners want to be.

On behalf of this government, I am grateful for the open and generous involvement of all those who engaged in the process of developing this strategy. Our shared commitment to quality teaching and learning for every learner and their family is clear. This work will be progressed collaboratively with the education sector, experts, learners, families, iwi and communities as we design and implement its recommendations.

This strategy is rightfully ambitious. Progressing the teaching and learning components of the Early Learning Action Plan and refreshing *The New Zealand Curriculum* is just the beginning and there is considerable work to be done. While our goals won't be achieved overnight, we'll know we're on the right track when we begin to see a sustained improvement in learners getting the teaching and learning they need to thrive, including successfully obtaining the new NCEA co-requisites in literacy and numeracy.

As an educator, I am really excited about the opportunity ahead of us to realise a curriculum which is equitable, inclusive, and future-focused for all learners and their families. I look forward to advancing this work together as we rediscover the joy of literacy, communication and maths for our learners and for our teachers.

**Hon. Jan Tinetti**

ASSOCIATE MINISTER OF EDUCATION

# Purpose of this strategy

**Whakamaua te pae tata kia tina** – *Take hold of your potential so it becomes your reality...*

*We are descendants of explorers, discoverers and innovators who used their knowledge to traverse distant horizons. Our learning will be inclusive, equitable and connected so we progress and achieve advances for our people and their future journeys and encounters.*

**Whāia te pae tawhiti kia tata** – *Explore beyond the distant horizon and draw it near!*

The overarching vision for education reflects the important role our early learning and schooling system plays in **enabling every New Zealander to learn and excel, to help families and communities thrive, and to build a productive and sustainable economy and an open and caring society. Literacy & communication and maths<sup>i</sup> are foundational to this, which is why priority 4 of the National Education and Learning Priorities (NELP) is focussed on ensuring every learner gains these skills.**

This strategy will **guide action to shape the early learning and schooling system to deliver equity and excellence in literacy & communication and maths teaching and learning.** Learners being more successful in these foundational skills, and enjoying their learning more, will also help children and young people stay engaged in education.

Implementation of this strategy will build a cohesive teaching and learning pathway from early learning through to the end of secondary schooling, so that all learners have strong foundational skills that keep possibilities open as they transition during secondary schooling to greater specialisation and a focus on what they need to realise their aspirations and access post-school pathways.

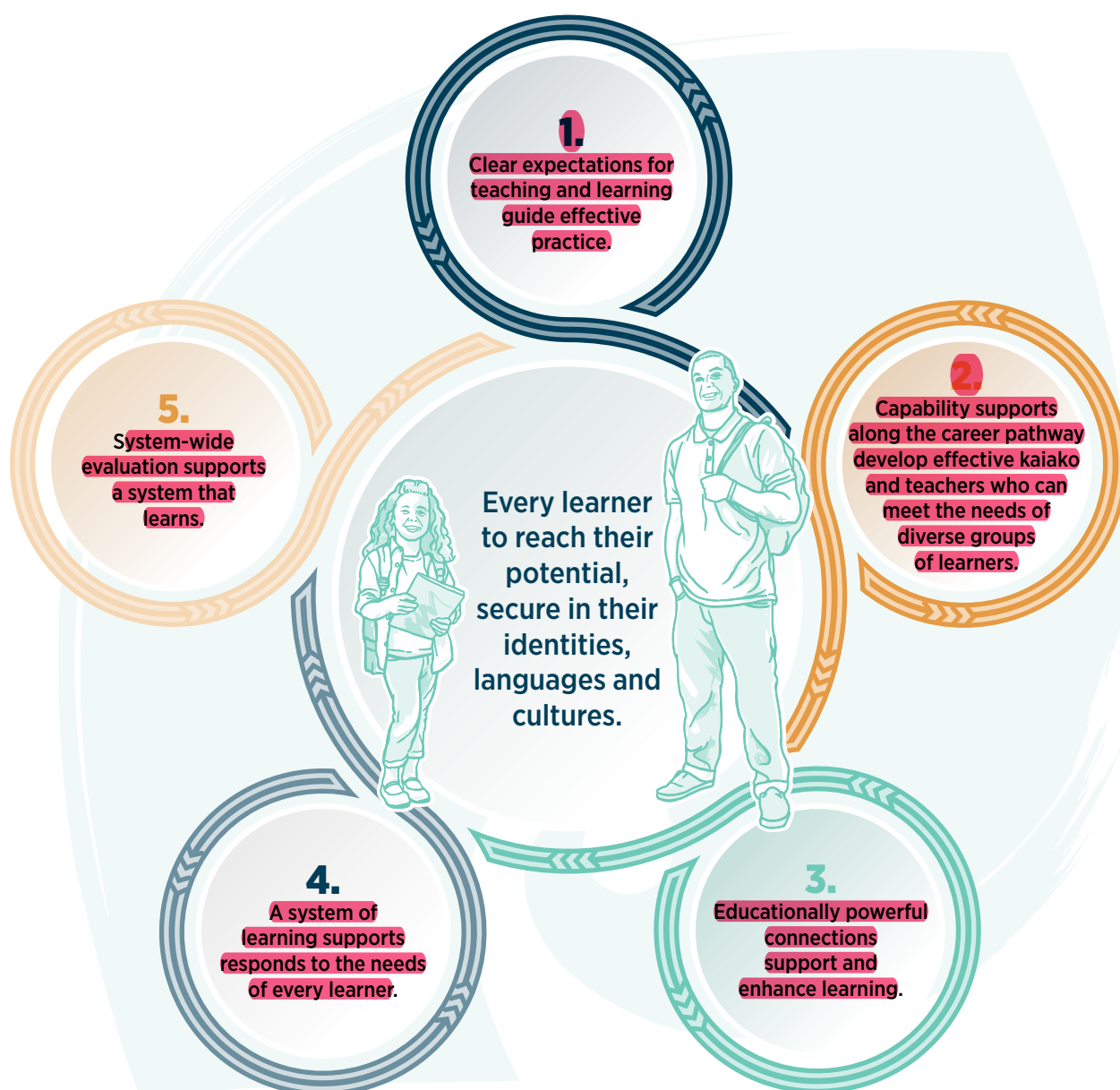
Literacy & communication and numeracy demands are inherent in all learning areas but are not currently explicit in *The New Zealand Curriculum* (2007). This strategy calls out a shift to make literacy & communication and numeracy explicit within the NZC, so that all teachers are supported to be effective teachers of these areas. It draws on a range of research and evidence, alongside conversations with groups and individuals from the education sector and wider communities, with a particular focus on those being least well served by our system.

This strategy has five interdependent focus areas (fig. 1). A combined focus on all five areas is needed to equip every early learning setting and school to provide the teaching and learning their learners and families need.



<sup>i</sup> 'Maths' is used in the strategy as an all-encompassing term to refer to the grouping of subject matter, skills, competencies, and understandings that encompass all aspects of numeracy, mathematics, and statistics.

**Fig. 1 Five focus areas of the strategy**

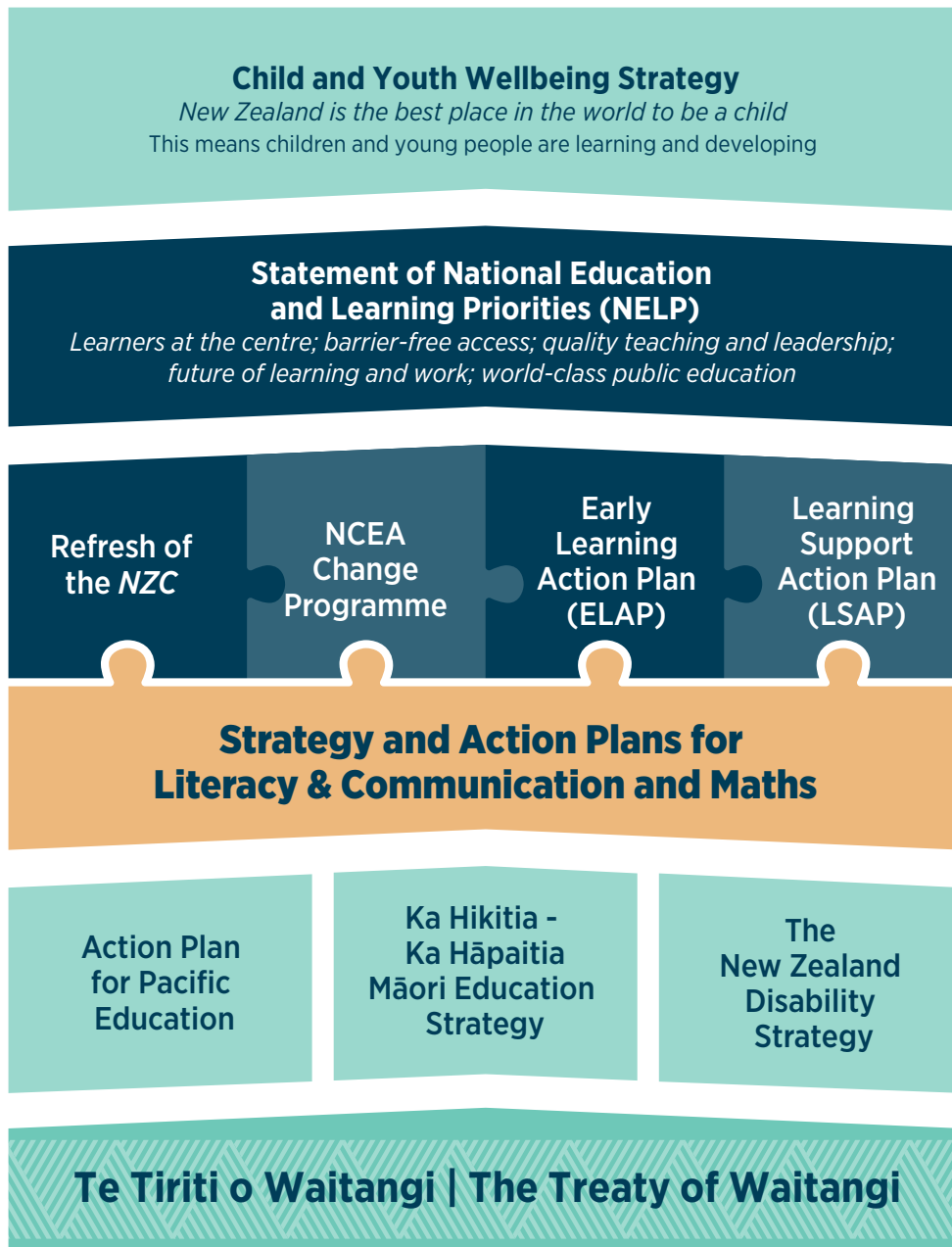


This strategy covers literacy & communication, numeracy, and mathematics & statistics teaching, learning, and assessment along the early learning and schooling pathway, as articulated in *Te Whāriki*<sup>ii</sup> and *The New Zealand Curriculum*. Many of the strategic actions needed are common across Literacy & Communication and Maths, but there are also differences so separate action plans will be developed to support delivery of this strategy.

This strategy supports and depends on other education system strategies and plans which are working together to transform education (*fig. 2*). Alongside this, wider government work is helping to address issues such as child poverty, housing, social cohesion, domestic violence, health, and wellbeing which impact on children and young people having safe and equitable opportunities for learning. Education has enormous potential to transform lives, but without also addressing these wider issues learner progress and achievement will continue to be impacted.

ii References to *Te Whāriki* in this strategy are to the He whāriki mātauranga mō ngā mokopuna o Aotearoa Early childhood curriculum pathway only. This strategy does not cover the Te Whāriki a te Kōhanga Reo pathway.

**Fig. 2 Key education system interconnections**



This strategy recognises and celebrates the diversity of learners and their families. It also recognises and celebrates the diversity of our kaiako<sup>iii</sup> and teachers, of our early learning services and schools, and of the communities they serve.

Implementation of the strategy will strive to find a good balance between national consistency and local flexibility. National consistency because every learner and their family should have a quality experience regardless of where they are learning; and every kaiako and teacher should have access

to the services, support, and leadership they need. Local flexibility because teaching, learning, services, support, and leadership need to be tailored and implemented according to individual strengths, contexts, and needs, including the aspirations of mana whenua and local communities.

A separate strategy, *Hei Raukura Mō Te Mokopuna*, has been developed for te reo matatini and pāngarau.

<sup>iii</sup> 'Kaiako' is used in this document in the same way it is used in *Te Whāriki*, i.e., it is the term for all teachers, educators and other adults, including parents in parent-led services, who have a responsibility for the care and education of children in an ECE setting. 'Teacher' is primarily used in relation to the schooling sector, but at times refers to all Registered Teachers (regardless of where in the pathway they work).

# A journey towards equity and excellence

## Our system has strengths, but it is not yet working for all

Persistent inequities and a pattern of long-term decline in achievement in English medium settings make clear that our early learning and schooling system is not yet supporting all learners to grow the literacy, communication, numeracy, mathematics, and statistics knowledge, skills and capabilities they need.

### Learners enter education settings with widely different literacy & communication and maths skills and experiences



Higher levels of reading achievement in Year 5 learners were identified when, prior to entering primary school, **parents engaged with their children in literacy & communication related activities**, such as reading books, telling stories, singing songs, playing with alphabet or word games, and reading labels and signs aloud<sup>1</sup>.



We have limited data on learner progress prior to Year 4, however, a 2020 study found only 75 percent of 4½ year old children can count to 10 – there is a **correlation between level of socioeconomic deprivation** and demonstrated ability to perform this task<sup>2</sup>. **International evidence suggests maths anxiety starts before school**<sup>3</sup>.

### Many learners experience bias and discrimination within early learning and school settings



Early learning services are more likely to **differentiate instruction or cater for differing needs based on age and ability, and less likely to cater for needs based on gender and ethnicity**<sup>4</sup>.

58 percent of schools have been recorded as intentionally promoting learning by using a home language or cultural lens to support the learner's acquisition of the English language, and to promote engagement with the learner, their parents and caregivers, and communities<sup>5</sup>.



**Learners in lower decile schools report more frequently experiencing discriminatory practices** and encountering lower academic expectations compared with students in higher decile schools<sup>6</sup>. Levels of same ability grouping for maths instruction in New Zealand primary school settings are high compared with other countries<sup>7</sup>.

### Inequity starts early and persists over time



There are learners who demonstrated high and low achievement in national and international studies across all ethnic and socio-economic groupings. However, **learners in homes with many economic resources had higher average achievement than those in homes with fewer economic resources**. The gap between literacy and numeracy achievement of learners in economically affluent schools compared with those in economically disadvantaged schools was large compared with other countries<sup>8</sup>.



Unlike achievement, **there is no clear relationship between school decile and annual progress in literacy and numeracy**. Therefore, differences in achievement by school decile observed at higher levels of primary school reflect different starting points, rather than differing progress throughout Years 4 to 8<sup>9</sup>.





Progress in International Reading Literacy Study (PIRLS) results show almost three-quarters of learners are achieving at the level they need to be on track to be literate – this means **the system is not serving over a quarter of learners well in their literacy learning**. Trends in International Mathematics and Science Study (TIMSS) results show that just over 50 percent of Year 5 and Year 9 learners are achieving at or above the level of maths they need to be on track for being numerate – this means **the system is not serving nearly half of learners well in their numeracy learning**.

### The capabilities of the education workforce and the resources, tools and guidance provided also influence the quality of literacy & communication and maths learning experiences



**Only two-thirds of primary schools teaching students in Years 1 to 3 have been identified as using reading assessment effectively.** Education Review Office (ERO) reported that just over two-thirds of schools had good or high-quality reading instruction, while just under two-thirds had good or high-quality writing instruction<sup>10</sup>.



**Only 9 percent of schools have 'highly effective' processes for gathering and using information on maths and literacy to support learning** as learners transition at the lower secondary level<sup>11</sup>.



Across both primary and secondary school level, New Zealand **teachers have a relatively low level of specialisation in maths** compared with international peers<sup>12</sup>.



Evidence suggests that many **children aren't receiving sufficient or appropriate opportunities to learn maths** and this has links to levels of teacher knowledge and confidence<sup>13</sup>.



One study found **many primary teacher trainees struggled with demonstrating the maths knowledge needed** to teach Year 7 and 8 students, and a number expressed negative views about maths<sup>14</sup>.

### Literacy & communication and maths knowledge and skills influence life outcomes into adulthood



In 2020, **67.3 percent of school leavers at decile 1 schools left with NCEA Level 2 or above, compared with 93.2 percent of school leavers at decile 10 schools**<sup>15</sup>. Adults with baseline literacy & communication skills are more likely to gain higher qualifications, be employed, have higher incomes, and report good health.



**Early achievement in maths, even more so than reading, is a strong predictor** of later academic achievement, mobility, economic success, and civic participation<sup>16</sup>.



OECD evidence on adult numeracy suggests that **one-fifth of New Zealand adults don't have minimum numeracy proficiency** to cope with the demands of everyday life<sup>17</sup>.

## People are clear about what they need to be different

Through the Education Conversation | Kōrero Mātauranga and targeted engagements on literacy & communication and maths we have heard from a wide range of people about their experiences and what they want.

Valuing of te ao Māori and authentically weaving mātauranga Māori throughout the learning journey was central to discussions, alongside the need for guidance to support, encourage, and value what children and young people already know and can do, and the diversity of languages, cultures, and identities they bring.

***‘ Education is easier when it’s family orientated, and we relate and enjoy it.’***

Learners want to learn from a curriculum that is meaningful to them and their family, with a stronger focus on identities, languages, and cultures. Parents and caregivers want more certainty about what their children will learn in schools and early learning settings. People want clarity about what learners need to learn, their progress and strengths, and the supports available to help them achieve.

***‘ Greater clarity and support for teachers so they can lift achievement.’***

Employers called for better connections between education and real-life skills and wanted to work with the education sector in partnership to foster stronger foundational maths and literacy skills. The education system also needs to better prepare learners for the shift to disciplinary literacy & communication and numeracy as part of greater specialisation in senior secondary.

***‘ There is a bigotry of low expectations [for learners with disabilities].’***

Consistent observations were made about the importance of home and school relationships, partnering with families to design education opportunities, and fostering positive mindsets towards learning. These were noted alongside the need to address the difference, systemic ableism, racism, and discrimination that exist within our education system.

***‘ Those foundation skills are not strong across the whole workforce coming out of secondary school.’***

Initial Teacher Education (ITE) was identified as needing a stronger focus on literacy & communication and maths and that educators should have access to ongoing evidence-based professional learning and development (PLD) support to ensure that learners are receiving valuable literacy & communication and maths learning experiences.

***‘ Increased requirements for entry, more consistency and a greater focus on maths within the programmes offered by Initial Teacher Education.’***

People spoke about the need for clearer, broader definitions of literacy and numeracy that enable learners to easily transition along the whole learning pathway. In addition, there was a call for learners to have access to highly skilled and knowledgeable kaiako and teachers. This supported the feedback that leaders, teachers, and kaiako want greater direction from Te Tāhuhu | the Ministry on effective teaching practices and curriculum resources, guidance, and tools.

***‘ It would help to have evidence-based national literacy guidelines that provide for diverse needs and promote clear teaching, learning and assessment approaches.’***

A more comprehensive summary of the insights and evidence that have informed this strategy is available on the Te Tāhuhu o te Mātauranga | Ministry of Education website: *Insights that informed the Literacy & Communication and Maths Strategy*: [www.education.govt.nz/literacy-and-communication-and-maths-strategy](http://www.education.govt.nz/literacy-and-communication-and-maths-strategy)

## This strategy guides the way towards Te Pae Tawhiti

The education system vision references Te Pae Tawhiti as the distant horizon to strive for. Making progress requires clarity on where we are and what we want to move towards. Looking through the lens of the five focus areas of this strategy, there are key signposts for the journey which will guide supporting action plans.

Strategic actions	Current state	Where we are heading
Literacy & Communication (LC) Maths (M)	<b>FOCUS AREA 1: Clear expectations for teaching and learning guide effective practice</b>	
LC1.1 M1.1	The NZC lacks sufficient clarity and detail on the literacy & communication and numeracy learning needed for the demands of 21st century life.	Everyone understands and works towards literacy & communication and numeracy learning that equips learners with the knowledge and skills needed for success in the 21st century.
LC1.2, 1.3 M1.2, 1.3	The system is not providing kaiako and teachers with the clarity they need to gauge what progress looks like in literacy & communication and maths and how best to support it, so they can be confident they are focussing their teaching on the right things at the right time along the pathway.	Kaiako and teachers use evidence-based practices and tools that provide clarity and examples of the sequence of growth and progress along the pathway, and help them identify what learners need as learning progresses.
LC1.4 M1.4	There is uncertainty about the most effective teaching approaches to meet the needs of diverse learners, and harmful streaming and grouping practices persist in the system <sup>18,19</sup> . Advice is accessed from multiple sources and can be conflicting or not reflect the full range of current evidence.	Everyone uses an agreed and widely understood common practice model which provides clear, coherent, evidence-informed guidance on how to effectively teach literacy & communication and maths along the pathway.
LC1.5	Aotearoa New Zealand's cultural and linguistic diversity is growing, yet bilingual and multilingual children and young people are not well-supported in their learning.	Linguistically diverse learners enjoy success and fully participate in all learning areas along the pathway because kaiako and teachers understand and use effective approaches to provide for their needs.
M1.5	Many children and young people are not getting sufficient opportunity to learn the maths that would help them succeed.	Learners are provided with enough learning time to develop the maths they need.
<b>FOCUS AREA 2: Capability supports along the career pathway develop effective kaiako and teachers who can meet the needs of diverse groups of learners</b>		
LC2.1 M2.1	Evidence-based practice isn't being consistently embedded across the system, limiting the growth and spread of knowledge about effective teaching, learning, and assessment.	Literacy & communication and maths leadership and expertise within education settings, regionally and nationally is connected and builds shared understanding of effective approaches.
LC2.2 M2.2	PLD is not having the impact it needs to on growing kaiako and teachers who are confident and proficient in effective literacy & communication and maths teaching, learning, and assessment.	A coherent system of capability building supports and training opportunities, aligned with a common practice model, responds to the needs of individual kaiako and teachers to develop their practice throughout their careers.

Strategic actions	Current state	Where we are heading
LC2.3 M2.3	ITE is not consistently producing teachers with the evidence-based literacy & communication and maths knowledge, skills and teaching capabilities they need to be successful in their practice.	ITE and professional standards reflect an evidence-based common practice model so that teachers are consistently well-equipped with what they need to know and use when they graduate and throughout their careers.
M2.4 M2.5	Aotearoa New Zealand's teaching workforce has relatively low levels of specialisation in maths compared with international peers, and it is challenging to recruit and retain sufficient people with maths expertise.	More teachers with maths-rich backgrounds in the workforce have access to rewarding career pathways, including specialist roles with a deep understanding of how to improve learning progress (including responding to neurodiversity).
<b>FOCUS AREA 3: Educationally powerful connections support and enhance learning</b>		
LC3.1 M3.1	Many parents and caregivers want more clarity about how to support their children with literacy & communication and maths learning along the pathway.	Parents and caregivers feel confident supporting their children's learning progress, including through reading for pleasure and using maths in everyday life.
LC3.2 M3.2	Learners and their families aren't always well-supported to make subject choices at secondary school that develop the literacy and maths needed to achieve pathway and career aspirations.	Learners and their families make secondary subject choices that enable learners to, pursue the diverse and exciting literacy and maths-rich careers available.
LC3.3 M3.3	Many parents and caregivers do not experience ongoing, reciprocal, and timely communication about learners' progress.	Reporting is accessible, relevant, and meaningful, helping parents and caregivers engage with kaiako and teachers to enhance learner enjoyment and progress.
LC3.4 M3.4	Moving between different educational settings can impact literacy & communication and maths learning progress.	Learners and their families experience seamless and positive transitions which sustain literacy & communication and maths learning progress.
LC3.5	There is a lack of connection and coherence across community-based literacy & communication approaches and resources.	There is an engaging literacy & communication culture in communities that is connected to curriculum learning and promotes wellbeing and engagement.
M3.5	The significant impact of maths education on the life course is not widely understood.	People are more aware of the critical role of numeracy in supporting wellbeing, agency, and civic participation, and of the opportunities provided by diverse maths-rich career pathways.

Strategic actions	Current state	Where we are heading
<b>FOCUS AREA 4: A system of learning supports responds to the needs of every learner.</b>		
LC4.1 M4.1	Learners are not consistently provided access to additional support when they need it – needs can be missed, and supports are often not accessible or timely.	Learners needing additional support in literacy & communication and maths are identified promptly and get what they need to learn and progress along the pathway.
LC4.2 M4.2	Literacy & communication and maths supports along the pathway do not always meet the specific needs of learners.	Tailored and individualised additional supports meet the diversity of learner needs.
LC4.3	There is inequitable access to literacy & communication supports that recognise learner neurodiversity.	Children and young people across the spectrum of neurodiversity receive targeted, evidence-based, and easy-to-access supports which enhance their literacy & communication learning.
<b>FOCUS AREA 5: System-wide evaluation supports a system that learns</b>		
LC5.1 M5.1	Assessment is often disconnected from teaching and learning, and there is wide variation in the assessment tools schools use and the ways these are implemented and interpreted.	Assessment practices and tools provide useful, common insights which support transitions; enable kaiako and teachers to notice and respond to learners' progress; and create shared understanding of the progress pathway.
LC5.2 M5.3	Evaluation and monitoring to understand the impact of supports and initiatives in literacy & communication and maths is ad hoc.	A systematic approach to information-gathering (identifying what works, for whom, and why) informs continuous improvement.
M5.2	The evidence base to inform maths teaching, learning, and assessment along the pathway is under-developed.	Strong partnerships between Te Poutāhū, the Curriculum Centre, and maths education experts grow our knowledge about effective maths teaching and learning.

**It is time for a transformation in literacy & communication and maths education and this strategy recommends the key changes to improve outcomes for all learners. We now have a clear view of the strengths in the early learning and schooling system on which we will build, and also where the gaps and challenges lie. We understand how changes must be coordinated and connected if they are to result in a sustained system shift.**

There is much expertise in literacy & communication and maths education across the sector, academics, and private providers. A Ministry that provides stronger curriculum stewardship can build the connections needed, leveraging expertise to enhance learning outcomes across learning areas and subject disciplines along the schooling pathway.

A clear theme across the research is that no one, single change can deliver the system transformation we need. This strategy describes interdependent shifts that will guide us towards Te Pae Tawhiti – providing excellent and equitable education outcomes for all learners.

# Literacy & Communication

---



This strategy emphasises communication alongside literacy, as both are fundamental to realising the vision of *Te Whāriki* and *The New Zealand Curriculum* for every learner. Taking a wider view of literacy to include oral language<sup>iv</sup>, speaking, listening, viewing, presenting, and digital literacy alongside reading and writing will help ensure that every learner has the foundational knowledge and skills required along the whole pathway and that contribute to lifelong wellbeing. Being literate in Aotearoa New Zealand today involves an understanding of diverse cultural perspectives, privileging te ao Māori and Pacific worldviews.

In this strategy we describe literacy & communication in the following ways<sup>20</sup>:

- » **Generic literacy & communication** knowledge and skills underpin and contribute to developing the complex language needed for advanced interpretation and expression of meaning across an increasingly diverse range of oral, visual, and written narrative and informational texts, digital and otherwise.
- » **Content-specific literacy & communication** refers to the literacy skills and knowledge necessary for each curriculum learning area. This is not just the technical and specialist language of those areas, but also the approaches and ways of using language across different curriculum areas, e.g., ‘reading critically’ in English has similarities and differences from what counts as ‘reading critically’ in Science or History.

The strategy actively recognises the importance of **digital literacy**, which refers to the ability to effectively and critically interpret, manage, and create meaning through a range of evolving digital communication channels<sup>21</sup>. This includes the operational skills to retrieve and understand information on the internet, and create and share quality content online. These skills are essential for children and young people to act as critically engaged citizens, as they continue to transition along the pathway.

Each of the modes provides different possibilities for how meaning can be created and understood, and in combination provide learners with the opportunity to respond to and produce multimodal texts in varied forms.

As children move through primary school and progress along the learning pathway, the emphasis shifts from developing generic literacy & communication knowledge and skills to using and applying them alongside content-specific literacy & communication across all curriculum learning areas and into the more specialised, disciplinary areas of study through to Year 13.

In *Te Whāriki* (2017), early learning is organised around the five strands of Wellbeing | Mana atua; Belonging | Mana whenua; Contribution | Mana tangata; Communication | Mana reo; and Exploration | Mana aotūroa. Literacy is woven throughout aspects of all five strands, and specifically in the Communication | Mana reo strand. *Te Whāriki* encourages a holistic view of literacy where infants, toddlers and young children build rich oral language foundations and engage with literacy in ways that reflect their growing expertise and incorporate their home literacy practices.

In *The New Zealand Curriculum* (2007), literacy is structured around two interconnected strands that encompass the oral, written, and visual forms of the language, and are woven through all learning areas. They differentiate between the modes where learners:

- » Make meaning of ideas or information they receive (listening, reading, and viewing); and
- » Create meaning for themselves or others (speaking, writing, and presenting).

<sup>iv</sup> Oral language encompasses any method of communication used as a first language, including New Zealand Sign Language and other approaches used to replace or augment speech (such as Communication Assistive Technology or Augmentative Alternative Communication). This recognises that every learner is in scope of this strategy and that people make and create meaning in a variety of ways.

## A strategic approach to strengthening Literacy & Communication

Our children and young people live in a rapidly changing, highly connected, and digitally advanced world, presenting them with amazing opportunities as well as new challenges. To participate successfully in this world now and into the future, strong foundations in communication, critical thinking, and visual literacy are essential. Literacy & communication develop curiosity and creativity, bring joy and ignite passions, and provide ways for every learner to interact with a wide range of people, building empathy and understanding across experiences and cultures.

Literacy & communication allow children and young people to fully participate in learning opportunities across the curriculum, access great education opportunities, achieve positive employment outcomes, and realise their aspirations for their lives. Currently, there are key issues in our early learning and school system which impact literacy & communication engagement, progress, and achievement.

Evidence identifies declining literacy achievement levels and inequities which have persisted for the same groups of learners for many years. We also know information about the performance of the system is currently lacking, making it hard to evaluate the impact of initiatives in place to support literacy & communication teaching and learning.

A transformational system-wide shift is required to prepare learners with the literacy & communication knowledge and skills which will allow them to thrive and make meaning in their environments and the wider world. The Literacy & Communication Strategy aims to strengthen and future-proof the early learning and schooling system for the next generations and provide learners with the critical and creative literacy & communication skills they need going forward into adulthood.

We now have much more evidence of how learners acquire and consolidate their literacy & communication learning, and the teaching approaches proven effective in enhancing progress and equity.

This strategy presents a coherent and sustainable system of supports for literacy & communication, spanning from early learning to the end of schooling. We identify approaches that will enable the system to provide the right amount and type of support to learners when they need it. To fully realise the strategy recommendations, we will collaborate with all groups involved in both the national and local parts of the early learning and schooling system, and those who are affected, including learners and their families. The design work will be enriched by input from a wide range of people with diverse backgrounds and lived experiences.

***‘ Literacy skills are key to ensuring that children and young people can access curriculum content, progress, and achieve in all learning areas, and are equipped for life after school.’***

— Shifting the Dial on Literacy<sup>22</sup>.

The strategy builds on a life course approach, acknowledging the building blocks required along the whole pathway that contribute to lifelong wellbeing. It takes a wider view of literacy than the traditional focus on reading and writing, because we know literacy is about more than this. Equal importance must be placed on oral language, speaking, listening, viewing, presenting, and the interdependencies between them, as well as digital literacy if we are to prepare learners with what they need.



Both literacy & communication are fundamental to realising the vision of *Te Whāriki* and *The New Zealand Curriculum*. We propose extending the oral language and early literacy learning and development reflected in the Communication | Mana reo strand in *Te Whāriki* to provide a coherent and cumulative literacy framework along the whole pathway.

We plan to build on the strengths in our early learning and schooling system and the commitment of kaiako, teachers, and leaders to do the best for their learners. We will also draw

on the richness of te ao Māori and the cultural and linguistic diversity present in our schools, early learning settings, and communities to support learners' identities, languages, and cultures.

The strategy recommends authentically weaving mātauranga Māori into all resources, guidance, and tools. It also highlights how we will develop a system which is more consistent and responsive, where evaluation and monitoring inform timely responses to better support learners and their families, kaiako and teachers.



# Overview of strategic actions for Literacy & Communication<sup>v</sup>

## FOCUS AREA 1

**1.1** Refresh literacy learning in the NZC, including strengthening communication and digital literacy.

**1.2** Replace the Learning Progression Frameworks and Literacy Learning Progressions with one progression for schooling that shows the sequence of learning for literacy & communication.

**1.3** Develop resources and guidance to help kaiako understand and attend to children's progress in oral language and literacy in the early years, as part of a common practice model.

**1.4** Develop guidance on how to teach literacy & communication in schooling, as part of a common practice model.

**1.5** Develop resources, guidance and tools to support literacy & communication learning for culturally and linguistically diverse learners.

## FOCUS AREA 5

**5.1** Review and develop a coherent suite of assessment tools for schooling.

**5.2** Build an evaluation strategy to monitor the effectiveness of implementation actions and make evidence-based adjustments to future-proof the system.

## FOCUS AREA 4

**4.1** Build a system of 'safety nets' for learners along the schooling pathway.

**4.2** Review, develop and adapt additional literacy & communication supports along the whole learning pathway, ensuring they are aligned to the common practice model.

**4.3** Develop evidence-based supports that recognise learner neurodiversity (e.g., dyslexia, dysgraphia, dyspraxia, gifted).

**1.**  
Clear expectations for teaching and learning guide effective practice.

**5.**  
System-wide evaluation supports a system that learns.

Every learner to reach their potential, secure in their identities, languages and cultures.

**4.**  
A system of learning supports responds to the needs of every learner.

<sup>v</sup> A detailed action plan is being developed. Note that the timing of some actions will be dependent on future funding and policy decisions.



**2.**  
Capability supports  
along the career pathway  
develop effective kaiako  
and teachers who can  
meet the needs of  
diverse groups  
of learners.

**3.**  
Educationally powerful  
connections  
support and  
enhance learning.

## FOCUS AREA 2

**2.1** Develop and strengthen curriculum leadership for literacy & communication at three key system levels: national, regional and in learning settings.

**2.2** Design and develop professional learning for the workforce that is targeted, flexible and aligned with the common practice model.

**2.3** Incorporate the common practice model into approaches for teaching, assessment and learning used by all ITE providers.

## FOCUS AREA 3

**3.1** Support early learning services and schools to work with families, iwi and communities, in culturally sustaining ways, to enrich children's literacy & communication learning.

**3.2** Make clear the literacy & communication capabilities required for different pathways and careers.

**3.3** Develop resources, guidance and tools to support education settings report to parents and caregivers on how their children are progressing as part of a record of learning.

**3.4** Support positive transitions for learners and families, across and within settings.

**3.5** Consolidate a partnership with the National Library to extend literacy & communication engagement and learning.

# Maths



---

**The full name of the ‘maths’ component of this strategy is the Mathematics & Statistics, including Numeracy Strategy. In this strategy, for ease of reading, ‘maths’ is used as an all-encompassing term to refer to the grouping of subject matter, skills, competencies, and understandings that encompass all aspects of numeracy, mathematics, and statistics.**

Statistics’ is now commonly regarded as a distinct mathematical science, as opposed to a branch of mathematics, therefore, the learning area of *The New Zealand Curriculum* (2007) is called Mathematics & Statistics.

There is no single agreed definition of ‘numeracy’ and often people assume it simply means ‘number sense’. An unintended consequence of the Numeracy Development Project was that it compounded the association of numeracy with number by focussing on the ‘number’ part of the ‘Number and Algebra’ strand of the NZC Mathematics & Statistics learning area.

This strategy defines numeracy as encompassing the knowledge, skills and behaviours that are needed to be able use mathematics and statistics purposefully in a wide range of situations including real-life contexts. Learners become numerate as they develop their ability to apply mathematical and statistical knowledge and skills purposefully across all learning areas and in their lives to achieve their goals. Being numerate in Aotearoa New Zealand today involves an understanding of diverse cultural perspectives, privileging te ao Māori and Pacific worldviews.

Independent advice from the Royal Society Te Apārangi highlighted the importance of numeracy reflecting the skills and knowledge adults need to succeed in work, life, and citizenship in the 21st Century<sup>23</sup>. The strategy describes the functional numeracy necessary to support wellbeing, agency and citizenship as ‘critical numeracy’.

As children move through primary school and progress along the education pathway, the emphasis of numeracy learning shifts from the numeracy in their real-life contexts to the numeracy demands of subject-specific contexts.

The recommendations in the strategy aim to support all kaiako and teachers to see themselves as teachers of numeracy, and to give them the tools and support they need to develop learners’ numeracy in all learning areas and subjects across the NZC. Numeracy learning will also support learners to further their own goals and aspirations.

*Te Whāriki* and the NZC do not distinguish between numeracy learning and the learning of mathematics and statistics. In *Te Whāriki*, numeracy, mathematics, and statistics are woven mainly throughout the Communication | Mana reo and Exploration | Mana aotūroa strands, but feature to some degree in all five strands. In the NZC, numeracy, mathematics, and statistics learning is currently described within the Mathematics & Statistics learning area. The refresh of the NZC will make numeracy explicit across all learning areas of the curriculum.

## A strategic approach to strengthening Maths

Faced with a rapidly changing technology and employment landscape, and a complex ever-expanding world of data, the numeracy demands on young people are steadily increasing. Nationally and globally, the demand for people with advanced knowledge and skills in maths is higher than the supply of qualified potential employees. Maths develops learners' ability to think creatively, critically, strategically, and logically. The curriculum supports the development of important skills such as problem solving, logic, deductive and inductive reasoning, abstraction, spatial reasoning, creative thinking, and communication, as well as ways to think about data, information, and living with uncertainty.

Maths allows children and young people to fully participate in learning opportunities across the curriculum, access great education opportunities, achieve positive employment outcomes, and realise their aspirations for their lives. Unfortunately, in our current state too many young people aren't being sufficiently supported to develop the critical numeracy needed to participate fully in society, have agency in their lives, and feel well-prepared to pursue maths-rich education and career pathways.

Evidence tells us there is wide variation of maths learning in early learning settings, and that children often arrive at school with very different starting points. Variation in opportunities to learn continues into schooling, and inequities in achievement appear early and persist along the pathway. Analysis from international and national assessments shows many learners are not getting the teaching and learning they need to progress in line with the current curriculum. Evidence provided by the Royal Society Te Apārangi indicates that this is mainly due to the lack of opportunities to learn, as opposed to content that is too demanding. Learners are capable of much more than we currently expect of them in early learning and junior primary.

Faced with the challenges presented in our current state, the pressure on kaiako and teachers to get it right can feel overwhelming, and lead to variation in approaches to teaching maths. In some cases, it can lead to reliance on harmful streaming and grouping practices when teachers don't feel sufficiently supported to meet diverse learner needs in classes. It can prompt schools to turn to private providers, who tend to champion

one approach over others. Binary mindsets (a sense that there are clear right and wrong ways to teach maths) can limit the range of practices used, which in turn impacts the full range of learning experiences that should comprise a rich, complete maths education. When learners experience only one approach to maths learning, they potentially miss out on the variety of learning experiences that could contribute to deeper understanding.

***' Mathematics and statistics are more relevant and important than ever, and Aotearoa New Zealand needs citizens with well-developed mathematical and statistical skills for the positive work and life outcomes they confer, and the opportunities they present to engage effectively in our democracy.'***

— Royal Society Te Apārangi report on Mathematics and Statistics<sup>23</sup>.

Limited curriculum leadership has sometimes allowed narrow solutions to take hold. The approaches championed are evidence-informed and sound, however, integrating different approaches and offering learners a broader range of maths learning experiences will better meet the needs of learners. Kaiako and teachers told us they want to see increased guidance and support. More certainty on proven effective approaches to maths teaching and learning will build confidence and enjoyment. Curriculum stewardship is also needed to provide guidance on a range of effective and culturally sustaining teaching practices, foregrounding approaches shown to work for ākonga Māori and Pacific learners.

We have seen and heard from evidence and engagement with New Zealanders that too many learners are not finding their maths learning relevant or engaging. There is an opportunity to make maths learning enjoyable, aligned with learners' aspirations and interests, and connected to the funds of knowledge they bring from their own cultures and backgrounds. Curriculum, teaching practices, and supports in maths must adapt and respond to an increasingly culturally and linguistically diverse population.

While most New Zealanders likely consider maths knowledge and skills important for our economy and valuable in broader society, many kaiako, teachers and learners have encountered views like 'I was never any good at maths', or 'I always hated maths', or 'What's the point of maths?'. These societal perceptions can have a profound impact on maths learning, and we recommend they are addressed through a national campaign to raise the profile and value of critical numeracy and promote the opportunities provided by maths-rich pathways.



# Overview of strategic actions for Maths<sup>vi</sup>

## FOCUS AREA 1

**1.1** Refresh maths learning described in the NZC.

**1.2** Replace the Learning Progression Framework with a progression for schooling that shows the sequence of learning for numeracy.

**1.3** Develop resources and guidance to help kaiako understand children's progress in numeracy in the early years, as part of a common practice model.

**1.4** Develop guidance on how to teach maths in schooling, as part of a common practice model.

**1.5** Safeguard maths teaching and learning time.

## FOCUS AREA 5

**5.1** Review and develop a coherent suite of assessment tools for schooling.

**5.2** Build an evaluation strategy to monitor the effectiveness of implementation actions and make evidence-based adjustments to future-proof the system.

**5.3** Develop an ongoing evidence base for maths teaching, learning and assessment along the pathway.

## FOCUS AREA 4

**4.1** Build a system of 'safety nets' for learners along the schooling pathway.

**4.2** Design and develop additional maths supports along the whole learning pathway, ensuring they are aligned to the common practice model.

**1.**  
Clear expectations for teaching and learning guide effective practice.

**5.**  
System-wide evaluation supports a system that learns.

Every learner to reach their potential, secure in their identities, languages and cultures.

**4.**  
A system of learning supports responds to the needs of every learner.

<sup>vi</sup> A detailed action plan is being developed. Note that the timing of some actions will be dependent on future funding and policy decisions.



## FOCUS AREA 2

**2.1** Develop and strengthen curriculum leadership for maths at three key system levels: national, regional and in learning settings.

**2.2** Design and develop professional learning for the workforce that is targeted, flexible and aligned with the common practice model.

**2.3** Incorporate the common practice model into approaches for teaching, assessment and learning used by all ITE providers.

**2.4** Develop a maths specialist workforce with expertise in delivering targeted and individualised support to learners who need it, including neurodivergent learners (e.g., dyscalculia, dyslexia, dyspraxia, gifted).

**2.5** Attract and grow the future workforce of maths teachers through incentives, training and improved career pathways.

**2.**

Capability supports along the career pathway develop effective kaiako and teachers who can meet the needs of diverse groups of learners.

**3.**

Educationally powerful connections support and enhance learning.

## FOCUS AREA 3

**3.1** Support early learning services and schools to work with families, iwi and communities, in culturally sustaining ways, to enrich children's maths learning.

**3.2** Make clear the capabilities required of a multitude of maths-rich pathways and careers.

**3.3** Develop resources, guidance and tools to support education settings report to parents and caregivers on how their children are progressing as part of a record of learning.

**3.4** Support positive transitions for learners and families, across and within settings.

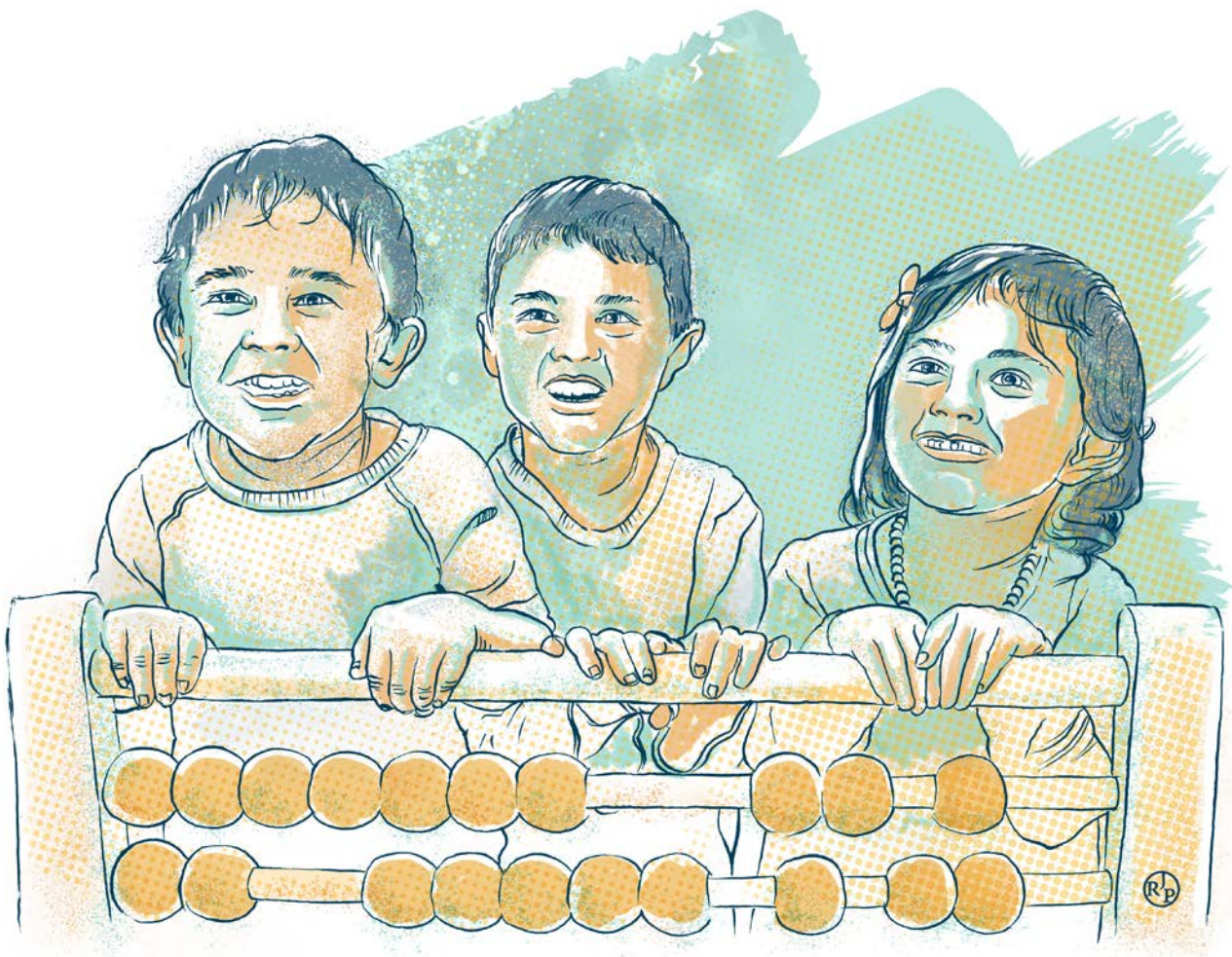
**3.5** Raise public awareness of the critical importance of numeracy and the opportunities maths-rich pathways provide.

# Better support for kaiako and teachers

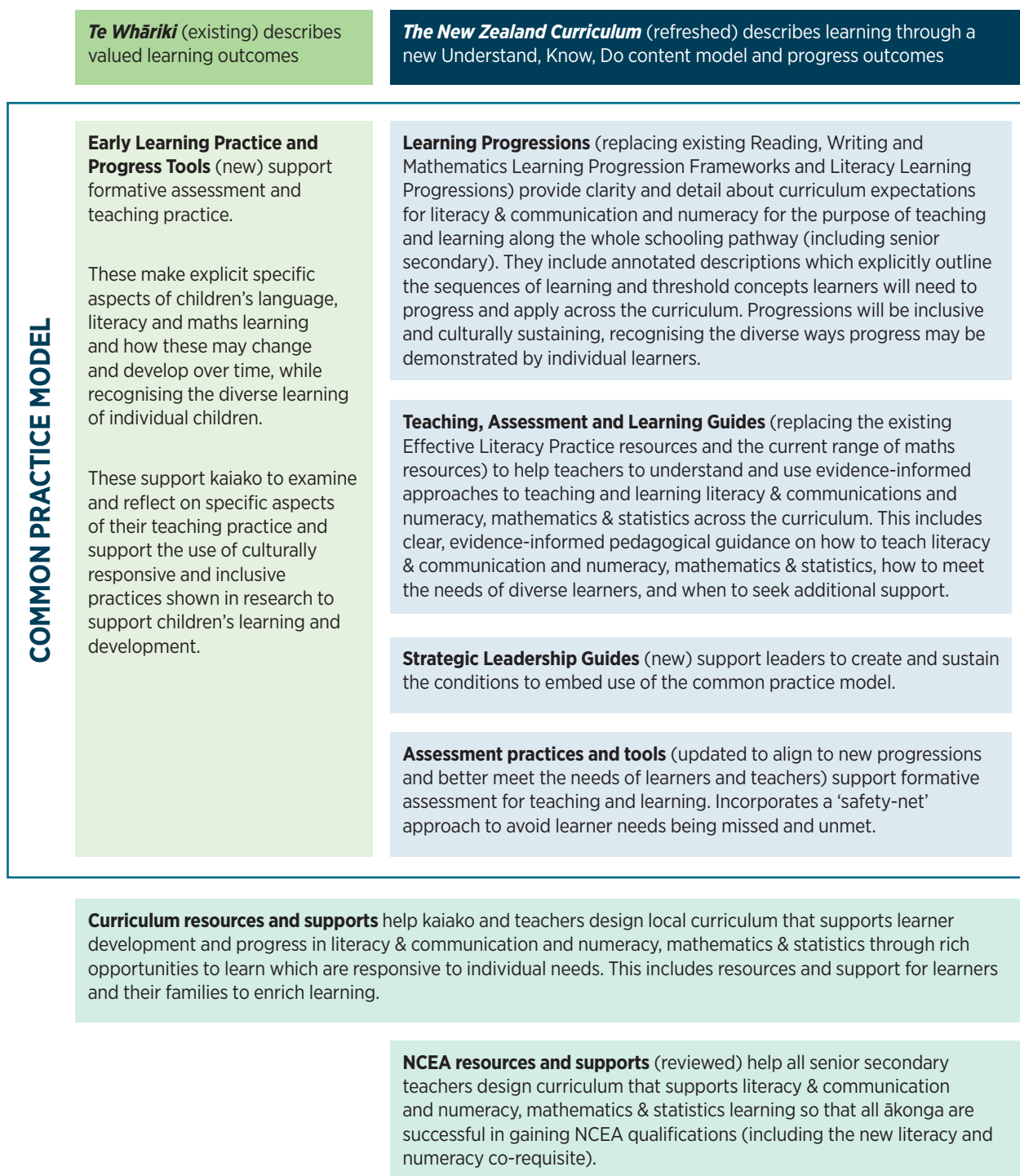
Ultimately, the success of this strategy depends on kaiako and teachers feeling confident in their practice and the decisions they make every day in the best interests of their learners. People have told us that they don't feel there has been enough leadership, guidance, and support from central government.

The introduction of Te Mahau, which includes Te Poutāhū (the Curriculum Centre) and a strong curriculum frontline, is a commitment to changing that. Through the implementation of this strategy, a common practice model approach, aligned to *Te Whāriki* and the refreshed *New Zealand Curriculum*, will be introduced to create greater coherence and consistency in teaching and learning practices for literacy & communication and maths across the education system (fig. 3).

This will underpin Initial Teacher Education and be embedded across a range of self-directed, guided and supported services provided by Te Poutāhū and through professional networks. This will help grow the self-awareness, connection, knowledge, and competency of kaiako and teachers throughout their careers.



**Fig. 3 Common practice model approach**



Feedback loops, evaluation and research will inform improvements to the curriculum, common practice model and services over time, so that all kaiako and teachers, and every learner, benefits from our growing understanding of what works for whom, when, and in what contexts along the full learning pathway.

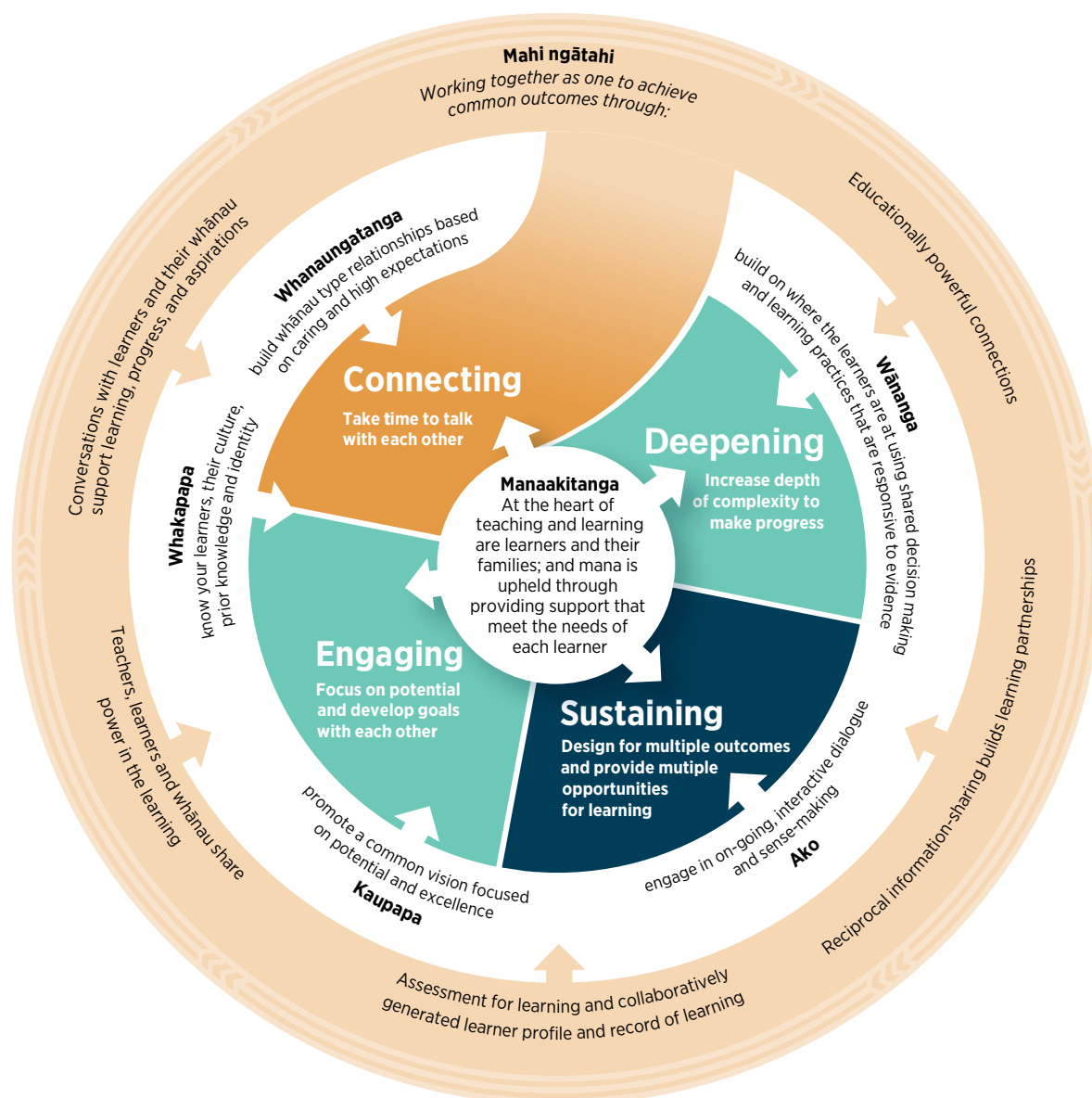
# Teaching and learning that fits each learner and their family

Learning and wellbeing outcomes for children and young people are improved when there is quality teaching and learning within education settings; all learners are welcomed; their diverse strengths and needs are recognised and valued; and their learning and wellbeing are planned for with them and their families, and implemented in responsive and adaptive ways.

We also know that learners are better able to realise their full potential when parents, caregivers, families, iwi, and communities are meaningfully

connected to their children's education and working in partnership with kaiako and teachers to design and enhance learning (fig. 4)<sup>vii</sup>.

**Fig. 4 Mana-enhancing teaching and learning experiences**



vii Inspiration has been provided by ERO's School Evaluation Indicators (2016), which draws on scholarship by M. Berryman, R. Bishop, et. al. on culturally responsive learning that promotes equitable outcomes for all learners.

These approaches will be embedded in, and supported by, the common practice model as they are foundational to making a difference for learners and families whose needs aren't currently being well met. This focus on quality teaching practice sits alongside other actions to create educationally powerful connections and recognise that learning happens everywhere.

The intention of this strategy is that more learners will have more of their needs met 'as the norm', as part of an inclusive curriculum. Teaching and learning will be designed from the outset to fit the needs of all learners – not because it is one-size-fits-all, but because it recognises and allows for the uniqueness and diverse needs of all learners, taking into account intersecting needs, for example those of disabled Māori.

There will always be some learners who need additional support, whether that is one-off or ongoing and sometimes unique to them. The number of learners needing additional support is greater at the moment because we aren't yet consistently identifying, and meeting, needs early enough. An inconsistent understanding of, and capability to deliver, inclusive curriculum also means that too often learners' needs are being addressed as an 'add on', rather than within the main teaching and learning programme.

When learners do need additional layers of support, there is currently inconsistency in whether that need is identified, and there is also inconsistency in whether each learner gets access to the right supports at the right time to sustain their learning and wellbeing. Some of this is about decisions made by individuals in our highly devolved system, and some of it is about constraints in what is available (e.g., some services are not available for some parts of the learner pathway, or not available in some settings, and there are limited additional supports for maths).

Learners need to get the right support for their needs, regardless of where they are learning or what stage of the pathway they are at. Over time, implementation of this strategy will put in place a more effective system for additional literacy & communication and maths support along the whole learning pathway. This includes having a mix of services available, designed, and allocated to maximise reach and impact, as well as flexibility for iwi-led or other locally designed responses.

A 'safety net' approach will make sure learners get the supports they need, and it will be clear to all what services are available and when they should be used.



# Approach to implementation

## Working and learning together

This strategy is built on a learning-focussed collaborative approach to curriculum improvement. This is summarised in the document [\*Insights that informed the Literacy & Communication and Maths Strategy\*](#) available on the Ministry of Education's website, and its implementation will strengthen our ability to work together as 'a system that learns', so that the aspirations of our national curriculum become the experience of all learners and their families.

The success of this strategy requires a commitment to working together in mana-enhancing ways as further policy and design work is progressed and new and improved supports move into implementation. As with the development of this strategy, there needs to be a particular and deliberate focus on those who are being under-served by our early learning and schooling system – particularly ākonga Māori and their whānau, Pacific learners and families, and disabled people and their families.

This strategy recognises that effective change and implementation is something we have long struggled with. Designing things with people to meet the range of needs in the system will be important and help create the trust conditions needed for change. Implementation of the strategy will also involve local action and responses, led by places of learning, regional networks, iwi, hapū, mana whenua and local communities throughout Aotearoa New Zealand.

Implementation of the strategy will take a phased approach and changes will not all happen at

once. Actions will be progressed over time, and in partnership with the education community. Some changes, such as the development of tools and guidance for *Te Whāriki* and the refresh of *The New Zealand Curriculum* are already underway. Separate action plans for Literacy & Communications and for Maths will be developed. Note that the timing of some actions will be dependent on future funding and policy decisions.

This strategy also includes a deliberate focus on actions that will help create the conditions for effective change and implementation. This includes creating connected and coherent leadership across the system (in places of learning, in regions, and nationally), a commitment to giving kaiako, teachers, mana whenua, and communities time and support to understand and integrate change, and timely feedback loops so that we can adapt and adjust as we go to better meet people's needs. The success of this strategy will depend on the quality of our relationships, and a shared commitment to doing better together for all learners and their families.

# Understanding our impacts

**Ultimately, the success of this strategy will be borne out in the lives of learners and in national and international studies showing that the equity gap is closing and that long-term trends are tracking upwards towards excellence for all. There should no longer be large numbers of learners at risk of not obtaining the NCEA literacy and numeracy co-requisite.**

The introduction of the NCEA numeracy and literacy co-requisite will provide information to assess the impact of some aspects of this strategy. It is, however, late in the pathway and national and international studies do not provide sufficient information earlier in the learner pathway in a timely way. This limits our ability to understand impacts along the whole learning pathway and whether the course of action should be sustained or adjusted.

For this reason, implementation of this strategy includes a focus on putting in place the feedback loops, evaluation, and research that will provide the information decision-makers need as the strategy is implemented, as well as provide all New Zealanders with the confidence changes are leading to more learners gaining the literacy & communication and maths skills they need.

An important part of feedback loops, evaluation, and research to support implementation and monitoring of this strategy will be understanding how practices and people's experiences of our early learning and schooling system are changing. We want there to be fewer stories of kaiako and

teachers feeling unsupported and under-equipped to meet the literacy & communication and maths learning needs of their learners. We want there to be fewer stories of learners disengaging from learning or of families worried that their child's needs aren't being met.

The strategy envisages a state where kaiako, teachers, families, and the wider community are confidently working together to bring literacy & communication and maths learning to life in ways that are meaningful for learners and their future aspirations.

Data protection and use principles require data and information practices that empower service users, steward people's information and stories, and create insights that lead to wellbeing.

The principles of Māori Data Sovereignty must also be upheld. This means that approaches to monitor and evaluate the progress and impact of the recommendations in this strategy will be designed with the sector, iwi, and local communities, so that their needs are met as well as the needs of those accountable for this strategy.

# Annex: References

- <sup>1</sup> International Association for the Evaluation of Educational Achievement. (2016). PIRLS 2016 International results in reading: Home Environment Support. Retrieved from: <http://timssandpirls.bc.edu/pirls2016/international-results/pirls/home-environment-support/>
- 
- <sup>2</sup> Morton, S.M.B., Walker, C.G., Gerritsen, S., Smith, A., Cha, J., Atatoa Carr, P., Chen, R., Exeter, D.J., Fa'alili-Fidow, J., Fenaughty, J., Grant, C. Kim, H., Kingi, T., Lai, H., Langridge, F., Marks, E.J., Meissel, K., Napier, C., Paine, S., Peterson, E.R., Pilai, A., Reese, E., Underwood, L., Waldie, K.E., Wall, C. (2020). Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Now We Are Eight. Auckland: Growing Up in New Zealand. Retrieved from: [https://www.growingup.co.nz/sites/growingup.co.nz/files/documents/GUINZ\\_Now\\_We\\_Are\\_8\\_ONLINE.pdf](https://www.growingup.co.nz/sites/growingup.co.nz/files/documents/GUINZ_Now_We_Are_8_ONLINE.pdf)
- 
- <sup>3</sup> Geist, E. (2015). Math anxiety and the 'math gap': how attitudes toward mathematics disadvantages students as early as preschool. Education. Spring 2015, Vol. 135 Issue 3, p328-336. Retrieved from: <https://eis.hu.edu.io/deanshipfiles/pub110226807.pdf#page=64>
- 
- <sup>4</sup> Education Review Office (2015). Continuity of learning: transitions from early childhood services to schools. Retrieved from: <https://ero.govt.nz/our-research/continuity-of-learning-transitions-from-early-childhood-services-to-schools>
- 
- <sup>5</sup> Education Review Office (2018). Responding to language diversity in Auckland. Retrieved from <https://ero.govt.nz/our-research/responding-to-language-diversity-in-auckland>
- 
- <sup>6</sup> May, S. with Jang-Jones, A. and McGregor, A. (2019). PISA 2018 New Zealand Summary Report System Performance & Equity. Retrieved from: <https://www.educationcounts.govt.nz/publications/schooling2/large-scale-international-assessments/pisa-2018-summary-report>
- 
- <sup>7</sup> Rendall, S., Medina, E., Sutcliffe, R., and Marshall, N. (2020). Mathematics Year 5: Trends over 24 years in TIMSS; findings from TIMSS 2018/19. Wellington: Ministry of Education. Retrieved from: <https://www.educationcounts.govt.nz/publications/schooling/timss-201819-mathematics-year-5>
- 
- <sup>8,9</sup> Caygill, R., Zhao, B., Hunter, H., and Park, S. (2021). How our education system is performing for literacy: Progress and achievement of New Zealand learners in English medium settings; and Caygill, R. and Zhao, B. (2020). Progress and achievement and the context of mathematics and statistics learning in New Zealand (English medium education). Retrieved from: <https://assets.education.govt.nz/public/Literacy-and-Maths-strategy-development-in-2021/How-our-education-system-is-performing-for-Literacy.pdf> and <https://assets.education.govt.nz/public/Literacy-and-Maths-strategy-development-in-2021/Progress-and-achievement-and-the-context-of-mathematics-and-statistics-learning-in-New-Zealand.pdf>



- <sup>10</sup> Education Review Office (2009). Reading and Writing in Years 1 and 2. Retrieved from: <https://ero.govt.nz/our-research/reading-and-writing-in-years-1-and-2>
- 
- <sup>11</sup> Education Review Office. (2012). *Literacy and Mathematics in Years 9 and 10: Using Achievement Information to Promote Success*. Retrieved from: <https://ero.govt.nz/our-research/literacy-and-mathematics-in-years-9-and-10-using-achievement-information-to-promote-success>
- 
- <sup>12</sup> Rendall, S., Medina, E., Sutcliffe, R., and Marshall, N. (2020). Mathematics Year 5: Trends over 24 years in TIMSS; findings from TIMSS 2018/19. Wellington: Ministry of Education. Retrieved from: [https://www.educationcounts.govt.nz/\\_data/assets/pdf\\_file/0003/205707/TIMSS-2018-Year-5-Mathsc.pdf](https://www.educationcounts.govt.nz/_data/assets/pdf_file/0003/205707/TIMSS-2018-Year-5-Mathsc.pdf);
- Sutcliffe, R., Marshall, N., Rendall, S., and Medina, E. (2020). Mathematics Year 9: Trends over 25 years in TIMSS; findings from TIMSS 2018/19. Wellington: Ministry of Education. Retrieved from: [https://www.educationcounts.govt.nz/\\_data/assets/pdf\\_file/0007/205693/TIMSS-2018-Year-9-Mathsb.pdf](https://www.educationcounts.govt.nz/_data/assets/pdf_file/0007/205693/TIMSS-2018-Year-9-Mathsb.pdf)
- 
- <sup>13</sup> Caygill, R., Singh, S., & Hanlar, V. (2016). Mathematics Year 5: Trends over 20 years in TIMSS. Wellington: Ministry of Education. Retrieved from: <https://www.educationcounts.govt.nz/publications/series/2571/timss-201415/student-attitudes-to-maths-and-science-what-we-know-from-new-zealands-timss-201415-results-for-year-5-and-year-9>
- 
- <sup>14</sup> Young-Loveridge, J., Bicknell, B., and Mills, J. (2012). The mathematical content knowledge and attitudes of New Zealand pre-service primary teachers. *Mathematics Teacher Education and Development* 14.2, 28-49. Retrieved from: [https://researchcommons.waikato.ac.nz/bitstream/handle/10289/7984/MTED\\_14\\_2\\_Young-Loveridge\\_Bicknell\\_Mills\\_01.pdf](https://researchcommons.waikato.ac.nz/bitstream/handle/10289/7984/MTED_14_2_Young-Loveridge_Bicknell_Mills_01.pdf)
- 
- <sup>15</sup> Ministry of Education. (2021). Time Series Data: School Leavers with NCEA Level 2 or Above (2010-2020). Retrieved from School Leaver's Attainment | Education Counts: <https://www.educationcounts.govt.nz/statistics/school-leavers>
- 
- <sup>16</sup> Royal Society Te Apārangi Expert Advisory Panel (2021). Pāngarau Mathematics and Tauanga Statistics in Aotearoa New Zealand. Retrieved from: <https://www.royalsociety.org.nz/assets/Pangarau-Mathematics-and-Tauanga-Statistics-in-Aotearoa-New-Zealand-Digital.pdf>
- 
- <sup>17</sup> Ministry of Education and Ministry of Business, Innovation and Employment (2016). Skills in New Zealand and around the world. Retrieved from: [https://www.educationcounts.govt.nz/\\_data/assets/pdf\\_file/0003/173514/Skills-in-New-Zealand-and-Around-the-World.pdf](https://www.educationcounts.govt.nz/_data/assets/pdf_file/0003/173514/Skills-in-New-Zealand-and-Around-the-World.pdf)
- 
- <sup>18</sup> Ministry of Education. (2021). Does streaming work? A review of the evidence. Retrieved from: [https://www.educationcounts.govt.nz/\\_data/assets/pdf\\_file/0012/210027/He-Whakaaro-Does-streaming-work-.pdf](https://www.educationcounts.govt.nz/_data/assets/pdf_file/0012/210027/He-Whakaaro-Does-streaming-work-.pdf)

- <sup>19</sup> Tokona Te Raki – Māori Futures. (2021). Ending Streaming in Aotearoa. Retrieved from:  
[http://www.maorifutures.co.nz/wp-content/uploads/2021/04/TTR\\_Streaming\\_Document.pdf](http://www.maorifutures.co.nz/wp-content/uploads/2021/04/TTR_Streaming_Document.pdf)
- 
- <sup>20</sup> McNaughton, S. (2020) The Literacy Landscape in Aotearoa New Zealand, Office of the Prime Minister’s Chief Education Scientific Advisor. Retrieved from:  
<https://cpb-ap-se2.wpmucdn.com/blogs.auckland.ac.nz/dist/f/688/files/2020/01/The-Literacy-Landscape-in-Aotearoa-New-Zealand-Full-report-final.pdf>
- 
- <sup>21</sup> Dudeney, G., Hockly, N., & Pergrum, M. (2013). Digital Literacies. London: Routledge; see also: McNaughton, S. (2021) Digital Literacy: A Review, Office of the Prime Minister’s Chief Education Scientific Advisor. Retrieved from: <https://cpb-ap-se2.wpmucdn.com/blogs.auckland.ac.nz/dist/f/688/files/2020/01/The-Literacy-Landscape-in-Aotearoa-New-Zealand-Full-report-final.pdf>
- 
- <sup>22</sup> Ministry of Education. (2020). *Shifting the dial on literacy*. Retrieved from:  
<https://assets.education.govt.nz/public/Literacy-and-Maths-strategy-development-in-2021/Shifting-the-dial-Full-document.pdf>
- 
- <sup>23</sup> Royal Society Te Apārangi Expert Advisory Panel (2021). Pāngarau Mathematics and Tauanga Statistics in Aotearoa New Zealand. Retrieved from:  
<https://www.royalsociety.org.nz/assets/Pangarau-Mathematics-and-Tauanga-Statistics-in-Aotearoa-New-Zealand-Digital.pdf>



